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Dear TOJDE Readers,

Welcome to Volume 18, Number 3 of TOJDE,

There are 14 articles and 2 book reviews in July 2017 issue. 27 authors write these articles from 11 different countries. These countries are Ghana, Greece, Indonesia, Mexico, Nepal, Saudi Arabia, Taiwan, Turkey, UK, Ukraine and USA.

The title of the 1st article is STUDENTS' MEDIA PREFERENCES IN ONLINE LEARNING. Dr. Michiko Kobayashi is the author of this article. This study aims to explore students' preferred media in online learning and its relationship with learner characteristics and online technology self-efficacy. Online technology self-efficacy is correlated with a type of media requiring a relatively higher level of technology skills.

ANALYSIS OF PERFORMANCE FACTORS FOR ACCOUNTING AND FINANCE RELATED BUSINESS COURSES IN A DISTANCE EDUCATION ENVIRONMENT is the title of the 2nd article. Dr. Serdar BENLIGIRAY and Ahmet ONAY are the authors of this article. This study explores business core course performance interrelations with a focus on accounting and finance courses. Analysis of the correlations between overall course scores provides interpretable information for the underlying performance factors.

The 3rd article is written by Angeliki GARIOU-PAPALEXIOU, Spyros PAPADAKIS, Evangelia (Gelly) MANOUSOU and Irene GEORGIADU. IMPLEMENTING A FLIPPED CLASSROOM: A CASE STUDY OF BIOLOGY TEACHING IN A GREEK HIGH SCHOOL is the title of the article. The purpose of this study is to investigate the application of the model of the "flipped classroom" as a complementary method to school distance education in junior high school Biology. The writers highlight that school distance education combined with the radical development of ICT can be complementary with the use of various methods, like the "flipped learning", and give a new perspective and potential to the limited choices of conventional education in the Greek educational system which is worth further investigation.

The 4th article's title is HOW DO THE FACULTY MEMBERS GO FOR TROLLS? A VIEW FROM AN EMERGING COUNTRY. Elif Bugra KUZU DEMIR, Barış MERCIMEK, Nihal DULKADIR YAMAN and H. Ferhan ODABASI are the authors. This study focuses on the findings of an exploratory, qualitative phenomenological study and investigates opinions and evaluations of faculty members about trolls encountered in social media and mass medium. The research was carried out in Anadolu University in Turkey. It concludes that purity, hazard and intelligence of trolls are still dubious facts for the Anadolu University faculty members.

The 5th article, titled LOYALTY, TRUST, SATISFACTION AND PARTICIPATION IN UNIVERSITAS TERBUKA AMBIANCE: STUDENTS' PERCEPTION, is written by HERMAN. Factors affecting the loyalty of students in Universitas Terbuka are investigated in this article. The results showed that loyalty is significantly influenced by trust, satisfaction, participation and interaction between the independent variables. However, three out of four interaction variables contributed negatively to loyalty. Besides, the variances of independent variables, including their interactions, explain 60% of loyalty's variance.

Asu ALTUNOGLU is the author of the 6th article. **INITIAL PERCEPTIONS OF OPEN HIGHER EDUCATION STUDENTS WITH LEARNER MANAGEMENT SYSTEMS** is the title. This study aims to investigate the initial perceptions of students experiencing the Learner management systems (LMS) for the first time in the Open Education System of Anadolu University with the purpose of identifying the effective and ineffective aspects of it from their perspective and their demands and suggestions for how to improve their the engagement in the system.

SEEING GOOGLE THROUGH THE EYES OF TURKISH ACADEMICIANS is the title of the 7th article. Dr. Turgay ALAKURT and Dr. Salih BARDAKCI are the authors. In this study, results offer important insights about the academicians' perceptions of Google and how and why they make use of Google products.

The 8th article is written by Dr. Christopher Yaw KWAAH and Gabriel ESSILFIE. The title of this article is **STRESS AND COPING STRATEGIES AMONG DISTANCE EDUCATION STUDENTS AT THE UNIVERSITY OF CAPE COAST, GHANA**. The results of the study show that 'academic workload', 'high frequency of examinations', 'financial problems' and family/marriage problems' are the major causes of stress among the students.

Hasan TANIS and Ian BARKER are the authors of the 9th article. The title is **E-MENTORING AT A DISTANCE: AN APPROACH TO SUPPORT PROFESSIONAL DEVELOPMENT IN WORKPLACES** is the title. This research project was conducted in a governmental company as a case study in order to study how the participants of mentoring understand their roles, and how they perceive these roles when communicating through Skype and e-mail. The project culminates in suggestions for a new e-mentoring model for practitioners.

The 10th article is written by Shesha Kanta PANGENI, and the title is **ISSUES IN E-RESEARCH: LOG IN/OUT VIRTUAL FIELDS**. This study focuses on methodological issues of the Internet mediated research (e-Research) with particular focus on virtual fields. It explores and discusses on possible sources of data, methods of data collection, process of analysis and ethical issues to adopt research with virtual fields.

COLLABORATIVE WORK COMPETENCY IN ONLINE POSTGRADUATE STUDENTS AND ITS PREVALENCE ON ACADEMIC ACHIEVEMENT is the title of the 11th article. Marisela CASTILLO, Yolanda HEREDIA and Katherina GALLARDO are the authors. The purpose of this research establishes a relationship between the level of collaborative work competency and the academic performance of students in an online master's degree program. Results confirms a positive correlation between high level of collaborative work competency and academic achievement. Didactic recommendations of this study includes collaborative learning activities as one way to promote useful academic and personal skills development.

Daniah ALABBASI writes the 12th article. **EXPLORING GRADUATE STUDENTS' PERSPECTIVES TOWARDS USING GAMIFICATION TECHNIQUES IN ONLINE LEARNING** is the title. The results point out a positive perception toward the use of gamification tools in online learning among graduate students. Students require effort-demanding, challenging, sophisticated learning systems that increase competency, enhance recall memory, concentration, attentiveness, commitment, and social interaction.

The title of the 13th article is **CLOUD COMPUTING TECHNOLOGIES IN WRITING CLASS: FACTORS INFLUENCING STUDENTS' LEARNING EXPERIENCE**, and the author is Dr. Jenny

WANG. The proposed interactive online group within the cloud computing technologies as a main contribution of this paper provides easy and simple access to the cloud-based Software as a Service (SaaS) system and delivers effective educational tools for students and teacher on after-class group writing assignment activities.

The 14th article's title is E-COACHING, E-MENTORING FOR LIFELONG PROFESSIONAL DEVELOPMENT OF TEACHERS WITHIN THE SYSTEM OF POST-GRADUATE PEDAGOGICAL EDUCATION. Vasyl KOVALCHUCK and Iryna VOROTNYKOVA are the authors. The research considers the readiness of teachers and postgraduate pedagogical educational establishments to use e-coaching and e-mentoring which can provide continuous professional development of teachers.

There are two book reviews in this issue. CALL TEACHER EDUCATION: LANGUAGE TEACHERS AND TECHNOLOGY INTEGRATION is the title of the 1st book. The author of this book is Simone TORSANI. The reviewer is Yildiz TERZIOGLU.

Other book's title is INSPIRING THE SECONDARY CURRICULUM WITH TECHNOLOGY: LET THE STUDENTS DO THE WORK. James SHEA and Antony STOCKFORD are the authors. Dr. Marium DIN is the reviewer of this book.

Hope to meet you in the next issue of TOJDE.
Cordially,

Dr. T. Volkan YUZER
Editor-in-Chief

STUDENTS' MEDIA PREFERENCES IN ONLINE LEARNING

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ABSTRACT

This study examined students' preferred media in online learning and its relationship with learner characteristics and online technology self-efficacy. One hundred six college students in a mid-size U.S. university responded to a survey. The frequency analysis showed that students did not necessarily favor rich media over lean media in online learning. They preferred recorded online slide presentations with audio to Internet-based live video lectures in two-way video and audio interactions. Online discussion boards and chat groups were less favored than other types of media. As expected, online technology self-efficacy was correlated with a type of media requiring a relatively higher level of technology skills. The paper presents the results and discusses their implications of the study.

Keywords: Media preferences, online technology self-efficacy, online interaction, higher education.

INTRODUCTION

The current advancements in technology allow us to integrate a variety of media into online courses. However, media can either limit or promote students' interactions (Thoms & Eryilmaz, 2014), and the use of inappropriate or ineffective media impedes the delivery of the course content. Therefore, selecting the right media is key to successful online learning. When instructors design online courses, they should consider students' media usage patterns and preferences.

Past studies have identified media-richness as one of the influential factors for people's media preferences. The theory suggests that people choose specific media according to levels of uncertainty and equivocality of information (Daft & Lengel, 1984, 1986; Daft, Lengel & Trevino, 1987). Uncertainty is related to the quantity of information, which can be reduced by providing additional information, whereas equivocality addresses the complexity or ambiguity of information itself. According to the theory, two types of media exist: rich and lean media. Rich media transmit information through multiple channels, such as audio and visual, and they may be appropriate for discussing complicated or personal matters. On the other hand, lean media deliver information through limited channels, such as text only; therefore, they may be useful for casual conversation or information exchange. The theory suggests that richer media are generally synchronous media that can afford immediate feedback, verbal and nonverbal communication cues, a sense of personalized communication, and natural language (Capsi & Gorsky, 2005).

In the online learning context, students must rely on technology to obtain course materials and communicate with instructors and peers; therefore, their media preferences may be different from those in regular classroom settings. Capsi and Gorsky (2005) maintained that media choice in distance education is not merely determined by the level of media richness. Their study identified individuals' technology skills and social influence (e.g. group norms and peer pressures) as significant factors that affect media preferences. Similarly, Lightfoot (2009) added new dimensions to the media-richness theory and revealed that students' media preferences vary depending on gender, level of technology comfort, and the person with whom they are communicating.

Zhao, Alexander, Perreault, Waldman, and Truell (2009) found that faculty's media preferences in distance education are different from those of students. In their study, both faculty and students preferred online lecture notes and assignments the most. However, in video conferencing formats, significant differences emerged. Faculty preferred TV-based two-way live lectures, whereas students preferred Internet-based two-way live video and audio lectures. Nowadays, the use of online videos is becoming increasingly popular in distance education, and some faculty members also record their lectures and upload them on course websites. In a recent study, Sadik (2015) compared different types of online videos and found that students perceive screencasting recordings to be more useful than lecture capture recordings.

Furthermore, Morris (2013) found that online students prefer to use technology for learner-content interaction more than for learner-learner interaction, and that both faculty and students perceived online discussion forums as the least important media. Consistent with Morris's findings, Kaiser's study (2011) also showed that the younger generation perceived online collaboration with peers as less important than older students. Another research also revealed that age and attitude toward technology are two strong predictors of how students approach studying in distance education. Younger students tend to have positive attitudes towards technology, whereas older students are more likely to use technology for deeper learning (Jelfs & Richardson, 2013). Furthermore, research has demonstrated that although faculty members tend to be reluctant to use social media for teaching (Brown, 2012), prior experience with e-learning or hybrid courses increases their use of social media (Manca & Ranieri, 2016). These findings are consistent with an earlier study showing that prior technology experience influences on media choice in the distance learning context (King & Xia, 1997), suggesting that because distance learners are more likely to use technology to complete their coursework compared to other students, prior distance learning experience may also affect students' media preferences.

Finally, one might expect that if online students use their preferred media, their course satisfaction would increase. According to the media richness theory (Daft & Lengel, 1984, 1986; Daft, Lengel & Trevino, 1987), face-to-face communication is assumed to be the richest medium and expected to be the most favorable communication means. However, Havice, Davis, Foxx, and Havice (2005) argued that although the use of rich media in online courses is more likely to boost student satisfaction, it can also increase the risk of technical problems, which in turn discourages students to use advanced technology. In addition, Cole (2016) revealed that online students tend to prefer face-to-face communication, yet their course satisfaction is independent of their preferences for face-to-face interaction, and is rather related to their communication satisfaction with instructors. These studies support Capsi and Gorsky's claim (2005) that students may not always prefer rich media to lean media in the online learning context.

Bandura (1977) first introduced the theory of self-efficacy, which refers to the level of confidence in one's own ability to perform a particular task or accomplish a goal successfully. Self-efficacy is context dependent and affected by different factors, such as self-esteem, prior experience, task value, interest/motivation, and support by instructors or peers (Alkharusi, 2013; Hsiao, Tu, & Chung, 2012; Jian-Feng, Ze-Wei, & Xue-Ting, 2015). Online technology self-efficacy (OTSE) is one type of self-efficacy related to computer skills and is necessary for online communication or interaction with peers and instructors. As noted earlier, levels of technology skills and comfort influence media choice; therefore, it is assumed that OTES is more likely to affect students' media preferences.

Miltiadou and Yu (2000) developed an online technology self-efficacy scale (OTSES) and demonstrated its validity and reliability in their study. Other researchers also used the OTSES to examine the relationship between learners' characteristics and OTSE. For example, Yukselturk and Top (2013) found that males tend to have a higher level of OTSE compared to females. Moreover, Wang, Shannon, and Ross (2013) also revealed that the number of previous online courses taken influenced OTSE levels. Their finding aligns with research by Eastin and LaRose (2000), which found that students with limited online learning experience have a lower level of OTSE. Lee (2015) also found that OTSE changes over time; as students' use of online technology increases, their OTSE also increases. Furthermore, Wang et al. (2013) reported that OTSE is significantly related to the final grade in the most recent online course. Taken together, these studies suggest that females or students with limited and unsuccessful online learning experiences are less likely to choose rich media or a high level of technology.

Research Questions

In summary, a number of factors appear to be related to online students' media preferences. Learner characteristics such as age, gender, and prior online learning experiences have emerged as influential factors. Based on past research, it is also assumed that OTSE is more likely to affect students' media preferences, and that students with a higher level of OTSE are more likely to favor rich media over lean media. The purpose of the study was to investigate online students' preferred media and its relationship with demographic features and OTSE. The research questions included:

> ➢ What types of media do college students perceive to be useful in online learning?
> ➢ Is there a relationship between students' demographic features and preferred media in online learning?
> ➢ Is there a relationship between OTSE and preferred media in online learning?

METHODOLOGY

Participants in the study were recruited from students majoring in education at a rural, mid-size U.S. university. These participants had taken at least one college-level online course. The study employed a convenient sampling method; the survey was anonymous and distributed online as well as in print. The total number of participants was 106. The survey consisted of three sections: participants' demographics, online technology self-efficacy, and preferred media in online learning. The participants' demographics are described in the results section.

Instruments used for the other two sections are explained as follows.

Online Technology Self-Efficacy Scale

The researcher examined an existing OTSE survey created by Miltiadou and Yu (2000) and added and deleted several items to reflect current technology. The revised survey consisted of 20 items in a four-point Likert scale: strongly agree, agree, disagree, and strongly disagree (see Appendix). The scale is expected to assess a variety of technology skills that are necessarily for online learning. In order to confirm the content validity, the researcher asked an expert in the field to examine each item. A sample college student was also asked to respond to the survey to test the clarity of written instructions and question items. Based on their suggestions, minor revision was made to a few items. Inter-item reliability was tested using SPSS, and Cronbach's alpha was .94. Factor analysis was also conducted to examine underlying components and factor loadings. The Kaiser Meyer-Olkin Measure test was above an acceptable value (.898) and Bartlett's Test of Sphericity also showed a significant level (p<.001). Factor loadings were higher than .45 on each item, which was at an acceptable level (Matsunaga, 2010). Therefore, all 20 items were included in the survey, and composite scores were used to assess OTSE.

Preferred Media in Online Learning

In order to assess students' preferred media in online learning, the researcher identified 15 media based on a study by Zhao et al. (2009). In that study, the participants were all graduate students. However, in this study, the majority of participants were undergraduate students, and only a few students were in remote locations. Therefore, several items that did not apply to the current participants were dropped. Students were asked to respond to each item on a four-point Likert scale regarding their perceptions of media technologies: very useful, somewhat useful, not very useful, and not at all useful.

RESULTS

The total number of participants was 106. About 87% of them were senior and junior and 76% were female. The median of the age group was 21 to 23. The number of online courses taken prior to Fall 2015 was sparse and the median was three, while 27% of students had taken more than six online courses. Over 70% of the participants received as in their most recent online courses.

Frequency Analysis for Preferred Media in Online Learning

Table 1 shows the frequency distribution of preferred media in online learning. Email, texting/instant messaging, and lectures notes and assignments posted on LMS were the three most useful media identified by participants; more than 80% of participants selected very useful. Online slide presentations with audio, online collaboration tools, and online videos were also perceived as useful media. Online discussion and chat groups and CDs/DVDs were rated the lowest among all media listed in the survey and only about 20 to 25 % of students found them very useful.

Table 1. Frequency of Preferred Media in Online Learning

	Very useful	Somewhat useful	Not very useful	Not at all useful
1. Online lecture notes and assignments posted on LMS	82 (77.4)	24 (22.6)	0	0
2. Online slide presentations with audio	70 (66.0)	35 (33.0)	1 (.9)	0
3. Online slide presentations with images and text only	62 (58.5)	35 (33.0)	9 (8.5)	0
4. Online discussion groups (Discussion boards)	26 (24.5)	51 (48.1)	23 (21.7)	6 (5.7)
5. Online chat groups	21 (19.8)	54 (50.9)	28 (26.4)	3 (2.8)
6. Online collaboration tools (Wiki, Google Docs etc.)	74 (69.8)	29 (27.4)	2 (1.9)	1 (.9)
7. Email	86 (81.1)	19 (17.9)	1 (.9)	0
8. Telephone/Voicemail	56 (52.8)	39 (36.8)	10 (9.4)	1 (.9)
9. Texting/Instant Message	87 (82.1)	17 (16.0)	2 (1.9)	0
10. Online videos (Youtube, TED etc.)	77 (72.6)	29 (27.4)	0	0
11. CD or DVD	28 (26.4)	51 (48.1)	23 (21.7)	2 (1.9)
12. Social networking systems (Facebook etc.)	37 (34.9)	51 (48.1)	14 (13.2)	2 (1.9)
13. Internet–based live lecture using two-way video and audio	38 (35.8)	50 (47.2)	15 (14.2)	2 (1.9)
14. Internet–based live lecture using one-way video and two-way audio	28 (26.4)	61 (57.5)	15 (14.2)	1 (.9)
15. Internet–based live lecture using two-way audio with presentation slides.	44 (41.5)	47 (44.3)	13 (12.3)	1 (.9)

Note. Numbers in the parentheses show percentages.

Kendall's Tau-b Correlation Analysis

The researcher treated the survey items as ordinal scales, and the collected data also failed to meet the normality assumption. Therefore, a Kendall's tau-b correlation analysis was conducted to determine the relationship between preferred media and demographics, and between preferred media and the revised OTES (see Table 2). Gender was significantly correlated with email ($\tau b = .192$, $p = .048$), telephone/voicemail ($\tau b = .187$, $p<.046$), and internet-based two-way video and audio ($\tau b = .213$, $p =.022$). Females perceived these three media more positively than males. GPA and recent online course grades were also negatively correlated with online slide presentations with images and text only ($\tau b = -.535$, $p = .003$ forGPA; $\tau b = .535$, $p = .003$ for recent online course grade). That is, students with lower grades felt online slide presentations with images and text to be more useful than those with higher grades. There were strong to moderate positive correlations between OTSE and

several types of media. Three types of media including online collaboration tools (τb = .258, p = .002), Internet based live lecture with two-way video and audio (τb = .277, p = .001), and Internet-based live lecture with one-way video and two-way audio (τb = .219, p = .008) were strongly correlated with OTSE. Online chat groups (τb = .206, p = .012) and social-networking systems (τb = .181, p = .030) were also moderately correlated with OTSE. The results indicate that students with higher level of OTSE perceived those five media more favorably than those with lower OTSE. Lastly, OTSE was not correlated with any of the demographic factors and prior online learning experiences in this study.

Table 2. Results of Kendall's Tau-b Correlation Analysis

	Age	Gender	N of online courses	Recent online grade	OTSE
1. Online lecture notes and assignments posted on LMS	.092	.018	.015	-.048	.129
2. Online slide presentations with audio	.091	.020	-.062	-.181	.072
3. Online slide presentations with images and text only	-.001	.118	-.068	-.199*	.145
4. Online discussion groups (Discussion boards)	.101	.119	-.085	-.076	.086
5. Online chat groups	.099	.018	-.112	-.067	.206*
6. Online collaboration tools (Wiki, Google Doc etc.)	-.015	-.082	-.075	.002	.258**
7. Email	.033	.192*	.105	-.096	.025
8. Telephone/Voicemail	-.136	.187*	-.016	-.005	-.058
9. Texting/Instant Message	-.071	.147	.073	-.035	.037
10. Online videos (Youtube, TED etc.)	.030	-.042	-.106	.023	.140
11. CD or DVD	.116	.006	-.083	-.085	.010
12. Social networking systems (Facebook etc.)	.069	.132	.051	.050	.181*
13. Internet–based live lecture using two-way video and audio	-.067	.213*	.011	-.0.51	.277**
14. Internet–based live lecture using one-way video and two-way audio	-.014	.134	-.064	-.010	.219**
15. Internet–based live lecture using two-way audio with presentation slides.	-.087	.113	-.034	-.131	.157

Note. *p<.05, **p<.01

DISCUSSIONS

What Types of Media Do Students Perceive to be Useful in Online Learning?

As expected, all surveyed students perceived online lecture notes and assignments as useful. The result was consistent with a past study (Zhao et al., 2009). These are traditional methods of delivery for course materials in online learning. Even though a variety of new technologies are available, the study suggests that simple text documents and written instructions are still essential tools. Among email, text, and telephone/voice mail, students perceived telephone/voice mail to be the least useful. Aligning with a study by Frey, Yankelov, & Faul, (2003), online students prefer email and text because of their flexibility. Although social networking is popular among younger generation, the result showed that students perceived it to be less useful compared to other asynchronous media. The result may be linked to faculty's attitude; social media are not perceived as pedagogical tools (Manca & Ranieri, 2016). Also, students rated online videos much higher than CDs/DVDs. The results reflect the current student population; about 70% to 95% of undergraduate students in the U.S. own at least one smartphone or other type of mobile device (Chen & Denoyelles, 2013). Therefore, online videos may be more convenient and easier to access compared to CDs/DVDs.

Online discussion boards, online chat groups, online collaboration tools (e.g. Wiki, Google Docs) are used to promote interaction among peers. Of these three media, online collaboration tools were perceived to be the most useful. In alignment with Morris' study (2013), students did not perceive online discussion boards to be useful. Although both online collaboration tools and online discussion boards are asynchronous media, their purposes of use are different. For example, Google Docs is helpful when constructing a collaborative research paper, while online discussion boards are generally used for exchanging opinions on a topic assigned by the instructor. This indicates that online students prefer individual learning unless the assignment requires collaboration. Also, how discussion boards are used can vary with the instructor. Therefore, students' prior experience with discussion boards may have influenced the results. Students with negative or limited experiences may perceive discussion boards to be less useful than those who have used them for meaningful tasks or discussions. Further research is needed in this area.

In this study, three different types of Internet-based live lectures were compared. Internet-live lectures with two-way audio with slide presentations were rated the highest, followed by two-way video and audio and one-way video and two-way audio. One might expect that two-way video and audio would be the most preferred format because it is considered to be a richer medium than the other two formats. However, live video lectures are often interrupted due to bandwidth issues. Past research also shows that personality traits affect people's media choice (Hertel, Schroer, Batinic, & Naumann, 2008), therefore it is quite possible that shy or introvert students may not feel comfortable with being on live videos, which in fact can limit their participation. Thus, two-way video and audio may not always be necessary or the best option.

Is There a Relationship Between Students' Demographics and Preferred Media?

Gender and recent online course grades were related to some of the media included in the survey. Females rated higher on email and telephone/voice mails than males did. This is consistent with a past study; females tend to use cell phones for social communication more frequently than males (Beaver, Knox, & Zusman, 2010). Therefore, it is expected that females also use these media for academic purposes more frequently. In addition, females perceived two-way video and audio to be useful more than males did. Online communication patterns between males and females are different. Females try to establish a sense of emotional closeness though online communication more often than males (Gougeon, 1998).

This may be why females tend to prefer a two-way video and audio format because it is closer to face-to face communication. Lastly, the results showed that students who received lower grades on the most recent online courses prefer online slide presentations with images and text only. This seems to align with Sweller's cognitive load theory (Blayney, Kalyuga, & Sweller, 2015). Overuse of multimedia including audio, images, and text can be distracting, which in turn slows down students' cognitive processes. Therefore, online instructors should use multimedia, only if that technology helps students better understand the content.

Is There a Relationship Between the Revised OTSE and Preferred Media?
Five types of media were significantly correlated with the revised OTSE. Those media are relatively new technologies, such as social network systems, online collaboration tools, and live video and audio lectures. Students with a higher level of OTSE perceived them more useful than those with a lower level of OTSE. In the survey, three types of Internet-based live lectures were listed. Two-way and one-way videos were negatively correlated with OTSE. This indicates that the use of video gives students with a lower OTSE additional complexity, such as learning how to operate the video feature and handling with technical problems; therefore, they prefer two-way audio with presentation slides. Moreover, there was a strong negative correlation between online collaboration tools and OTSE. Although more than 90% of the students perceived online collaboration tools as useful media, instructors should be aware that students with lower OTSE might need additional support when those tools are integrated into course activities.

CONCLUSION

The study identified several factors that influence students' media preferences and shed light on directions for future research. Consistent with earlier studies, online students did not necessary favor rich media over lean media. As expected, OTSE influenced students' preferences for rich media or a higher level of technology. Although gender differences were found in preferences for several media, they were not related to OTSE. The revised OTSE scale appears to be valid and reliable, yet the majority of participants in this study were education students at the same university; thus, further analysis with different groups of samples is recommended. In addition, this study did not examine students' prior experiences with each type of media in the online learning context. Future researchers may investigate to what extent students' past technology experiences affect their media preferences.

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Dr. Michiko KOBAYASHI is an Associate Professor of Education at Southern Utah University in the U.S. Dr. Kobayashi earned her Ph.D. in Instructional Design and Technology in 2006 and has been teaching preservice teachers for 11 years. Her specializations include distance education, K-12 technology integration, and second language acquisition. She is also interested in promoting global collaboration in K-16 classrooms to develop students' multicultural perspectives. Her current research focuses on students' attitudes towards group collaboration and interaction patterns in online learning.

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Please rate the level of your confidence in using technologies and choose the one that best describes your feeling. Choose the option "Strongly Disagree," if you didn't know what the statement meant.

1. I feel confident in downloading (saving) files from a website to the desktop. **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
2. I feel confident in printing a website. **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
3. I feel confident in copying a block of text from a website and pasting it to a word document. **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
4. I feel confident in bookmarking a website. **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
5. I feel confident in taking a screenshot of the computer monitor. **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
6. I feel confident in inserting a link in a word document or an email message. **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
7. I feel confident in performing the basic functions of email systems (ex. Sending email to a specific person or multiple people at the same time, forwarding email, and attaching files). **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
8. I feel confident in texting or using instant messaging systems with my classmates. **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
9. I feel confident in posting a new comment (creating a new thread) and a reply to others on online discussion boards. **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
10. I feel confident in using the Internet (ex. Google, Yahoo) to find or gather information for online learning. **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
11. I feel confident in using library databases to find articles for course assignments. **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
12. I feel confident in performing the basic functions of online audio and video/slide shows (ex. Play, Stop, Forward/Rewind, Share). **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
13. I feel confident in subscribing and unsubscribing to a podcast. **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
14. I feel confident in creating a podcast and publishing it to a website. **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
15. I feel confident in creating a simple video/slide show and uploading it to a website. **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
16. I feel confident in creating a simple web page with text, images, and links. **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
17. I feel confident in using the basic functions of social networking systems (ex. Facebook, Twitters). **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
18. I feel confident in using online collaboration programs (ex. Wiki, Google Doc) to work on a group project. **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
19. I feel confident in using audio/video conferencing systems (ex. Skype, Face Time, Adobe Connect) to participate in live group disccussions. **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**
20. I feel confident in using online text chat programs to participate in live group discussions. **(1) Strongly Disagree, (2) Disagree, (3) Agree, (4) Strongly Agree**

ANALYSIS OF PERFORMANCE FACTORS FOR ACCOUNTING AND FINANCE RELATED BUSINESS COURSES IN A DISTANCE EDUCATION ENVIRONMENT

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ABSTRACT

The objective of this study is to explore business courses performance factors with a focus on accounting and finance. Course score interrelations are assumed to represent interpretable constructs of these factors. Factor analysis is proposed to identify the constructs that explain the correlations. Factor analysis results identify three sub-groups of business core courses. The first group is labeled as management-oriented courses. Accounting, finance and economics courses are separated in two groups: the prior courses group and the subsequent courses group. The clustering order of these three groups was attributed to underlying performance factor similarities. Then, the groups are compared by the pre-assessed ratings of course specific skills and knowledge. The comparison suggests that course requirements for skills and knowledge were the latent variables for the factor analysis. Moreover, multivariate regression analyses are employed to reveal the required level of verbal and quantitative skills for the groups. Management-oriented courses are differentiated from others with requiring verbal skills, managerial skills and knowledge more. Introductory courses require quantitative and analytical reasoning skills more than the subsequent courses in accounting, finance and economics. Mathematics course score fails to be a suitable proxy of numerical processing skills as an accounting course performance factor.

Keywords: Business education, course performance, distance education, factor analysis, regression analysis.

INTRODUCTION

Academic success is of primary importance to students in pursuit of their career goals. It is also critical for faculty members and educational institutions to gain reputation in the challenging competition for attracting the most promising students. Thus, determinants of student performance have drawn the attention of researchers. Different factors affecting business course success have been investigated. The most notable factors are required skills and knowledge, student demographics and background, motivational effects and educational factors external to the student attributes.

This study explores business core course performance interrelations with a focus on accounting and finance courses. Analysis of the correlations between course scores provides interpretable information for the underlying performance factors. We propose a novel decomposition technique for an analysis of course performances. Factor analysis identifies the constructs that explain correlations among business core course scores.

Factor analysis identifies three sub-groups of business core courses that exhibit a clustering order, which can be attributed to underlying performance factor similarities. All of the management-oriented courses are clustered in one group. Accounting, finance and economics courses are separated into two groups by their course sequence. In factor loadings descending order, the third group is the prior courses set and the second group is the subsequent courses set for accounting, finance and economics. A post hoc analysis and multivariate regression analysis are then employed for these groups of courses to gain understanding of the latent factors. The results of these analyses suggest that required skills and knowledge are important for being successful in business core courses.

The analysis structure is also designed to test individual course performance relationships mainly for Financial Accounting, Cost Accounting and Auditing. We adopt a more comprehensive approach to accounting course interrelations. However, analyses cover other business specialties as well, particularly finance, economics and business management courses. We integrate the analysis of performance factors for accounting and these courses. Analysis outcome provides guidance for instructors and faculties to equip future accountants with proper skills and knowledge for pivotal roles in business functions. Vocational education program designers may benefit from the analysis outcome in firms that use job rotation throughout the functional departments. Our interpretation of business core courses performance interrelations may be intriguing for business education researchers who are trained in specialized fields and inclined to design research models from the perspective of their specialty.

Meristosis and Phipps (1999) stated that one of the measures of effectiveness is course performance for comparisons between distance and traditional classroom-based education. They also suggest that a complete set of course performances must be included for a robust comparison of effectiveness between these education techniques. Courses may differ in terms of performance factors which are unequally affected by the delivery process, i.e. distance education. This may cause a generalization problem for the results of single course investigations. An analysis of business course interrelations and performance factors is believed to be useful for distance education researchers who use course scores as a measure of effectiveness.

The paper is organized as follows. First, review of key areas in the literature is presented. Based on the review, a conceptual framework is defined for the determination of proper research environment and variable composition. Then, hypotheses are developed according to the preliminary discussion. The next section proposes research methodology for hypothesis testing. Following section introduces the sample. The analysis outcome is presented afterwards. The discussion section interprets the outcome within limitations and relates to the previous studies. The final section offers conclusions and insights for further research.

LITERATURE REVIEW

Eskew and Faley (1988), Doran et al. (1991) hypothesized that performance in an accounting course is a function of gender, general academic performance and ability, and prior accounting course performance. They employed multivariate regression models to explore accounting course performance measured by course scores. Results of the analyses drew attention primarily to course performance interrelations. After these studies, prior course performances were frequently included in both accounting and finance course performance models. Borde et al. (1996) investigated determinants of Introductory Finance performance with similarly hypothesized factors. They considered accounting course performance as a variable and investigated cross-relations between accounting and finance course performances. Having studied the upper level finance course performance determinants Trine and Schellenger (1999) also used independent variables alike. Over time, hypothesized factors have changed depending on different concerns or paradigms, while some factors were retained. These factors can be named as demographics, background and related course performances of student.

One of the important performance factor is overall student ability. It seems plausible to measure overall student ability by grade point average (GPA). Eskew and Failey (1988), Doran et al. (1991), Borde et al. (1996) considered GPA as important factor in terms of explaining the students' success of business courses. Kirk and Spector (2006) reported positive effect of GPA on Cost Accounting performance. GPA can be considered as the most frequent and significant among proposed predictors in the literature. Although GPA may contain information about students' ability and motivation, it is hard to differentiate the effect of motivation in quantifiable terms. Mo and Waples (2011), Denny (2014), controlled for students' choice of major, which was assumed to represent the motivational factors affecting past course performances. However, there is an ambiguous order of causality between choice of major and better performance in prerequisite courses related to that major. It is also possible that a student prefers to study a major which he or she proved to be good at. Another motivation aspect is the link between personality type and course performance. Bealing et al. (2006) claims that there is a relation between specific personality types (sensing-judging) and success of accounting courses. However, Filbeck and Smith (1996) found that personality types perform differently on certain types of examination methods. This means performance results may vary for the same personality types in different means of examinations. Thus, a robust generalization of relationship between personality types-oriented motivation and course performances has not been established yet. Apart from motivational aspects, GPA is deemed to be an objective but merely adequate factor indicative of student ability in undergraduate course work.

Various potential factors effect course performance. Guney (2009) structured these potential factors in terms of their internal relationships. An extensive review of factors in the literature can be found in this research. Guney (2009) points to a two-fold structure of potential factors in relation to students' performance in accounting: student-exogenous and student-endogenous. Age, gender, country of origin, effort, attendance, numerical processing skills, work experience, academic experience and future career motivations are factors related to the student, and thus are called student-endogenous factors. Instructor-related factors and teaching environment are student-exogenous factors. Student has nothing to do about these and cannot control these for his/her benefit. Examples are teaching quality and competence of lecturer, teaching and examination method and textbook or learning material quality. Guney (2009) introduced the concept of student-exogenous factors in addition to student-endogenous factors and formed a more comprehensive model. However, exogenous variable data were obtained from the questionnaire measuring students' perceptions of teaching. Students' lack of expertise and reporting bias may lead to false evaluation of the factors. That means possible measurement bias. In fact, students' perceptions may be a reflector of their motivation and attitude towards courses, instead of being an exogenous factor measurement.

Related Course Performance as a Determinant for Accounting Course Success

The models which explore factors associated with a specific course success tend to include various variables from each category of the factors mentioned thus far. A favored variable is performance of another course, which is theoretically related to target course performance. The assumption here is that related course performance can be a proxy of the level of knowledge, ability and skill needed for the target course. Related course performance can reflect specific requirements of the target course in a way similar to GPA which reflects overall ability. Thus, related course performance is a valid predictor of target course performance as well as GPA. Eskew and Faley (1988) established a relationship between pre-college study of accounting and the subsequent performance in an introductory accounting course. However, Doran et al. (1991) refers to a more complex outcome regarding the impact of prior accounting knowledge on academic performance in sequential accounting courses. They found that although earlier studies of high school bookkeeping had positive effects on performances in the first accounting course, these studies negatively affected performances in the subsequent accounting course. An attractive indication of this result is a complex relationship among undergraduate courses in terms of varying performance factors.

Bernardi and Bean (2002) reported that students' Intermediate Accounting I performances account for around 50 percent of the variation in Intermediate Accounting II test scores. If the course specific ability and skill (or even motivation) are to be controlled, then it is reasonable to consider courses from other branches as well as prior same-branch courses. Drenann and Rohde (2002) found that success in prior managerial accounting courses was related to students' achievement in the subsequent courses. They conducted similar tests for Business Finance on the ground that the subject has similar combination of quantitative, analytic, and interpretive performance criteria. Financial Accounting and Statistics performance relations with Business Finance performance supported their main analysis. Hartnett et al. (2004) observed statistically significant relationship between accounting performance and accounting course work prior to undergraduate education. Kirk and Spector (2006) found that students' success in Managerial Accounting Principles, first statistics course and overall performance were significantly related to Cost Accounting performance. Bealing et al. (2008) found that performances in prerequisite accounting courses were statistically significant to predict the subsequent accounting course performances. In another study, Baker et al. (2010) inferred that students' performance in their first financial accounting course could be a predictor of performance of all business core courses. Maksy (2012) reported significant relationships between Intermediate Accounting and upper level accounting courses, namely Contemporary Issues in Financial Accounting and Advanced Accounting. Schmidt and Wartick (2014) considered the effect of the time lag between related accounting courses. Nevertheless, performance difference was ambiguous.

Accounting course performance and non-accounting course performance relations were investigated as well. Tho (1994) found that scores in earlier high school mathematics and economics positively affected the academic accounting performance. Gist et al. (1996) reported positive effect of mathematical skills on performance of accounting students. Mathematics course score is an accepted variable in accounting course performance models in order to take the numeracy level of students into account. Fedoryshyn et al. (2010) fully focused on numeracy and they reported a significant correlation between arithmetic skills and performance in accounting courses.

Majority of the accounting course performance researches focus on sequential introductory accounting courses and upper level accounting courses. Auditing course performance relations are somewhat neglected. Jenkins (1998) investigated the performance in an upper division auditing course and associated it with GPA and critical thinking test score as a proxy for required skills. No other accounting course performance relation was assumed. Thus, auditing course was implicitly differentiated from other accounting courses in this study. On the other hand, the grade in Intermediate Accounting was found as a predictor of student performance in Advanced Accounting and Auditing by Maksy and Zheng (2008). They treated auditing as a regular constituent of accounting track. According to Maksy and Wagaman (2012), students' performance in Intermediate Accounting and their overall GPA were significant indicators of their performance in Auditing. However, their study had inconsistent results with a different cohort and they stated that there was almost no statistical connection between the grade in Intermediate Accounting and student performance in Auditing. In practice, an important educational aspect of Auditing course is to provide ethical background for accounting students. Cohen and Pant (1989), Bampton and Cowton (2002) conducted surveys and reflected the common opinion that the auditing course was the most suitable one for ethical topics among other accounting courses. Uyar and Gungormus (2013) investigated accounting professionals' perception of ethics education in university with a survey. The responses indicated that auditing courses were appropriate for ethics in business practice. Anzeh and Abed (2015) investigated the scope of ethics education for undergraduate accounting education. They employed thematic content analysis and reported that auditing courses dominated other accounting courses in terms of ethical topics in syllabus. They validated that auditing courses were rich in ethical materials so as to prepare the accounting students to face the ethical challenges in their professional career. Consequently, if there is Business Ethics as a separate course in

undergraduate business program, then there may be a relationship between Auditing and Business Ethics performances.

Related Course Performance as a Determinant for Finance Course Success

Studies in finance course performances tend to investigate cross-relations of course performances from other branches. Accounting course and finance course relations are well-established. Drennan and Rohde (2002) argued that accounting and finance course performance criteria were akin. Pritchard et al. (2004) indicated that skill requirement similarities between accounting and finance majors were more convergent compared to other business majors such as marketing and management. Ely and Hittle (1990) assumed that upper division finance courses require students to have a fundamental background in mathematics. Nevertheless, the analysis outcome was unsupportive. Their explanation was improper selection of mathematical skills proxy. Didia and Hasnat (1998) found that students with pre-knowledge of Calculus and other related mathematics courses exhibited better performance in finance courses, compared to individuals who had no prior coursework in mathematical fields. The investigation of upper level finance course success determinants by Trine and Schellenger (1999) presented positive and significant effects of first financial accounting course grades, basic finance course grades and American College Testing (ACT) mathematics scores. Marcal and Roberts (2001) stated completion of Statistics prerequisite positively affected finance course performance. Grover et al. (2010) pre-examined Introductory Finance students with a quantitative skills test at the beginning of the semester. Mathematics and accounting based questions were a significant predictor of student performance in Introductory Finance.

Related Course Performance as a Determinant for Economics Course Success

Economics and finance are often taught as separate disciplines. However, they are interrelated and influence each other. Historical interactions between finance and economics are well presented by Miller (1999). In spite of the different aspects of these disciplines, there may be similarities between undergraduate finance and economics course performance factors. In earlier work of Simpson and Sumrall (1979), it was reported that accounting and finance majors were better performers in prior economics courses.

Economics course performance is also a concern for instructors and researchers. Besides the undergraduate economics program, various undergraduate programs have economics courses in their curriculum. For example, a typical undergraduate business program has a set of these courses. However, this line of research uses similar performance determinants without referring to accounting, finance or any other business course performance research. Anderson et al. (1994) investigated Introductory Economics performance determinants. They focused on prior knowledge of economics and mathematical subjects, such as functions, algebra and calculus. Ballard and Johnson (2004) conducted a detailed analysis of Introductory Economics performance determinants. They examined the effect of GPA, gender, country of origin, quantitative skills, prior and knowledge, which are examples for identical factors in both lines of research.

A novel interdisciplinary analysis for economics course performance was conducted by Denny (2014). The author examined the relationship between student performance in Economics and student attributes in different specialty programs such as Law, Political Sciences and Business Management. This study has a comprehensive approach and has a wider set of course group interrelations. Model of the research has business organization and accounting variables to capture if the student studied business organization or accounting at upper level. It is hypothesized that if student chooses either of these subjects at upper level, then perhaps this indicates an interest in the financial sector, which may make them more motivated about studying Economics. The analysis outcome indicates a negative coefficient with business organization and a positive coefficient for accounting without statistical significance. Thus, the research hypothesis is declined. Therefore, upper level specialty subject selection may be a proxy of pre-existent skills, rather than a proxy of motivation. Accounting students seemingly have required skills for Economics more than Business Organization students. Denny (2014) also reported that the least successful

students were the Sociology and Computer Science students in Macroeconomics. Computer Science students had the poorest performance. If it is presumed that the motivational factors and prior knowledge are not different in these student cohorts, and Computer Science students are more skilled in quantitative courses, then the results contradict prior studies that establish a positive relationship between performances of quantitative courses and Economics.

Course Performance in Distance Education

Previous studies for undergraduate business course performance have been mostly conducted in conventional learning environments. There are less studies which have their focus on distance learning course performances rather than performances of face to face courses. An evaluation of Factors related to student performances in distance learning environments were presented by Cheung and Khan (2002), taking the case of Open University of Hong Kong. They reported significant relationship between Business Communications and Business Relations Communication with a sample of 168 students, which is a small number of observations for a research in open education system. Pretorius et al. (2009) presented a positive relationship between Introductory Economics and Mathematics performance in South African Distance Education environment. Papageorgiou and Halabi (2014) examined the determinants of performance on distance education students who completed three years of financial accounting to obtain a Bachelor of Accounting Science degree. Their results showed that mathematics background and prior academic performance were both significantly associated with student performance throughout the financial accounting subjects. Moreover, they reported that students' prior accounting knowledge improved the outcome especially for the first year-courses. Huh et al. (2010) investigated accounting course performance determinants at California State University. In the University, online and offline accounting courses were taught by the same instructor. This made a performance comparison possible. Their findings showed no difference in student performances between online and offline groups of learners. However, "online learners and offline learners may perform differently due to differences in student perception, available learning tools and other technical issues" (Huh et al, 2010, p.81). For example, Carpinelli et al. (2006) reported better performance in distance learning group than face to face group of students and explained their findings with better quality of distance learning in their specific research environment. On the contrary, Urtel (2008) reported lower final grades for distance learning students compared to face to face group with a same instructor and same assessments.

In comparative analysis of distance versus traditional business education, course performances are used as an effectiveness indicator (Brown & Liedholm, 2002; Anstine & Skidmore, 2005; Chen et al., 2013; Parks-Yancy & Cooley, 2015; Aly, 2016). These researches have target courses from a single discipline or two instead of covering all disciplines in business education. Arbaugh (2005) pointed that studies comparing business disciplines such as accounting, finance, marketing and management were limited and he conducted a discipline-level analysis on an internet based business program. The results imply that course grades are affected by subject matter. This study argues for a greater emphasis on multi-course and multidisciplinary studies to establish generalizable predictors of on-line course effectiveness. Here, we recall that the courses may differ in terms of performance factors which are unequally affected by the delivery media and techniques. In this sense, course score interrelations and performance factor analysis may be fruitful for effectiveness studies of distance education.

CONCEPTUAL FRAMEWORK

Thus far, course performance interrelations have been presented from various studies that mainly investigated the performance determinants of courses from individual fields, particularly Accounting, Finance and Economics. These studies do not necessarily focus on the related course performances as independent variables in their analyses. These studies include a few related course performance variables in their independent variable set. From

our point of view, most of the variable sets are arguably problematic. First, basic demographics (age, gender, ethnicity, etc.) are often employed without introducing a conceptual background. Analysis results of these variables yield less knowledge without theoretical reasoning. Second, some variables may contain considerable measurement error. According to Mo and Waples (2011, p.106), "most of the analyses use data collected from questionnaires that are inherently subject to self-selection bias". A remedy for this problem is to observe the student. However, Garcia and Jenkins (2003, p.29) stated "This may lead to a Hawthorne Effect with performance improving simply because student knows that observation is taking place". Measurement bias may occur by the influence of the observer on the students' behavior. In contrast, related course score as a predictor of course performance is a legitimate and objective variable with minor measurement error. A third concern is the arbitrary composition of explanatory variables, particularly for the related course performances. Some course relations are taken into account and some other courses are neglected without expressing the rationale. Required skills for business courses may be structured into sub-groups of courses. There may be relationship patterns among courses which indicate an important factor to be controlled in course performance prediction models. Based on these arguments, we concentrate on performance interrelations for Accounting and Finance in undergraduate business program.

Course performance is usually measured by course grade or final course score. For a robust comparison of course performances, factors that Guney (2009) mentioned as student-exogenous have to be considered for the research environment. Course score comparability depends on the equivalence of performance factors which are related to teaching, course material and examination. These factors may vary across courses in a regular face to face education program with diverse teaching conditions. We collected research data from Anadolu University Open Education System which has a standardized education process and objective examination for each course. Hence, there is minor concern over course performance comparability and course-specific factors can be observed by course interrelations.

Research Environment

Equivalence of performance factors such as the teaching method, course material, examination and evaluation methods were mentioned to be important for a robust course performance comparison. Distance learning with a standardized education process is suitable for this type of research. Accordingly, we preferred distance learning environment, namely Anadolu University Open Education System (OES). Anadolu University OES develops and distributes large scale programs via printed and web based materials to students in Turkey, Azerbaijan and 6 European countries. Anadolu University, which has completed the 33rd year of the Open Education System as of the 2015-2016 academic year, continues to offer educational services with 17 undergraduate and 34 associate degree programs (Anadolu University website). The programs have 1,388,573 students in 2015 (Anadolu University OE e-bulletin June Issue, 2015). As Figure 1 illustrates, the research environment is able to provide large number of observations.

Associate degree programs are Pearson Assured accredited in 2015 and bachelor degree programs are in accreditation process (Anadolu University OE e-bulletin April Issue, 2015). This yields additional reliability of educational quality standards. Anadolu University has specialized distance learning faculties, e.g. Faculty of Business Administration, Faculty of Economics, and departments for OES. The Distance Education Design Department coordinates the production of learning materials such as self-directed learning textbooks and other learning materials, which are co-developed by more than 750 authors and editors (Latchem, Ozkul, Aydin & Mutlu, 2006).
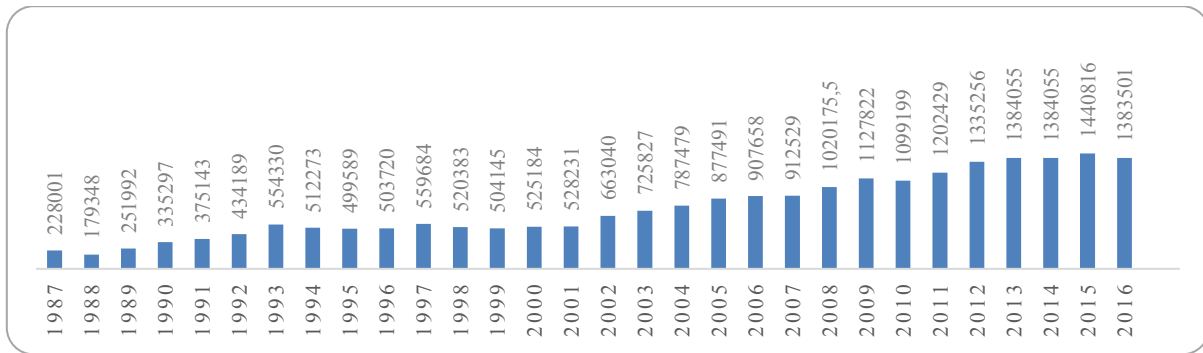
Figure 1. Number of active students by years
Source: Open Education System Student Statistics (Students enrolled in Fall)

This assures each course to meet course objectives. Evaluation of course performances are conducted through multiple choice tests. Teams of education specialists at Test Research Center developed the tests. The appropriateness and effectiveness of both the instruction of courses and the examinations are also monitored at Test Research Center. These conditions are deemed to be adequate for an analysis of course performance interrelations.

Variable Composition
Undergraduate business programs have various courses that construct abilities and competencies for prospective business professionals. These can be business core courses or courses from other disciplines. If the scope of research is limited to accounting and finance based courses, then it is plausible to investigate solely business core courses for the interrelations. However there are some theoretical relationships between accounting courses and others, such as quantitative courses. Those connections are to be covered after gaining understanding from a wider perspective.

Terzi et al. (2013) investigated Turkish undergraduate business programs and reported that accounting and auditing courses constitute an average of 15 percent, finance related courses and economics constitute an average of 18 percent, business management and organization courses constitute an average of 18 percent of compulsory courses in state universities on the basis of European Credit Transfer and Accumulation System (ECTS). Cumulative proportion of these courses is roughly over half of the program. Anadolu University OES undergraduate business program follows the proportional structure of the programs in Turkey, a participant country of Bologna Process - European Higher Education Area.

Schelfhaudt and Crittenden (2005) interviewed with business consulting and accounting leaders and revealed that the functional depth might be essential for entry-level position. That means accounting courses are the most important courses for a beginner accountant. However, it is important to understand costs and income (accounting and finance insight) to do any effective planning and related performance evaluation (management insight) in a given market structure (economics insight). Thus, business core courses are the most important and theoretically integrated components of accounting and finance education. An a priori assumption had been made and the following groups of courses were taken into account as business core courses: management and organization courses, Principles of Economics and courses for accounting and finance. Although it is somewhat difficult to form theoretical transitions between selected subjects and marketing, Introductory Marketing Course was added for conducting a more comprehensive research. Course set determination process was carried out under scrutiny and core courses were retained as much as possible, while observation maximization was a minor criterion.

A detailed review of course contents helped us distinguish which courses are to be considered as business core courses. As being educational members of Anadolu University OES undergraduate business program, we were able to obtain content information of the

courses. Each of the courses has a standardized study material and course information documentation, which are helpful for an unbiased elimination process.

The International Accounting Education Standards Board determined three business core components in the International Education Standards documentation (IES 2, 2012). The primary knowledge part of professional accounting education programs is shown under three major headings: 1. Accounting, finance and related knowledge; 2. Organizational and business knowledge; and 3. Information technology knowledge and competences. From our point of view, first and second major components are core competencies. The third component is a complementary competency for the contemporary business environment. In addition to this, learning process and applications for information technology (IT) courses are divergent from business core courses. Inclusion of IT courses would hamper a sound performance comparison. For the purpose of the study, IT course is compromised, even though it is essential for business job requirements. Eventually, except for IT, our set covers IES 2 major education headings.

In an undergraduate program, final evaluation of student success is the overall score which determines whether or not the student passes the course. A-F basis grading may also be a good proxy for student performance, yet some information loss is possible due to the wider gap between grades. Fedoryshyn et al. (2010, p.97) argued that "the numerical grade provided a more precise measure and differentiates students with the same final grade but different numerical averages". Celik and Ecer (2009) used examination scores as measures of knowledge and skills acquired by students. One can argue that being enthusiastic about a course distinctly may lead the student to study more and score high. Thus, the overall score may inform less about being capable or skilled. Without involving any debate over which one is more dominant on success, overall score is considered as a valid proxy for students' course specific abilities. In the set, there is at least one course for each year and both courses are taken if the course is separated into two semesters. Therefore, any potential year/semester related factors can be captured. Student may perform better or worse in a specific period due to time-varying factors such as psychological condition and level of workload. If there is a strong relationship among courses which are taken in specific period of time, this may indicate that course performance is not a good indicator of student ability. Non-appearance of such a factor provides additional validity for the variables.

HYPOTHESES

Borde et al. (1996) reported positive relationship between the Introductory Finance and Accounting course. Drenann and Rohde (2002) argued that the combination of quantitative, analytic and interpretive performance criteria were similar for accounting and finance. According to these arguments, H0.1 null hypothesis is expected to be rejected.

> H0.1: Accounting course scores are not distinctively correlated to finance course scores in the set of business core course scores.

Pritchard et al. (2004) found that students of Accounting and Finance majors showed more similar skills compared to the students of other Business majors such as Marketing and Management. On the other hand, Baker et al. (2010) have found that prerequisite accounting course performances were statistically significant predictors for subsequent business course performances. This statement implies accounting courses are so involved with the remainder of business courses, that a strong relationship may be expected between accounting course scores and management course scores. According to these opposing arguments, H0.2 null hypothesis is developed.

> H0.2: Accounting and finance course scores are not distinctively correlated to management course scores in the set of business core course scores.

Eskew and Faley (1988), Doran et al. (1991), Bernardi and Bean (2002) Drenann and Rohde (2002), Hartnett et al. (2004), Maksy and Zheng (2008), Maksy (2012) reported that prior accounting courses positively affected subsequent accounting courses. On the finance

branch, similar findings are reported by Ely and Hittle (1990) and Trine and Schellenger (1999). Based on these arguments, H0.3 null hypothesis is expected to be rejected.

H0.3: Accounting and finance prior course scores are not distinctively correlated to subsequent accounting and finance courses in the set of business core course scores.

Maksy and Zheng (2008) and Maksy and Wagaman (2012) found a positive relationship between Intermediate Accounting and Auditing. However, there may be a higher correlation between Auditing and management courses, as auditing requires a deep understanding of managerial concepts. Thus management course performance interrelation may suppress the correlations between auditing and accounting courses. According to these opposing arguments, H0.4 null hypothesis is developed.

H0.4: Auditing course score are not distinctively correlated to accounting course scores in the set of business core course scores.

Eskew and Faley (1988), Tho (1994) Gist et al. (1996), Koh and Koh (1999) Güney (2009), Uyar and Gungormus (2011), Fedoryshyn et al. (2010) reported a positive relationship between Mathematics performance and Financial Accounting performance. Mathematics course performance is a common independent variable in accounting course performance models in order to control the numeracy of student. However, Mathematics deals with logical reasoning as well as numerical processing. Even secondary school Mathematics course syllabus covers a wider range of topics than the accounting course requirements. Thus, Mathematics score may not be a statistically significant predictor of accounting course performance. According to these opposing arguments, H.05 null hypothesis is developed.

H0.5: Mathematics course score is not a significant predictor of Financial Accounting course score.

Cost Accounting may differ from Financial Accounting in use of statistics. For example, regression analysis is one of the methods for separating mixed costs into their fixed and variable cost components. Kirk and Spector (2006) reported that course performance in Mathematics was not significant. In contrast, success in Statistics was highly significant in explaining success in cost accounting. Alcock et al. (2008) reported insignificant Mathematics performance relationship as well. According to these arguments, H06 null hypothesis is expected to be rejected while H.07 null hypothesis is expected not to be rejected.

H0.6: Statistics course score is not a significant predictor of Cost Accounting course score.

H0.7: Mathematics course score is not a significant predictor of Cost Accounting course score.

Didia and Hasnat (1998), Trine and Schellenger (1999) Marcal and Roberts (2001) Grover et al. (2010) found that Mathematics score (or quantitative skills test score) was a positive predictor of finance course performance. Anderson et al. (1994), Ballard and Johnson (2004) reported similar findings for Economics course performance. Drenann and Rohde (2002), Marcal and Roberts (2001) found positive relationship between Statistics course score and Finance course score. Based on these studies, H.08-H0.9 null hypotheses are developed.

H0.8a: Mathematics course score is not a significant predictor of finance course scores.

H0.8b: Statistics course score is not a significant predictor of finance course scores.

H0.9a: Mathematics course score is not a significant predictor of economics course scores.

H0.9b: Statistics course score is not a significant predictor of economics course scores.

An important educational aspect of Auditing course is to provide ethical background for accounting students. Cohen and Pant (1989), Bampton and Cowton (2002), Uyar and Gungormus (2013), Anzeh and Abed (2015) indicated that Auditing was the most suitable

course for ethical topics. Auditing courses are supposed to cover ethical discussions and accounting ethics. Hence, there may be a significant relationship between Auditing and the prior Business Ethics course. According to this argument, H0.10 null hypothesis is expected to be rejected.

H0.10: Business Ethics score is not a significant predictor of Auditing score.

METHODOLOGY

The research design is clearly described and appropriate for the purpose of the study. Overall scores are the measured variables for the structural analysis of underlying performance factors in undergraduate business program. In this phase, an analysis methodology is required to identify interpretable constructs that explain correlations of measured variables. The constructs are to be revealed by distinguishing course sub-groups in business core courses group. These sub-groups are assumed to be formed by some underlying variables (for example required skills and knowledge), which can be defined as latent variables. Exploratory factor analysis is appropriate for the research objective, as it is a suitable approach to identify unobservable variables that account for correlations among course performances.

Identifying clusters of variables based on the interrelations technique is generally implemented for three main purposes. First one is to reduce data to a more manageable size, while keeping as much of the initial information. This application also helps mitigating multicollinearity problems in a multivariate regression. Second is to construct a questionnaire to measure underlying variables. This is the common application of factor analysis in related literature; generating factor analyzed variables from a questionnaire and adding them into the multivariate regression models. A third application of factor analysis is to determine the structure of a set of variables. We adopted the third application of factor analysis. Instead of having limited observations and artificially created questionnaire variables, our research covers a vast observation set (11,646 students graduated in 2015) with naturally formed variables (students' overall course scores). This manner resembles more of a natural science factor analysis. For example, Riemann et al. (2002) gathered many regional soil samples and investigated various geochemical matters' quantities by factor analysis. Our intention is to gather student samples and to investigate various course scores by factor analysis. The present study shares the essence of their approach and avoids subjective investigations on course performance interrelations.

Exploratory factor analysis (EFA) and principal component analysis (PCA) are two approaches used for assessment of underlying dimensions and there is confusion about which one is applicable for what purpose. Briefly, PCA is a data reduction method. Its purpose is to arrive at a reduced number of components that explain most of the variance of a relatively larger set of variables. If the goal is to determine composites of measured variables that retain as much of the variance as possible, then PCA is applicable. On the other side, in order to identify interpretable forming of variables that explain correlations, EFA is the right choice. According to Preacher and Maccallum (2003), EFA's success is not determined by the explanation level of the variance, because the approach is not intended to reach an optimal explanation level of variance. As an extraction technique, PCA has an iterative component reduction process. This helps explaining the variance as much as possible with less components. Without this iteration, PCA can be used as a factor extraction technique with EFA approach. Pedhazur and Schmelkin (1991) argued that PCA technique is applicable in factor analysis as it revealed a great deal of information about the number and nature of factors. In our study, we use EFA approach with non-iterative PCA extraction technique.

Hypotheses and their testing are foundations of modern scientific methodology. Our research is designed to conform to this methodology as well. However there are some shortcomings of using EFA as a confirmation for an *a priori* hypothesis test. According to Riemann et al. (2002, p.203) "Factor analysis cannot be used as a proof for the existence

of certain processes – it can indicate certain relations and help stimulate ideas, they have to be proven in different way". Furthermore, Tabachnick and Fidell (2012, p.656) stated "tests of theory (in which theoretical factor loadings are compared with those derived from a sample) and comparisons among groups are currently the province of structural equation modeling". Yet these explanations may not be considered as an objection to applying EFA for hypothesis testing. Since factor loadings have statistical significance, hypothesis over correlated variable sub-groups can still be appropriate for statistical testing, e.g. hypothesis for some courses being in the same component/sub-group. Another way to overcome the confirmation problems of EFA is adopting *a posteriori* hypotheses. Erren (2007) argues for the value of clearly stating *a posteriori* hypotheses as the result of advanced thinking in the course of a scientific study. *A posteriori* hypotheses reflect the author's inference in a research scheme. Eventually, it is a preference of presentation, an alternative to introduce post hoc analysis. In our study, hypotheses set is a combination of *a priori* and *a posteriori* hypotheses: H0.1, H0.2 and H0.5 - H0.10 are *a priori* hypothesis which initiated the research. H0.3 and H0.4 are *a posteriori* hypotheses.

ANALYSIS

In this section, descriptive statistics, sampling adequacy and reliability are presented separately. H0.1 - H0.4 are hypotheses are to be covered in Section 5.2: Factor Analysis. H0.5 - H0.10 are to be covered in Section 5.3: Regression Analysis and its sub-sections.

Sample

Analysis data was gathered from Anadolu University IT Department in transcript format. Bulk data was handled and formatted for SPSS input scheme. The sample consists of all (11,646) graduated students in 2015. Hence, sample is the program population. Descriptive statistics for the business core courses data are presented in Table.1. Year and semester based course sequence for business core courses resides in the table. The sequence information is to be referred to Section 5.2: Factor Analysis and Section 6: Discussion.

Guney (2009) stated that the average grades for accounting courses tends to be lower than others.   In Table 1, accounting and finance courses have lower overall scores than management courses (except for Organization Theory).

Table 1. Business Core Course Sequence and Overall Scores Descriptive Statistics

Code	Course	Year / Semester	Mean	Std. Dev.	N
MUH103	Financial Accounting I	1 / 1	53.352	10.795	11,646
MUH104	Financial Accounting II	1 / 2	42.750	10.333	11,646
MUH301	Cost Accounting	3 / 1	50.061	8.967	11,646
ISL401	Auditing	4 / 1	45.773	8.752	11,646
FIN201	Financial Management I	3 / 1	45.766	9.323	11,646
FIN202	Financial Management II	3 / 2	46.723	8.749	11,646
FIN402	Financial Statement Analysis	4 / 2	43.790	10.304	11,646
ISL403	Financial Institutions and	4 / 1	54.623	11.332	11,646
IKT103	Principles of Economics I	1 / 1	50.582	11.084	11,646
IKT104	Principles of Economics II	1 / 2	46.807	11.225	11,646
ISL405	Strategic Management I	4 / 1	60.117	13.217	11,646
ISL406	Strategic Management II	4 / 2	56.165	12.395	11,646
ISL302	Organization Theory	3 / 2	40.429	9.251	11,646
PZL103	Marketing Management	2 / 2	57.546	11.319	11,646

Large sample size makes factor analysis more reliable. MacCallum et al. (1999) demonstrated that 100 to 200 sample size is acceptable with appropriate factors. Comrey and Lee (1992) classified 100 as a poor sample size, 300 as good and 1000 as excellent for

factor analysis. Our sample size, 11,646, is far beyond these quantities and this is the strength of our sample compared to other research samples in the literature. The sample has Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy 0.87, a satisfactory score for conducting factor analysis.

An appropriate factor analysis needs fair amount of correlation between measured variables. As a preliminary examination of this condition, Bartlett's Test controls whether the correlations are significantly different from zero. For our sample, Bartlett's Test is significant at a level of 0.1%.

Reliability means that a measure should consistently reflect the construct that it is measuring. Reliability score Cronbach's Alpha is 0.766, which means reliability is a minor concern for the measurement of business core courses performance. On the other hand, if a measure has more than one concept or construct, it may not make sense to report Cronbach Alpha for the complete measure, as the larger number of entities will inevitable inflate the value of Cronbach Alpha. According to Tavakol and Dennick (2011), Cronbach Alpha should be calculated for each of the construct rather than for the entire test or scale. Cronbach Alpha is to be reported for each component in Section 5.2: Factor Analysis. Validity is another pillar of measurement evaluation that is concerned with the extent to which an instrument measures what it is intended to measure (for validity arguments, see Section 2.2: Variable Composition). Overall scores, in other words final marks, are smoothed data by its nature. Overall scores are averages of several exams throughout the semester; non-existence of outliers is presumed. Thereby, data intervention, such as truncating, is avoided.

Assumptions regarding the distributions of variables are less important when factor analysis and principal component analysis are used descriptively to summarize the relationships in a large set of observed variables. If the variables are normally distributed, the solution is enhanced and more reliable. However, multivariate normality is assumed when statistical inference is used to determine the factors. Multivariate normality assumption means that all variables, and all linear combinations of variables, are normally distributed. Tabachnick and Fidell (2012) argued that normality of single variables could be assessed by skewness and kurtosis. For our sample, skewness and kurtosis values are slightly deviated from normal distribution parameters, which have to be zero (for SPSS) and there are a few values over 1. In this situation, data transformations may result in an improvement.

Data transformation is a tool for obtaining a particular type of distribution. In addition, it was also used, as Treiblmaier and Filzmoser (2010) argued, to establish a simple systematic relationship between an independent and a dependent variable as well as to stabilize the variance. In econometric studies, logarithmic transformation is applicable for indicating elasticities and establishing a comparable relationship between variables. In a full log-transformed model, a percentage change of the dependent variable affects the dependent variable as a unit of percentage. Log-transformed course performances may be interpreted in the same way. Hartnett et al. (2004) used log-transformation of the student performance grades to strengthen normality and variance homoscedasticity assumptions. Values for skewness and kurtosis for both logarithmic and non-logarithmic data presented in Table 2.

Table 2. Variable Normality Parameters Before and After Log-Transformation

Code	Non-Logarithmic		Logarithmic Data		Improvement over	
	Skewness	Kurtosis	Skewness	Kurtosis	Skewne	Kurtosis
MUH103	0.391	-0.014	-0.141	-0.228	+	-
MUH104	0.929	1.009	0.317	-0.306	+	+
MUH301	0.639	0.679	0.081	0.086	+	+
ISL401	0.733	0.479	0.268	-0.387	+	+
FIN201	0.832	0.902	0.274	-0.165	+	+
FIN202	0.817	1.214	0.241	-0.018	+	+
FIN402	0.815	0.453	0.304	-0.53	+	-
IKT103	0.524	0.249	-0.063	-0.243	+	+
IKT104	0.812	0.69	0.196	-0.293	+	+
ISL403	0.472	-0.186	0.01	-0.531	+	-
ISL302	1.14	1.664	0.535	-0.057	+	+
ISL405	0.265	-0.455	-0.223	-0.464	+	-
ISL406	0.231	-0.504	-0.223	-0.634	+	-
PZL103	0.478	-0.148	0.02	-0.417	+	-

Logarithmic transformation makes certain improvement for the skewness values, while it makes moderate improvement over kurtosis values. Moreover, transformation effectively reduces extreme values above 1. Nevertheless, transformed variables failed at Shapiro-Wilk and Lilliefors Tests of Normality. A Power transform, namely Box-Cox transform is another prospect for the normality tests (Box & Cox, 1964). Osborne (2010, p.5) stated that "Given that Box-Cox parameter lambda can take on an almost infinite number of values, one can calibrate a transformation to be maximally effective in moving a variable toward normality, regardless of whether it is negatively or positively skewed". Data was Box-Cox transformed with optimum lambda estimated by the Matlab function. Box-Cox transformed variables failed the normality tests as well. The results were neither any better, nor more easily interpretable than the results obtained with the same data with log-transformation. Measured variables of our research are in the same unit. The parity enables comparisons without complication. However, even though the variables are in the same unit, some comparison problems may occur due to distribution parameter differences. While it is preferred to calculate standard beta coefficients for regression models, there is no such application for the factor analysis; log-transformed variables are considered adequate. When the raw data is used in factor analysis (the outcome is not reported in present study), the components are identical to the log-transformed results. This can be interpreted as robustness of the analysis. However, there is difference in factor loadings and we believe that the log-transformed loadings are more accurate.

Factor Analysis

Correlation coefficients for each pair of variables were calculated first. Correlation matrix helps clarify course interrelations and allows for a reproduction of factor analysis outcome (see Appendix A). There is no negative correlations among courses except one, which is almost zero. Wider range of correlations could be monitored if course set was not internally consistent. Supporting courses from other disciplines, e.g. Mathematics, Law and Information Technology might show negative correlations due to greater difference in prerequisite skills and knowledge. In our study, the course set is limited to business core courses in the program and thus, positive correlations are observed as expected.

Table 3. Obliquely Rotated Component Loadings

		MAN	AFE-2	AFE-1
ISL405	Strategic Management I	0.697		
ISL406	Strategic Management II	0.671		
ISL403	Financial Institutions and Markets	0.584		
ISL302	Organization Theory	0.528		
ISL401	Auditing	0.491		
PZL103	Marketing Management	0.446		
MUH104	Financial Accounting II		0.629	
FIN202	Financial Management II		0.612	
FIN402	Financial Statement Analysis		0.540	
IKT104U	Principles of Economics II		0.510	
MUH103	Financial Accounting I			0.687
IKT103	Principles of Economics I			0.607
MUH301	Cost Accounting			0.585
FIN201	Financial Management I			0.581
Eigenvalues (values > 1)		3.58	1.39	1.08
Explained Total Variance (%, Cumulative)		25.59	35.6	43.24
Crombach Alpha (Overall 0.77)		0.69	0.52	0.58
Number of Items (Loading > 0.40)		6	4	4

When inspected as a whole, the correlation matrix has lower intermediate level of correlations. Low levels of correlation may indicate that students' intrinsic characteristic that cannot be measured by the present data do not suppress course specific characteristic. For example, if being hardworking overly affected all course scores no matter what the course was, then there would have been less course specific effects, even with high correlations. To conclude, correlations are appropriate and as mentioned before, Bartlett's Test score is sufficient for conducting factor analysis.

Calculation of the correlation coefficient matrix initiates factor analysis. The following procedure is to reduce the correlation matrix down to its underlying dimensions by clustering variables. This reduction is achieved by searching for variables that have high correlations among themselves, but have low correlations with other variables. These groups are called factors (or components) and are obtained by factor extraction. The convention is to retain factors which have eigenvalues over 1. Scree plot observation also helps determine which factor to be included. Zwick and Velicer (1986) recommended parallel analysis instead of scree plot and Kaiser's criterion. In our analysis, scree plot graph criterion and Kaiser's criterion gave consistent results, as the point of flexion is right before the factor has an eigenvalue over 1. Other criteria, including parallel analysis, are skipped and three factors are retained after extraction. For precise factor items and their loadings, factor rotation is needed. Field (2009) stated if there were theoretical grounds for supposing that the factors might correlate, then oblique rotation (direct oblimin, with default delta) should be selected. Our theoretical ground is that all courses are affected more or less by students' intrinsic characteristics, e.g. diligence, thereby factor groups of courses are expected to be correlated. Moreover, Browne (2001, p.114) stated that "oblique rotation is probably more appropriate in most practical situations".

Any loading that is going to be used to interpret a factor should be statistically significant at a minimum. Stevens (2009) argued that loadings in very large samples were reliable without a significance test. With 11,646 observations, our sample outnumbers common definitions of large sample size. Stevens (2009, p.332) stated that "Once one is confident

that loadings being used for interpretation are significant (because of a significance test or because of large sample size), then the question becomes which loadings are large enough to be practically significant". The common threshold is 0.40 or greater loadings for interpretation purposes. When loadings less than 0.40 are suppressed, the analysis yields a three-factor solution with a simple structure. The results of an oblique rotation (converged in 7 iterations) of the solution are shown in Table 3.

When inspected as a whole, factor analysis decomposes the components of business core courses are clustered in smaller internally correlated sub-groups. Here, factor analysis outcome exhibits three groupings of courses that contribute students' performance on a business core course set.

The first component is the most influential course group which covers management courses. We will use a label, "MAN", for this sub-group. MAN includes Auditing, Financial Institutions and Markets. These courses are hybrid courses which mostly have management concepts with accounting and finance themes. Financial Institutions and Markets is a systematic introduction of financial system and regulations. Auditing is not a pure accounting course. In fact, Auditing covers operational audits, as well as financial audits.

The second and third sub-groups consist of accounting, finance and economics courses. There is a clear pattern that introductory courses of these subjects cluster in the third component and subsequent courses constitute the second component. As a single semester course, Cost Accounting is a first-time course which take part in third component. On the other hand, Financial Statement Analysis is a subsequent course which is based on prior accounting and finance courses. We will use a label, "AFE-1", for the prior courses sub-group and, "AFE-2", for the subsequent accounting, finance and economics courses sub-group. As large sample size justifies the significance of factor loadings, hypothesis tests are based on course placement among the components defined in factor analysis outcome:

➢ Accounting courses and finance courses are in the same component. Therefore the first null hypothesis is rejected in favor of the following alternative hypothesis (Ha):

Ha.1: Accounting course scores are distinctively correlated to finance course scores in the set of business core course scores.

➢ Accounting and finance courses are not in the same component with management courses. Therefore the following null hypothesis is failed to be rejected:

H0.2: Accounting and finance course scores are not distinctively correlated to management course scores in the set of business core course scores.

➢ Sequential accounting and finance courses are not in the same component. Therefore, the following null hypothesis H0.3 is failed to be rejected:

H0.3: Accounting and finance prior course scores are not distinctively correlated to subsequent accounting and finance courses in the set of business core course scores.

➢ Auditing course is not in the same component with accounting courses. Therefore, the following null hypothesis H0.4 is failed to be rejected:

H0.4: Auditing course score are not distinctively correlated to accounting course scores in the set of business core course scores.

A post hoc analysis can be designed to investigate the reason behind the decomposition of business core courses. The course scores are assumingly determined by underlying performance factors, in particular, required skills and knowledge. As a result, sub-groups of courses are expected to be formed by these factors. At this point, we propose a comparison of sub-groups (MAN, AFE-1, AFE-2) with the documented data for the assessment of course contributions to business program objectives.

Students' overall success depends on aggregate set of skills and knowledge that is cooperatively developed by the delivery of courses in the program. This set is comprehensively defined in the

business program documentation. We inspected the documentation that covers 19 items of objectives standardized for each course. In this study, objectives are reduced down to five items with respect to their importance and research relevancy:

- ➢ **Analytical thinking and problem solving skills (Analytical, item 1)**
- ➢ **Verbal skills and written communication proficiency (Verbal, item 10)**
- ➢ **Knowledge and skills in business practices (Knowledge, item 2)**
- ➢ **Organizational and managerial skills (Organizational, item 7)**
- ➢ **Interpersonal skills (Interpersonal, item 3)**

The program documentation comprises assessment of course contributions to the objectives. The courses were assessed by Educational Members Committee under the supervision of the Distance Education Design Department. The assessment presented in Table 4 has a four category rating scale (0-3), where zero represents "no contribution".

Table 4. Assessments of Course Contributions to Business Program Objectives

		Analytical	Verbal	Knowledge	Organizational	Interpersonal	Total
ISL405	Strategic Management I	3	3	3	3	2	14
ISL406	Strategic Management II	3	3	3	3	3	15
ISL403	Financial Institutions and	0	1	1	0	1	3
ISL302	Organization Theory	2	2	1	3	2	10
ISL401	Auditing	2	2	1	2	2	9
PZL103	Marketing Management	2	2	2	2	1	9
	MAN Avg. Rating	2.00	2.17	1.83	2.17	1.83	10
MUH104	Financial Accounting II	2	2	2	1	0	7
FIN202	Financial Management II	3	1	1	1	0	6
FIN402	Financial Statement Analysis	2	2	2	3	2	11
IKT104	Principles of Economics II	1	1	1	0	1	4
	AFE-2 Avg. Rating	2.00	1.50	1.50	1.25	0.75	7
MUH103	Financial Accounting I	2	2	2	1	0	7
IKT103	Principles of Economics I	1	0	1	0	0	2
MUH301	Cost Accounting	3	2	2	1	2	10
FIN201	Financial Management I	3	2	2	3	2	12
	AFE-1 Avg. Rating	2.00	1.33	1.67	0.67	0.67	6.33

According to the program objectives, courses are designed to develop the attributes presented in Table 4. From another perspective, these attributes are the required skills and knowledge to be developed for being successful in a specific course. In this manner, average ratings are comparable so as to reveal sub-group differences in terms of skills and knowledge.

First, the sum of average ratings are in the same order with the factor loadings. MAN has the most contributive courses to the program objectives. AFE-2 and AFE-1 have similar contribution ratings for similar items. MAN differs from the others with higher ratings, except for analytical thinking and problem solving skills. MAN has notably high ratings for organizational and managerial skills. Thus, a name such as management-oriented courses is appropriate for MAN. This group of courses require (or develop) verbal skills more than AFE-1 and AFE-2 courses. Some courses have lower total ratings than others. As mentioned

before, we selected five items from a larger set of objectives in the documentation. This may be the reason for an unbalanced total ratings among courses. Nevertheless, this unbalance is not a handicap for our intent. Post hoc analysis provides evidence for the fact that sub-groups of courses are formed according to required skills and knowledge.

Regression Analysis

In the previous section, factor analysis has revealed sub-groups of courses according to course interrelations among business core courses. However, undergraduate business program has many supplementary courses that further equip students for their professional career. Some supplementary courses may have performance determinants similar to accounting and finance courses. For example, Guney (2009) reported this similarity as the predictive power of a specific course (Mathematics) score on a target course (Accounting) performance. In this section, regression analysis is proposed to test null hypotheses H0.5-H0.10, which are in line with the previous studies. Our interest is the underlying performance factor similarity, instead of predicting course performance. This will establish business core course interrelations with supplementary courses, particularly Mathematics and Statistics.

The studies that have been mentioned thus far mostly controlled GPA as a measure of general student ability that affects individual course performances. GPA has the potential to be the most effective and statistically significant explanatory variable in course performance regression models. Hence, it has to be controlled when regressing the course performances. In our model, GPA is an average of course scores weighted by their respective ECTS credits.

Our scheme aims to explain target course score as a dependent variable by a bivariate regression model. The independent variables are related course score and GPA. Multicollinearity may be a concern, as both GPA and individual course scores measure similar attributes. However, the research data exhibits lower intermediate level of correlations. In addition, variance inflation factors (VIF) are below 3 for the entire set of bivariate models with raw data. These indicate a low risk of multicollinearity.

Coefficient interpretation for the same scale variables is straightforward. A single unit change in the independent variable results in several unit changes in the dependent variable which is equal to the respective regression coefficient of the independent variable. However, comparison of independent variable coefficients may be inaccurate with incompatible means and standard deviations. On the other hand, standardized coefficients are comparable as they all refer to a one standard deviation change in their respective independent variables rather than a one unit change. In the regression outcome, standardized coefficients are reported as well.

Regression Analysis for the Components

Factor analysis suggested three components of courses that contribute students' performance on a business core course set. MAN covers management-oriented courses. AFE-2 and AFE-1 cover accounting, finance and economics courses by their sequence. These patterns may be caused by similarities within group courses in terms of required skills and knowledge. As it is presented in Section 1: Literature Review, prior studies found that Mathematics course score was a positive predictor of course performance for accounting, finance and economics courses. We interpret these findings as the sign that quantitative and analytical reasoning skills are in the required skills set of those courses. AFE-1 and AFE-2 courses may differ from MAN courses with a significant coefficient of Mathematics score variable. A similar result can be expected for the Statistics score, as it is another quantitative course in a business undergraduate program. Bivariate regression output for Mathematics and factor analysis sub-groups interrelations are presented in Table 5.

Table 5. Sub-Groups Average Score Prediction Model with Mathematics Score

Independent Variable: Mathematics Courses Avg. MAT (MAT105, MAT106)

Dependent Variable	Coefficients		Standardized		Model Statistics	
	MAT	GPA	MAT	GPA	F prob.	R^2
MAN Avg. Score	-0.035	1.026	-0.080***	0.942***	0.000	0.834
	(0.000)	(0.000)				
AFE-2 Avg. Score	0.002	1.057	0.003	0.862***	0.000	0.745
	(0.905)	(0.000)				
AFE-1 Avg. Score	0.067	0.991	0.129***	0.772***	0.000	0.690
	(0.000)	(0.000)				

Collinearity Statistics for Independent Variables, Tolerance: 0.847 VIF: 1.181

Significance values in parentheses   * p < 0.1, ** p < 0.05, *** p < 0.01

The undergraduate business program comprises mathematics courses (MAT105, MAT106) in the first and second semesters of the freshman year. Statistics courses (IST201, IST202) are delivered in the first and second semesters of the sophomore year. These courses are averaged into single mathematics and statistics course scores. Course scores in each sub-group are averaged into a combined group score. Bivariate regression output for statistics course and factor analysis sub-groups interrelations are presented in Table 6.

Table 6. Sub-Groups Average Score Prediction Model with Statistics Course Score

Independent Variable: Statistics Courses Avg. IST (IST201, IST202)

Dependent Variable	Coefficients		Standardized		Model Statistics	
	IST	GPA	IST	GPA	F prob.	R^2
MAN Avg. Score	-0.027	1.033	-0.039**	0.945***	0.000	0.851
	(0.032)	(0.000)				
AFE-2 Avg. Score	0.005	1.011	0.007	0.858***	0.000	0.741
	(0.777)	(0.000)				
AFE-1 Avg. Score	0.089	0.953	0.115***	0.770***	0.000	0.707
	0.000	0.000				

Collinearity Statistics for Independent Variables, Tolerance: 0.673 VIF: 1.485

Significance values in parentheses   * p < 0.1, ** p < 0.05, *** p < 0.01

Regression models in Table 5 and Table 6 are all significant as a whole (F prob. 0.00) with medium-high percentages of variance explained by the model. GPA is significant and the dominant predictor in all models. Mathematics and Statistics course score coefficients are positive, but insignificant for AFE-2 courses. This group covers Financial Accounting II, Financial Management II, Principles of Economics II and Financial Statement Analysis. On the other side, Mathematics and Statistics course scores are positive and significant predictors of AFE-1 courses' average score. This group covers Financial Accounting I, Cost Accounting, Financial Management I and Principles of Economics I.

MAN covers management-oriented courses. Mathematics and Statistics course scores are negative and significant predictors of MAN courses' average score. First, this may indicate that quantitative and analytical reasoning skills are not in the required skillset for these courses. Quantitative reasoning skills may be the performance factor that differentiates the sub-groups of business core courses. The students intended for management majors had the lowest Graduate Record Examinations (GRE) quantitative reasoning score average among the students intended for Business majors, including accounting and, banking and finance (Educational Testing Service, 2014). This may imply that management studies require less quantitative reasoning skills than accounting and finance. Second, the students

who are motivated for management oriented courses probably lack interest for quantitative courses. These students may perform worse in Mathematics and Statistics.

MAN courses are courses that are mostly taught by verbal explanations and are provided by text-based written content. On the other side, such courses as accounting, finance and economics (AFE courses) are delivered mainly by expressions of schedules, graphics and are provided by quantitative processing of examples. MAN courses presumably require verbal reasoning skills more than quantitative reasoning skills. Thereby, we considered that MAN courses are verbal-oriented courses (in short, verbal courses).

The negative coefficient in Table 5 and Table 6 may be explained as a potential antagonism between verbal-oriented and quantitative courses. In the business program, some students tend to develop verbal skills and somehow neglect quantitative skills which result in a quantitative course apathy or discouragement. Inversely, some students tend to develop quantitative skills and neglect verbal skills, which result in a verbal-oriented course apathy or discouragement. This may be observed by regressing business course scores with completely quantitative (Mathematics, Statistics) or completely verbal-oriented (Linguistics) course scores. Accordingly, a regression outcome with basic verbal-oriented course score coefficient is expected to be opposite to Table 5 and Table 6 quantitative course score coefficients. The undergraduate business program comprises introductory linguistics course (TUR201), which is deemed to be a completely verbal-oriented course. Bivariate regression output for Introductory Linguistics course and factor analysis sub-groups interrelations are presented in Table 7.

Table 7. Sub-Groups Average Score Prediction Model with Linguistics Course Score

Independent Variable: Introductory Linguistics Course (TUR201)

Dependent Variable	Coefficients		Standardized		Model Statistics	
	TUR201	GPA	TUR201	GPA	F prob.	R^2
MAN Avg. Score	0.026	0.984	0.034*	0.909***	0.000	0.857
	(0.074)	(0.000)				
AFE-2 Avg. Score	-0.017	1.028	-0.020	0.875***	0.000	0.750
	(0.415)	(0.000)				
AFE-1 Avg. Score	-0.059	1.080	-0.065**	0.869***	0.000	0.707
	(0.016)	(0.000)				

Collinearity Statistics for Independent Variables, Tolerance: 0.783 VIF: 1.277

*Significance values in parentheses   * p < 0.1, ** p < 0.05, *** p < 0.01*

Introductory Linguistics course score coefficient is positive and significant for MAN courses. However, it is negative for the remaining sub-groups with statistical significance only for AFE-1. To summarize, Table 7 exhibits a reversed outcome compared to Table 5 and Table 6. There seems to be a contraposition of performance factors in MAN and AFE-1 courses. To conclude, MAN course performances are similar to verbal-oriented course characteristics. AFE-1 and AFE-2 course performances are similar to quantitative course characteristics, yet AFE-2 courses are more neutral.

Regression Analysis for the Hypotheses

Scores of sequential courses are averaged for Accounting (MUH103, 104), Finance (FIN201, 202) and Principles of Economics (IKT103, 104). Averaged scores are to be used in regression models in order to test the null hypotheses developed earlier. Bivariate regression outcomes for Mathematics and hypothesized courses interrelations are presented in Table 8.

Table 8. Accounting, Finance and Economics Score Prediction Model with Mathematics Score

Independent Variable: Mathematics Courses Avg. (MAT105, MAT106)

Dependent Variable	Coefficients		Standardized		Model Statistics	
	MAT	GPA	MAT	GPA	F prob.	R^2
Financial Accounting	0.019	1.087	0.030	0.670***	0.000	0.465
	(0.440)	(0.000)				
Cost Accounting	0.040	0.955	0.057	0.543***	0.000	0.322
	(0.191)	(0.000)				
Financial Management	0.048	1.106	0.082**	0.757***	0.000	0.629
	(0.011)	(0.000)				
Principles of Economics	0.094	0.929	0.163***	0.650***	0.000	0.532
	(0.000)	(0.000)				

Collinearity Statistics for Independent Variables, Tolerance: 0.847 VIF: 1.181

Significance values in parentheses   * p < 0.1, ** p < 0.05, *** p < 0.01

Mathematics course score coefficient is positive and significant for Financial Management and Principles of Economics, while it is insignificant for Financial Accounting and Cost Accounting. Hypothesis tests are based on statistical significances of the independent variable coefficient. Hypotheses H0.5 and H0.7 are failed to be rejected. Null hypotheses H0.8a and H0.9a are rejected in favor of the Ha.8a and Ha.9a alternative hypotheses. To conclude, our findings are:

H0.5: Mathematics course score is not a significant predictor of Financial Accounting course score

H0.7: Mathematics course score is not a significant predictor of Cost Accounting course score

Ha.8a: Mathematics course score is a significant predictor of finance course scores

Ha.9a: Mathematics course score is a significant predictor of economics course scores

Bivariate regression outcomes for Statistics course and hypothesized courses interrelations are presented in Table 9.

Table 9. Accounting, Finance and Economics Score Prediction Model with Statistics Course Score

Independent Variable: Statistics Courses Avg. (IST201, IST202)

Dependent Variable	Coefficients		Standardized		Model Statistics	
	IST	GPA	IST	GPA	F prob.	R^2
Financial Accounting	0.032	1.024	0.034	0.661***	0.000	0.462
	(0.334)	(0.000)				
Cost Accounting	0.137	0.814	0.134***	0.498***	0.000	0.340
	(0.001)	(0.000)				
Financial Management	0.065	1.057	0.075***	0.760***	0.000	0.648
	(0.008)	(0.000)				
Principles of Economics	0.085	0.960	0.096***	0.678***	0.000	0.541
	(0.003)	(0.000)				

Collinearity Statistics for Independent Variables, Tolerance: 0.673 VIF: 1.485

Significance values in parentheses   * p < 0.1, ** p < 0.05, *** p < 0.01

Statistics course score coefficient is positive and significant for Financial Management, Cost Accounting and Principles of Economics, while it is insignificant for Financial Accounting. Hypothesis tests are based on statistical significances of the independent variable coefficient. Null hypotheses H0.6, H0.8b and H0.9b are rejected in favor of the Ha.6, Ha.8b and Ha.9b alternative hypotheses. To conclude, our findings are:

> *Ha.6: Statistics course score is a significant predictor of Cost Accounting course score*
> *Ha.8b: Statistics course score is a significant predictor of finance course scores*
> *Ha.9b: Statistics course score is a significant predictor of economics course scores*

Bivariate regression outcomes for Business Ethics and Auditing interrelation is presented in Table 10. Business Ethics is a verbal-oriented course, so it may require skills similar to MAN, which covers Auditing. A significant coefficient in Auditing course regression may stem from the required skillset instead of corresponding interests. Thus course sub-groups are also regressed with Business Ethics to control validity of a possible interpretation that establishes a relationship between Auditing and Business Ethics.

Table 10. Auditing Score and Sub-Groups Average Score Prediction Model with Business Ethics Score

Independent Variable: Ethic Course (ISL201)

Dependent Variable	Coefficients		Standardized		Model Statistics	
	ISL201	GPA	ISL201	GPA	F prob.	R^2
Auditing	0.018	0.832	0.020**	0.512***	0.000	0.274
	(0.032)	(0.000)				
MAN Avg. Score	0.006	1.169	0.009	0.873***	0.000	0.770
	(0.110)	(0.000)				
AFE-2 Avg. Score	-0.111	0.940	-0.162***	0.764***	0.000	0.471
	(0.000)	(0.000)				
AFE-1 Avg. Score	-0.116	1.050	-0.164***	0.822***	0.000	0.552
	(0.000)	(0.000)				

Business Ethics course score coefficient is positive and significant for Auditing course score, while it is insignificant for MAN average score. Business Ethics and Auditing relationship seems to be independent from the required skill similarity within MAN. The coefficient is negative and significant for both AFE-1 and AFE-2 that cover accounting, finance and economics courses. This pattern supports studies indicating that Auditing is the most suitable course for ethical topics. Null hypothesis H0.10 is rejected in favor of the Ha.10 alternative hypotheses. To conclude, our finding is:

> *Ha.10: Business Ethics score is a significant predictor of Auditing score*

DISCUSSION

Factors affecting course performances were investigated in different schemes in the previous studies. Underneath the overall score interrelations, we assume that there are interpretable constructs of various factors. For our data, course scores are deemed to be equally affected by student-exogenous factors due to the standardized course delivery and examination process for each course. Our approach is to analyze business course interrelations and interpret underlying performance factors, particularly required skills and knowledge.

Business core courses are management courses, Principles of Economics and courses for accounting and finance. Factor analysis identifies three sub-groups of business core courses that explain the correlations between the overall scores. Management courses, Auditing, Financial Institutions and Markets are in the first sub-group (MAN). Financial Accounting II, Financial Management II, Principles of Economics II and Financial Statement Analysis are in the second sub-group (AFE-2). The third sub-group (AFE-1) comprises Financial Accounting I, Financial Management I, Principles of Economics I and

Cost Accounting. These groupings exhibit a clustering order, which can be attributed to underlying performance factor similarities.

Inferences can be based on the forming of courses in the sub-groups MAN, AFE-1 and AFE-2. First, time-varying factors have minor effect on course performances. If these factors were in control, the same year/semester courses would possibly be in the same sub-group. In the analysis outcome, each group has a scattered set of year/semester courses. Second, main sub-groups for accounting do not comprise Auditing course, which is essential for a student dedicated to pursue an accounting career path. A similar finding can be highlighted for a finance course, namely Financial Institutions and Markets, which is a fundamental subject for potential finance professionals. Therefore, career motivation may be argued to be a less important performance factor for accounting and finance students.

Course sub-groups are compared by the pre-assessed ratings of course specific skills and knowledge. The ratings are obtained from the assessment of course contributions to program objectives in the business program documentation. MAN has a high rating for organizational and managerial skills. Thus, it can be labeled as management-oriented courses. This group of courses require verbal skills more than others. AFE-1 and AFE-2 have similar contribution ratings for the skills. Thus, program objective ratings provide inadequate evidence for the AFE-1 and AFE-2 courses being formed by the program objective set of attributes. However, the findings are encouraging for widening the analysis of required skills and knowledge as a major performance factor.

Factor analysis suggests three components of courses that contribute to students' performance on a business core courses program. MAN covers management-oriented courses. AFE-1 is the introductory courses set, while AFE-2 is the subsequent courses set for accounting, finance and economics. Quantitative reasoning skills may be the performance factor that distinguishes AFE-1 from AFE-2. To test this argument, AFE-1 and AFE-2 group average of course scores is regressed onto quantitative course overall score and control variable GPA. The analysis outcome indicates that the introductory courses require quantitative and analytical reasoning skills more than the subsequent courses in accounting, finance and economics. Both the introductory and subsequent courses are concerned with monetary subjects from the business perspective. However, students' first encounter with these matters may be confusing to some extent. In accounting, finance and economics introductory courses, analytical reasoning skills are essential for a fresh learner to comprehend a complex set of fundamental concepts and connections between. When AFE-1 and AFE-2 courses are modeled as individual courses, each model has a positive coefficient for quantitative course scores. However the coefficient for Financial Accounting performance model is statistically insignificant and relatively lower.

Quantitative course scores partially explain clustering order of AFE-1 and AFE-2. Interest towards monetary issues may be a supportive performance factor which correlates course scores of accounting to finance and economics. Further research could be conducted for motivational performance factors, including interests involved to monetary subjects. This type of study requires methods of data gathering different than our research.

An unexpected outcome of our analysis is the negative and significant coefficient for linguistics course in the regression models for AFE-1. Our prediction was insignificant and low effect of verbal skills measured by linguistics course. Another unexpected outcome of our analysis is the negative and significant coefficient for quantitative courses in the regression models for MAN. Here, we predicted at least a non-negative effect of quantitative skills. The outcomes indicates a contradiction of performance factors for MAN and AFE-1 courses. Further research is suggested for motivational performance factors, including interest in quantitative and verbal-oriented subjects.

The forming of the course clusters and the interrelations discussed above may be caused by varying effect of distance education on course performances. Anstine and Skidmore (2005) found online learning method was less effective for a more quantitative course,

Statistics compared to Economics. Estalami (2012) reported the varying effects of distance education environment on marketing courses of different nature, such as qualitative (Marketing of Financial Services) and quantitative (Marketing Research) courses. Stevens and Zhu (2015) compared traditional course performance with online course performance and reported significantly lower grades for online quantitative business courses. According to these studies, course delivery effect can be seen as an endogenous performance factor which differentiated AFE and MAN course scores as these groups of courses are different in nature of being quantitative or qualitative oriented subjects. Furthermore, there may be a "within subject" differentiation as well as "between subject" differentiation of distance education effectiveness. Chen et al. (2013) investigated outcomes of principle-level and advanced-level accounting courses in both traditional and distance education environment. They argued that principle-level accounting courses better fitted to distance education environment than advanced accounting courses. This argument supports our basic grouping of course performances for AFE-1 and AFE-2 which comprises accounting and related courses. Again, course delivery effect can be seen as an endogenous performance factor which differentiated AFE-1 and AFE-2 courses as they are different in terms of being prior or subsequent subjects of accounting, finance and economics.

The findings of course performance interrelation analyses are presented in the form of hypothesis statement. First finding is that accounting course scores are distinctively correlated to finance course scores in the set of business core course scores. This finding is interpreted as performance factor similarities, the result is parallel to Drenann and Rohde (2002). Accounting and finance course scores are not distinctively correlated to management course scores in the set of business core course scores. This finding supports the argument of Pritchard et al. (2004), that accounting majors and finance majors demonstrate similar skills compared to the students of other business majors, such as marketing and management.

Accounting and finance prior course scores are not distinctively correlated to subsequent accounting and finance courses in the set of business core course scores. This statement does not mean that the prior accounting course does not positively affect subsequent accounting course. Eskew and Faley (1988), Doran et al. (1991), Bernardi and Bean (2002) Drenann and Rohde (2002), Hartnett et al. (2004) reported positive effect of prior knowledge on accounting course performance. However, our inference is a minor effect of prior knowledge on course performance when compared to skill-based factors.

Auditing score is not distinctively correlated to accounting course scores in the set of business core course scores. Auditing course performance depends on managerial skills and knowledge. Thus, management course performance correlations suppress the correlations between Auditing and accounting courses. This implies less relevance of accounting related skills for Auditing course performance. Maksy and Zheng (2008) and Maksy and Wagaman (2012) found a positive relationship between Auditing and accounting course performance. According to our conclusion, the majority of their finding should be attributed to the factors other than required skills and knowledge.

Mathematics and Statistics scores are significant predictors of finance and economics course scores. This finding supports Anderson et al. (1994), Didia and Hasnat (1998), Trine and Schellenger (1999) Marcal and Roberts (2001), Drenann and Rohde (2002), Ballard and Johnson (2004), Grover et al. (2010). On the contrary, Mathematics score is not a significant predictor of Financial Accounting course score. We agree that Financial Accounting course requires a particular quantitative skill, which is numerical processing. However, Mathematics deal with logical reasoning as well as numerical processing. Thus, Mathematics score fails to be a suitable proxy of numerical processing skills as an accounting course performance factor. Our conclusion contradicts Eskew and Faley (1988), Tho (1994), Gist et al. (1996), Koh and Koh (1999), Guney(2009), Uyar and Gungormus (2011).

Mathematics course score is not a significant predictor of Cost Accounting course score. On the other hand, Statistics score is a significant predictor of Cost Accounting course score. Cost Accounting differs from Financial Accounting in the use of statistics. Thus, statistical knowledge is a performance factor for Cost Accounting course performance. Kirk and Spector (2006) found that course performance in Mathematics was not significant. In contrast, success in Statistics was highly significant and positive in explaining success in Cost Accounting. Alcock et al. (2008) reported insignificant Mathematics course performance relationship. Our findings are consistent with their findings.

Business Ethics score is a significant predictor of Auditing score. Business Ethics score coefficient is positive and significant for Auditing model, while it is insignificant for MAN group average score. Thus, ethics and Auditing relationship seems to be independent from required skill similarity within MAN courses. A positive and significant coefficient in Auditing course regression can be explained by corresponding interests and knowledge. On the other hand, remaining courses, such as Financial Accounting, Financial Management and Principles of Economics may not be suitable for ethical topics due to required skills mismatch. Our conclusion is parallel to Cohen and Pant (1989), Bampton and Cowton (2002), Uyar and Gungormus (2013), Anzeh and Abed (2015), who stated that Auditing was the most suitable course for ethical topics.

Structure of the performance factors for the courses vary depending on the program properties and the applicant profile. In the present research, the data was collected from A.U. Open Education System, which has a mission to ensure educational opportunity by providing quality university education. The program accepts students with different motives. In our research environment, motivational factors such as career motivation may not be as important as in a face to face education at a top-notch university. Additionally, a research sample from graduated students limits us to control the level of motivational factors, which may affect course score interrelations and distort the interpretation of performance factors. This limits the generalization of our results and can be considered as a weakness of our research. However, presumably minor importance of motivational factors with a standardized education process refine the analysis of course performance interrelations based on required skills and knowledge. We present business core course interrelations that reveal performance factors, notably for required skills and knowledge. We hope the findings to be beneficial for further studies investigating the determinants of business course performances.

CONCLUSION

This study explores business core course performance interrelations with a focus on accounting and finance courses. Analysis of the correlations between overall course scores provides interpretable information for the underlying performance factors. The analysis suggests that course requirements for skills and knowledge are effective performance factors for our research data. This verifies the usage of examination scores for gained skills and knowledge as an education output in efficiency analysis of academic departments (Celik & Ecer, 2009).

The analysis outcome indicates that the introductory courses require quantitative and analytical reasoning skills more than the subsequent courses in accounting, finance and economics. Management-oriented courses differed from these courses with requiring higher verbal and organizational skills. Auditing, Financial Institutions and Markets have main performance factors that are similar to management-oriented courses. Skill based forming of these groups implies less relevance of accounting related skills for Auditing course performance. In addition, Auditing is the most suitable course for ethical subjects among business core courses.

The research is designed to expose the course interrelations investigated in the previous studies. Mathematics and Statistics scores are significant predictors of finance and economics course scores. On the contrary, Mathematics score is not a significant predictor

of Financial Accounting and Cost Accounting scores. Thus, Mathematics score fails to be a suitable proxy of numerical processing skills as an accounting course performance factor. Cost Accounting differs from Financial Accounting in the use of statistics. In the analysis outcome, Statistics score is a significant predictor of Cost Accounting course score. Thus, statistical knowledge is a performance factor for Cost Accounting.

Results of this study provide a benchmark of course interrelations for researchers who controlled for related course scores in their performance prediction models particularly for Accounting. The analysis results may also be indicative for finance, economics and management course performances studies. The statistically clustered course scores imply similarities between courses, which have been separately investigated thus far. This may promote a multidisciplinary approach and result in further research that defines the common and unique performance determinants for business courses.

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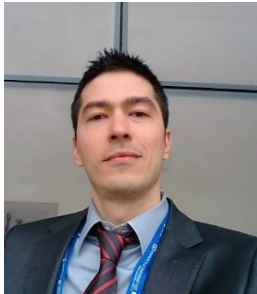
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IMPLEMENTING A FLIPPED CLASSROOM: A CASE STUDY OF BIOLOGY TEACHING IN A GREEK HIGH SCHOOL

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ABSTRACT

The purpose of this study was to investigate the application of the model of the "flipped classroom" as a complementary method to school distance education in junior high school Biology. The "flipped classroom" model attempts a different way of organizing the educational process according to which the traditional methods of learning at school and studying at home are interchanged, the learners' active involvement is supported, their autonomy is reinforced, ICT is utilized and learning occurs partially by distance (blended learning). We performed an action research implementing flipped classroom in Biology teaching in a class of 17 students attending the 1st year of junior high school. The educational platform used was the Learning Activity Management System (LAMS). The findings were evaluated qualitative rather than quantitative, and can provide evidence about the prevailing situation. During the action research, it became evident that time management in the classroom was improved. Furthermore, it was observed that students' involvement in the educational process was also improved. Students had already familiarized themselves with the cognitive aspect of the lesson before entering the class and they considered the learning process as an individual affair which does not only depend on the teacher. The implementation of digital activities accomplished by distance led to taking action and initiative and finally to active learning. School distance education combined with the radical development of ICT can be complementary with the use of various methods, like the "flipped learning", and give a new perspective and potential to the limited choices of conventional education in the Greek educational system which is worth further investigation.

Keywords: School complementary distance education, blended learning, flipped classroom, junior high school Biology, photosynthesis, LAMS (Learning Activities Management System).

INTRODUCTION

Learning is not a product which is transferred through the instructive action from one source to another one or by from one region to another one or from an empirical – philosophical dimension to another one (Lionarakis, 2003). It is a product that is discovered from the person himself interested through concrete practices and methods. Although the modern theories of learning recommend the biggest possible entanglement and activation of the student, research shows that the educational process in secondary education continues to take place in the traditional way, where the student is mainly a passive receptor. This is due mainly to the fact that the time for the delivery of the curriculum is not sufficient.

Limited time is a common situation that Greek classroom teachers face, and it can have a significant effect on the learning process. While dealing with this issue, a new, modern learning method, which is a combination of distant and traditional educational strategies came up. This approach is called "the flipped classroom" and its applications appear to be beneficial for time management and the students' involvement in the educational process (Estes et al.; 2014; Kurtz et al., 2014; Bergmann et al., 2011).

The purpose of this paper is to define how the "flipped classroom" could work as a complementary education method in Biology teaching in High school. The following research questions are being studied:
- ➢ How could the "flipped classroom" be effectively used as a complementary distant education method?
- ➢ In what way can the "flipped classroom" help improve the learning process?
- ➢ What are the difficulties we faced when we applied the "flipped classroom" method in a Biology class?

The discoveries give new prospects and possibilities of the contribution of school distance education in the Greek educational system. The "flipped classroom" provides an opportunity to capture the attention of Millennial students and thus improve their learning experience. In the next sections, theoretical introduction, research part, results, discussion, conclusions and recommendations are presented.

THEORETICAL PART

School Distance Education

Distance education can be utilized for the needs of school education (Anderson & Dron, 2011). The term "school distance education" defines the education of elementary and secondary level, which is provided to students of school age as well as to adults (Vasala, 2005). The application of school distance education is of high importance in providing equal opportunities and fighting social exclusion (Themelis, 2001; Manousou, 2008; Cleveland-Innes & Garrison, 2010). Nowadays distance education methods achieve high degree of interaction between the teacher and the learner regardless of distance (Dede, 1996). An instance of distance education consists of the virtual teaching and learning environments which give the opportunity to learners and teachers of different geographical areas to add up to a class, communicate at any time, collaborate, participate in discussions and interchange aspects, experiences or concerns (Mauger, 2002).

In Greece, innovative teachers make good use of complementary school distance education in various fields, such as extracurricular projects (Cultural, environmental, e-Twinning) (Manousou, 2008; Papadakis et al., 2014). We have to take into consideration that distance learning is not part of the institutional framework in the Greek educational system. The "flipped classroom model" constitutes an approach where the learners' active involvement is supported, their autonomy is reinforced, ICT is utilized, learning occurs partially by distance (blended learning) and supplements school education.

The Pedagogical Model of the "Flipped Classroom" Approach

The term "Flipped Learning" or "Flipped Classroom" is used to describe a relatively new instructional design approach in schools, reversing the hitherto followed structure. Founder of the "Flipped Classroom model is considered Baker who in 2000 presented a model entitled*: "The classroom flip: using web course management tools to become the guide by the side".* The pioneers in the implementation and promotion of the model are two chemistry teachers in Colorado, Jonathan Bergmann and Aaron Sams, who recently (2012) published their book *"Flip Your Classroom: Reach Every Student in Every Class Every Day"* which is the most reliable guide for the implementation of the model. It starts with the realization that students need their teachers to respond to their questions and help them when they face difficulties, while they do not need to hear or watch a lecture. Thus, they collected the available material from the application of the model for interested teachers. Moreover, they founded the Flipped Learning Network community (FLN, 2014) (www.flippedlearning.org) providing modern information and helpful material for the application of the model.

The "flipped classroom" is a model of blended learning, in which students learn by watching videolectures or other educational material at home, while the "homework" is done in the classroom with the teacher and students discussing and resolving queries (Kandroudi & Bratitsis, 2013).

In traditional teaching students attend the "lecture" of the course and answer in tests at school, while they study the book and solve the exercises at home. In "flipped teaching" students study the next lesson at home on their own, usually through a video, which - at best-has been prepared by their teacher or other available material, and once they come in the classroom they apply their knowledge by solving problems and taking part in consolidation activities. The teacher supports the students exactly where they need. Its role is shifting from the traditional lecture to guidance, support and personalization (Bishop & Verleger, 2013).

For the implementation of the model, the use of an online educational platform is required and here comes the contribution of distance methodology and educational technology.

The reason we use and recommend this model is that the "flipped classroom" frees up valuable time for the acquisition of knowledge through problem solving and interaction of the students with each other, the teacher and the subject.

The use of video or other digital material outside class in itself is not enough for something to happen differently in the classroom. Emphasis should be placed on the fact that students are an active part of their own learning rather than teaching objects.

Moreover, Millenials' access to technology, information, and digital media is greater than that of any prior generation (Roehl et al, 2013), which is a parameter that is strongly considered through the "flipped classroom" implementation.

The Characteristics of the "Flipped Classroom" Model

There are four pillars that teachers must incorporate into their practice in order to engage with flipped learning (Pearson's School Achievement Services, 2013) (Fig.1):

> ➤ **F (Flexible Environment): Educators create flexible spaces in which students choose when and where they learn. They often physically rearrange their learning space to accommodate a lesson or unit and support either group work or independent study. Furthermore, educators who flip their classes are flexible in their expectations of student timelines for learning and in their assessments of student learning.**

- ➢ **L (Learning Culture): In the traditional teacher-centered model, the teacher is the primary source of information. By contrast, the Flipped Learning model deliberately shifts instruction to a learner-centered approach, wherein-class time is dedicated to exploring topics in greater depth and creating rich learning opportunities. As a result, students are actively involved in knowledge construction as they participate in and evaluate their learning in a manner that is personally meaningful.**
- ➢ **I (Intentional Content): Flipped Learning Educators continually think about how they can use the Flipped Learning model to help students develop conceptual understanding, as well as procedural fluency. They determine what they need to teach and what materials students should explore on their own. Educators use Intentional Content to maximize classroom time in order to adopt methods of student-centered, active learning strategies, depending on grade level and subject matter.**
- ➢ **P (Professional Educator): The role of a Professional Educator is even more important and often more demanding, in a Flipped Classroom than in a traditional one. During class time, educators continually observe their students, providing them with feedback relevant to that moment, and assessing their work. Professional Educators are reflective in their practice, connect with each other to improve their instruction, accept constructive criticism, and tolerate controlled chaos in their classrooms. While Professional Educators take on less visibly prominent roles in a flipped classroom, they remain the essential component that enables Flipped Learning to occur (Flipped Learning Network FLN, 2014).**
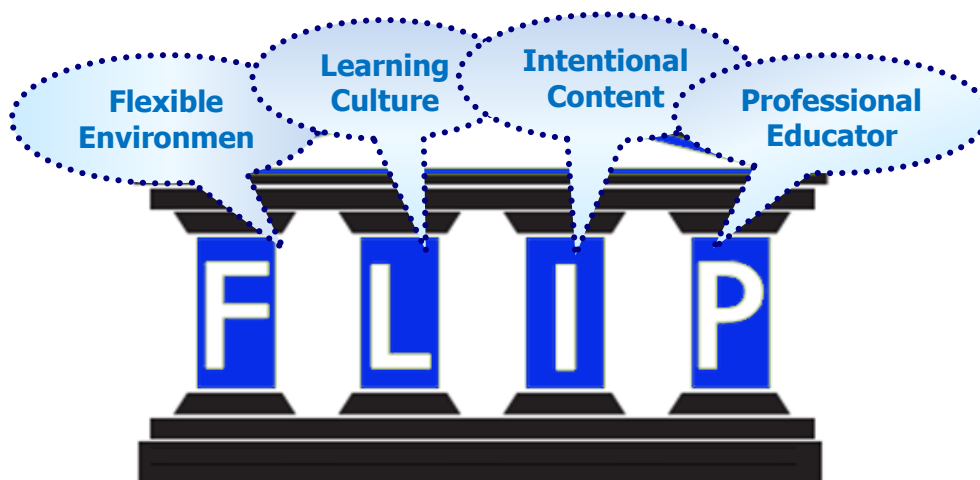

Figure 1. Pillars of "flipped classroom" (adapted from Hamdan et al., 2013)

Preparation and Implementation Stages
Estes et al. (2014) proposed a three-stage model to flip the classroom: the pre-class (modelling, pre-assessment), in-class (clarifying concepts, solving problems) and post-class (assessment, application, transfer) stages (Fig.2).

Figure 2. The stages of flipping a class (adapted from Estes et al., 2014)

The initial and final stages (pre and post class) were made by the students by distance, at home, using a digital platform and appropriate educational material. Students can view the digital content as many times as they want, they can focus on any points they wish, at their own space and their own pace (Strayer, 2007). Thus, the interaction of the students with the teaching material is scaled in a way that does not occur when lectures are given in class (Hertz, 2012). After the "flipped classroom" activities, students can return to the platform and check the level of their knowledge. Depending on their performance and after identifying their possible weaknesses, they can refer again to digital material, watch the video again –from a different viewpoint - or expand their knowledge further if they wish (Estes et al., 2014). The intermediate stage (in-class) takes place in the classroom, using active and participatory teaching techniques. In the "flipped classroom" students are asked to combine the information they acquired outside the classroom and interact with them and their peers in a way to show that they have become active users of information, based on their personal experiences, opportunities, critical thinking and interaction through group activities (Bergmann et al., 2011).

Expected Benefits from the Application of the "Flipped Classroom"
Based on the levels of taxonomy objectives in the cognitive domain of Bloom, in applying the "flipped classroom" model, lower levels − Remembering and Understanding − are achieved at home where students can study at their own pace (Fig.3). Higher levels-Applying, Analysing, Evaluating and Creating - are reached at school where the students have the support of the teacher and their classmates (Hamdan et al., 2013; Anderson & Krathwohl, 2001). One might reasonably expect the students to be able to learn, recall, and comprehend the subject matter at a basic level online - at home; then, use higher order thinking skills to apply, analyze, evaluate, and create new material in the synchronous classroom (flipped environment) (Estes et al., 2014).
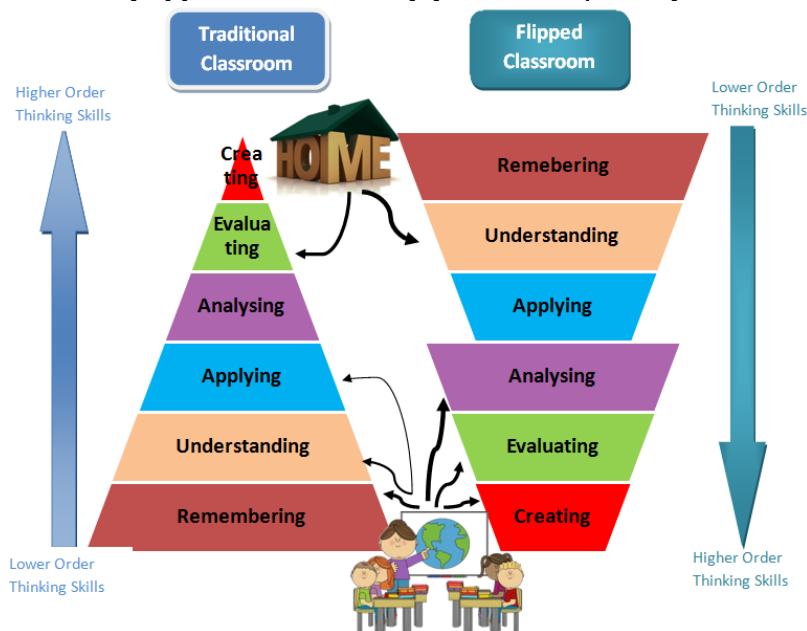

Figure 3. Improving learning to think in a flipping class

METHODOLOGY

We performed an action research implementing the "flipped classroom" in Biology teaching in a Greek junior high school. We studied the case of the model application in the classroom in the subject of Biology for the theme of "Photosynthesis".

Action research is developed through the spiral design cycles, action, observation and reflection. The starting point is a problematic situation, an issue of teachers' concern which needs ameliorating interventions (Altrrichter et al., 2001). This is a research method that is suitable for application in schools; it can be applied by teachers themselves ensuring the reliability of research results. The triangulation was achieved by collecting data from three "perspectives": the researcher, the pupils and a critical-friend-observer.

The educational platform used was the Learning Activity Management System (LAMS). The LAMS (http://lamsfoundation.org) is the most widespread and popular platform that implements the ideas of learning design (Dalziel, 2003; Britain, 2004).The LAMS is an Online Free Open Source Software (Papadakis, 2010; Papadakis & Paschalis, 2009) that supports the design, authoring, management and supervision of the execution of courses in the form of sequences of learning activities.

Action Research
The project was prepared at the beginning of the School Year 2014-2015, it was carried out in March 2015 in a 1st year class of the15th junior high school of Patras. The general plan of the implementation was the following:
  ➢ **Class selection -target group**
  ➢ **Information of the school advisor, parents and students**
  ➢ **Preparation of the educational material**
  ➢ **Familiarization of the students with the LAMS platform**
  ➢ **Application of the three stages (pre-class, in-class, post-class) of the flipping classroom with the attendance of a critical friend-observer.**

Target Group
The study concerned 17 students attending the 1st year of junior high school, 8 boys and 9 girls, presenting various performances (from very high to very low). It was a multi-cultural class, regarding the nationality of the pupils (12 were Greek and 5 foreigners: Albanians, Indians and Pakistanis). Four of them exhibited learning disabilities. The social-economic level of their parents was moderate. The sample was small, although as representative as possible. The findings were evaluated qualitative rather than quantitative, and can provide evidence about the prevailing situation.

Necessary Procedures before Applying Research
Information of the School Advisor, Parents and Students
The school advisor was informed in advance in order to give his permission for the implementation of the method. Furthermore, parents as well as students were straightened out about the methodology that was planned to follow.

An attempt was made to help students understand that they would combine face-to-face teaching with distance learning via computer activities (blended learning). In addition, they were told that the process would take part in a reversed order from the usual one (flipped classroom). It was made clear to the students that the aim of the procedure was not to assess their performance, but to evaluate the implementation of the flipped approach so it was absolutely necessary that they respond honestly to the various questions and not at random, so that research be driven to safe conclusions.

Preparing the Application - Creation of the Educational Material
The first and most important step concerned the creation of the proper educational material according to the distance educational principles. Given that students would be

invited to study alone, from home, at a distance from the school class, the educational material composed the main tool for their study. So it was necessary to know in detail from the first steps what to do, why they would do it, when to do it, how to do it and if they did it right (Lionarakis, 2001). The "Photosynthesis" unit was selected as the cognitive object to be taught, which -according to the curriculum- has to be taught in one hour. Moreover, because the students had no previous experience of the LAMS platform and in order for this not to affect the results, it was considered appropriate that a discrete course aimed at familiarizing students with the platform would precede.
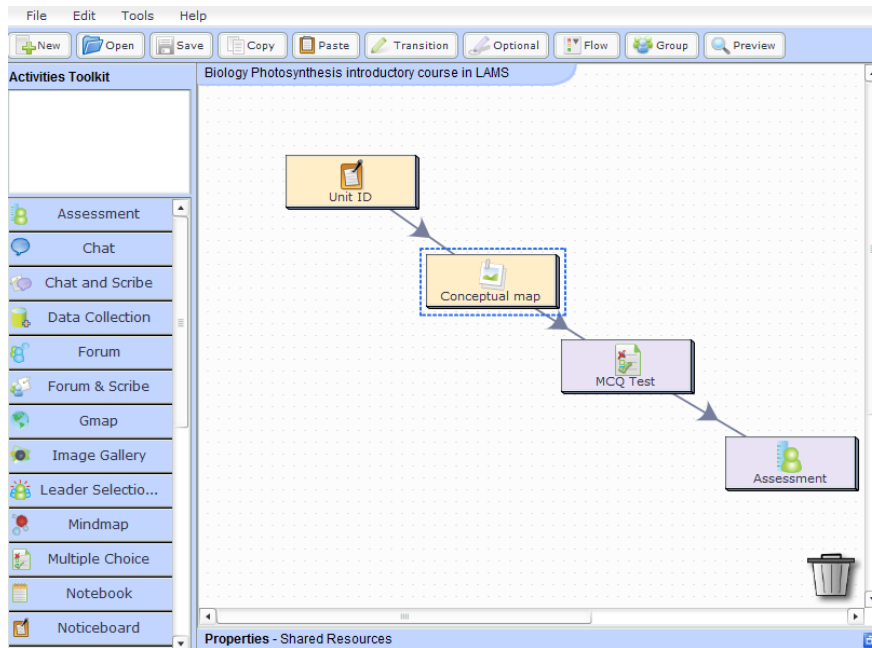

Figure 4. The learning sequence of the introductory course

So, a learning sequence was created in LAMS entitled "Acquaintance to the LAMS - Introduction" (Figure 4). We used the introductory section preceding the teaching of Photosynthesis which students had already learned in class. In this way, they focused on how to use the platform effectively. The course had the following simple structure and is posted online at: http://lamscommunity.org/lamscentral/sequence?seq_id=1986329.

The process involved a learning sequence of four steps as illustrated by the four rectangles of the above figure from the author environment. Specifically the students' environment included the following:
  ➢ In the first step, the identity of the learning activity was determined.
  ➢ In the next step, there was a brief presentation of the lesson "Division of the organisms according to their eating habits" already taught to the students in the classroom. That lesson was the basis for the teaching of "Photosynthesis" which was the next section. Students were required to study a conceptual map and browse pop ups with information and images (Gariou, 2012a). At the same time, the various functions and features of the platform were explained, the difficulties were highlighted and their questions mainly on the use of the platform were resolved.
  ➢ The next two parts included questions on the subject of the next lesson "Photosynthesis". These were designed both in the context of better familiarity with the LAMS platform, but also in order to test the existing knowledge (pre-test) of students on the discipline of Photosynthesis, which would be taught using the "flipped classroom" methodology.

This preparatory lesson was held at the Computer Lab of the school. The LAMS platform was presented to the students and they were provided with their passwords. It was figured out that the students interacted with the platform and familiarized themselves quite easily and pleasantly seeking new opportunities.

It's worth noting that the LAMS teachers' environment can support a wide range of pedagogical approaches, as well as the ability of authorship and supervision. The teacher can follow the progress of the students' studying and record statistics such as the time the learner spent on various sections, their performance on the various exercises and so on.
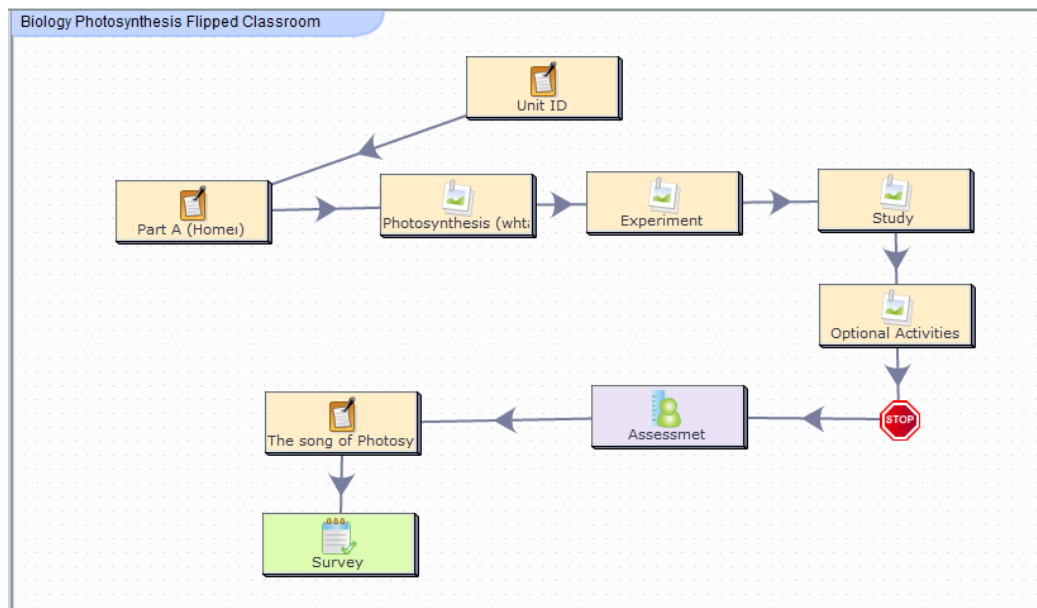

Figure 5. The design of learning activities of the
"Photosynthesis – The Flipped Classroom" course

The main lesson (Figure 5) concerned the Unit of Photosynthesis and was carried out based on the principles of distance education and flipped learning. It was divided into three parts corresponding to the three steps of the "flipped classroom" implementation (pre-class, in-class, post-class).

    a. The first part was digital and it concerned the study of the students at home before the school class period. At this stage, students were required to study from home -on their own, at their own time and pace (distance education) - the following lesson, which is posted online at: http://lamscommunity.org/lamscentral/sequence?seq_id=1986326 entitled "Photosynthesis – The Flipped Classroom" and included:

      ➢ An introductory page of the section dealing.
      ➢ A page with the objectives and expected results of the study.
      ➢ Multimedia: A video presentation of the function of photosynthesis.
      ➢ Practice: a videotaped experiment to demonstrate the importance of light in photosynthesis.
      ➢ The relevant pages of the digital book for study.
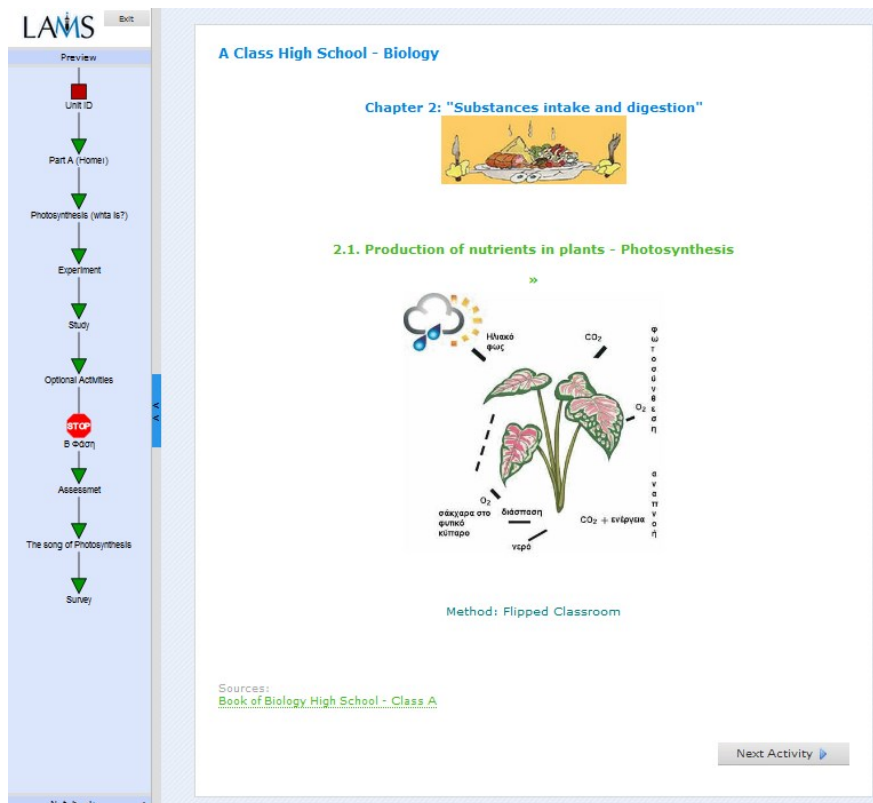   ➢ An optional link of Wikipedia for further study.

Figure 6. The introductory page of the section concerning the learner

At this point the distance study from home was completed. Students could repeat the whole lesson or whatever section they wished, but they could not go further. A gate (STOP) was placed and students were able to go on to the next level only when the author gave them permission. This could happen after the next phase was completed, that is the lesson in the classroom.

The video-presentation and experimental video material were created by the teacher herself and were posted in "Photodentro" (Gariou, 2012b; c). As shown in the literature (Bergmann et al., 2011) students prefer their teacher to talk in the digital material they are studying from home and so the corresponding learning objects were selected.

   b. The second part took place in the classroom and involved teaching techniques and printed material supporting the active participation of the students in the social structure of the class and the efficient use of teaching time. At this stage, these students were invited to use the information they acquired "pre-class" and to interact with their peers by sharing the work traditionally done at home, in the social structure of the classroom.

The structure of the course in the classroom, in general, included: Starting point – ice breaking, brainstorming, questions-answers-discussion, team-working of two worksheets.

   c. The third part was also digital and "unlocked" after the course was completed in class. This included:
  ➢ A self-assessment exercise of knowledge acquired by students (post-test).
  ➢ A song for photosynthesis from the Internet for a pleasant ending of the lesson.
  ➢ A survey - questionnaire for the students to evaluate the process.

RESULTS AND DISCUSSION

Pre-Class

Once the students familiarized themselves with the platform, they were given the address of the second lesson they had to study at home which was about "Photosynthesis", and they were asked to study it by themselves (on their own) using their codes before the next Biology class (four-day-period).

In this period we supervised the learning progress of the students. Wherever we detected students having difficulty with the course, we approached them at school for help. For example; some students who had already begun the lesson sequences, discontinued before finishing them. The teacher asked them questions, solved their own ones and encouraged them to continue. Some others did not even get into the platform. It was found that they had no access to a computer or the Internet at home. These students were given the permission to use the Computer Lab and they ran the lesson at school, each on their own, wearing a headset so that they were not affected by their classmates. While monitoring the lesson, it was made clear that the amount of time every student devoted for every activity differed. Some students ran the lesson too fast. Some others spent a lot of time, repeating some of the activities. There were also students who spent a lot of time for the optional activity.

The above confirmed the need of the students to study at their own pace of progress each repeating what they had found necessary or pleasant and interesting as many times as they wanted. This is not easy to happen in the classroom and with the tight time limits of one class period.

What is more, it came to our attention that the interaction between the students and the educational material (presentation, video, book, external links) differed from one student to another, and it was also different among the various types of material. The optional link for more information in Wikipedia was the less popular among the students. The next less popular was the study of the e-book. The video-presentation and the experimental video had the most views by the students.

The many different types of the educational material and activities attracted the students and served many categories of educational purposes. It also promoted the independence and autonomy of the students, as well as the individualized learning, since the personal style of learning affected the educational outcome. Especially the experimental video strengthened the heuristic self-learning procedure, cultivated a scientific way of thinking and taught the meanings and the phenomena in an experiential way. Alongside with the video-presentation, they scored the highest viewing rate, which confirms that students prefer modern, interesting, interactive audiovisual material. Furthermore, both of these were accompanied with narration, also meeting the needs of students with learning disabilities.

Studies have shown that videos present a big advantage against a static image because they provide more information and they can make the deeper understanding of their content easier. Besides this, the content of the videos remains imprinted in memory for a longer period than a static image (Mayer, 2005; Jukes et al., 2010; Means et al., 2010).

The optional activity to gain more information about photosynthesis through the external link of Wikipedia presented the least number of visits. This fact, although at first glance it might seem negative, confirms that not all students are interested at the same level for every known object. But, giving the opportunity to the students who wanted, to go even deeper and be guided in this attempt is one of the strong points offered by the complementary school distance education. The optional activities have a great educational value, because they give students the opportunity to meet their interests, discover their abilities and tendencies and cultivate their personalities.

In-Class

Until the predetermined day of the "Flipped classroom", the teacher confirmed that all students had completed on their own the LAMS learning sequence given to them. The supervision of the digital lesson gave the opportunity to the teacher to watch the progress of each student as well as test the success rate of the questions from a distance. This was quite useful in order to design the course in the second phase of the methodology properly and prepare the grouping of students to work in the classroom collaboratively. Based on their answers to the pre-test, students were divided into 5 groups, each of which contained a highly scored and various other grades. On entering the classroom, students arranged their seats for team working according to the posted groups.

During this stage, a second teacher having the role of a critical friend-observer was present in the classroom. The second teacher didn't participate in the procedure, but wrote down his observations during the lesson according to the following list of axes that we were interested in. It should be noted that this teacher was highly qualified, having a Master's degree in the teaching of Chemistry. Indeed he was aware of the theoretical underpinnings of the methodology of the "flipped classroom" and he was very interested in taking part in this app. In addition, he taught to the specific pupils and so he knew them very well.

Observation Axes of a Critical Friend
> * Students' involvement and active participation in the educational process
> * Students' cooperativeness and socialization
> * Detection and dealing with the students' cognitive needs
> * Use of a variety of teaching techniques
> * Efficiency of the educational design
> * Strengthening students' confidence
> * Utilization of teaching time
> * Possibility of deepening into the cognitive subject
> * Compatibility with the official curriculum of study

Inside the classroom, a wide range of teaching techniques was used in order to optimize the given teaching time and activate the students' involvement. Students' engagement was indeed noted during all the phases of the lesson. Probably, the fact that pupils were already prepared for the content of the following lesson contributed to this. Students asked each other, explained, commented, communicated, conferred, supported, compared, replied, thus contributing to the effective learning.

Despite that, many false preconceptions were stated during the presentation of the first work sheet. Although they had studied the lesson on their own, most of the students didn't seem to have changed their misconceptions about the process of Photosynthesis. The discussion among the students in the classroom led to the detection of the errors and the expression the correct options. The teacher's role was shifted to distinctive feedback, encouragement and support.

With the completion of all group presentations, it was noted that there was excess of time! Given the academic background of the "flipped classroom" we had been prepared for such a possibility, and thus we distributed another work-sheet to the students concerning the experimental video they had watched at home. The answers were this time much clearer and correct. This is maybe due to the students' active involvement during the previous classroom time, or/and to the fact that the experimental video attracted their attention.

The experimental procedures, even when presented videotaped, stirred the interest of the students, which was consistent with the high viewing rate of the activity of the digital course of LAMS. Besides, the laboratory experimentation is central to learning science (Toth et al., 2008). Through its utilization conceptual understanding is activated and

promoted, knowledge is built and learning is enriched as connected to the real world. Moreover, in the videotaped environment, students were able to observe a phenomenon in a shorter time than the actual time span and become familiar with the way that scientists experiment in science.

Post-Class

The third stage took place at home, from a distance and had to do with a self-evaluation test and a survey on the methodology followed. From the pre- test it was observed that the students had a limited knowledge (low base) on Photosynthesis The post-test presented an improvement in the students' performance. So, it appeared that the methodology had a positive effect on the cognitive level of the students, after some improvement in the number of correct answers given (Fig. 7).
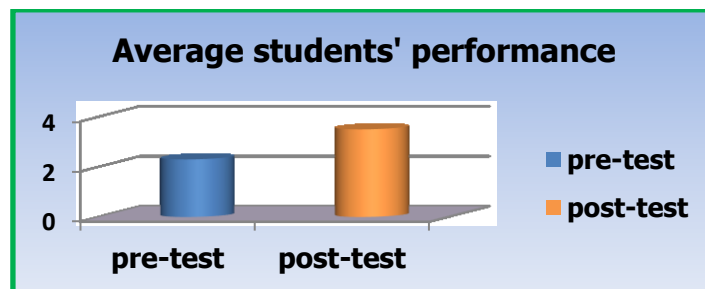
Figure 7. Average students' performance at pre and post - test

Investigation of the Students' Opinion (Survey)

Research into students' opinion on the application of the "flipped classroom" methodology generally showed their acceptance of the new didactic proposal. The LAMS environment as well as the digital content aroused their interest in the study. Students also favoured a combination of "flipped" and traditional ways for their study. They responded positively to the content of the lesson and to the technical requirements of the digital material. The digital environment of the LAMS' platform is designed to facilitate and guide the distance learner on his way to the acquisition of knowledge.

Figure 8. Students' opinion on the implementation of the "*Flipped classroom*"

Overall, students appeared satisfied with the implementation of the "Flipped classroom" (fig.8), found the lesson pleasant and expressed the desire to be taught with this methodology in further subjects, as shown below by their comments:

> *"LAMS helped us immensely and helped us solve our problems and answer questions"*
> *"I really liked the lesson. It helped me answer some questions"*
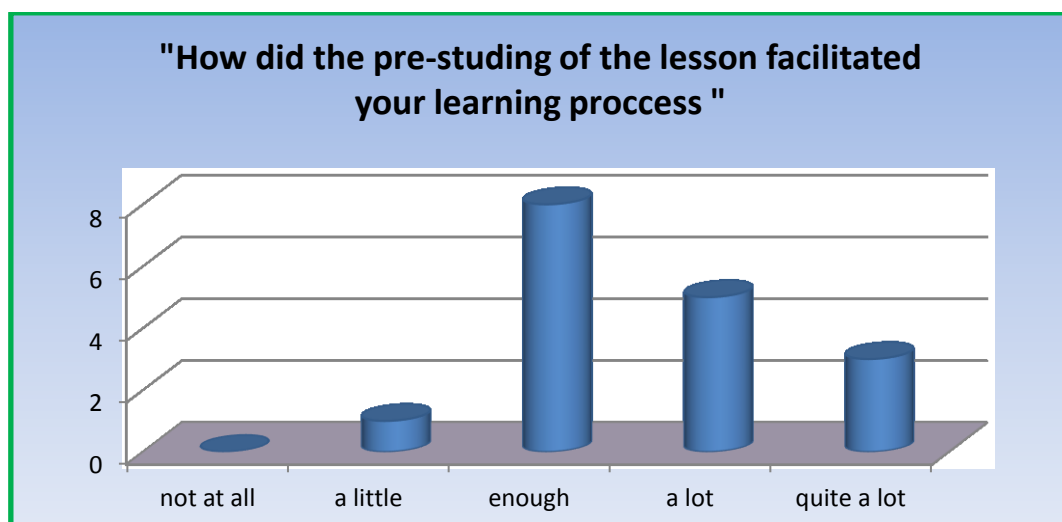> *"I would like to do all the lessons in this way"*
> *"Let's do all the courses in this way (except art, gymnastics and music)"*
> *"It's interesting to make a preparation for the lesson at school, then at home read the lesson and the digital material and then do the exercises at school"*

Findings from the Critical Friend

The critical friend gave a more objective aspect of the classroom function and contributed to the extraction and evaluation of the study (consideration, reflection).

Generally, criticism of the friend-observer was positive and optimistic concerning the pedagogical, the cognitive as well as the emotional level. The possibilities of better time management and more efficient educational design were pointed out based on the targeting, the quality and the number of activities accomplished in the classroom. Furthermore, students' active involvement in the educational process led to their taking action and initiative and finally to active learning.

Students' persistence on their pre-existing perceptions —despite studying at home- was highlighted as the negative element. The possibility of monitoring (supervision) given by the LAMS environment as well as the finest time management in the classroom contributed to effectively coping with this issue.

CONCLUSIONS

A general conclusion of this study which can be reached is that it is possible to make good use of the "flipped classroom" methodology as a complementary tool to school distance education in junior high school Biology.

The following elements of the "flipped classroom" that contribute to the optimization of the learning process were noticed:

 - The implementation of the "flipped classroom" had a great effect on time management. Students watched the following lesson away from class, from a distance, on their own thus giving free time for targeted, constructive activities, troubleshooting, and detection of tricky meanings in the class under the guidance of the teacher.
 - There was efficient detection and dealing with the students' cognitive needs due to the fruitful educational design. The methodology required the use of an online digital platform. LAMS environment was selected due to the diversity of pedagogical tools that it provided to the authors.
 - The use of polymorphic educational material that was prepared for home study and for classwork led students to taking action and initiative and finally to their active learning.
 - The students' attitude towards the use of ICT was positive, being quite capable of handling digital files, although it was the first time that they used such a platform. They expressed their desire to attend more lessons using similar tools.
 - Moreover, the "flipped classroom" methodology enabled those students who wish to study a specific subject more deeply. This is one of the strong features of the methodology which teachers can use in order to satisfy their students' personalized interests —something that can hardly occur in a traditional class.
 - Students' involvement and active participation in the educational process were remarkably increased. Students knew that their teacher was monitoring (supervising) their progress while they attended the lesson at home. So, they were already familiar with the cognitive aspect of the lesson before entering the school class. As a consequence, pupils entered the class with less stress and higher confidence. They were involved more easily in co-operative and

> discovering activities and they considered the learning process a personal affair which did not only depend on the teacher. Finally, they obtained a more positive view towards Biology.
>
> ➢ It is worth mentioning that students exhibiting learning disabilities revealed a peculiar interest concerning the use of digital tools and participated sufficiently in the distance study as well as in the in-class activities. Although this group was not a separate objective in our work, the positive effect of the "flipped classroom" methodology gave an added value to the results of this research.

There were some difficulties that we faced when we applied the "flipped classroom" method in a Biology class:

> ➢ Despite attending the following lesson before entering the class, most of the students did not change their pre-existing concepts which we recorded though the pre-test. Studying at home, from a distance, was not enough alone to lead to a cognitive conflict. To accurately record the situation we suggest that during a future application - in addition to the pre- test (initial assessment) and the post-test (final evaluation) —there be a knowledge control to be inserted immediately after the (distant) home preparation or prior to the conduct of the lesson in the classroom (formative evaluation).This will give more accurate information about what students were able to learn studying on their own, at their own pace and in their own time at home.

On the other hand, the aim of the implementation of the "flipped classroom" was not to leave pupils alone to learn from a distance, but to optimize time management and students' involvement in the class. This target was fully successful based on their active learning and the results of the post-test.

> ➢ Secondly, we have to note that the implementation of the "flipped classroom" demands more time and effort in order for the teacher to prepare the lesson. The distance, online parts of the lesson need to be digital, polymorphic and attractive, while the in-class part ought to be focused on the individual learning needs of the students.

This difficulty can be overcome given that these lessons are re-usable and can be distributed along the educational community. During one school year, a teacher could create one or two "flipped" lessons, which he subsequently shares with the learning community, such as the LAMS community. In this way, one lesson can be reusable, adaptable, versatile and free-offered to the modern, globalized society as a part of open educational resources.

RECOMMENDATIONS

During the implementation of this research new questions that could be investigated in the future arose.

In order to extract more reliable conclusions, it would be suggested the "flipped classroom" be applied at a larger scale. That is one course during a quarter or a semester or the whole school year, or even many different courses or classes of the same or different scholar units including elementary, secondary, high school, general or vocational. Feedback could lead to the improvement of the implementation.

It would be of interest to investigate more specialized markers, such as the impact of the "flipped classroom" on the students' performance, its influence on the levels of stress, its effect on the satisfaction they gain from their involvement, or even on groups of students with different learning abilities.

Another factor that could be considered is the potential of improving the distance part of students'' studying. In case we realized that watching a video or other educational material from a distance is not efficient enough to learn, one could explore whether this

could become more productive if it were combined with other techniques. For instance, students could be obliged to submit questions to the digital platform or hold notes, or draft a summary following the watched presentation. These techniques might motivate students to familiarize themselves with the content of the educational material rather than remain passive recipients. Making a deal regarding the students' obligations mentioned above could lead to their considering the learning process a personal individual affair. The addition of a questionnaire following the pre-class stage would contribute to the focusing of the students on the cognitive subject as well as the optimal educational design.

All in all, the role that school plays cannot be questioned or replaced. School distance education combined with the radical development of ICT can be complementary with the use of various methods, like the "flipped learning", and gives a new perspective and potential to the limited choices of conventional education in the Greek educational system which is worth further investigation.

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HOW DO THE FACULTY MEMBERS GO FOR TROLLS?
A VIEW FROM AN EMERGING COUNTRY

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ABSTRACT

This paper focuses on the findings of an exploratory, qualitative phenomenological study and investigates opinions and evaluations of faculty members about trolls encountered in social media and mass medium. The research was carried out in Anadolu University in Turkey. A total of 18 faculty members from 9 faculties in 12 different departments responded to 4 interview questions. Faculty members' views on trolls were elicited through 2 rounds of semi-structured focus group interviews. Findings were based on content analyses of interview transcripts. Results are presented in four categories which emerged from perceptions, strategies, incidences and feelings. Trolls' aims and their success in doing so when it comes to the research group are discussed. This research concludes that purity, hazard and intelligence of trolls are still dubious facts for the Anadolu University faculty members.

Keywords: Trolling, social media, faculty members, computer-mediated communication.

INTRODUCTION

> *"I'm a professor of instructional technology and I have never witnessed how desperate the faculty could become with an introduction of any other new issue. The other day a colleague came into my room with her smartphone in her hand pointing me a picture of a back of a young person run over by a heavy police truck. I knew that the photograph was a troll and had nothing to do with the ongoing events, then. But I felt so bad to tell her that because she was so naive in believing what she saw, my comment would be traumatic for her."* **H. Ferhan ODABASI**

The rapid proliferation of technology brought up new issues on consensus that has been difficult to think of years ago. Transformation of communication is in the process of going from agreement to conflict. Once having features as facilitating communication, easing

information gathering and making people come together, the communication technologies replaced these favorable features with unfavorable ones, such as deception, humiliation and detraction for fun, privacy invasion, disregard for content creators' moral right and misuse of intellectual property. As the power of social media increases day-by-day, unethical uses have emerged correspondingly. In order to exemplify, during the interpersonal communication, identity issues such as fake and double identities have arisen by means of these emerging information and communication. In such a case, sharing biased, false, misleading and incomplete information has become easier to distribute. This is a concern when the information shared on the Internet, and especially social media, are personal relationship problems linked to their important life events. Thus it is not surprising to find that confidentiality, privacy, integrity and purpose of information can easily be misused for different actions by different groups. At this point, it is difficult to determine who or what should be blamed for this state of affairs. In such a case where students in higher education are affected from this, the faculty members are responsible for the adequate training and education of these students. Besides, they are believed to be the most potent ones in defense against this unsavory behavior.

When the faculty members are considered simultaneously with social media, there goes the paradox (Moran, Seaman & Tinti-Kane, 2011). Faculty members are known to incorporate sophisticated users of social media whereas higher education is known to have laggard members in technology use. Taking into consideration that the social media match different sites to the faculty members' varying personal, professional, and teaching needs, adoption rate of social media among faculty members tends to increase year after year (Seaman & Tinti-Kane, 2013). Despite the increase in utilization rates, there are problems that may be experienced in the use of social media. For instance, in a study about the use of social media, 80% of faculty members claim that "lack of integrity of student submissions" is an important barrier whereas 70% admit the same judgement for privacy concerns. As a consequence, it can be said that the faculty members should be aware that social media use is not only about passive reading or viewing; moreover it is a challenge for the faculty members that in order to be active, they should take in consideration the ethical issues. As in the example case mentioned above, approximately 40% of faculty members who posted content during the past month did so on more than one site (Moran, Seaman & Tinti-Kane, 2011).

Since the use of social media arises ethical issues as stated above, the concept of trolls and troll behaviors come into the limelight. Troll behaviors are defined as the behaviors to provoke (Taiwo, 2014) an emotional response for different users in which individuals can use expressions in free and relaxed manner with the help of secret identities (Donath, 1999; Hardaker, 2013; Weller, 2007; Williams, 2012).

Trolls are regarded as the ongoing development of an Internet subculture (Schwartz, 2008). Trolls act unreal behaviors, which take form from cultural differences. Offering high-level thinking skills and critical judgments, the troll hunting conditions are getting extremely difficult because of the fake identities. In order to understand the nature of trolls and the behaviors that the trolls exhibit, a comprehensive literature review should be done; however, there are a few studies that are troll-related in the literature. While Binns, (2012); Hardaker (2013) and Maltby et al. (2015) focus their research of trolls as individuals; Herring, Sluder, Scheckler, & Barab (2002) and Merritt's (2012) studies are concerned with the trolling behavior. Furthermore, personal and psychological processes of trolling are partially interested by the researchers conducting conceptual and linguistic studies such as in Buckels, Trapnell & Paulhus's (2014) study. Another conceptual study by Karppi (2013), focuses on the fake accounts of the trolls. On the other hand, another research conducted by Ozsoy (2015) plays a role in being a satisfying reference in the literature related to the political issues in trolling by supporting a different point of view. Besides the studies that

point out the negative aspects of trolling (Donath, 1999; Hardaker, 2013; Taiwo, 2014; Weller, 2007; Williams, 2012); there are studies that reflects the positive aspects like "kudos trolling" and "acceptable trolling" (Bishop, 2012; Coles & West, 2016).

Physical and psychological factors of an individual play a significant role in constructing and disseminating knowledge. This individual should use a tool between the source of the information (in this case the individual) and the other person who receives the information. At this point, the features of the tool such as appropriateness and effectiveness become very significant in terms of not distorting the true meaning. According to McLuhan (1994)'s "The medium is the message" theory, the messages in social media, the information in Internet and everyday social interactions gain their meanings by way of the tool used during the transmission process. With a postmodernist approach, not only the source and content but also the image of the tool matters for the trustworthiness of the messages. From this point-of-view, it can be said that the perception depends primarily on the media, then the message. In this context, thanks to the influence of the tool, trolling behaviors may affect intentionally or unintentionally the other people's minds. These affected people, then, may generate opposed information and respond to it so fast by means of effective social media features, that this process cyclically will resume until one is finally able to understand that s/he is trolled. This may not be so rare since it is proposed that emotional instability is related with social media use (Correa, Hinsley, & De Zuniga, 2010).

This research focuses on the faculty members and their points of views and strategies regarding trolls in social media. Although there has been consensus about the effect of mass media as being universal for different people (Meyrowitz, 1985), when it comes to faculty members, we cannot easily consider differences for them. Being at the utmost intelligence level to access right and full information (Ozdemir et al., 2006) has brought the faculty members to the focus of this research. As Meyrowitz (1985) claims, the effect of new means of production can affect variables as value systems or perceptions of truth. Turkey, in this sense, is not different than any other country. It is known that faculty members in Turkey use social media heavily, however there is no research carried out to prove this or how they handle information on social media. Hence, the aim of this study is trolls, a reality of social media especially for the faculty. Since the teaching and research skills of the faculty members are relatively high compared to the majority of the other members of the community, faculty members' views and perceptions about trolls have become more of an issue. Moreover, in order to take the argument further about the depths of the study field, conducting analyses related to their strategies of determining and questioning the accuracy of the information that they encounter during their use of social media is an important issue for the study.

Purpose
Academicians' point of views regarding social media trolls. Thus, this study tried to investigate the faculty members':
- ➢ **Understanding of what a troll is**
- ➢ **Use of ways for understanding a troll**
- ➢ **Incidence with a troll**
- ➢ **Feelings about troll experience.**

METHOD

In the present study, which examined faculty members' views about the trolls in social media, the qualitative research method was used. Qualitative research method allows developing a viewpoint regarding individuals' experiences and obtaining in-depth information about the values, behaviors and attitudes (Grbich, 2013).

Research Model

The study was carried out as a phenomenology design method, one of qualitative research methods. Phenomenological study is conducted to gain insights of participants' lived experiences of a concept or a phenomenon in the study (Creswell, 2007). Patton (2002) claimed that "phenomenological approach focuses on describing how people experience some phenomenon - how they perceive it, describe it, feel about it, judge it, remember it, make sense of it, and talk about it with other". The meanings conveyed by the experiences of faculty members in relation to trolls are interpreted within the framework of phenomenological design.

Participants

The participants were determined on voluntary basis. In the study, 883 faculty members from a state university, Anadolu, in Turkey, were asked via e-mail to take part in the present study. A total of 29 faculty members wanted to participate in the study and responded positively to the e-mail. These volunteering faculty members were informed via e-mail about the place and time of interviews. 11 faculty members reported that they would not be available at the time determined for the interviews. Therefore, the remaining 18 faculty members were invited for the interviews. One day before the interviews, these 18 participants were reminded of the interview day via e-mail. The study fields of the participants varied with respect to their faculties. Table 1 presents the study fields of the participants considering their faculties.

Table 1. Backgrounds of the participants

Participants	Faculty	Department
Gul	Open Education Faculty	Distance Education
Vedat	Open Education Faculty	Distance Education
Metin	Open Education Faculty	Distance Education
Mert	Open Education Faculty	Distance Education
Yeliz	Faculty of Engineering	Chemical Engineering
Orcun	Faculty of Tourism	Department of Tourism Management
Cemil	Faculty of Science	Biology
Asli	Faculty of Education	Computer Education & Instructional Technologies
Isik	Faculty of Education	Foreign Language Education
Yagmur	Faculty of Pharmacy	Pharmaceutical Technology
Rifat	Faculty of Tourism	Department of Tourism Management
Ahu	Faculty of Engineering	Environmental Engineering
Haydar	Faculty of Education	Primary Education
Orhan	Faculty of Economics and Administrative Sciences	Business Administration
Yilmaz	Faculty of Business Administration	Marketing
Sami	Faculty of Aeronautics and Astronautics	Aviation Management
Irmak	Faculty of Education	Computer Education & Instructional Technologies
Yigit	Faculty of Education	Computer Education & Instructional Technologies

The departments of the faculty members participating in the study varied in science and social sciences. There were 13 faculty members in the field of social sciences and 5 faculty members in the field of science.

Procedure

The study was carried out to determine the faculty members' perceptions of trolls and tried to investigate the strategies they used to understand the trolls, their experiences regarding trolls, and their feelings regarding their troll-related experiences. The research data included digital and written data in relation to the focus-group interviews. The reason to rely on a focus group interview is that in phenomenological studies, it is typically wise to carry out the long interview method, through which in-depth data can be collected on the research purpose (Moustakas, 1994). A focus group interview is a qualitative data collection tool, which is, conducted a small group of people, typically 6 to 10 people with similar backgrounds, on a specific topic. A focus group interview generally lasts for one to two hours in order to gain detailed insights of the participants (Patton, 2002). Within the scope of a study, more than one focus group interview can be held to obtain different perspectives. At this very point, the literature on focus group interviews emphasizes that using this method as a data collection tool can be advantageous in many ways, such as when the backgrounds/experiences of the interviewees match together so that the high-level interaction among interviewees lead to produce the best information, when the participants cooperative with each other, when there is limited time to collect information, and when individuals are hesitant to provide information during their one-on-one interviews (Creswell, 2007). Focus group interviews were held with faculty members from different fields for this study based on the fore mentioned rationale. Table 2 presents information about the focus group interviews. The semi-structured interview form used in focus group interviews included not only questions directed in line with the research purposes but also other probe questions directed at the end of the interview to help respond to the previously directed questions. This semi-structured interview form was finalized in line with the views of four field experts and one expert from the field of qualitative research.

Table 2. Information about the focus group interviews

Focus Group Interview	Place		Time	Number of Participants	Time
FGI1	Faculty Room	Meeting	04.12.2015	10	87 min
FGI2	Faculty Room	Meeting	18.12.2015	8	60 min

The research data were collected via two focus group interviews. The first focus group interviews were held with 10 faculty members and the second with eight faculty members.

Data Analysis

The transcriptions of the audio-records of the focus group interviews held with the participants were examined by the researchers of the present study to see whether the transcription were valid and accurate. In line with this, the authors confirmed the correctness of the transcriptions by listening to the parts they randomly selected among the audio-records of the focus group interviews. For the analysis of the qualitative data obtained via the focus group interviews, the methods of content analysis and inductive analysis were used.

FINDINGS

The Faculty Members' Understanding of What A Troll Is

During the focus group interviews, the faculty members were first asked for their views about trolls. Within the context of the faculty members' responses to the question directed to determine their perceptions and awareness of trolls, it could be stated that their views about trolls were gathered under two themes: definition of troll and troll behavior (Table 3.). The theme of definition of troll included perceptional and descriptive explanations regarding trolls, and the theme of troll behavior included explanations regarding positive and negative behaviors of trolls.

Table 3. Faculty Members' Views about Trolls

Definitions of Troll	
Perceptions regarding Trolls	Fishing
	Mystical beings
	Graffiti
Troll Descriptions	Human (group or individual)
	Machine
	Personality traits
Troll Behaviors	
Positive Behaviors	Sharing real information
	Revealing the facts
	Transfer of information by marginal groups
Negative Behaviors	Manipulation/Distorting the meaning
	Provocation
	Offending/Insulting

While defining trolls, the faculty members used various perceptional statements and descriptions. According to the faculty members, concepts in association with trolling were used with metaphors. Most of the faculty members who participated in the focus group interviews resembled 'trolling' to the action of hunting, which is included in the meaning of 'troll'. In addition, the faculty members also resembled trolls to creators living in the forests in Norway, to dwarfs in Finland, to mystical beings in movies or to graffiti.

The faculty members, in their descriptions of trolls, reported different views about whether a troll is an individual or a group. Most of the faculty members believed that a troll was not effective alone as an individual and those groups with the same opinion could thus be regarded as a troll. In addition, there was one faculty member who stated a troll was not likely to be a human but a machine. During the focus group interviews, the faculty members pointed out that trolls are were intelligent, extraordinary but untrained people able to hide themselves, use technology well and pursue financial gains.

The focus group interviews also revealed that the faculty members considered trolls' behaviors to be positive or negative. Most of the participants focused on such negative actions of trolls as manipulation, provocation and offending. Manipulation makes it possible to direct the masses to the in accordance with a certain goal. Provocation allows provoking the target population to demonstrate emotional rather than reasonable reactions. As for offending, it includes such negative actions as offending the values and beliefs that individuals find holly. Despite these negative behaviors, some of the participants also mentioned positive aspects of trolls such as sharing the real information and revealing the facts. Table 4 presents direct quotations from the faculty members' views about trolls.

Table 4. Direct Quotations of Faculty Members View about Trolls (Sample texts)

Views about Definition of Troll	
Views about Perceptions of Troll	"I regard trolls as fish feeding if I associate it with fishing." [FGI2-Asli] "…we see trolls in the modern era as well. Graffiti is in fact a troll. Well, whose slogans or posters in your hand. But, today, from a different perspective, not in a negative or positive respect, it is actually very important since it allows everyone to express their views, whether correct or not."[FGI1-Metin]
Views about Description of Troll	"At first, the troll reminded me of the little creators living in the forests in Norway. A troll may not be a living thing, but trolls could also be humans or machines that exist in media, especially in social media, to motivate, or sometimes to distort certain ideas." [FGI2-Orhan] "…there is an entertaining and fairly intelligent group. It is a group that trolls big companies and the web-pages of municipalities, creates an entertaining environment with the help of a very interesting message, and I think it is not that much harmful." [FGI2-Yigit]
Views about Behaviors of Trolls	
Views about Positive Behaviors	"…they may use fake accounts but give correct information. They may also give very secret and important information. And, this doesn't necessarily mean they are negative trolls as we mentioned before. That is, there could be sharing of real information without any negative aspects though it might be a fake account." [FGI2-Yilmaz] "….the media, well when you look at the media, you see Uğur Dündar [a famous Turkish journalist], and he says 'I will now tell you the words of a troll: the troll curses badly at me, and then he says it is the troll doing so.' None of them has shared any message in social media related to blood donation so far. Actually, trolls have always created negative perceptions whether they are real or not. As an academician, I have just recognized this during this interview. However, I always have thought so. I have always thought that there is something fishy if it comes from the troll. I don't know, but we generally have such perception." [FGI1-Cemil]
Views about Negative Behaviors	"…they don't reply to you, and their arguments or instruments could be visual and could even be a name. It associates what they defend. And you understand that because it is a speculation or manipulation. In fact, the number of these criteria could be increased…" [FGI1-Mert] "…trolls can do it for their own benefit although they believe it is not correct. It is something different. I didn't want to say that what science says is absolutely true. But, they believe in something, and they want to transmit their thoughts to us. And the other is a group of people who do so because they are paid. That is, I believe there are somehow negative perceptions regarding trolls." [FGI1- Cemil]

The Faculty Members' Use of Ways for Understanding a Troll

Thanks to the first question, the faculty members' views about a troll as an individual and about trolls' behaviors were found out. Following this, the next question was direct to the faculty members to see how they understood whether a message they met in social media included any trolling behavior or not.

In line with the data collected via the focus group interviews, the faculty members' strategies in relation to understanding the trolls in social media were examined under the categories of content, source and personal qualifications (Table 5).

Table 5. Strategies used by faculty members to understand trolls

Content
Deceptiveness
Lack of flexibility
Reliability
Logicalness
Source
Trustworthiness
Privacy
Being a single-centered
Seeking for financial benefits
Troll-related background
Personal Qualifications
Expertise
Digital Wisdom
Experience

Content

The faculty members point out that the content of the message delivered in social media should be interrogated to see whether it was sent by a troll and to understand a troll's behavior. The participants considered the interrogation of content under the sub-themes of deceptiveness, lack of flexibility, reliability and logicalness.

Deceptiveness

The faculty members stated that individuals would feel obliged to be cautious against the content of a message if it included such deceptive elements as subjectivity and directivity or if it included speculative and provocative elements regarding social issues. The faculty members stated that when they met the presentation of a content as mentioned above, they could determine trolls and trolling behaviors by carefully examining the people who provided that content.

Lack of flexibility

Another strategy used by faculty members to understand trolls is to evaluate whether the content is exact, stiff or flexible. If the content views a subject from a single point and rigidly closes itself to other viewpoints, then it is believed that the content tends to include trolling behavior.

Reliability

According to the data collected via focus group interviews, confirming the consistency of a content with current scientific, historical and up-to-date information and determining whether this content includes the behavior of trolling is used as an important method by faculty members to determine whether the content includes any trolling behavior or not. Examples for the methods used under this sub-theme include interrogating the reliability of a message with scientific sources, confirming the consistency of a message shared by a person

with the daily-life sharings of that person, and evaluating whether the content shared is confirmed or supported by historical information.

Logicalness
If a content presented in social networks involves logical mistakes, then faculty members are likely to have doubts about whether the person sharing that content is a troll or not.

Source
In order to identify a trolling behavior in social media, faculty members reported that it would be necessary to investigate the source of the message besides examining that message. In this respect, the source, or the person demonstrating the trolling behavior, and certain characteristics of that person/source gain importance. The participants focused on the main theme of investigation of the source under five different sub-dimensions: trustworthiness of the source, privacy, belonging to a single center, troll-related backgrounds, and seeking for financial benefits.

Trustworthiness
Under the main theme of interrogation of the source, the sub-theme that the participants considered most important was the sub-theme of trustworthiness. In order to determine the trustworthiness of the source, the participants stated that they tried many different ways. While interrogating the trustworthiness of the source, most of the participants reported that they consulted people in their environment or in social media whose knowledge about the subject they trusted.

Another method of interrogating the source was confirming whether the people considered to demonstrate trolling behavior had fake or real social media accounts. In relation to this, the participants stated that they tried to learn whether the personal information provided by the account owner belonged to a real person or whether it included a speculative image or not. In addition, in order to determine whether the account was fake or not, the participants reported that they followed the account owners' statements in real life.

Privacy
According to the participants' views, the data regarding the accessibility and privacy of the source considered to demonstrate trolling behavior are important to determine whether that source is a real troll or not. A great majority of the participants stated that while determining whether an individual is a troll or not, they took the accessibility and permanency of the social media accounts of the suspected individual into account.

Being single-centered
Most of the faculty members defined the concept of troll not as a single person but as a group of individuals who came together for a common purpose. Depending on this definition, the participants claimed that these group members were dependent on a single person/center. The participants, who stated that images were used in a way to serve a common purpose even though the visuals or texts used in a content shared in social media vary, regarded the sources of such contents they believed to spread from a single center as a troll.

Seeking for financial benefits
According to the faculty members, in order to determine whether a source demonstrates a trolling behavior or not, it is important to evaluate whether that source takes financial advantage of the content that try to make spread.

Troll-related background

One of the faculty members stated that while determining whether an individual in social media demonstrate a trolling behavior or not, it is important to focus on the connection of that person with other individuals already considered by the society to be a troll. The participant also reported that there are troll network maps formed by different sources on the Internet and that one can understand whether suspected individuals are trolls or not by examining these maps.

Personal Qualifications

Regarding the main theme of interrogation of personal traits, the faculty members focused on the cognitive and affective efficacies of an individual while determining whether an individual is a troll or not. According to the faculty members, these efficacies included: (1) field knowledge about the content of the message shared by the troll, (2) awareness of such affective issues as common sense, feelings and knowledge, that is affective wisdom, and (3) existence of situations experienced by the individual in the past, that is experiences.

Expertise

The faculty members stated that determining whether a message shared in social media involves trolling or not could be difficult most of the individuals in a society. However, as faculty members, the participants believed that they would not have any difficulty understanding whether a trolling behavior was demonstrated by a troll or not if the message shared by that troll belonged to their own field of interest. In relation to this one of the participants stated;

> *"we should view the issue from a scientific perspective if we are, as an academician, investigating a trolling behavior for research purposes, and we should view it from a different perspective if we are speaking in public. It will be quite easy to determine whether a troll is really a troll if it belongs to your field of interest and if we are talking about it among us as academicians." [FGI1-Metin].*

When the views of the participants were examined, it was seen that there was an obvious gap between individuals in a society and faculty members. The participants explained this gap saying that as required by their profession, they were individuals who criticized and interrogated the information rather than just accepting the information as it was.

Affective wisdom

Some of the participants stated that while determining the trolls, made use of cognitive processes as well as such affective factors as common sense and feelings.

Experience

In relation to determining whether a message involved a trolling behavior or not, one of the faculty members stated that one could refer to his or her past experiences.

Table 6 presents direct quotations regarding such strategies as content, source and self-knowledge used by faculty members to identify the trolls in social.

Table 6. Direct Quotations of Strategies Used

Main Themes	Sub-Themes	Samples of Faculty Expressions
Trolling as content	**Deceptiveness**	"And they appear in irrelevant situations and try to direct people. You always realize there is something interrupting the flow, and when the subject changes, they intervene this change and try to keep talking about the same previous subject." [FGI1 - Mert: Manipulative content] "... or, well, when the discussion turns into a certain ideology or ethnicity or in cases of a slogan, then you understand it." [FGI2 - Yigit: Speculative content]
	Lack of flexibility	"But as you read, you understand it. There are clear-cut judgments and inflexible sayings. They do not provide an alternative, and at that time, you understand it." [FGI1 - Gul]
	Reliability	"You immediately believe what he wrote or what he wanted to do. If you believe it by heart, then they really take control over your brain, and you just start to obey them. Thus, you have to be cautious and analytic. I think especially in this social media, you shouldn't immediately get engaged with this social media." [FGI2 - Ahu]
	Logicalness	"Probably, as required by our study field, we can rapidly make correct decisions regarding this. Sometimes, we are far from this social media, but logical mistakes, or logical patterns, that we call logical fallacies... provocation... when he makes this mistake, I mean logical mistake, then you just take a step backward." [FGI2 - Yigit]
Troll as source	**Trustworthiness**	"Quite difficult, but I sometimes hear from friends, colleagues or other individuals. For example, once, when retweeted, a fellow, whom I like a lot, said this is a troll, just watch out." [FGI2 - Haydar] "I directly look at the source of the news. I click on it to see who he is, or is it a group? Who do they serve? What do they mean? ..." [FGI1 - Orcun]
	Privacy	"... especially when they share an ideological view, they just try to hide their identities, use a different profile picture... they never use their real names, and when you look at the comments, you see that they shared a message but avoided making further comments below, but other individuals make numerous comments there." [FGI1 - Asli]
	Being single-centered	"I have realized that for example in Facebook, when you look at foreigners' trolls and yours, it looks as if all these trolls share from a single center. For example, when we look at the trolls during our political elections, well, elections will be held in USA as well, that is, the same things happen. Everything happens in the same way. I mean I see the same news shared in Turkey as the news shared in USA by the trolls in relation to the conservatives. The same sayings, the same items. Thus, it appears that there is someone in the center." [FGI1 - Gul]
	Seeking for financial benefits	"They can not always hide themselves. For example, scientists, say, Pirelli, or some other companies, come to a university, a scientist, and even his name is apparent. He says, in fact I say, manipulate everything. Now, social media looks the same." [FGI1 - Gul] "... well, they use it very well for drugs (talking about drugs or other related substances). That is, live fast, die young. Well, as you know, this is done by a company." [FGI1 - Mert]
	Troll-related background	"Well, actually, those are trolls on the Internet are already obvious. Today, it looks as if a network appeared, and in that network, everyone is doing something. We can follow them via that network. We can say this person is a troll, or that one is not... As I said before, there is a general structure over that network. There is a network everywhere on the Internet. Generally, I have the chance to predict who is a troll and who is not." [FGI2 - Orhan]
Characteristics as self-knowledge	**Expertise**	"If it is a scientific qualitative study examining use of trolling in social media, then we should speak differently as an academician, and if we are speaking in public, then we should speak differently. If we are to speak in terms of education, or if it is in our own field of interest, then it is quite easy to understand whether someone is a troll or not." [FGI1 - Metin]
	Affective wisdom	"We have a common sense, or when you analyze it in some way, and if it is right for you, then you say yes, it is right."[FGI2 - Sami]
	Experience	"As I said before, mostly my personal views and experiences guide me to decide on whether it is a troll or not."[FGI2 - Sami]

The Faculty Members' Incidence with a Troll

The last interview question is aimed to address the examples of trolling that the faculty members witnessed via social media and mass-communication tools. The trolling behaviors examined in the study were classified under three main themes: political, socio-cultural and health.

Political

The interviews held with the participants revealed that trolls tended to direct the society intentionally from a certain political view to a different one. The effort to make a change in social perception is considered to be one of the important goals of trolling. It is thought that individuals do not interrogate or criticize media contents. There are statements that the target of trolling behavior is not these individuals. Another participant reported that the target of these behaviors not only includes uneducated people but also covers people with upper level educational background, and it was seen that the participant was also affected by these behaviors.

Socio-cultural

The participants reported that the cultural structure and values of a society guide trolling behaviors. The participants also claimed that trolls successfully analyze the target audience and try to transmit their ideas to others. In addition, it is thought that trolls not only aim at transmitting ideas to others but also tend to achieve provocative goals. Also, it was seen that the participants had doubts about whether the social media messages were reliable and real.

Health

During the focus group interviews, the participants reported several examples of trolling in the area of health that aimed at. In relation to delicate matters, the trolls tried to affect the target audience making use of similar experiences. The participants, while sharing their experiences, stated that they had difficulty perceiving the trolling behaviors since the internal structure of trolling involved latent identities and vague goals.

Political-Health

It is not always possible to use a classification for the presentation of the codes related to the themes formed in relation to examples of trolling during and at the end of the focus group interviews. It was seen that the participants' views belonged to three main themes and that the examples shared could be said to refer to two themes. This situation is regarded as effective performance of trolls, and it leads to anxiety in terms of its effects on the society. Some of the participants shared examples of trolling in cultural and political aspects.

Table 7 presents examples of trolling that the faculty members witnessed via social media and mass-communication tools.

Table 7. Examples of trolling

Main Theme	Samples of Faculty Expressions
Political	"Gezi Park* is a good example. The social events shared at the time of Gezi Park, the related visuals, the protests, people passing the Bosphorus Bridge on foot. In fact, the photos of those walking on that bridge were actually a photo of the people joining a marathon organized in previous years. Well, this was really a good example of trolling." [FGI2- Irmak] "If I speak a bit subjectively, there were quite good trolls at the time of the elections. They were good for me, and I shared them. However, nothing like that happened in our country." [FGI1-Isik]
Socio-cultural	"There was a very good one last week. A troll wrote a column with the name of Engin Ardıç [a Turkish journalist]. The troll imitated the writing style of Engin Ardıç, and you will certainly think it was a text really composed by Engin Ardıç. But, it was quite a provoking text, well, we try to be honest in politics... the troll had imitated so well that a number of people criticized Engin Ardıç. The troll was very successful, and it was an example of unbelievable intelligence. Rather than directly attacking the red lines of the opposition, the troll made use of a columnist, shared that text in social networking sites and reached a large number of people in just a few hours." [FGI2-Yigit] "There was a life tree project against drug abuse. I shared it on my own page. After that, six Facebook profiles with the exactly same name appeared on the right of the screen. Also, the contents were quite similar. That was really interesting for me. It was as if there was a robot, and when you want to denounce it, they disappear." [FGI1-Yeliz]
Health	"Two days ago, I saw breaking news. It says, if you have diabetes, there is quite an easy way, and you, with a great possibility, get rid of this illness. It says, lose weight, and don't get fat. But, these trolls have a somewhat good side. They make you feel very well. It says, he is 150 kilos, and it will help recover from this illness without losing weight. Well, you really want to believe in this." [FGI1-Metin] "There was a foreign group. For a long time, they demonstrated a trolling behavior in relation to removing the ban on marihuana. It cured cancer, and it was beneficial for stomachache... because my father died of cancer. At that time, for example, if they had said there was something like that, well, you really become emotional because the patient is your father." [FGI1- Gul]
Political-Health	"Let me give examples from the past. Now, when you asked in that way, well, was there a troll in those days? There was an old woman selling lentils, do you remember her? -talking- Thanks to her, people ate lentils as a meal. She was so beneficial that, she was a troll at that time. Well, she appeared on TV, and we, of course, learned it later that the amount of lentils was too much in the country in that period. The question of 'What can you cook with lentils?' directed Turkish Republic... Well, it was actually correct. The troll appeared on TV. But now, these two examples, well, I used one of them a lot, too, and I think this had a trolling feature as well" [FGI1- Vedat]

*An environmental protest to save the trees in Gezi Park, Istanbul, turned into a countrywide fullfledged uprising against the government as a result of the use of teargas and water cannons during the police raid (Varnali & Gorgulu, 2014)

The Faculty Members' Feelings about the First Trolling Phenomena

In this part, the participants' reactions to troll behaviors when they first met these behaviors were gathered. It was striking that few participants reported positive feelings. The fact that the faculty members had high levels of perception and judgment skills in general and specially in their own fields did not cause them to stay away from these behaviors. According to the following quotations, two of the participants defended themselves strongly against such behaviors and managed to avoid trolling behaviors.

> *"Well, I just smiled sarcastically"* [FGI1- Metin]
>
> *"Well, we are not that stupid. I didn't make any mistake ..."* [FGI2- Ahu]

In this part, which mostly included negative feelings, such feelings as "anger", "furiousness", "embarrassment", "confusion", "cursing", "entrapping", "being a sucker", "surprise", "restlessness", "dishonesty" and "shyness" were more frequently reported by the faculty members. In this respect, it would not be appropriate to say the target audience of trolls includes uneducated people. Therefore, trolling could be said to be boring and saddening and to bring about such emotions as annoyance. In addition, according to the quotations below, the fact that the faculty members were in such a situation led to questioning.

> *"We attend a university, and we then believe in trolls... I totally find it nonsense."* [FGI2- Orhan]
>
> *"I really laughed a lot at myself... We talk about it during lessons, but I myself believed in it."* [FGI1- Gul]

DISCUSSION

This study tried to highlight the faculty members' point of view on trolls. In doing so the researchers tried to understand the faculty around 4 main issues regarding trolls;

- ➢ faculty members grasp of the meaning of what a troll is
- ➢ faculty members' strategies for understanding a troll
- ➢ faculty members' personal incidences with a troll
- ➢ faculty members' feelings about their experiences with a troll.

The findings revealed that the faculty members were familiar with a troll and they used different metaphors to talk about trolls. This use of metaphors for trolls indicated that they had sophisticated ideas to represent trolls within a symbolic system. The most striking point on trolls was that the faculty members were aware of the fact that trolls can convey positive attitude as well as a negative one and that does not alter the reality of them being a troll. Parallel to this claim was that the faculty members thought that the trolls are intelligent, extraordinary and creative people who are technology-minded.

As far as the faculty members' strategies for understanding a troll is concerned, they relied on content and source of trolls and their personal qualifications correspondingly. Faculty members said that they would crosscheck for the accuracy of the content and source and believed that their expertise and study field would help them to comprehend the reliability of trolls. They also revealed that they were rather hesitant to accept information at first sight and believed that it was their insight or digital wisdom that kept them from accepting information without questioning it.

The faculty members' incidences of trolls were mostly political, socio-cultural or health wise in content. They believe that it is due to the culture they live in since these issues arise more influential feelings in people in this side of the world. Based on these feelings the faculty members' senses on their experiences with a troll were listed as anger, confusion, shame, feeling trapped and waste of time. Cynicism was also a feeling to resort to.

The researchers' recommendations for further studies on trolling covers; handlings seminars on digital wisdom, digital accuracy and digital literacy for faculty which will help them master an understanding of trolling behavior on media. Any professional development opportunity on social media that involves up to date knowledge is a benefit for the faculty. An information ethics course covering privacy, property, accuracy and accessibility should also be a priority for other researchers who would like to convey information on social media.

CONCLUSION

Although people at the beginning chose to use Internet for the anonymity it offered (McKenna & Bargh, 2000) as the practices have improved the anonymity issue has become to be a disadvantage. Social media as a part of Internet has not much to do with traditional media use (Correa, Hinsley, & De Zuniga, 2010). Many studies on social media use have concentrated on personality traits, demographic variables, and attitudes. However almost none of them were carried out with the faculty members understanding regarding trolls.

The above discussion has inspired that the faculty can be surveyed into trolls more deeply, and thus gave the researchers a motivation that the faculty members can be investigated in their perceptions of social media. From the analysis it can be understood that the faculty members do not assign trolls into strict categories as being totally evil or an angel but admit the intelligence level in them. This may be in accordance with Coles & West's (2016) research carried out in online sources. However, this situation should not be associated with the characteristics of trolls but rather with the visionary attitudes of the faculty members. Other studies carried out with different groups of participants may place trolls into different labels. Overall the researchers in this paper feel that they have contributed to research of new realities of social media, trolls and in doing so they referred to the faculty members an underused population in this kind of research.

The study was a satisfactory experience for the researchers in getting together with their colleagues on a popular issue in a research medium. The researchers are planning to continue to work on the issue by developing a scale for trolling behavior in a future study.

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LOYALTY, TRUST, SATISFACTION AND PARTICIPATION IN UNIVERSITAS TERBUKA AMBIANCE: STUDENTS' PERCEPTION

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ABSTRACT

Factors affecting the loyalty of students in Universitas Terbuka are investigated in this paper. The aim was to elucidate how all the variables such as trust, satisfaction and participation interrelate with one another. Loyalty was the dependent variable; trust, satisfaction and participation were the independent variables. Data were accumulated using instruments in the form of questionnaires. The population was students registered in the first semester of 2014. Respondents were taken purposively from 22 of 37 regional offices throughout Indonesia, representing the western and middle part of the country; 1,099 questionnaires from respondents were finally completed and processed. Two hypotheses were established and then assessed. Statistically, factor analysis, correlation and multiple regression were thoroughly utilized to comprehend the interaction and behavior of all variables engaged. The results showed that loyalty is significantly influenced by trust, satisfaction, participation and interaction between the independent variables. However, three out of four interaction variables contributed negatively to loyalty. Besides, the variances of independent variables, including their interactions, explain 60% of loyalty's variance.

Keywords: Loyalty, trust, satisfaction, participation.

INTRODUCTION

A customer is a person who buys a product or uses a service. Basically, producers hope to have many customers. In fact, there are so many similar products or services that customers can buy. What is the strategy to attract more customers? There should be a way to catch customers' attention. Many kinds of research show that producers should create customer loyalty. To a certain extent, loyalty is usually related to satisfaction, trust and other factors.

Whenever customers are satisfied with a product or services, they will buy or use them again. This happens because what they expect is at least similar to what they perceive (Kottler, 1990). Like the product, a customer will come or buy goods or use a service in a certain store or company when they are satisfied by the services (Tariq *et al.* 2013; Gronroos, 2001; Parasuraman, Zeithaml & Berry, 1988). Therefore, quality of products and quality of services plays an important role in capturing customers' loyalty.

It can be anticipated that services and satisfaction have strong relationships since services have an impact on satisfaction. Good services create high satisfaction; bad services create low satisfaction. Customers will buy or use the same product or service when they are satisfied with the quality (Tariq *et al.* 2013; Anthanassopoulus, Gounaris, & Sathakopoulus, 2001; Selnes, 1993; Bloemer & Ruyter, 1998). This situation is known as customer loyalty to

a certain product or service. Customer loyalty is a creation of an organization which gives an added value to the customer and has an impact so that customers will still give their business to the organization (Jensen, 2011; Anderson & Jacobsen, 2000).

For educational institutions, their customers mostly are students. Schools or universities are interesting places and the focus of many students if the schools are very good at giving the best product or service with successful alumni. Students also will look for educational institutions which offer excellent quality of services.

One of the educational institutions in Indonesia is Universitas Terbuka (UT). This university offers open and distance learning (ODL) where the students mostly learn by self-learning using various materials, written or electronic-based. The students do not need to come to certain places to study. They can study anywhere by using modules or the Internet. They can also involve in face-to-face tutorials or online tutorials.

ODL students are expected to be self-learners. They can participate in activities initiated by the university such as tutorials, seminars, or other curricular activities. This participation is of importance to the students. How do ODL students' learning experiences in participating in learning activities compare to face-to-face students? This question is hard to be answered because of two different circumstances of students (Chen, Gonyea & Kuh, 2008). Participation, according to Jung *et al.* (2002), is very much related to satisfaction.

It cannot be avoided that the more diligent students are, the more subject matter they can master. An indication of subject matter mastery is students' grades in examinations (Duckworth, Quinn, Tsukayama, 2011; Crocker & Algina, 2006). Having engaged in tutorials, discussions and other academic activities, it can be highly expected that students are more motivated to study harder.

There is also information related to customer and producer; it is called trust. This is something important that will influence long-term relationships (TRIF, 2013; Rousseau, Sitkin, & Camerer, 1998; Singh & Sirdeshmukh, 2000). Trust is the readiness of one party to believe in its partner related to their business (TRIF, 2013; Moorman, Deshpande, & Zaltman, 1993). When one-party trusts its companion whom it will give an advantage then trust can be developed (Anderson & Narus, 1990). This positive result will be continued to the next business (Doney & Cannon, 1997).

From these theories, it can be seen that there is a relationship between loyalty, trust, satisfaction and participation. The question is what would be the behavior of their relationships? In this paper, loyalty is the dependent variable. In contrast, trust, satisfaction, participation and their interactions are the independent variables.

LITERATURE REVIEW

Loyalty could be influenced by some factors such as participation, satisfaction and trust. Some literatures related to loyalty and those factors are discussed below.

Participation

Customer participation has a relationship to customer loyalty (Solem, 2016). Study from Holland and Baker (2001) showed that "how consumers' goals in visiting a website (task or experiential) affect their propensity to be site brand loyal and how characteristics of the site, including personalization and community, are related to brand loyalty". Customer could be anyone. Therefore, it could also be students. In their study, Zuo and Ratsoy (1999) concluded that students have an ability in doing their plans, accommodating other students'

plan, and helping other students to reach their needs. They also found that students who were involved in organization had much greater influence than did students in general. Student must develop and sharpen their decision-making skills and commit to the plan which they have in order to be used in their future.

Satisfaction

According to Rizan, Warokka & Listyawati (2014), Grönroos (1994) and Sheth & Parvatiyar (1994), there is a shifting paradigm from transactional marketing to relationship marketing which influences customer satisfaction. This means that transactional marketing does not guarantee that the customer will buy the same product in the future. Transactional marketing just sells the product without taking an attention to the customer services. Soliman (2011), Morgan & Hunt (1994) stated the importance of keeping the relationship to the customers, especially when they had already bought the product.

Many research results have been published and stated that customers' satisfaction is needed in order to keep the customers not to go to other products (Angelova & Zekiri, 2011; Rust & Zahorik, 1993). The key to maintain the customers is by keeping their satisfaction as high as possible and tries not to disappoint them at all (Angelova & Zekiri, 2011; Kotler, 1994). Because of that reason, customer satisfaction becomes a construct in monitoring and controlling activities in business by using relationship base (Long, Khalafinezhad, Ismail, & Rasid, 2013; Anderson, Fornell, & Lehmann, 1994; Fornell, 1992).

Liljander & Strandvik (1993) stated that experience in buying a product is not needed in judging the service quality. Evaluating a service can be done by evaluating a service from the provider. However, according to those researchers, customer satisfaction is customer evaluation based on their experienced in the service which they received from the provider. According to Parasuraman et al. (1998) satisfaction is customer feeling as an impact from service given by provider. Therefore, the statements or the questions related to customer satisfaction should be asked to those who already had experience in buying the products/services from the provider.

Trust

Some researchers such as Sarwar, Abbasi, & Pervaiz (2012), Garcia & Valor (2007) and Thompson & Thompson (2003) mentioned that trust had an impact to loyalty. Morgan & Hunt (1994) stated that there are some serial actions in buying a product which can show a relationship between trust and commitment. Customers who trust a provider and have high commitment most likely be loyal customers. It is important for the providers to build customer trust by giving their best services.

Loyalty

Organizations need to develop customer loyalty in their activities. As mention before loyalty is an important factor for the organization in order to the customer to buy their product intentionally. Ladhari *et al*, (2011) defined loyalty as a deeply held commitment. It is considered as a critical determinant of profitability. According to Reichheld and Sasser (1990) a 5 per cent increase in customer retention can enhance profitability by $25 - 85$ per cent. In order to keep customer retention, there should be no defect in giving services for the profitable customers. "Profitability results from growth in revenue and market share (for example, referrals and repeat purchases), lower costs of acquiring and serving net customers, and increased productivity" (Reichheld, Markey, & Hopton, 2000).

Hypotheses

> ➢ There is a positive correlation between Loyalty, Trust, Satisfaction and Participation.
> ➢ Trust, Satisfaction and Participation contribute significantly to Loyalty.

RESEARCH METHOD

The population was all UT's students who registered in the first semester of 2014. The sample was UT's students (as customers) who came to UT's regional centers to solve problems related to their admission process. Respondents were recruited using purposive sampling. According to Parasuraman Zeithaml, and Berry (1985) latent variables such as Services cannot be measured directly. To measure these kinds of variables, researchers need to measure customer perception. To measure students' loyalty, students' trust, students' satisfaction and students' participation, an instrument was developed. The scale was 5 (Likert scale). The research instrument then was distributed to these students.

Theoretically, the relationship between variables is shown in Figure 1. All possible relationships, including the relationship between interaction variables and loyalty are drawn. Interaction between participation and satisfaction which influences loyalty means that satisfaction influences loyalty by considering the influences of participation on satisfaction. In this figure, the ellipses contain latent variables, and rectangles contain indicators.
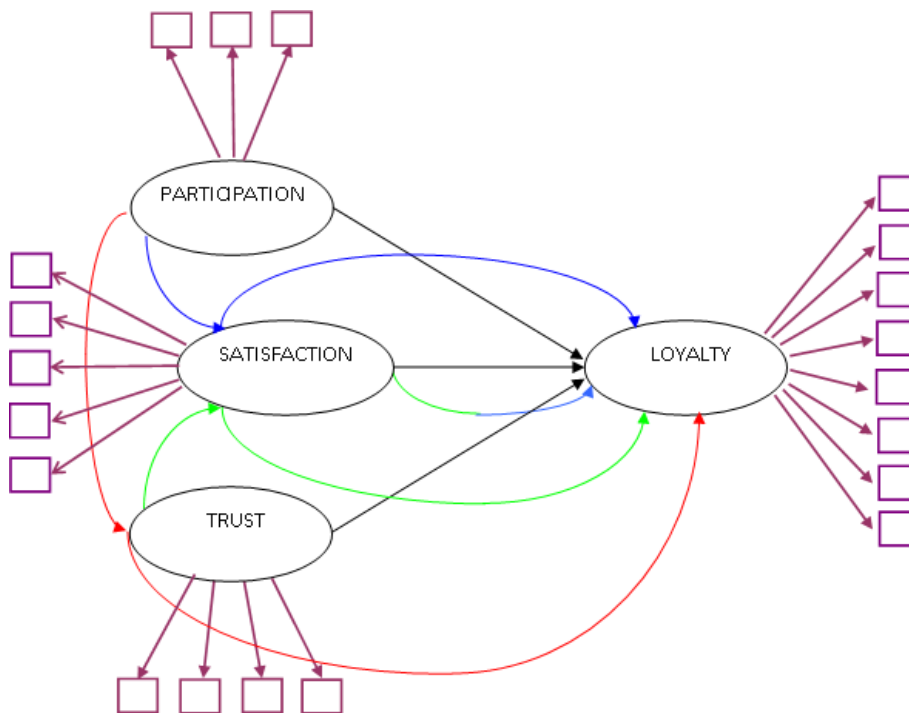

Figure 1. Relationship among variables

All indicators in each variable were factorized by using exploratory factor analysis. If the items in each variable are correct, then they will form one factor only. Otherwise, they measure at least one other factor.

Each factor (latent variable) has a mean value = 0 and variance = 1. This means that the majority of the data for each latent variable will be around zero. For computation, all values in each interaction variable were shifted three points to the right. By doing this, most of the data would be around 3 with variance is still equal to 1. Without shifting the data, there is a chance that (-a) times (-b) is exactly the same as (a) times (b). Even if the result is equal, the meaning is different. After these factors were formed, the next analyses were correlation and multiple regressions.

Theoretically, there is a chance that some independent variables are correlated. Furthermore, the theory says that they are related each other. As a consequence, this relationship will influence the process of forming a regression equation. The function of correlation analysis here is to see how strong the correlation between variables is.

In the regression process, if two independent variables are correlated and both influence the dependent variable, then the variable with the smallest contribution will be thrown out from the equation. Here, the regression analysis is to determine the mathematical relationship between trust, satisfaction, and participation, and their interaction with loyalty.

RESULT

Based on the validity test of items in the instrument, the correlation coefficient between item and total items in each latent variable was significant at $p < 0.01$. In addition, the instrument was reliable. This information can be seen in Table 1.

Table 1. Validity and reliability of the instrument

	Coef. Correlation	Cronbach Alpha
Participation		**0.745**
• Active in Extra Curricular	0.780**	
• Intensive Communication	0.829**	
• Active in Work Group	0.865**	
Satisfaction		**0.896**
• Faculty Services	0.858**	
• Study Programme Services	0.851**	
• Quality of Teaching-Learning	0.817**	
• Quality of Facilities	0.837**	
• Services Quality	0.837**	
Trust		**0.827**
• Similarity with F2F University	0.713**	
• Give the Best	0.829**	
• Trust on Staff	0.869**	
• Promising	0.829**	
Loyalty		**0.905**
• Still Study at UT	0.742**	
• Ask others to be UT students	0.773**	
• Must finish the study in UT	0.799**	
• Be a Member of Alumnus	0.802**	
• Relationship with UT	0.804**	
• Proud of Study Programme	0.788**	
• Proud to be UT's Student	0.799**	
• Even though it is hard, students want to finish their study in UT	0.711**	

**) significant at $p < 0.01$

There were 1,099 respondents from 22 regional centers who completed the instrument. The respondents represented the west and middle of Indonesia. None of the students from eastern Indonesia sent the instrument back. These respondents were mostly students who came to regional centers and had problems with their admission process. In fact, some students did not give responses to some statements.

Table 2 shows the result of the exploratory analysis factors. The number of factors which was formed for each construct variable is one. From Table 2, the smallest Kaiser-Mayer-Olkin

(KMO) value is larger than 0.600 which is still acceptable for running the exploratory factor analysis. Furthermore, Bartlett's tests for all latent variables show that they are significant at $p < 0.01$. This means that factor analysis could be run because the matrix correlation of indicators was not an identity matrix.

Table 2. Exploratory Factor Analysis Result

Latent Variable	KMO	% of Variance Explained	Number of Indicators
Participation	0.609	69.123	3
Satisfaction	0.833	70.564	5
Trust	0.768	65.956	4
Loyalty	0.909	60.531	8

Table 3 shows the coefficients' correlation between latent variables. It can be seen that all independent variables are correlated with each other and significant at $p < 0.01$. These variables, including their interactions are also correlated positively and significantly to loyalty.

Table 3. Correlations between Participation, Satisfaction, Trust, and Interaction Variables and Loyalty

		Participation	Satisfaction	Trust	P*T	P*S	T*S	P*S*T	Loyalty
Participation (P)	Pearson Corr.	1	.536**	.513**	.861**	.864**	.573**	.784**	.510**
	N	1072	1070	1069	1069	1070	1067	1067	1062
Satisfaction (S)	Pearson Corr.	.536**	1	.767**	.734**	.850**	.914**	.825**	.713**
	N	1070	1089	1082	1067	1070	1082	1067	1073
Trust (T)	Pearson Corr.	.513**	.767**	1	.841**	.716**	.909**	.811**	.719**
	N	1069	1082	1086	1069	1067	1082	1067	1072
P*T	Pearson Corr.	.861**	.734**	.841**	1	.926**	.854**	.957**	.675**
	N	1069	1067	1069	1069	1067	1067	1067	1060
P*S	Pearson Corr.	.864**	.850**	.716**	.926**	1	.854**	.959**	.671**
	N	1070	1070	1067	1067	1070	1067	1067	1060
T*S	Pearson Corr.	.573**	.914**	.909**	.854**	.854**	1	.923**	.731**
	N	1067	1082	1082	1067	1067	1082	1067	1069
P*S*T	Pearson Corr.	.784**	.825**	.811**	.957**	.959**	.923**	1	.682**
	N	1067	1067	1067	1067	1067	1067	1067	1058
Loyalty	Pearson Corr.	.510**	.713**	.719**	.675**	.671**	.731**	.682**	1
	N	1062	1073	1072	1060	1060	1069	1058	1076

** Correlation is significant at the 0.01 level (2-tailed).

Trust and satisfaction correlated with each other with a coefficient $r = 0.767**$. Meanwhile, trust and satisfaction were also significantly correlated with Loyalty with a coefficient $r = 0.719**$ and $r = 0.713**$. These coefficient correlation values were big enough in order to influence the regression equation.

Table 4 shows the regression equation. This equation includes the interaction variables. It can be seen that all independent variables significantly contributed to students' loyalty with $p < 0.01$. However, three of four interaction variables had negative signs in regression coefficients.

Table 4. Regression Equation between Participation, Trust, Satisfaction and Loyalty

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.753	.280		-2.684	.007		
	Participation (P)	.584	.119	.582	4.903	.000	.027	36.982
	Satisfaction (S)	.686	.121	.688	5.649	.000	.026	38.933
	Trust (T)	.801	.134	.802	5.968	.000	.021	47.474
	P*T	-.154	.049	-.797	-3.165	.002	.006	166.401
	P*S	-.124	.045	-.643	-2.721	.007	.007	146.387
	P*S*T	.039	.014	.921	2.766	.006	.003	290.817
	T*S	-.109	.042	-.579	-2.627	.009	.008	127.675
Dependent Variable: Loyalty								

Coefficients

The equation is:
Loyalty=0.801 Trust+0.686 Satisfaction+0.584 Participation+0.039 Participation*Trust*Satisfaction − 0.109 Trust*Satisfaction − 0.124 Participation*Satisfaction − 0.154 Participation*Trust − 0.753.

A rule of thumb is that if VIF > 10, then the multicollinearity is high (Kutner, Nachtsheim & Neter, 2004). Since all independent variables have VIF > 10, all of them were highly correlated. This information can also be seen in Table 3 where all of them are significantly correlated with each other. The minus sign in the regression equation is suspected that because they are highly correlated then most of the positive parts were taken by Participation*Satisfaction*Trust and other interaction variables took the residue which is negative parts (means that if the value in one variable goes up/ down then the value in another variable goes down/ up).

Table 5. Coefficient of Determination (R^2)

			Model Summary	
Model	R	R Sqr	Adjusted R Sqr	Std. Error of the Estimate
1	.775[a]	.600	.597	.63629

a. Predictors: (Constant), T*S, Participation, Trust, Satisfaction, P*S*T, P*S, P*T

From Table 5, all independent variables, including the interaction variables have common correlation with loyalty as large as r = 0.775. In other words, variances from these constructs explain 60% of loyalty variance.

DISCUSSION

According to Hsu & Chen (2014), customer participation plays an important role in service. Participation is an active engagement process which can be divided into five categories: preparation, contribution to discussion, group skills, communication skills, and attendance (Dancer & Kamvounias, 2005). If the students have a high GPA, students' participation is strongly related to self-efficacy (Galyon, *et al*, 2012). When interactions among students and interactions between students and tutors are often then students will be motivated to participate in many activities (Jung *et al.*, 2002). It is true that the more diligent students are, the more subject matter they can master. According to Crocker & Algina (2006) the degree of subject matter mastery can be measured by using valid and reliable assessment.

By involving in tutorials, discussions and other academic activities, it can be highly expected that students are more motivated to study harder. Students' participation is also an indicator of loyalty level and students' satisfaction (Chen, Gonyea & Kuh, 2008). Therefore, students' participation, students' satisfaction and trust will influence students' loyalty (Kunanusorn & Puttawong, 2015). These relationships appear in Table 2 where they are significantly correlated with each other.

Students who involved their learning strategies, problems and solution in online learning process had more satisfaction compare to those who did not (Sahin, 2007; Burke, 2011). Interaction between students and instructors in online learning had an impact to students' success and students learning (Joyner et al., 2014; Areti, 2006; Chen & Guo, 2005; Schmidt & Gallegos, 2001). This finding showed that participation influenced students' satisfaction. Support from tutors can motivate students to learn much harder.

Participation*Trust*Satisfaction has correlation with Loyalty as large as r = 0.682**. However, this interaction variable has the biggest correlation with other interaction variables which are Participation*Trust, Participation*Satisfaction and Trust*Satisfaction (with r ≥ 0.923**). Since these three interaction variables share more than 85.2% of their variances, then Participation*Trust*Satisfaction took the highest variance to contribute positively and significantly to loyalty.

Trust*Satisfaction has the biggest correlation with Loyalty (r = 0.731**). This interaction also has large and significant correlation with Participation*Trust*Satisfaction (r =0.923**). However, Trust*Satisfaction only has a correlation smaller than 0.9 with Participation*Trust (r=0.854**) and with Participation*Satisfaction (r=0.854**). Since more than 85.2% of variance is already taken by Participation*Trust*Satisfaction, then the rest of the variance could probably explain the negative impact of Trust*Satisfaction to loyalty.

Participation*Satisfaction has r = 671** with Loyalty. This Participation*Satisfaction has large correlation with Participation*Trust*Satisfaction (r = 0.959**) and with Participation*Trust (r =0.926**). However, Participation*Satisfaction has lower correlation with Trust*Satisfaction (r = 0.854**). Since more than 85.2% of the variance of Participation*Satisfaction has already been taken by Participation*Trust*Satisfaction then Participation*Trust could took the negative parts of the rest of the relationship.

Participation*Trust is significantly correlated with loyalty (r = 0.675**). In addition, this variable is strongly correlated with Participation*Trust*Satisfaction (r = 0.957**) and with Participation*Satisfaction (r = 0.926**). However, Participation*Trust has lower correlation with Trust*Satisfaction (r = 0.854**). Because more than 85.2% of its variance is already taken by Participation*Trust*Satisfaction then Participation*Satisfaction could take the rest of its relationship to explain the negative impact on loyalty.

For every educational institution, especially UT in this case, students' loyalty must be considered as an important factor. Students' loyalty is influenced by some other factors, such as students' satisfaction, students' participation and students' trust. Meanwhile, some research shows that customers' loyalty is important in attracting customers. In addition,

satisfaction, participation, and trust influence each other. As a consequence, these three entities should also be considered and should be improved in order to increase students' loyalty. Educational institutions cannot avoid them.

CONCLUSION

All latent/ construct variables are positively and significantly correlated with each other. In addition, all independent variables, including interaction variables contribute significantly to Loyalty. Furthermore, 60% of variance in Loyalty can be explained by Trust, Satisfaction, Participation,Participation*Trust*Satisfaction, Trust*Satisfaction, Participation*Satisfaction, and Participation*Trust.

This educational institution cannot avoid the factors such as students' loyalty, students' participation, students' trust and students' satisfaction. They are related, and they also influence each other. Improving loyalty means that educational institutions simultaneously promote satisfaction, trust and participation become much promising. By improving them, institution will also upgrade all services that they offer.

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INITIAL PERCEPTIONS OF
OPEN HIGHER EDUCATION STUDENTS WITH
LEARNER MANAGEMENT SYSTEMS

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ABSTRACT

Learner management systems (LMS) are used in open education as a means of managing and recording e-learning facilities as well as improving student engagement. Students benefit from them to become active participants in the decision-making process of their own learning. This study aims to investigate the initial perceptions of students experiencing the LMS for the first time in the Open Education System of Anadolu University with the purpose of identifying the effective and ineffective aspects of it from their perspective and their demands and suggestions for how to improve their the engagement in the system. To do this, an interpretive qualitative case study research design was used in order to focus on individual contexts and perceptions formed within those contexts. According to the findings, students were found to have highly personalized and customized user habits and engagement levels with the LMS depending on their varying ages, occupational statuses, IT capacities, and educational backgrounds. In terms of their satisfaction with the LMS, the quality, quantity and variety of content in LMS was found to have a major influence on their initial perceptions of satisfaction.

Keywords: Learner management systems, distance education, learner satisfaction, higher education, educational change.

INTRODUCTION

The advancements in technology come together with inherent characteristics of innovation, diversity and socio-technological dynamism, which create new possibilities for higher education that still need to be explored (Hesterman, 2016). Distance education is one of them, since it has become critical in terms of addressing the educational needs of adults and disadvantaged individuals. Today distance education has naturally been embellished with online features. Online education has recently been an indispensable component of formal education as well as distance education programs. The inclusion of an online component into an existing distance education program largely based on print material is usually possible through the adoption of an e-learning perspective.

E-learning is a planned process that takes place in a different environment than a regular school and thus it requires a special understanding of course design and instruction together with a particular need for a special organisational and administrative approach (Moore & Kearsley, 2007). Similar to educational management, the management of e-learning also comprises of components of planning, organisation, coordination and control of space, time, financial resources, human resources and information in a way that would not fall out of pedagogical principles (Oliveira, Cunha & Nakayama, 2016). The fact that e-learning needs to be managed and organised led to the development of Learner Management Systems (LMSs), which are used to automate the administration of the courses, record student use and student learning process. A strong LMS is expected to

centralize and automate administration of e-learning activities, use self-service and self-guided services, assemble and deliver learning content rapidly and accurately, support mobility, personalize content and enable reuse of it (Vazquez-Cano & Garcia, 2015). An LMS offers various benefits to different stakeholders in the system. Alsop and Tompsett (2002) reported that for policy makers LMS may offer operational benefits such as integration with other management systems like financial or student records, or some strategic opportunities. Significant student data can be extracted from learner analytics, and help educational policy makers to improve student engagement. From the students' perspective, LMS provides opportunities to them to play an important role in the educational activity of making decisions about and managing their own learning, in a way to construct their own learning.

Research on LMS as an e-learning innovation contributes to a better understanding of how to facilitate student learning in an online tertiary education environment, which is supposed to facilitate students' use of different resources and multimodal means. Given the diversity of learners in a distance higher education system with different educational histories, occupational statuses, ages and learning styles and preferences, with a pedagogy of multiliteracies, the LMS is expected to promote a socially and culturally responsive curriculum (Kress & Van Leeuwen, 2011). The flexibility of time and place provided by e-learning is strengthened through LMS. Both the benefits to the administrators and the path it opens to students to direct their own learning has led many higher education organisations world wide to initiate policies to adopt an LMS. In most cases LMS is used on-campus to support formal education or offered as an alternative to it to the interest of some learners who do not want to or cannot commute to campus. In other cases LMS is used as the ground for the facilitation of e-learning for a distance education system.

The ways to plan, organize, manage and control a higher education organization need to be different from that of a regular organization due to its peculiar nature. Likewise, the management of e-learning must be different from regular education. Despite the distinct natures of both, the educational management of e-learning still requires the managers to perform the functions of planning, organization, direction and control in order to manage the resources such as facilities, space, time, money, information and people (Oliveira, et. al., 2016). An LMS, thus, is a great opportunity for managers of e-learning to improve their planning, execution, and evaluation functions of management, especially when it is a well-defined and well-built pattern.

As for this evaluation, or control function, measuring the effectiveness of e-learning systems has become a significant issue both in practice by policy makers and in research. However, there is still a lack of clear theoretical definitions on the relationship between the LMS and the e-learning management. It was noticed that different technological platforms are treated in a generic way and that there is little empirical research focused on the topic (Oliveira, et.al., 2016). In addition, the lack of critical investigation of the LMS used in some universities led to waste of resources and unfulfilled expectations which later turned out to be organizational failures (Pratt, 2005). Although a bulk of research has been published lately on learning in distance education, the area of management and organization of distance education has narrowly attracted the attention of researchers. In an institution as large as this, Open Education Faculty with more than 1 million students spread around the world, a minor weakness may have serious implications for user perceptions. Thus, it is highly significant for the university to assure that LMS is used as effectively as possible. In the case of not being accepted by its intended user, which is the distance higher education student in our context, even the best technology-based systems are deemed useless (Venkatesh & Davis, 2000).

E-learner satisfaction may be defined as an affective response upon the use of eLearning activities on their several aspects such as content, user interface, learning community, customization, and learning performance (Wang, 2003). It was found that student satisfaction in virtual learning environments was generally lower than in traditional classroom settings (Piccoli, Ahmad,& Ives, 2001), yet since then the technical problems

cited in this study have been solved with more improved technologies. In fact, another study found increased student satisfaction between the first and the second deliveries of the same online course (Arbaugh, 2004). All in all, student satisfaction has been found to be a major contributor to continued student participation in e-learning and positively correlated with the quality of learning (Green, Inan & Denton, 2012).

There is a need to discuss how institutions can be guided so that they can make use of their IT resources in order to improve e-learning in their system (Oliveira, Cunha & Nakayama, 2016). This paper is taking a stand in that direction both as its data were selected from learner analytics of the LMS and also because it seeks to understand how the management of LMS should be improved based on student initial perceptions and experiences. In addition, the evaluation of an LMS is essential to its effective implementation and positive impact on the delivery of e-learning (Almarashdeh, Sahari, Zin, & Alsmadi, 2010). When these type of changes are not evaluated timely, institutions are not able to know whether the improvements are working as planned or not, which may result in their making decisions based on the assumptions of a significant stakeholder or a very discontent student. Taking the increasingly competitive positions that distance higher education institutions hold into account, the lack of assessment is likely to place a traditional institution in a difficult position.

Blackboard LMS infrastructure is used to administer and monitor the educational resources in open education system in Anadolu University. This university has been delivering higher education at associate's and bachelor's degrees within the body of Open and Distance Learning System in Turkey since 1982. It also serves in lots of other countries where a Turkish-speaking population exists such as Azerbaijan, Bulgaria, Kosovo, Macedonia, Albania and Bosnia-Herzegovina to nearly 1.3 Million actively enrolled students. According to a study on student profile, almost 75% of its registered students are currently working and 91% of them have access to the internet (Hakan, Ozgur, Toprak, Aydin, Firat, 2014), which implies that they have limited time to study the printed material and therefore largely prefer e-learning materials and environments in a more customized and personalized manner. Inclusion in LMS is completely voluntary in the system as mandating it would result in the segregation of those who do not have access to IT facilities or simply do not choose to be involved in a learning community. Since printed course books are still the primary component of course content and all e-learning materials available in LMS are dependent on course books in terms of content, students who choose to login benefit from the supplementary materials and interaction with instructor and other students, whereas others still utilize the book for content. Although there is a great variety of advanced learning tools offered in the LMS, the rate of students using it is not as high as desired.

The initiation of LMS is an example of educational change, which is considered to be technically simple but socially complex. A large part of the problem of educational change may be less a question of dogmatic resistance and bad intentions and more a question of the difficulties related to planning and coordinating a multilevel social process involving lots of people (Fullan, 2001, p. 45). Therefore, the aim of this study was to catch and document the initial reactions of students to the implementation of LMS in a distance learning community, with a managerial aim to think of ways to counteract the possible resistance to the new system by some students. Research questions that we sought to answer were 1) what are the students' initial perceptions using LMS in an open higher education system? 2) what are the effective and ineffective aspects of LMS for them at first glance? 3) what improvement do students suggest to improve the system?.

METHOD

This study was designed to describe and understand the essence of meanings of individuals who have experienced a particular case. The perceptions of policy makers as to what is critical in the design of an LMS would certainly not fit with those of the students. Aware of this, the selection of the research methodology was done in a way that would capture the students' own perceptions and experiences of using the LMS. E-learning and LMS research

has been dominated by quantitative studies derived from student perceptions; however, they may not accurately provide us with indicators of learning. Rather, a qualitative perspective focusing on individual contexts is necessary to develop a richer understanding. Thus, an interpretive qualitative case study research design was used. Interpretive paradigm stems from a concern to understand the world as it is, at the level of subjective experience; and it regards the social world as an emergent social process created by the individuals (Burrell & Morgan, 1979).

Although quantitative data gathered through questionnaires were also used in order to do quick alterations in implementation as a component of managerial control function, students' initial perceptions ad experiences were still in need of comprehension. Five focus group interviews were conducted for qualitative data collection, which has the potential to uncover information that is not included in an online questionnaire, through its open-ended nature, which does not limit the responses of students. Each focus group consisted of minimum six participants with high level of activity and higher amount of time spent in the LMS, and was moderated by the researcher. When selecting participants for a case study like this, it is critical that all of them must experience the case (Creswell, 2009), which means criterion-referenced sampling technique was used to select participants. To do this, first, the list of students all over Turkey with the highest activity rate and highest amount of time spent online in LMS was extracted from learner analytics, and then they were telephoned to ask their consent and availability for a focus group interview session. Among those who agreed to participate, five cities where the biggest number of students were available were selected. Sample size is not usually of significant value in case studies like this, since we are interested in the way meaning is constructed, and large variations of linguistic patterning can emerge from a small number of people (Potter & Wetherell, 1987).

Focus group interviews were conducted with five distinct groups of students in five different cities. A semi-structured interview protocol prepared by the researcher was reviewed by both a peer and a decision maker to ensure validity. The interview questions were prepared based on issues raised by past research as well as issues raised by students in other satisfaction surveys conducted recently, in order to find out their perceptions, problems they face as they experience the novelty and their suggestions for the improvement of the system. The students were all in the early stages of discovering the LMS by navigating it and were achievement oriented, which increased both their awareness and interest in the subject. All groups met in person, and the sessions were sound-recorded as well as a researcher monitoring live, taking notes and interfering when necessary. Participants' consent was taken to record the sounds during the interview, and they were asked to sign a written consent to ensure data confidentiality. The interviews aimed to seek background information about students' general study habits before discussing their learner analytic data concerning LMS participation. The recordings were later transcribed for the purposes of data analysis.

The transcripts of all interviews were analyzed through content analysis, the steps of which are, initial reading, scaffolding, doing the interpretation, and identifying patterns within or across groups or within or across features. The first step of the analysis was to separate the data into units, called "open coding" by Strauss and Corbin (1998). The units, their labels and the categories were displayed by the researcher on a table as suggested by Miles and Huberman (1994). Many of these labels were generated through reading and understanding of the literature or by words or phrases that the teachers repeated.

FINDINGS

The following themes emerged as a result of the data analysis: 1) a completely personalized use of LMS, 2) LMS use as a contribution to the formation of Distance tertiary learner identity and belonging to the system, 3) issues faced and shortcomings, and finally 4) further demands, which will all be elaborated in this section.

The data under the first theme revealed that although students had similar levels of success, they exhibited very different study behaviors. The students were found to display varying approaches to the use of LMS as a supplementary material resource to the unit content. Variation was both found in students' prioritizing their preference of the type of e-learning material and in unit content. For example, while some students never used the unit content but solely the e-learning materials in the LMS such as webinars and e-courses, others used the interactive content in the LMS to assist their self-regulated study of the unit content. The most crucial factor leading to this variation was found to be the amount of time one could devote to studying as the majority of the students enrolled are working. These students felt learner management system improved their time management skills. Other factors include their differing levels of motivation and learning styles. One student from focus group interview no 3 expressed this as follows:

> *"Open Education system is generally the choice of those who do not have chance to attend formal education.. because we are either housewives or employed..that is why e-kampüs (the name of LMS) has been a blessing to me...I am really happy with it and thank you all...I was about to give up but now I think well maybe I can do it..."*

As for the possibilities of interacting with other students in the system, they reflected that although interaction does not lead to success, it adds an element of enjoyment and socialness to studying. Many reported that they do not consider it as a necessity for their learning, which partly explains us the reason for the low level of interest in LMS in student-student interaction facilities. All in all, it would not be wrong to say that LMS use in the participants of this study was found to be highly personalized, and tailored in a way that would meet their varying needs.

Secondly, besides the benefits of the LMS to students' self-regulated study habits and their ability to personalize their learning, it also was reported to contribute to the formation of a distance tertiary learner identity as a member of a renowned institution. Read et. al (2003) claimed that identity and belonging to an institution are very significant for retention, which make them very important concepts especially for institutions like this where LMS participation is not compulsory. Data revealed that the reason why this group of students take more part in the LMS is strongly linked to the sense of belonging to "an open university student identity" they get from it. The quote below, taken from focus group interview no 1 is a clear example to this.

> *"Open Education system makes you feel you are a student. Formerly we were students, too, but we did not feel it. Now we are really students... "internet student"* "

Belonging to an e-learning community is a social identity. Although identity formation is often assumed to be based on commonality, findings suggest that diversity is also a significant factor in the building process of identity. To illustrate, Open Education system of this university serves a diversity of learners including women who were formerly disempowered for education but now have the chance to pursue it through this system. Especially for those who have not been a formal university student before, LMS was reported to be critical in terms of congruence to a more autonomous and pluralist nature of the identity of a "university student". Another major component of this identity also reinforced by LMS is flexibility. This is not surprising as LMS could be considered as a means of learner empowerment, which is assumed to support the idea of diversity behind it, coming from its roots in feminist and community education (Hughes, 2007). As for the empowerment of the learners, findings also suggest that LMS has a huge role in keeping the students in the system by decreasing their exam anxiety and building a sense of confidence. This role is critical when the differing ages, IT capacities and educational backgrounds of students are considered.

The latter two themes are the answers awaited so that the system could be readapted or improved in accordance with them, which are of critical importance from a functional managerial perspective. A distance learner's participation in the LMS has a strong influence on the level of satisfaction s/he gets from online learning (Inan, Yildirim, and Kiraz, 2004) and vice versa is also the case, which means rare use of LMS is related to dissatisfaction (Palmer and Holt, 2009). Although in the literature there is an abundance of studies which report the satisfaction of the students regarding the usability, ease of use or practicality of the systems, in our case students' initial perceptions about their satisfaction mostly referred to what could be considered as content of the LMS, rather than the structure or form of it. In line with this, students came up with issues or shortcomings about the quality of the content of the materials provided to them through the LMS, such as exercise questions /quizzes, chapter summaries and webinars. As for exercise questions and chapter summaries, both quality and quantity were raised as issues to be improved, as they are thought to be major types of material for the revision of course content. Some minor issues raised about the usability of LMS were related to the mobile application of LMS and the problems faced in viewing the answer keys for some quizzes. As a third type of material for which the students participate in the LMS, we have the webinars, which they can both participate in real time or watch the recorded version at their leisure. The most prevalent criticism brought concerning the quality of the webinars was that they were dull, not lively, and did not include interaction. This made the students to choose not to participate in the webinars. In sum, regarding the third theme, students largely raised issues related to the quality and variety of content presented to them via LMS. As for demands raised by the students, variety comes out as a central theme, too, since students expressed a lot of different claims to improve the quality and quantity of materials like quizzes and e-courses.

DISCUSSION AND CONCLUSION

The evaluation of a newly built-in learning management system is a vital step to ensure its effective implementation as acceptance of the new technology is strictly linked to its perceived ease of use by the target users. In some studies it was reported that the difficulties the students experienced with the technology was a strong negative barrier to learning (Schrum & Hong, 2002; Faux & Black-Hughes;2000, Daley, et al. 2001); whereas others reported that technology does not always result in negative outcomes of learning (DeBourgh,1999 and Kenny,2002). Students' initial online learning experiences also play a critical role in forming their perceptions of this delivery medium (Arbaugh, 2004). However, based on the results of this study it should be noted that the quality of content provided through LMS also has a major influence of students' initial perceptions of their satisfaction with the system, as well as service quality or ease of use.

The underlying decision process used by students to determine how to make use of the LMS is considerably more complex than reported before in more positivist accounts (Alsop & Tompsett 2002). Students in our case were found to make highly customized and personalized decisions regarding to what extent to make use of the LMS for academic achievement, which explains this complexity. The multimodal structure that the educational resources in the LMS system are offered was found to be a great asset for students, who had largely tailored their experiences with the system to fit their varying time schedules, learning styles, and varying ICT capacities. This implies that the e-learning materials offered through LMS should be enhanced in a way that students would want to pursue their learning in this environment rather than just focusing on the print content. To bridge the gap between the LMS and the-yet-nonusers, the LMS should be built in a way that is more adaptive and responsive to customized needs of students.

The fact that students turned out to be generally satisfied and that they felt secure while navigating in the LMS led to their being more critical about the quality and variety of the content available. This proves that for LMS content to be effective in learning, the students need to be comfortable with using the system (Green, Inan & Denton, 2012). Although there is a great emphasis on service quality and technology acceptance studies in the realm of LMS (Louwa, Brown, Muller, Soudien, 2009) ensuring overall satisfaction and comfort in

navigating through the LMS is not sufficient in satisfying the students with a need for cognition. Thus, students should be given an active role in the construction of their own educational activities and in decision-making and management of their own learning, and be provided with an abundance of high quality content so that they can be engaged. Similar to Alsop and Tompsett's (2002) findings, the decision making process that e-learners go through to design their use of LMS and thus their learning is highly complex, and is hardly obstructed by technical or interface-related shortcomings. Thus, further research could focus on the significance of content of the e-learning materials as a component of learner satisfaction with the learner management systems.

Finally, building a shared identity and growing a sense of belonging among users is vital in ensuring their participation. That is why although demand for collaborative e-learning is not so high on the part of the users, it should be seen as a way to establish a community for students to identify with and feel belonging, and enhanced. The sense of both "open learner" and "e-learner" identities are another major area of research that could be dwelt on.

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SEEING GOOGLE THROUGH THE EYES OF
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ABSTRACT

With its new variety of IT products and services created in the last decade for students, teachers and schools, Google has changed the face of education. Google technologies that can be used completely free of charge via a single account in any device offer innovative alternatives to meet the needs of education. These technologies also help continuously improve digital competencies of students and teachers. On the other hand, criticisms against the monopolization of the company as well as its privacy and transparency policies have been increasing. In the light of these developments, the current study aims to examine academicians' metaphorical perceptions related to Google. The study was designed based on metaphorical analysis as a method of qualitative research. The study group was comprised of academicians working at education faculties of four state universities located in the middle west of Turkey. The data were collected through a closed web-based questionnaire consisting of open-ended questions. Results revealed that large majority of the academicians have a positive perception of Google. A group of participants also views it as a threat. Results offer important insights about the academicians' perceptions of Google and how and why they make use of Google products.

Keywords: Google, Google services, academician, metaphor.

INTRODUCTION

"Ask Google!", "Google knows!". Internet users increasingly utter such sentences day by day. However, Google Web Search, the most widely used research engine in the world with its sophisticated research options and simple structure (Webcertain, 2014), is just one of the services offered to the users by the company established in 1998. One of the biggest players of the Internet market, Google has a large population of users for the products it developed in many fields of life, particularly shopping, mapping, game, finance, health, tourism, video, and so on. New applications and services of the company developed based on the cloud technology are most rapidly changing user routines. In addition, free large storage capacity offered to users makes important contribution to increase the number of the users of its services. With a single user account and password, users can obtain free access to more than 20 products including those developed for communication, storage and collaboration. Because of the wide scope of its products and free access to them, Google has turned to an indispensable as well as an effective innovative educational tool for students, teachers and schools. Recent research has revealed that increasing number of young people prefer information and communication technologies (ICTs) as an educational tool helping them for their out-of-school learning (Greenhow & Robelia, 2009). This tendency is supported by the increasing value attached to informal learning within the context of life-long learning offering more freedom and flexibility (Eraut, 2004; Cross, 2003; Livingstone, 2002) and by students' changing new social learning patterns. For instance, Michigan University selected Google as the supplier of main on-line

collaborative learning tool to enhance course management processes and the interaction between the personnel and students in Ann Arbor Campus in 2011 (Hershock & LaVaque-Manty, 2012). In a similar manner, more than 60 American universities including Yale, Rochester Institute of Technology, Texas A&M, UCLA, California State, and Boston University selected integrated communication and collaboration tools offered by Google and made them available for their personnel, students and alumni. Today, not only universities, but also countries are in an effort to integrate their schools into Google cloud technology to reform its educational systems. For example, in 2012, Philippines Department of Education (DepEd) moved its systems into the Google cloud with "Google Apps for Education" to solve the problems of national education. Similarly, in 2013, Malaysia government adopted Google Apps for 10 million students, teachers and parents in the primary and secondary schools nationwide (Koetsier, 2013).

THEORETICAL BACKGROUND

Social Learning
Pioneered by John Dewey and pursued by Vygotsky, Rotter, Lave and Wenger, the view of learning as a social process argues that learning with others and learning from others not only improve interpersonal interaction but also lead to more innovative and stronger ideas and make learning more permanent. However, development of new communication technologies, which are supportive to individuals' learning experiences and increasing user interaction on the basis of Web 2.0, has unprecedentedly affected individuals' learning experiences and added a new dimension to 'social learning'. This has given rise to a need for individuals to develop their skills required to collaboratively work in small and large groups in the world reshaped on the basis of information economy and within the context of the new learning paradigm in which knowledge is constructed, transformed and dispersed with the active participation of the individual (Johnson, Johnson & Holubec, 2008). In the broadest terms, Dillenbourg (1999) defined collaborative learning as a state of two or more individuals' learning something together and explained the components of the definition as follows:
  ➢ "Two or more" can be interpreted as a couple, a small group (3-5 participants), a class (20-30 participants), a community (several thousand people), a society (millions of people)... and all the other intermediate levels.
  ➢ "Learning something" can be interpreted as studying a textbook, studying a course, conducting a learning activity like solving a problem ...
  ➢ "...together ..." can be interpreted as different ways of interaction. For instance, face to face, computer assisted, synchronized/asynchronized etc.

ICTs developed based on cloud technology enable teachers and students to construct links with higher interactivity levels to each other by reconstructing collaborative learning environments. When compared to individual learning processes, collaborative learning has been reported to have positive effects on students' academic achievement and behaviors in many different fields by a large amount of research (i.e., Capar & Tarim, 2015; Johnson, Johnson & Smith, 1998; Kyndt et al., 2013).

One account is Enough for Everything!
In general, the company has two partner programs: Google for Work and Education. These programs are designed for specific customer needs and consist of a set of cloud-based tools. Whereas, the company is already in an attempt to update and combine these two partner programs into one in order to meet the customers' needs. Today, searching the net has become a daily activity for every internet user and forms the interface between users and computers in their social and business lives. Flagship of Google, web-searching service is one of the most preferred products for information searching processes. Chrome web application packages that are developed for organizational educational institutions (Khan Academy, Glogster, 3DT etc.) are bringing a new inspiration to the web searching. However, Google offers many apps and services (see Table 1) to be used inside and outside the school freely to enhance the basic components, as identified by Dillenbourg (1999), involved in collaborative learning processes. If individuals have a personal Google account, they may use these apps and services freely with limited features and functionality, and if individuals have a professional Google account, for example for an entire school, they might use these apps and services with additional features and functionality. However, individual use of these apps and services isolated from each other restricts their educational usages. When these products are

considered to be the parts of a whole and used in unity, they can turn to be powerful and innovative learning tools. The use of these services requires the users the acceptance of some service conditions and privacy policies of Google.

Table 1. Features and Educational Use of Google Apps and Services*

Google Apps	Features	Educational Use
Gmail	• more than just an e-mail service (combine other Google Apps)	• organize other e-mail accounts in a one-hand • enhance your interaction with students and colleagues • organize your classroom communication • decrease the amount of paper used in the class
Hangouts	• connect with anyone remotely in real-time (text, voice and video chat) • instant videoconferencing with multiple users	• online office hours of instructors • remote collaboration by student teams • interaction with guest lecturers/panelists • work shopping student writing
Calendar	• keep track of events • organize time	• schedule events • send invitations, deadlines • share responsibility with others
Google+	• social network	• improve student collaboration and student-instructor relationship through circles • share private posts with students • convenience of blended learning with Google Hangouts
Groups	• create email-based groups	• create a group for your entire class • distribute materials and resources • share updates and news
Drive	• file storage • synchronization	• share your docs with others • collaborate with others in real time
Google Docs, Sheets, Slides	• create online text documents, spreadsheets and presentations • share created documents	• collaborative authoring by students/instructors • interactive feedback on student work via comments • collaborative concept mapping or image annotation • collaborative collection and analysis of lab data
Forms	• create a survey or form	• give an assessment test to your students • create quizzes with Forms • gather immediate feedback for real-time assessment (track how many minutes students finished the test)
Blogger	• build interactive blogs	• create a blog for your class in a minute • engage with the subject matter • post opinions and questions
YouTube	• create and share video	• engage students through multimedia • create and share online lectures/tutorials • create subject specified playlists

***We benefited from the study of Paliktzoglou, Stylianou & Suhonen (2015) and official website of Google for Education. Furthermore, some educational uses of Google apps mentioned in this table include activities that are performed by the authors to improve learning both inside and outside the classroom.**

Concerns about Google

Google collects two types of user information. These are information given by users and gathered from the services utilized by users (device information, log information, location information, unique application numbers, local storage, cookies and similar technologies). The company states that it uses this information to provide, maintain, protect and improve its services for its users, to develop new services and protect both itself and its users. However, in March 2012, about 70 privacy agreements of the company were subsumed under a single privacy agreement (Pfanner & O'Brien, 2012) and this means that information gathered from the use of one product can be used for other products. This has resulted in increasing criticism towards Google's privacy and transparency policies as well as pressure put by countries to persuade the company to change its privacy policies (Temperton, 2015). Cardozo, Opsahl and Reitman (2015) prepared a report looking into privacy and transparency policies of 24 big technology companies including Adobe, Apple, CREDO, Dropbox, WhatsApp, and Yahoo. They raised some criticisms against the privacy and transparency policies of Google. In this report, evaluating company applications and policies over five stars, three stars were given to Google. The criticisms leveled against the company primarily focus on the company's not taking a stronger position in informing its users following the request for user information due to legal reasons and lack of transparency in data storage policies.

Use of Metaphors to Explore the Perceptions

There has been a growing research attention to the metaphorical analysis in recent years. Previous studies have focused on the metaphors of the concepts related to technology, collecting data from secondary school students (Eren, Celik & Akturk, 2014), college students (Koc, 2015), university students (Coklar & Bagci, 2010; Coklar, Vural & Yuksel, 2010; Gok & Erdogan, 2010; Koc, 2013; Kurt & Ozer, 2013; Saban, 2010), and from in-service teachers (Karadeniz, 2012).

Eren and his colleagues (2014) investigated the perceptions of secondary school students about Facebook. They identified the following five conceptual categories; *a useful device, a device that should be used carefully, a piece of the real life, the source of an addiction and a source of harm*. Koc (2015) used metaphors to explore how regular and problematic internet users conceive the Internet. He determined eight conceptual categories: *information source, immensity, basic need, addictive substance, double-edged sword, transporter, mood regulator, and supporter.* Koc argued that normal users are more likely to verbalize the Internet as a supportive entity. Saban (2010) also examined pre-service teachers' conceptions of Internet and found seven conceptual categories: *as a system, as a vehicle, as an addictive entity, as a useful and harmful entity, as an indispensible part of daily life, as an attractive location and as an uncertain entity*. She stated, "Metaphors are powerful cognitive tools to transform one's conceptions of unfamiliar phenomena". Gok and Erdogan (2010) conducted a study to elicit pre-service teachers' perceptions of technology and found them to be mostly positive. When gender, grade, the frequency of technology and background information are compared to technology use, there is no significant difference between pre-service teachers. Similarly, in another recent study examining the pre-service teachers' perceptions of technology, Koc (2013) found five emerged themes: *development, facilitation, vital necessity, power* and *threat.* He also revealed that gender and major have no significant effect on pre-service teachers' conceptions. Karadeniz (2012), in her study investigating the perceptions of school administrations, ICT coordinators and in-service teachers towards technology, grouped metaphors into five categories: *as a changing and developing entity, as a facilitator, as a needed entity, as a useful and harmful entity* and *as a diffusional entity.* Similar to previous studies, it was found that the majority of the educators have positive perceptions. Moreover, the perceptions of educators do not differ according to the gender and age.

With the growing interest and use of qualitative methods, metaphorical analysis was applied to elicit personal theories of participants as a methodological tool in many of these studies. Since metaphors are largely unconsciously generated (Pitcher; 2013;

Schmitt, 2005), it is very useful to investigate people's emotions, attitudes and conceptions (Cameron & Maslen, 2010). Moreover, some researchers mention that metaphors can affect our actions performed in the real life by shaping our perceptions, thoughts and viewpoints (Bailey, 2000; Collins & Green, 1990). It also reflects the person's true underlying feelings and understanding (Pitcher; 2013). In addition, there is some research reporting that metaphoric connotations directly or indirectly affect educators' performances during teaching processes (Marshall, 1990; McGrath, 2006).

Purpose of the Study

Although existing studies on metaphor span multiple disciplines, to our knowledge, there is no study to date that investigates the opinions of the faculty members working at education faculties responsible for the training of pre-service teachers. Previous studies have mostly focused on the perceptions of students and in-service teachers about concepts related with technology, such as internet, social media, and technology itself. While there is limited research on "Google for Education", there is a sizable body of research using Google apps and services from various academic disciplines such as geography, medicine, nursing and education. Universities have a central role to integrate innovative tools into teaching and learning to enhance students' learning experiences. Both inside and outside the school, Google provides innovative solutions that both completely change users' habits and meets the new learning needs of teachers and students. Thus, the purpose of the current study is to elicit the faculty members' metaphoric perceptions (mental images) of Google. The findings of the study conducted with this purpose in mind are believed to contribute to better understanding of why and how the faculty members utilize the products of the company. The present study is also believed to provide an opportunity for the faculty members to discuss the extent to which they think that the company is committed to its informal slogan "Don't be evil".

METHODOLOGY

Metaphor Analysis as a Research Tool

In order to determine the faculty members' metaphoric perceptions about Google, we used metaphor analysis as a method of qualitative research. Pitcher (2013) states that "Metaphor analysis is a systematic method of analyzing the metaphors that people use to express themselves". Schmitt (2005) also points out that in converting complex information obtained in qualitative research into clear and comprehensible patterns, metaphors are very useful. Primarily based on Lakoff and Johnson's (1980) cognitive linguistic theory, Schmitt (2005) provides some guidelines for qualitative inquiry based on metaphors. On the other hand, Moser (2000) posits that metaphor analysis is "a multifaceted research perspective". She states that metaphors generated by participants are placed in their correct context by using qualitative analysis. Furthermore, Martin and Lueckenhausen (2005) state that a number of different metaphors might be generated by individuals to express their ideas and feelings; therefore, it is vital that the researcher should be open to the opinions and thoughts of others.

Participants

The study group of the current research consists of faculty members working at the education faculties of four state universities located in the middle west of Turkey. The reason for the selection of education faculties for the current study is that Google supports education in many fields and provides free educational services to teachers and students to increase technology use in education. In the selection of the participants, convenience sampling which is one of the purposeful sampling methods was employed. A total of 66 academicians (Prof., Assoc. Prof., Ass. Prof., research assistant, instructor, specialist) participated in the study. Majority of the participants are research assistants (45.5%) and assistant professors (31.8%). Of the participants, 30.3% are in the age group of 30 or younger, 51% are in the age group of 31-40 and 13% are in the age group of 41-50. There are only two participants over 51 years old. When the participants' length of service is examined, it is seen that 31.8% have been working less than 5 years, 27.3%

have been working for 6-10 years, 27.2% for 11-15 years and 19.7% for 16 years or longer. Of the participants, 37.9% use internet more than 37 hours a week, 31.8% 13-36 hours, 27.3% 4-12 hours and 3.0% less than 3 hours. We believe that the diversity in the professional experiences of the participants and their different patterns of use of ICTs have increased the participant diversity and richness of the data in the current study.

Data Collection

The data of the current study were collected by using a web-based questionnaire only available to the participants. The questionnaire consists of two sections. In the first section, there are four questions aiming to elicit demographic information about the participants. In the second section, we asked participants to write a text by completing the prompt "Google is ……………because ………..". They were asked to generate a metaphor about Google and explain their reason for the generation of this metaphor. Totally 268 faculty members whose contact information could be reached were invited to participate in the study. In order to increase the return rate of the questionnaire, six reminders were sent to them by one-week interval. The management process of the on-line questionnaire lasted for about two months. Totally 66 faculty members returned the questionnaire; the return rate being 24%.

Data Analysis

During the qualitative process, the analysis and interpretation of the metaphors generated by the participants via the inductive method were carried out at four stages. These were the stages of naming, elimination and refining, constructing conceptual categories and reliability and validity studies. For this purpose, metaphors generated by the participants were listed first and then the recordings not including any source of metaphors or not presenting any reasonable evidence related to a metaphor were excluded from the analysis. Following the sentence-based revision of the participants' reasons for the generation of the metaphors, these reasons were reorganized under shared concepts based on the relationships between the metaphors and thus, main and subordinate conceptual categories were formed. During the sentence-based analysis of the data, it was observed that the participants sometimes assigned different meanings to the same metaphor or they offered more than one reason for a metaphor. In such cases, the related metaphor was coded with the same name under different themes (Fig. 1). Finally, descriptive statistics regarding the generated metaphors and conceptual categories were presented.
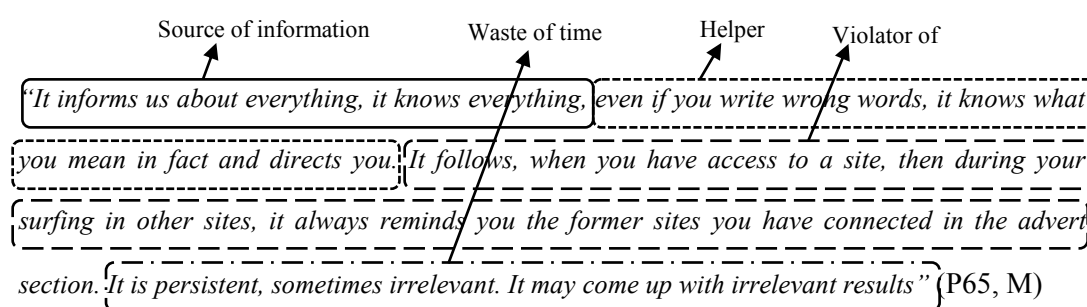

Figure 1. Sample coding statements

Trustworthiness

A series of strategies were used to increase the trustworthiness of the research findings. First, the data of the current study were collected by using a closed web-based questionnaire, which is only available to the participants. All potential participants were provided with information about the study prior to their participation to the study. Physical distance between the researchers and the participants allowed participants to respond on a voluntary basis and in a large period without being under any pressure. The

generated metaphors and their reasons reflect the participants' own thoughts and reasons. Second, we expanded our data sources (i.e., Prof., research assistant, instructor and specialist). The sampling of a range of participants with different length of service and titles contributed to the enhancement and interpretation of the data in a wider framework. Third, all data were analyzed simultaneously and separately by the researchers. Then the researchers came together and reached an agreement on the themes and codes. Two independent coders experienced in qualitative text analysis reviewed the statements and decided on a coding scheme. Moreover, for the confirmation of the results, apart from the authors, three researchers holding a PhD degree analyzed the categories once more. In determining the intercoder reliability, Fleiss' kappa was calculated and found as 0.97.

FINDINGS

According to the cognitive approach, metaphors are far from just being simple poetic statements. Lakoff and Johnson (1980, 3) state, "metaphor is pervasive in everyday life, not just in language but in thought and action." In our analysis, we used cognitive linguistic theory of Lakoff and Johnson (1980) to uncover patterns of thinking. We first began by examining participants' conceptions about Google through metaphorical analysis. We then specifically focused on the participants' reasons. The findings of the current study revealed that 66 participants generated a total of 51 valid metaphors about Google. When the participants' reasons for the generation of their metaphors were examined, it was found that they could be subsumed under three main themes: *information provider*, *life facilitator,* and *threat*. The distribution of the categories created based on the reasons stated and the metaphors generated are presented in Table 2.

Google as an Information Provider

Under the main theme of Google as an information provider formed in line with the metaphors generated by the faculty members and the reasons they proposed, two subthemes were constructed. First, one of these themes representing the participants' positive perceptions of Google is *"Google as a source of information"* and the other is *"Google as a tool to reach information".*

Google as a Source of Information

When Table 2 is examined, it is seen that under the theme of Google as information provider, 28 (35%) participants stated that they see Google as a source of information. Under this theme, there are totally 22 different metaphors generated by 28 participants mostly related to wisdom and greatness. The metaphors coming to the fore under this theme are ocean, grandfather and sea. On the other hand, some participants think that it is a source of harmful information as well as useful information and they may sometimes be confronted with bad surprises. One participant expressed his/her opinion as follows:

> *"We can find whatever we are looking for inside of it. There is an answer to any question! This might be useful, harmful, dangerous, and correct or false information. There is always an answer"* (P34, F).

Table 2. Distribution of metaphors used by academician

Conceptual categories		*f*(%)	Metaphor (*f*)	Sample statements...
Google as an information provider	Source of information	28 (35)	ocean (4), grandfather (3), sea (2), ying yang (1), computer on the way to space (1), space (1), supermarket (1), dictionary (1), magical hat of a magician (1), a plate in the kitchen (1),baby food (1), spring water (1), black hole (1), universe (1), hızır (an immortal person believed to come in time of need; in Turkish culture/godsend) (1), guru (1), world (1), crazy horse (1), smart cube (1), father (1), uncle (1), agent (1)	• "Because it involves endless information ...we cannot make certain definition of the limits, content and qualifications of the information it includes." (P62, F) • "Information inside it is like creatures in the sea because it is endless" (P18, F)
	Tool to reach information	14 (18)	ocean (2), hypotenuse (1), navigation tool (1), key (1), servant (1), mother nature (1), finding the needle in the hayloft (1), gossiper of the neighborhood (1), library (1), memory (1), crazy horse (1), treasure of information sharing and generating (1), smart book (1)	• "Through Google, it is possible to take the shortest way to the information you are looking for." (P63, M) • "Just as the correct key is needed to open the door, Google is needed to find the correct information through the correct words."(P57, M)
Google as a life facilitator	Helper	5 (6)	friend (1), twin (1), organ (1), agent (1), life-long learning (1)	• "Even if you write something wrong, it understands what you mean and directs you..." (P65, M)
	Problem solver	3 (4)	hizir (1), mother (1), gossiper (1)	• "When a baby cries, the person who caters its needs is the mother and when academicians encounter a problem, the first tool they resort to is Google." (P28, F)
	Pervasive technology company	2 (3)	creeper (1), octopus (1)	• "In the digital world, it has a product in every field ..." (P14, M)
	Motivator to learn	2 (3)	discovery of a new planet (1), ocean (1)	• "It continuously directs people to search. Thus, people can enter into a process of continuous quest." (P55, M)
	Charity	2 (3)	mother (1), benefactor (1)	• "Because its services are free to use." (P26, M)
Google as a threat	Supplier of disinformation	9 (11)	ocean (2), a plate in the kitchen (1), oracle (1), pool (1), supermarket (1), mirrors in a circus (1), magical hat of a magician (1), ying yang (1)	• "...It may offer a lot of irrelevant information..." (P58, F)
	Violator of privacy	6 (8)	agent (2), black hole (1), two-sided glass (1), crazy horse (1), grandfather (1)	• "It can watch every step and every breath of humans." (P19, F)
	Waste of time	6 (8)	ocean (1), metropolis (1), matryoshka(1), sea (1), crazy horse (1), agent (1)	• "When you look into details, you can encounter unwanted things. If you ask something, you are swayed from here to there." (P1, F)
	Technology leading to laziness	2 (3)	Mirrors in a circus (1), negative addiction (1)	• "It presents itself as if it was hardworking but at the same time it makes the user lazy." (P6, F)

Google as a Tool to Reach Information

When the metaphors generated under the main theme of Google as information provider are examined, it is seen that 14 (18%) different participants viewed Google as a tool to reach information. Under this theme, there are totally 13 metaphors generated in relation to finding and reaching information and "ocean" is the most frequently used one in this group. The common reason proposed by the participants for generating this metaphor is that they see Google as a search engine and they utilize this tool to have access to the information sought among a mass of information.

This is expressed by a participant as follows:

> *...you need to reach your destination in an ocean. In a similar manner, Google helps you to reach your destination in an ocean just by writing the correct words in the search engine so that you do not waste time.* **(P58, F).**

The other metaphors generated for the same reason described it as a key, *"Just like a correct key to open the door, with the correct word in Google, you can find the results you want."* **(P57, M),** as a navigation tool, *"Wherever you want to go, it takes you there through the shortest way"* **(P46, F),** and as a hypotenuse, *"Through Google, it is possible to take the shortest way to the information you are looking for."* **(P63, M).**

Google as a Life Facilitator

Under the theme of Google as a life facilitator constructed in line with the metaphors generated and reasons offered for the generation of these metaphors by the participants, five sub-themes were formed. They are helper, problem solver, innovator, motivator to learn and charity. All of these themes reflect participants' positive perceptions of Google.

Google as a Helper

When Table 2 is examined, it is seen that five (6%) of the participants view Google as an important helper under the theme of Google as a life facilitator. The reason presented by the participants for the generation of five different metaphors in this sub-theme is that they intensely utilize Google in their information seeking processes (e.g. finding answers to their questions). One of the participants viewing Google as a friend expressed his/her opinion as follows: *"It is like a friend I can trust whenever I need it and it can answer every question I ask."* **(P26, M);** another participant regarded it as his/her twin: *"Because it complements the word I am attempting to write."* **(P46, M).**

Google as a Problem Solver

Few participants (4%) stated that they see Google as a problem solver. The reason presented for the generation of Hızır, mother and grandfather metaphors in this sub-theme by the participants is that whenever they encounter a problem, Google helps them to solve this problem. One participant expressed his/her opinions as follows:

> *"When a baby cries, the person who caters its needs is the mother and when academicians encounter a problem, the first tool they resort to is Google. Just as all the needs of a baby are met by its mother, Google meets all needs of academicians; g-mail for sending and receiving e-mails and Google academic for finding articles "* **(P28, F).**

Google as a Pervasive Technology Company

Very few participants (3%) defined Google as one of the most pervasive technology companies of today's world giving direction to innovations. One participant expressed his/her opinions as follows: *"It is everywhere..."* **(P56, F);** another one: *"In the digital world, it has a product in every field..."* **(P14, M).** Under this sub-theme, the participants generated the metaphors of creeper and octopus.

Google as a Motivator to Learn

When Table 2 is examined, it is seen that two of the participants (3%) stated that they see Google as a tool motivating learning. A participant using the metaphor of discovering

a new planet explained the reason as follows: *"It continuously directs people to search. Thus, people can enter into a process of continuous quest."* **(P55, M).**

Google as a Charity
Very few participants (3%) generated the metaphors of mother and benefactor by emphasizing the free services of Google. One participant explained it as follows: *"It always gives."* **(P12, F). Another participant also stated that** *"because it does not want money for its services."* **(P26, M).**

Google as a Threat
In line with the metaphors generated and reasons presented for their generation by the participants, the theme of Google as a threat was formed. Under this theme reflecting the participants' negative perceptions of Google, there are four sub-themes that are supplier of disinformation, violator of privacy, waste of time and technology leading to laziness.

Google as a Supplier of Disinformation
Nine participants (11%) stated that Google supplies disinformation. Some of the eight metaphors generated under this sub-theme can also be found in the sub-theme of Google as a source of information. Most of the participants stated that though they see Google as a source of information, they still think that it also supplies disinformation. One participant expressed his/her opinion as follows: *"Because what it says is not always correct..."* **(P23, F).**

Google as a Violator of Privacy
The reasons presented for the generation of the metaphors in this sub-theme revealed that six participants (8%) think that Google violates privacy. In this sub-theme, there are five metaphors and the most outstanding one is the agent metaphor. One participant generating the grandfather metaphor explained his/her reason as follows: *"...it records your personal information and stores it in its sea to be able to use when needed. Therefore, be cautious about the grandfather and yourself!"* **(P61, F), another participant generated the black hole metaphor:** *"...and the most important thing is that while you think that you are learning a lot from it, you cannot guess what it is learning from you."* **(P62, F).**

Google as a Waste of Time
Six participants (8%) stated that Google leads to waste of time. In this theme, there are six different metaphors generated by the participants. Some participants pointed out that while Google is a quite useful tool to reach facts, if it is not used properly, it may lead the user to irrelevant and unrelated places. One participant explained this as follows: *"If you do not know what you are looking for, it is very difficult to find it."* **(P9, F).**

Google as a Technology Leading to Laziness
Very few participants (3%) generating two different metaphors in this sub-theme stated that Google exercises a negative influence on human behaviors; therefore, it is different from how it looks and makes user lazy. One participant expressed his/her opinions as follows: *"People prefer to reach a site or information they have already known by writing the related words in Google. Having access to known information by asking questions can make the brain lazy and promotes it to think less."* **(P53, M).**

DISCUSSION

The data collected in the current study show that the metaphors generated and reasons proposed for the generation of these metaphors can be subsumed under three main themes, two of which are positive and the other one is negative. Large majority of the participants stated that they view Google as a source of information and identified it as a useful tool to reach information. The participants' positive perceptions of Google are mostly subsumed in these two-subthemes gathered under the theme of Google as an information provider. However, it should be noted that these themes are directly related

to its web searching service, only one of its many services. Google's CEO, Larry Page, announced that Google is a part of a new structure called Alphabet in his blog message. In this new restructuring, as stated by Larry Page, the aim is to create more effective and efficient management of the companies. Additionally, we also believe that it aims to change the dominant belief among people that Google is only a search engine. Under the other positive theme of Google as a life facilitator, it is seen that a great emphasis is put on Google's being an important helper in information seeking processes and free access to its other products. Another remarkable finding related to this theme is that there are very few participants seeing Google as a pervasive technology company giving direction to innovations. However, the diversity of the services offered by the company can concert Google into an effective education tool for educators (see Table 1). This finding may indicate that the faculty members' information about and awareness of the educational use of Google services is quite low or they do not utilize these services for educational purposes.

Another important finding of the current study is that some participants view Google as a threat and thus, should be used cautiously. Among the negative perceptions subsumed under the theme of Google as a threat are supplying disinformation, wasting time, violating privacy and leading to laziness. Disinformation and waste of time make up two related themes. Moreover, as stated before, it is remarkable that these themes are related to web searching service, only one of the services offered by Google to its users. This finding once more proves that web searching service is more intensely used by the participants than the other services.

Other negative perceptions of the participants collected under the theme of Google as a threat are related to the violation of privacy. In an environment where many negative criticisms are leveled against the privacy and transparency policies of the company, few of the faculty members have negative perceptions of the privacy policies of the company. There can be two reasons for this. First, it might be lack of information about the privacy policies of the company. Second, it might be the company's indifference to the existing situation. However, these criticisms should be taken seriously considering the 150-page report prepared by the company to answer to the claims raised by EU commission (BBC, 2015). Acceptance of conditions of contract without reading is a popular on-line user habit. In general, users are prone to not reading licensing agreements of software programs or web sites. This was clearly revealed by an empirical study conducted by PC Pitstop Company. Quite a while ago, a company called PC Pitstop added a term to its licensing agreement stating that the users who read the agreement and return to them will be awarded with 1000 dollars. For this, it will be enough for the reader to send an e-mail to the e-mail address given in EULA address. Though the software program was downloaded 3000 times, not a single person sent an e-mail to the given address. Four months after the introduction of the software program, one user noticed this term. That person sent an e-mail and thus won 1000 dollars (PC Pitstop, 2012). Hence, it can be argued that the faculty members are not aware of the privacy and transparency policies of the company, as they do not read its terms of agreement. The most important reason for reading the terms of agreement is to see whether you allow them to use your personal information. Despite serious criticisms leveled against the privacy and transparency policies of the company, negative perception of these policies is not very strong at personal level and this might be the result of personal trust in Google.

When a general evaluation of the findings of the current study is conducted, two important results are found. The first one is that the faculty members make limited use of web-based services offered by Google for educational purposes. Google is offering new technologies or services to its users. Determination of which of these technologies are used and why they are utilized by the instructors in teaching and learning processes is of great importance for the improvement of these processes.

Davis (1989) states that there are two important factors predicting the acceptance of a new technology by individuals and these are perceived ease of use and perceived

usefulness. Many other research findings also indicate that perceived usefulness is the most important factor influencing the faculty members' behavioral intentions (Armenteros, Liaw, Fernandez, Diaz & Sanchez, 2013; Cigdem &Topcu, 2015; Gibson, Harris & Colaric, 2008; Mejia & Phelan, 2013). Rogers (1995), in his theory of diffusion of innovation, maintains that the factors affecting the acceptance of innovation are relative usefulness, convenience, complexity, trialability and observability. With increasing level of perceived usefulness by the user, the rate of convenience is also increasing. Thus, in-service training programs should be organized in faculties to raise the faculty members' awareness and information thus perceived usefulness related to new technologies. Another important finding of the present study is related to the slogan of the Google: "Don't be evil". Large majority of the faculty members were found to have a strong trust in Google. Future research looking at the causes leading the formation of this trust would offer valuable insights into how people can be encouraged to share information and how the amount and frequency of this information sharing can be increased in online communities.

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STRESS AND COPING STRATEGIES AMONG DISTANCE EDUCATION STUDENTS AT THE UNIVERSITY OF CAPE COAST, GHANA

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ABSTRACT

This study was designed to identify the causes of stress and coping strategies adopted among distance education students at the College of Distance Education in the University of Cape Coast. A total of 332 diploma and post-diploma final year students in 2014/2015 academic year were selected from two study centers using random sampling procedure to respond to self-administered questionnaire. The questionnaire which was adapted to suit the study context was pre-tested to ensure that it elicited valid response. The results of the study showed that 'academic workload', 'high frequency of examinations', 'financial problems', family/marriage problems' were the major causes of stress among the students. The study also found some statistical significant differences between married and unmarried students with married students feeling more stressed with 'financial problems' and 'family/marriage problems' than unmarried students. Students used multiple strategies, mainly praying/meditating, self-distracting activities such as watching TV and listening to music to cope with stress. Other important stress coping strategies were emotional and instrumental support from family, friends and lecturers. The study recommended among others that the need for the counseling unit at College of Distance Education of UCC to organize frequent stress management programs for students and assign academic counselors to students.

Keywords: Stress, distance education students, causes of stress, stress coping strategies.

INTRODUCTION

Globally, the traditional higher education delivery system which has a classroom setting with students and lecturer interactions has been challenged by innovations in educational delivery mechanisms (Soliman, 2014). Innovations in information technology has enabled other methods of education delivery such as Distance Education (DE) gained prominence in higher education delivery. DE has the student in remote from the campus and is educated through a mixture of media such as TV, video, print and personal computer. In many Sub-Saharan countries, tertiary institutions are under pressure to train skilled manpower to meet the increasing sophisticated demands of workplace. However, universities lack the infrastructure to cater for the increasing numbers of students who graduate from senior high schools every year and the high demand of organizations from workers to upgrade themselves to meet the current demand of development. In Ghana, as part of strategies to expand access to tertiary

education to meet the growing demands of professional education, DE has been one of the best mode of teaching employed by various universities (Kumi-Yeboah, 2010; Ministry of Education [MOE], 2013). This is as result of the unique advantages Distance and Open learning (DEOL) provide: DE students are not required to be physically residing on the campus of the learning institution, there is flexibility in the program in terms of place, time and pace of learning. Experts in various courses write modules for students self-learning, hence study materials could reach the remotest part of the country (Panchabakesan, 2011). Despite all the benefits of distance learning, DE students face a lot of challenges in the course of their program (Rourke, Hammond, Flynn, & Boylan, 2010). Studies conducted on DE in Ghana reveal that students face problems such as combining full time work and family demands with studies. Since many distance students are adults, there are a lot of responsibilities to meet while meeting the academic demands of their learning institutions. Most distance education students are matured, married and working. Additionally, distance education students have the problem of combining work, family demands, and other commitments with packed academic work (Panchabakesan, 2011; Torto, 2009). DE students encounter numerous challenges such as increased responsibilities from both nuclear and extended families and other social responsibilities. These responsibilities come with their associated pressure of work, fatigue and financial constraint which may result into stress-induced behaviors among these students. Interactions with distance students on the University of Cape Coast Campus during their face-to-face sessions showed complaints of headache, sleeplessness, and fatigue by these students. Studies on distance education in Ghana have focused mainly on students learning with information communication technology (William, Rebecca, & Joseph, 2010); problems of distance education students (Torto, 2009) and student mode of learning (Agyemang, 2010). Very little is known about the causes of stress and the coping strategies used by these students to survive the challenges encountered in pursuing distance education in Ghana.

Research evidence suggest that students experience some kind of stress in one way or the other, therefore stress is part of students' existence and can have effect on how students cope with the demands of university life (Ramos, 2011; Rourke et al., 2010). Other studies have consequently attributed many emotional and physical symptoms among tertiary students such as fatigue, headaches, depression to stress (Abdullah & Dan Mohd, 2011; Dusselier, Dunn, Wang, Shelley, & Whalen, 2010; Soliman, 2014). Excessive stress among students results in poor academic performance, school dropout, addictions, crime etc. Additionally, Soliman (2014) argue that high levels of stress do not only lead to anxiety and loss of objectivity but could also lead to increased incidence of errors and improper behavior such as cheating in examination, fraud and negligence. This presupposes that high level of stress and it control have effect on students learning outcomes (Dusselier et al., 2010; Gormathi, Kadayam. Soofia Ahmend, 2013). However, how students cope with these stressors depend largely on their personality, perceptions and past experiences. Much studies have been done in developed contexts such as USA and the UK on the relationship of stress factors among tertiary students and the effects of stress on their academic performance (Dusselier et al., 2010; Gallagher et al., 2014; Gnilka, Chang, & Dew, 2012; Reed, Lyons, Hendricks, & Mead, 2011), however little is known with regards to stress causes among DE students in developing contexts including Ghana. DE students have to adapt to various forms of psychosocial changes in addition to coping with the academic, social and work demands in preparing for their professional career (Shamsuddin et al., 2013). Stress comes in various forms which could affect a person's health irrespective of the race, age, and socio-economic background. There are many causes of stress, however, the degree of stress largely depends on the physical health, interrelationship with others, work demands, the degree of expectations and dependency; and commitments in various forms (Shamsuddin et al., 2013; Soliman, 2014). Some form of stress is experienced by most students and distance education students are no exception especially adjusting to new situations in their learning

environment. Ghanaian distance education and sandwich students are faced with writing assignments, preparing for quizzes and end of semester examinations. Furthermore, meeting deadlines for submission of assignments coupled with work and other social demands demand a lot of efforts to handle these multiple roles (Abdullah & Dan Mohd, 2011; Esia-Donkoh, 2014). These academic activities coupled with work schedules and other social responsibilities among distance education students have received little research attention to inform policy and practice in the Ghanaian contexts. The findings of this study will be of significance to the management of the College of Distance Education, University of Cape Coast and other similar institutions in developing contexts to be aware of perceived causes of stress among their students and the coping mechanisms they use to minimize them. This will help institutions to strengthen their orientation programs for students and initiate concrete steps in developing good mechanisms for counseling services for the students. This study, therefore investigates the causes of stress among distance education students in the University of Cape Coast, Ghana. Furthermore, the study explores the coping mechanisms these students use to reduce stress in the midst of the many problems they face in their academic pursuit.

The study was guided by the following research questions and a hypothesis:
The research questions are;
> What are the causes of stress among UCC distance education male and female students?
> What are the coping mechanism UCC distance education students use to minimize stress?

The hypothesis is;
> There is no difference in stressors among married and unmarried distance education students

LITERATURE REVIEW

Stress comes in different forms to an individual's daily life. Stress is a bio-psychosocial model that refers to the consequence of failure of an organism to respond adequately to mental, emotional or physical demands, whether actual or imagined cited in Al-Sowygh, (2013). According to Akhlaq, Amjad and Mehmood (2010), stress is seen as a psycho-physiological process, which results from the interaction of the individual with the environment and results in disturbances caused to the physiological, psychological and social systems, depending upon individual characteristics and psychological processes. The individual characteristics may include factors such as sex, health status, heredity, and socio-economic background. Psychological processes refer to such factors as attitudes, values and various personality dimensions. (Gormathi, Kadayam, Soofia & Ahmend, 2013; William et al., 2010).

For an undergraduate student, stress may be caused by failure in academic work, financial problems, health problems, loss of a family member or friend and other social problems (Hung & Care, 2011; Smith, Rosenberg, & Timothy Haight, 2014). Such events that bring stress are called stressors and a sudden change in these stressors may affect the persons' physical or mental health. Studies conducted on university students in the USA, UK and Saudi Arabia reveal high academic workload, difficulty reading textbooks, family related problems, health related problems and financial problems as most of the sources of students stress (Al-Sowygh, Alfadley, Al-Saif, & Al-Wadei, 2013; Chao, 2012; Saklofske, Austin, Mastoras, Beaton, & Osborne, 2012). These studies used regular undergraduate students as their study particpants who had varied background characteristics compared to distance education studies who majority are matured and are in the working class group. Distance education

students do not enjoy previlages such as access to library resources, computer laboratories, students support services interactions with academic counselors which make them disadvantage compared to regular and –campus students. Other reported studies on stress among tertiary students (Akhlaq et al., 2010; Al-Sowygh, Alfadley, Al-Saif, & Al-Wadei, 2013; Gormathi, Kadayam,Soofia Ahmend, 2013) have grouped stressors among university students under a broad categories such as 'self-efficacy beliefs' (e.g. fear of failing a course or insecurity concerning professional future); 'workload' (e.g. difficulty of class work, overloaded course content), 'faculty and administration' (e.g. lack of input into the decision-making process of school), 'social stressors' (e.g. financial responsibilities). All these studies were done with mostly regular residential students on university campuses; hence there is a gap to fill in the literature as to the sources and management of stress among distance education students in developing context.

Empirical evidence of the impact of stress on the individual has shown that depending on the stress coping strategies of the individual, stress could be very harmful to a person's physical and mental health (Akhlaq et al., 2010; Al-Sowygh, 2013; Hung & Care, 2011; Smith et al., 2014). The effects of stress in the literature stem from physical, psychological to behavioral problems. Some of the physical problems of prolonged stress are hypertension, high cholesterol level, ulcer, arthritis and heart diseases (Akhlaq et al., 2010; Johnson, Wasserman, Yildirim, & Yonai, 2013; Ramos, 2011). Psychological effects of stress could be anger, anxiety, nervous tension, depression, boredom. Direct behavior that may accompany high level of stress include under-eating or over-eating, increased smoking and alcohol use, and drug abuse (Esia-donkoh, Yelkpieri, & Esia-donkoh, 2011; Hung & Care, 2011; Ramos, 2011). The literature furthermore documents that high levels of stress if not controlled could result into poor academic performance, examination malpractices and incidence of improper behavior among tertiary students (Rourke et al., 2010; Soliman, 2014). Hence, stress is an important variable to include in designing students support services for distance education programs. A detailed examination of Al-Sowygh's (2013) study on "perceived causes of stress among Saudi dental students" revealed some significance differences in stressors using some background characteristics of the students. There were statistical differences in stressors among male and female students; first year and final year students. In Ghana, traditional gende-role identification and living arrangement have established clear delineation of households responsibilites which continue to passed down to children in the family (Adu-Yeboah, 2011). It is generally held that married women have to perform household chores like washing, cooking, caring for children.Furthermore, cleaning the house are the responsiblites of married women while men have the responsibility of providing for the home whether employed or unemployed (Adu-Yeboah, 2011). Consequently, we posit that married people pursuing tertiary education especially on distanace could have higher stressors than their unmarried couterparts. We, therefore hypothesised that there is no difference in stressors among married and unmarried distance education students. This hypothesis is supported by findings of some studies (Al-Sowygh, 2013; Kaufman, 2006; Reed et al., 2011) that found differences in stressors among married/unmarried and male/female students. The background characteristics of these students in the studies in developed context are different from that of Ghanaian distance education students in terms of socio economic background which gives space to explore the hypothesis in a developing context.

Coping strategies to reduce stress is a necessary condition for preventing the harmful effects of prolonged stress (William et al., 2010). Coping strategies refer to the specific efforts that people use to master, reduce or minimize stressful event. Coping is multi-dimensional and involves various strategies of which some are functional than others (Gnilka, Chang, & Dew, 2012). Chao (2012) identifies two important ways of managing stress; namely social support and dysfunctional coping strategies. Social support such as seeking support from families and friends naturally help people to manage stress. Dysfunctional coping strategies include:

focusing on and venting of emotions; behavioral disengagement and mental disengagement. Supporting this view of coping is what Lazarus and Folkman cited in (Chao, 2012) identified as problem-focused ways of managing stress referring to attempts to engage, act on, or change the perceived stress. The issue of social support and coping has received considerable attention in the literature, indeed, social support has been found to be related to problem-focused coping (Soliman, 2014). This assertion is corroborated by Saklofske, Austin, Mastoras, Beaton and Osborne (2012) who suggest that relaxation, exercises, maintaining good health and time managements are some ways of managing stress. A study by Sideridis (2008) reveals five most frequently used coping strategies by students; browsing the internet, sleeping and resting, watching TV shows or movies, and instant messaging.

The search for literature indicate there have been very limited discussion in the literature on the sources of distance students' stressors and what coping strategies they adopt to minimize the effect of stress in light of growing number of distance education students in most parts of the world. In this study, we give an account of the sources of stressors among distance education students, and the coping strategies they use to minimize stressful events in the Ghanaian context.

DISTANCE EDUCATION IN THE UNIVERSITY OF CAPE COAST

In Ghana, several public and private universities run distance education programs reducing the problem of admission to regular residential campuses to many students who are denied due to lack of infrastructure and to offer opportunity to many workers to access higher education in these universities. The College of Distance Education of the University of Cape Coast (CoDEUCC) was established under the Faculty of Education to run distance education programs. CoDEUCC currently has over thirty-five thousand students pursuing diploma, post-diploma, and graduate programs in Education and Business. More than 70% of the students enroll as mature students and are mostly over 24 years as demanded by the university requirements (University of Cape Coast, 2016). CoDEUCC uses the print medium and face-to-face or tutorial sessions primarily as its mode of delivery. This mode of delivery makes it important and beneficial for students to be regular at their study centers to take part in face-to-face activities. Students have face-to-face sessions with their course tutors every two weeks for two days (Saturdays and Sundays) for six weeks all in five months' period making a semester. Students have to write two standardized quizzes, Tutor-Made Test (TMT) and assignments in all the courses registered and end of semester examinations.

METHOD

The study was descriptive in nature employing quantitative methods in collecting the data. A cross-sectional survey was carried out using a voluntary, anonymous, self-administered questionnaire among sampled final year distance education students (diploma and those at the post-diploma level; a certificate given by the University for completing a three-year prescribed course of study.) between November 2014 to February 2015. Final year students were used because they have experienced distance education for more than two years hence were in the position of responding appropriately to questions relating to stress on the program. Students were informed about the purpose of the study and verbal consent was obtained. A total of 332 distance education final year students (business and education students) were randomly sampled from final year students at two purposively selected study centers. The final year students were stratified into 10 centers from all the 10 regions in Ghana. At the study centers one education program classes and business program classes were each randomly selected to participate in the survey.

Table 1. Demographic description of the study sample

Variable	N=332	N (%)
Gender	Male	232 (69.9)
	Female	100 (30.1)
Level	300	146 (44.0)
	500	186 (56.0)
Religious Denomination	Christian	299 (90.1)
	Moslem	33 (9.9)
Marital Status	Single	140 (42.2)
	Married	192 (57.8)
Employment Status	Employed	315 (94.9)
	Unemployed	17 (5.1)
Age (years)	Mean (SD)	31.0 (6.25)

Survey questionnaires were distributed to the students (the response rate was 85%) were internally consistent for all the questionnaire items as assessed by Cronbach's alpha 0.75. There were 232 (69.9%) males and 100 (30.1%) females with a mean age of 31 years (see Table 1). Majority of the respondents were employed (94.9%) with more than 60% of these workers being teachers. This is followed by administrative officers (19%), bankers (9.1%). A reasonable number of the respondents (7.8%) were self-employed with the rest working as security officers and traders. However, 5.1% of the respondents were unemployed. The highest qualification of the respondents ranged from WASSCE/SSCE (57.2), GEC 'O' Level, to Diploma. More than 50% of the respondents were married with 42.2% being single. Furthermore, majority the respondents had between one to four children.

Instrument

Factors causing stress were identified using a 22-item questionnaire. The Dental Environmental Stress (DES) was adapted for the questionnaire. 16 items were sourced, while the remaining items were included after a review of modified versions of DES reported (Cohen, Kamarch, & Mermelstein, 1983) in the literature to explore the sources of stress among the students. The overall reliability of the test items was assessed by calculating Cronbach's alpha (0.89), which indicates significant internal consistency. Demographic information such as age, gender, marital status and employment status were also obtained. Students were asked to respond to the questionnaire items on a four-point Likert scale as "not stressful at all", "somewhat stressful", "quite stressful", and "very stressful". For clarity and the purpose of data analysis the questionnaire items were categorize into three domains: academic-related, psychological and health-related items. The Brief COPE used by Folkman and Lazarus (1980) was also adapted to measure the coping strategies students used to minimize stress.

RESULTS AND DISCUSSION

Causes of Stress

The objective of the study was to investigate the causes of stress and coping strategies among distance education students enrolled on the university of Cape Coast distance education program. As seen in Table 2, among the academic-related stressors, 'high academic workload' had the highest mean (M=3.28, SD=0.84) indicating that academic work

put a lot of stress on distance education students. This is followed by 'high frequency of examinations' (M=3.00, SD=1.13), 'poor performance in examinations' (M=2.72, SD=1.08).

Table 2. Causes of stress among distance education by gender

Category	Stressors	DES Score			Sig. level
		Overall Mean (SD)	Male Mean (SD)	Female Mean (SD)	
Academic-related	High academic workload	3.28 (0.84)	3.25 (0.86)	3.36 (0.81)	NS
	Dissatisfaction with lectures/face-to-face	2.47 (1.04)	2.34 (1.01)	2.76 (1.01)	NS
	High frequency of examinations	3.00 (1.13)	2.95 (1.14)	2.92 (1.12)	< 0.001
	Poor performance in examinations	2.72 (1.08)	2.83 (1.06)	2.48 (1.11)	NS
	Lack of learning materials/resources	2.17 (1.14)	2.26 (1.18)	1.98 (1.00)	NS
	Difficulty reading and understanding modules	2.58 (1.02)	2.51 (0.98)	2.75 (1.04)	NS
Psychosocial	Inability to manage time	2.46 (0.92)	2.45 (0.87)	2.50 (1.04)	NS
	Inability to concentrate during lecture	2.63 (1.14)	2.59 (1.08)	2.73 (1.27)	NS
	Anxiety about performance in exams	2.20 (0.97)	2.23 (0.97)	2.13 (0.99)	NS
	High parental expectations	2.39 (1.16)	2.50 (1.19)	2.14 (1.07)	NS
	Worries about future	2.40 (1.05)	2.42 (1.03)	2.35 (1.12)	NS
	Loneliness	1.75 (0.87)	1.81 (0.87)	1.62 (0.87)	NS
	Financial problems	3.01 (1.12)	3.06 (1.07)	2.64 (1.20)	<0.009
	Family/marriage problems	2.98 (1.26)	2.62 (1.26)	2.60 (1.24)	NS
	Difficulty relating to members of the opposite sex	1.69 (1.07)	1.66 (1.06)	1.78 (1.07)	NS
	Lack of time for relaxation	2.75 (1.04)	2.82 (0.99)	2.60 (1.13)	NS
Health-related	Lack of healthy diet/irregular eating habit	1.96 (0.89)	1.91 (0.98)	2.07 (1.09)	NS
	Sleep problems	2.24 (1.01)	2.27 (0.96)	2.18 (1.12)	NS
	Illness/ health problems	2.00 (1.01)	2.06 (1.00)	1.87 (1.02)	NS
	Problems with lectures during face-to-face	1.84 (0.81)	1.85 (0.78)	1.89 (0.89)	NS

Statistical significance at p < 0.05   NS=Not Significant

Academic work such as writing of assignment, attending face-to-face sessions and examinations (quizzes and end-semester) put a lot stress on distance education students.

This result is consistent with findings of studies reported in the literature that cite academic workload, difficulty in reading textbooks as part of the sources of students stress (Al-Sowygh, 2013; Chao, 2011; Saklofske, Austin, Mastoras, Beaton, & Osborne, 2012). The content of the courses offered on distance education program are just the same as the residential or regular students courses which presupposes that distance education students need equal academic effort just as their regular counterpart to go through their study programs. However, most distance education students are matured which suggest some of them have not had academic work after senior high school for a long time, hence adjusting to a new academic life coupled with work and family responsibilities affect their academic life hence experiencing stress in the course of the program. Results in Table 2 further show that stressors were found to be similar among male and female students. This finding contradicts the finding of Al-Sowygh (2013) study on causes of stress among dental students which showed significance differences in stressors among male and female students. Ghanaian tertiary students face almost the same social and academic challenges irrespective of students' gender.

Among the psychosocial stressors, main issues identified were 'financial problems' (M=3.01, SD=1.12), 'family/marriage problems' (M=2.98, SD=1.26). 'Difficulty relating to members of the opposite' was reported by a few as being a stressor, this was followed by 'loneliness' (M=1.75, SD=0.87). (See Table 2). It is not surprising that 'financial problems' was scored the highest mean with high standard deviation indicating variability in the responses among all the psychosocial stressors. This resonates findings of studies conducted in Ghana (Kumi-yeboah, 2010; Torto, 2009; William et al., 2010) and other parts of developing counties (Panchabakesan, 2011). Dukel-Schetter and Lobel cited in (Abdullah & Dan Mohd, 2011) study in Malaysia cited financial fears as a common source of stress among part-time students. In Ghana, distance education students do not have any financial support scheme unlike regular residential university students who have access students' loan from the government to cushion them financially. This situation is even more pronounced among unemployed distance education students. This plight is aggravated with higher school fees that distance education students pay compared to regular students. Additionally, 'family or marriage problems' as stressor support Torto's (2009) study with part-time students in Ghana whereby social responsibilities such as taking care of children and spouses affects student's studies. With regards to health—related problems, 'sleep problems' (M=2.24, SD=1.01), 'illness/health problems' (M=2.00, SD=1.01) were moderately identified as stressors. These were almost similar among both male and female students. However, majority of students felt only minimally stressed when faced with the following items 'problems with lectures during face-to-face (This is a period when tutors meet distance education students at their study centers for tutoring sessions) (M=1.84, SD=0.81), 'lack of healthy diet/irregular eating habit' (M=1.96, SD=0.98). There were similar findings when compared among the students' gender.

Stressors were compared among married and unmarried students to examine how these category of students perceive the items as stressors (see Table 3). The analysis of the data indicates again, among the academic-related items 'high academic workload' scoring the highest mean for both married and unmarried students (Married, M=3.26, SD=0.83; Unmarried, M=3.34, SD=0.86). However, there was no statistical significance difference among them p> 0.286. This presupposes that academic related activities are source of stress whether a student is married or single. 'Financial problems' was identified as a high source of stress to both married (M=3.01, SD=1.12) and unmarried (3.10, SD=1.05) students. There was however a significant difference P<.001 with married students feeling more stressed with financial problems than unmarried students. This is expected in the Ghanaian context since there are lot of financial challenges with married couples regarding money for accommodation, school fees, transport, food etc. (Adu-Yeboah, 2011). In the midst of cash

trap of the economy in recent years. There was also significant difference p<0.001 between married (M=3.00, SD=1.15,) or unmarried (M=2.10, SD=1.17) with 'family/marriage problems' as one of the main stressors to the students.

Table 3. Causes of stress among students by marital status

Category	Stressors	Overall Mean (SD)	Married Mean (SD)	Unmarried Mean (SD)	Sig. level
Academic-related	High academic workload	3.2 (0.84)	3.26 (0.83)	3.34 (0.86)	NS
	Dissatisfaction with lectures/face-to-face	2.47 (1.04)	2.47 (1.02)	2.46 (1.08)	NS
	High frequency of examinations	2.68 (1.13)	2.71 (1.10)	2.63 (1.17)	NS
	Poor performance in examinations	2.72 (1.08)	2.84 (1.04)	2.57 (1.13)	NS
	Lack of learning materials	2.17 (1.14)	2.11 (1.12)	2.26 (1.15)	NS
	Difficulty reading and understanding modules	2.58 (1.02)	2.62 (0.92)	2.53 (1.10)	NS
Psychosocial	Inability to manage time	2.46 (0.92)	2.48 (0.87)	2.45 (0.99)	NS
	Inability to concentrate during lectures	2.63 (1.14)	2.67 (1.13)	2.57 (0.99)	NS
	Anxiety about my performance in exams	2.20 (0.97)	2.28 (0.98)	2.08 (0.95)	NS
	High parental expectations	2.39 (1.16)	2.50 (1.12)	2.24 (1.21)	NS
	Worries about future	2.40 (1.05)	2.41 (1.02)	2.37 (1.10)	NS
	Loneliness	1.75 (0.87)	1.70 (0.89)	1.82 (0.85)	NS
	Financial problems	3.01 (1.12)	3.10 (1.05)	2.71 (1.18)	< 0.002
	Family/marriage problems	2.98 (1.26)	3.00 (1.15)	2.10 (1.21)	<0.000
	Difficulty relating to members of the opposite sex	1.69 (1.07)	1.41 (0.88)	2.09 (1.18)	NS
	Lack of time for relaxation	2.75 (1.04)	2.59 (0.91)	2.97 (1.17)	<0.000
Health-related	Lack of healthy diet/irregular eating habit	1.96 (0.89)	1.86 (0.95)	2.09 (1.02)	NS
	Sleep problems	2.24 (1.01)	2.19 (0.95)	2.31 (1.01)	NS
	Illness/ health problems	2.00 (1.01)	1.83 (0.97)	2.25 (1.01)	<0.000
	Problems with lectures during face-to-face	1.84 (0.81)	1.63 (0.76)	2.12 (0.80)	<0.000

Statistical significance at p < 0.05   NS=Not Significant

Stress Coping Strategies

Managing stress is very vital to averting any negative effect of prolonged stress. Students use various coping strategies in managing stress. As shown in Table 4, majority of the students were using positive coping strategies. Praying/meditation were very important coping strategies for both male (M=3.22, SD=0.89,) and female (M=3.22, SD=1.04) students. In Ghana religion plays an important role in solving problems that confronts people especially with issues that do not have social structures to mitigate its negative effects. Hence, this results have shown the use of prayer in solving social problems in the Ghanaian context. Other important coping strategies were self-distracting (M=2.82, SD=1.07; M=2.69, SD=1.22) such as watching TV, movies listening to music; emotional support (M=2.84, SD=0.92; M=2.57, SD=1.09) and instrumental support (M=2.60, SD=1.08; M=2.26, SD=1.10) for males and females respectively. This results corroborates Sideridis (2008) study that revealed five important stress coping strategies; browsing the internet, sleeping and resting, watching TV or movies and instant messaging as frequently used coping strategies by students. However, many students were also attempting to learn to live with the situation.

In contrast to some perception in the Ghanaian society that some students use tobacco and alcohol abuse to reduce stress, this study found that majority of the students reported not using tobacco/alcohol or drugs to address stress situations. Some of the students also used 'Denial", that is refusing to believe it happened or not accepting the situation, male (M=2.24, SD=1.13) female (M=2.29, SD=1.12) as a coping strategy for stressful events. This implies students make sure to forget that they are going through stress and free their minds of the stressful events but for how long can these situations sustain such a coping strategy as far as the stressful keep occur.

The results in Table 4 further show that instrumental support such as getting support or advice from lectures or tutors was also used by a reasonable number of the students; Male (M=2.60, SD=1.08); Female (M=2.26, SD=1.10).

Table 4. Coping strategies used by distance education students

Coping strategy	Details	Overall Mean (SD)	Male Mean (SD)	Female Mean (SD)
Active coping	Doing something about the situation, taking action to negate stressor	2.50 (0.88)	2.57 (0.84)	2.34 (0.95)
Positive reframing	Seeing something good in what is happening, learning from experience	3.00 (1.10)	3.07 (1.06)	2.73 (1.18)
Alcohol/tobacco/substance abuse	Using tobacco/alcohol/drug to fell better	1.16 (0.57)	1.14 (0.53)	1.21 (0.65)
Humor	Making fun of the situation	1.63 (0.90)	1.61 (0.88)	1.67 (0.94)
Given up coping	Giving up the attempt to do anything about the situation	1.75 (0.99)	1.67 (0.94)	1.94 (1.08)
Emotional support	Getting emotional support/advice from friends and family	2.76 (0.98)	2.84 (0.92)	2.57 (1.09)
Instrumental support	Getting help and advice from lectures or tutors	2.50 (1.10)	2.60 (1.08)	2.26 (1.10)
Self-distraction	Doing something to take my mind off the situation such as watching TV, movies, shopping, listening to music	2.81 (1.07)	2.82 (1.00)	2.69 (1.22)
Religion	Praying/meditating	3.22 (0.89)	3.22 (0.83)	3.22 (1.04)
Venting	Expressing negative feelings: showing anger at things/people	1.65 (0.88)	1.60 (0.88)	1.77 (0.88)
Acceptance	Learning to live with the situation, accepting it	2.78 (1.02)	2.80 (1.03)	2.73 (1.00)
Denial	Refusing to believe it happened, not accepting the situation	2.24 (1.13)	2.29 (1.12)	2.12 (1.16)

Students support services such as academic counsellors are expected to help students to overcome challenges that face in the pursuit of their academic work, however the nature of distance education in the University of Cape Coast make it difficult to appoint academic counsellors at the various centers as support service for students. Study center coordinators attend to all needs of the students no matter the nature of the need the student brings to the center.

CONCLUSION

Distance education has come to complement the efforts of increasing access to tertiary education in Ghana. However, this study has revealed that high academic work, high frequency of examinations, financial and family problems combined with other social responsibilities are the major causes of stress distance education students. The distance education program in the University of Cape Coast lack students support services that could design program that at least to reduce stress among students. The work and academic load combination has been the major source of stress to students which goes to point to the fact that most employees do not inform their employers when they are enrolling on a distance education program hence continue to hold on to their tight schedules at work with academic work. This situation could affect their academic performance resulting in stress in most cases or even some students' dropping out eventually. While majority of the students irrespective of gender were using positive coping strategies such as praying, taking action to negate stressors, seeing something good in what was happening and learning from experience and getting emotional support from friends and family, many were also learning to live with the stress situation and accepting it. It however, came to light that minority of the students used tobacco/alcohol/drug to address stress situation.

RECOMMENDATIONS

Based on the findings and conclusion from the study, we recommend that the counseling unit at the college of distance should organize stress management programs for students who are on the program. This can done when every student has been assigned a counselor and the counselor can contact his or her students during face-to-face periods or through e-mails and mobile phones. The college of distance education should also have unit for students support services which will develop policies that will ease pressure on their students both from the university and employers. Prospective distance education students should be informed to seek support from family, friends, employers on the limited free times and movements associated with distance education programs. Prospective students who wish to enroll on distance education program should also inform their employers to enable them reduce their workload in order to have some reasonable time for meeting academic work.

LIMITATIONS

Our study did have some limitations. Firstly, being organized as a cross-sectional design, which investigates the real world at one point in time. Such a design does not examine longitudinal fluctuations in perceived stressors over time. Since the information was collected on self-administered questionnaires/instruments we cannot rule out information bias. Secondly, the students were in the final year of their studies only, and the results cannot be generalized to students in other years. Despite these limitations the findings could be useful in informing policy and practice of distance education in Ghana and other similar context. We strongly encourage further research on the causes of stress and coping strategies among residential students on University campus compared to distance education students. Furthermore, interviews could be used to elicit from respondents causes of stress and it effect on their academic work.

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E-MENTORING AT A DISTANCE: AN APPROACH
TO SUPPORT PROFESSIONAL DEVELOPMENT IN WORKPLACES

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ABSTRACT

The rapid growth of technology has had a significant effect on educational activities. As a result of this growth, a shift has taken place from a behaviorist teaching style to a constructivist perspective which enables adult learners to build up knowledge collaboratively. Mentoring, a valuable tool within the constructivism approach, can offer a two-way knowledge-sharing environment in which participants can adopt what they learn into their workplaces through a process called transformative learning. Mentoring has now embraced technological advances so that participants can contact each other with synchronous and asynchronous communication tools such as Skype and e-mail respectively. This research project was conducted in a governmental company as a case study in order to study how the participants of mentoring understand their roles, and how they perceive these roles when communicating through Skype and e-mail. The project culminates in suggestions for a new e-mentoring model for practitioners. One of the findings in the research shows that the understanding of the mentoring relationship is diverse, and most participants have confusion about the different meanings of coaching, mentoring and consulting. However, almost all the participants agree that mentors should have a strong position to foster transformative learning in a mentoring process. Although transformative learning has not occurred in the relationships, Skype is a supporting technology for mentors to complement e-mail dialogs by clarification, and building up a trusting relationship. Moreover, some mentors often take an active role to manage and control the relationships as a leading position, but mentees mostly support this action by asking good questions and initiating meetings. Additionally, e-mail is used as a storage tool to review previous conversations, and it is used to re-schedule and initiate online meetings. Lastly, the researcher reflects on the implementation process as practical implications for other practitioners who would like to implement electronic mentoring in workplaces.

Keywords: Online education, e-mentoring, computer mediated communication, professional development, workplace learning.

INTRODUCTION

In recent years, the rapid growth of technology has had a significant effect on teaching and learning activities in a wide range of contexts. Even though the understanding of education was more likely to be related to classroom based activities in the past, today, people have been interacting with a great deal of communication tools on the computer for their learning and training activities. In this respect, there has been a shift from non-technological education, which provided standardized curriculum in classrooms, to individual learning environments enhanced with developed technology. Today's learners have different opportunities provided by computer technologies. They can learn and

acquire knowledge individually at a distance without being a student at an educational institution. Considering that everyone has different preferences and learning methods, online education has provided individualized learning opportunities to understand how one learns in the learner's natural context considering his or her needs (White 2005).

Not only have such individual learning needs encouraged educators to use technology in order to enhance teaching and learning activities, it has also raised the notion of life-long learning. Furthering this point, education has to be shaped and adopted to support all people for their careers and to meet the needs of all learners. The reason to keep learning after school is most likely associated with having different jobs in different occupational fields after graduation, since people may contribute to the society and organizations where they are working during their career by fostering their personal and professional development. To do this, mentoring, one of the important approaches to elicit the potential of people and enable those people to transfer their experience into daily life (Kuzu et al. 2012, p. 1), might play an important role in supporting professional development in different contexts. The notion of mentoring has also embraced technological advances to enhance and support the mentoring process through emerging communication tools. This has encouraged researchers to develop the idea of electronic mentoring.

This research project is conducted as a case study in a governmental company in order to investigate how the participants understand their roles in a mentoring process, and to examine how communication tools relate to this understanding of electronic mentoring. The paper is divided into five chapters: introduction, purpose of the study, literature review, method, findings and discussion, conclusion and practical implications.

Purpose of the Study

The research is conducted in a governmental company—one of the biggest companies in Turkey. One of the main problems for the company is that if there is a specific in-service activity for some staff, they have to go to the training centers from different cities in Turkey in order to take the training sessions. As a result of this, such activities are costly for the company due to travelling expenses and the preparation of these traditional education approaches. Due to these challenges, the company management has already attempted to digitalize some content in order to turn traditional education into online education. Nevertheless, the rapid growth of the technology has encouraged the company to find out different solutions to increase the quality of these activities and the satisfaction of the staff.

E-mentoring relationships might be a part of the solution to deal with such issues for the company since it has many advantages such as cost-effective training and orientation activities. When electronic communication tools are used for a mentoring relationship, other online education practices can also facilitate this relationship.

LITERATURE REVIEW

The Paradigm Shift from Traditional Education to Online Education

The question of how educators can improve the effectiveness of education for their students has been a serious topic of discussion amongst educators and students alike. In fact, different theories and considerations have been proposed to better educational activities for a long time, but today, this issue has slightly changed due to the advent of the computer and Internet. Many researchers and practitioners have attempted to adjust and shape technology with educational theories. As a result of this, using theories and technology together in an effective way is one of the fundamental considerations among researchers in the literature. Anderson (1982), for instance, examines three key benefits of educational theories for technology-enhanced learning environments: helping educators make communication effective for learners; using time and educational sources wisely; and enabling the educators to think further about technology usage. Using online education in the context of this research study has similar consideration as many

employees use online technology, such as e-mail without being aware of the educational benefits. Similarly, Laurillard (2012) argues that theoretical formal education and technology should be used in harmony. These thoughts show that there is a tension between technology usage and educational considerations due to the rapid growth of the technology. Many software and tools, for instance, are available on the Internet to use them for our daily life such as communicating with people, but the problem is how to harness those tools and software to enhance learning. In this respect, Conole (2013) points out a new form of educational environment in which learners engage with different tools on the Internet and through computer technologies based on educational theories. She argues that "there are three fundamental shifts: a shift from a focus on information to communication, a shift from a passive to more interactive engagement, and a shift from a focus on individual learners to more socially situative learning" (p. 82). That is, learning takes place in a situation in which the learners can construct the knowledge, and this can allow them to transfer what they learn into their work context (Laurillard 2012, p.55).

The Characteristics of E-Mentoring

Electronic mentoring is sometimes defined as telementoring, cyber-mentoring or virtual mentoring in the literature (Single and Single, 2005; Akin and Hilbun, 2007). A brief definition of electronic mentoring might be that "a computer-based communication way in which mentor and mentee can contact each other with discussion boards, chat rooms, blogs and Web conferencing" (Circle et al. 2010, p.30). In opposition to Pachler and Redondo's (2012) observation that there are few definitions of e-mentoring, many definitions and explanations can be found in the literature. All these explanations, however, cannot give a robust structure for implementation and practicality. Therefore, there is a need to focus on some details in order to understand the characteristic of e-mentoring. Although e-mentoring literature is quite scarce, general considerations can be categorized into two main topics, namely transformative learning and effective technology usage. In this part of the paper, these topics are discussed in order to identify some key characteristics of electronic mentoring.

Transformative Learning

As some initial points discussed in the paper indicate a paradigm shift from traditional education to online education, educational considerations take place in understanding how the electronic mentoring process makes learning effective and transformative with the advance of technology. Although Rowland (2012) describes the relationship between mentor and mentee as a knowledge transmission, collaborative and situative learning should be taken into account. In other words, this relationship is far beyond a knowledge transmission, rather knowledge construction and active learning take place so that the participants can use constructed knowledge in their workplaces. In this respect, Crow (2012) adds the importance of the constructivist perspective for a mentoring relationship and states, this learning does not simply involve a transmission of knowledge. The learning that takes place with these strategies involves the social construction of knowledge, in which knowledge is co-constructed through the social negotiation process of relationship. Thus, rather than identifying and transmitting a set of facts, and practices, mentoring and coaching involve a creative process in which mentors and mentees together construct the knowledge of school leadership and make sense of the mentee's practice (p.233).

It is crucial to bear in mind that the mentoring or e-mentoring relationship should foster meaningful learning regardless of context differences. Since e-mentoring is a mentee-centered process, learning should be in a transformative way in which the mentee can use and adapt the knowledge for his or her work place context. Pachler and Redondo (2012) identify a similar characteristic of a mentoring relationship that: mentoring and e-mentoring for us are closely linked to capacity building: not just in terms of enabling individual learners to cope with and thrive as individual members of the knowledge economy, but also in terms of making a systematic contribution to the management and exploitation of existing as well as the generation of new knowledge (p.462).

Indeed, CMC (computer mediated communication) is the key element to facilitate and enhance knowledge construction between the mentor and mentee as long as it is used properly. Furthermore, not only is using communication tools with an educational perspective taken into account, ICT skills are also a fundamental factor to get more performance from an electronic mentoring relationship.

Effective Technology Usage

ICT or computer skills are often discussed issues regarding electronic mentoring process in the literature, but ICT literacy, defined as the ability of using technology "as a tool to research, organize, evaluate and communicate information (P21 Partnership)", should not be overlooked. Although there are many kinds of literacy, such as information literacy, digital literacy and so on, ICT literacy is one of the most important parts of an electronic mentoring relationship in any context, as participants in an e-mentoring process need to actively engage with different synchronous or asynchronous communication tools, and they need to deal with different challenges related to communication on the computer. Ensher et al. (2003, p.276), for instance, identify five challenges in terms of using CMC for a mentoring process as follows:

- ➢ **Misunderstandings in communication**
- ➢ **Slow pace of building up relationship**
- ➢ **Technical and written communication skills**
- ➢ **Hardware and software problems on computer**
- ➢ **Privacy issues**

Many of these challenges might never appear in a traditional mentoring relationship, but CMC is different than FtF since "e-mentoring adds a human element to computer-mediated-learning" (Homitz and Berge 2008, p.329).

Another example of using technology for the mentoring relationship is given by Bamford (2011). He defines the role of technology as the heart of an e-mentoring model.
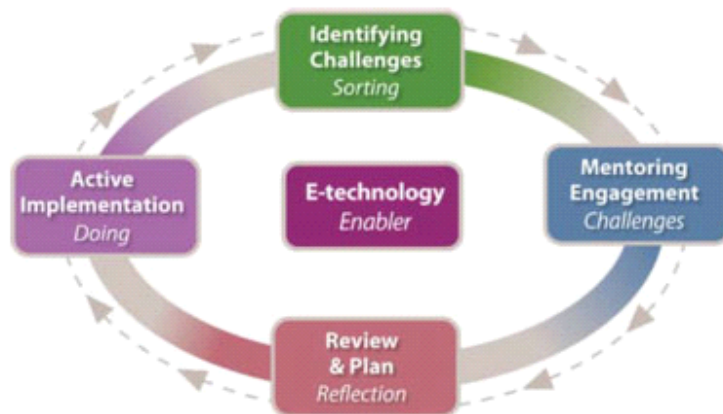

Figure 1. The e-Mentored Learning Model (Bamford 2011, p.153)

The figure indicates that technology facilitates almost every step of an electronic mentoring process. Technology is not only used to facilitate online communication between mentor and mentee in an e-mentoring system, it also plays an important role during implementation of an e-mentoring process. Basic ICT skills belonging to the participants might be enough in a short-term period, but the participants need to use technology in a meaningful way so that a successful and effective e-mentoring process can occur over a long-term period. From this point of view, computer or ICT literacy does not only include technical skills (Whitworth 2009), but rather it is an ability to use technology for an effective learning process. Therefore, ICT literacy skills are more likely

to help and support the participants in order to reduce possible problems in an e-mentoring process.

Similar Cases in Turkey

Even though there is plenty of research related to mentoring and electronic mentoring in Turkey, many of them are conducted in educational settings such as schools and universities. However, research about workplace settings in terms of mentoring are quite scares. For instance, one of paper focuses on training school managers through mentoring in schools (Eres, 2009). According to researcher, having leadership feature by school managers could positively affect making productive decisions and plans, using time wisely and arranging managements skills. Although this research project is conducted in a school setting, improving leadership skills for school managers could be considered as a professional development process.

One of the papers about professional development through mentoring is conducted by Celik (2011). The paper examines how to use mentoring and coaching process to support librarians' professional skills. An example of mentoring implementation given by the researcher, which is conducted in the Library of Dogus University, improves job qualifications for novice librarians through experienced staff. The end of the three months mentoring process, it is observed that full time novice librarians start to work more professionally.

A review article by Sen and Alan (2014) examines mentoring process in order to improve nursing competences. According to the researchers, experiences staff should learn new methods like mentoring to develop novice nurses rather than guide and order them. By doing this, organizational culture could easily transfer and orientation process could be done effectively.

When we look at the research and papers about mentoring process in Turkey, it could be observed that empirical research is very limited and vague. It should be also pointed out that electronic communication tools to facilitate mentoring relationships are not used by the researchers. Therefore, e-mentoring projects at workplace settings for professional development need to be conducted to have empirical data and embrace new educational methods to improve competences.

METHOD

The researcher has two main purposes of this research: the first one is to investigate how the participants understand their roles in an e-mentoring relationship to contribute to the literature as a researcher; the second is to identify, test and reflect an e-mentoring implementation experience as a practitioner. Therefore, the researcher is going to establish a small size group of e-mentoring relationships in order to analyze these research questions:

- To what extent do participants understand their roles in a mentoring process?
- How is using Skype related to this understanding?
- What are the roles of e-mail as a supporting technology in the mentoring process?

Before referring to the methodology, it might be useful to mention the philosophical considerations that underpin the rationale for the research. Cohen et al. (2011) point out that social reality can be viewed from two perspectives, namely ontological and epistemological points of view. The researcher in this research study is interested in knowledge in social science, which can be generated or interpreted. Thus, an epistemological viewpoint is an important consideration to analyze data that will be found out at the end of the research. Research in the social sciences requires more interpretations, thoughts, and opinions to understand knowledge, as understanding social issues about a human being, such as

educational phenomena, is more complicated than natural science. On this, Cohen et al. (2011) highlight, "the social and educational world is a messy place, full of contradictions, richness, complexity, connectedness, conjunctions and disjunctions" (p. 219). Therefore, it is difficult to find out definite answers in social science from only observations or experiments, without a researcher's interpretation. The case study was used as a scientific approach in order to find out accurate data during the research. Gillham (2010) defines a case as an individual, a group, an institution, a community or multiple cases (p.1). Understanding this, the research was conducted in a governmental company as an institution with a small-scale e-mentoring project. The company is also the researcher's workplace, as Blaxter et al. (2006) point out that case studies may also be done in a company where the researcher works. In addition, the research was mostly dependent on qualitative elements regarding the philosophical considerations discussed above. One characteristic of qualitative research is that it generally consists of thoughts, perceptions, and feelings (Gillham 2010). Therefore, the methods were selected in order to deeply understand what the participants think about their mentoring relationship.

Participant Selection and Ethical Procedures

Ethical issues were one of the main considerations underpinning any scientific research. Additionally, all participants in a research were supposed to be fully informed about what they were expected to do—volunteer to be interviewed, contribute to the project, and understand the risks and potential pitfalls of the research (Cohen et al. 2011). That being said, a consent form was prepared in order to gain their consents for the research for the project. Blaxter et al. (2006) also point out the importance of anonymity that the researcher is responsible to conceal the real identities of the participants provided by data in a project.

Having taken into account ethical considerations, six people were selected for this research project. One of the participants was the researcher himself taking on a mentee role and that of a practitioner. The rest of the participants were currently working in the Training Center in the company. Three of them were selected for a mentor role to match with other participants who were novice trainers. All of them were fully informed with information in terms of data collection methods, project schedule and interviews. Furthermore, all participants were asked to fill out participation forms to collect some details about them. In order to give some brief information about the participants while maintaining anonymity, different names were used during the data analysis.

Table 1. Pairs in the mentoring relationships

Pairs
MentorA - is a 48-year-old experienced male trainer. Although he has participated in many training and teaching activities as a trainer, this was his first mentoring experience. He used to work as a trainer for 4 years at the company. He is now a line-manager.
MenteeA – who is 28 years old and a novice trainer, has been working in the company for 1 year, and is experienced, using some software such as Flash and Dreamweaver. This is his first time to join an e-mentoring relationship.
MentorB - is a 37-year-old trainer in the training center of the company, particularly responsible for public relations and presentation development. He has been working in the company for 7 years. This is his first time as a participant in a mentoring project.
MenteeB - is a 29-year-old novice trainer who has been working in the company for 2 years.
MentorC - is 36 years old and a line manager, responsible for the management of in-service training activities in the company. He has participated in a coaching course before, but this is his first time being involved in a mentoring project. He has been working in the company for 10 years.
MenteeC(The researcher) - is a 28-year-old sponsored student, and has been studying in the UK for his master degree. He is going to be a novice trainer in the company after graduation.

Data Collection and Analysis

The question 'Which method is the best?' is not solely about whether, for example, to use interviews, questionnaires or observations. Underpinning these research tools are more generally philosophical questions about how we understand social reality, and what the most appropriate ways of studying it (Blaxter et al. 2006, p.58).

As the researchers point out the complexity of selecting suitable methods, some different instruments and methods were used to collect data during our research. According to Cohen et al. (2011) a case study may include numerical, qualitative, and mixed methods. Therefore, we used numerical and qualitative methods together considering our scientific and philosophical approach.

Table 2. Data Collection Methods and Instruments

Numerical	Qualitative
The number of sent E-mails	E-mail Logs
The number of online meetings	Online Reflective Review Forms
	Semi-structured interview
	The researcher's diary

As can be seen from the table, the number of E-mail posts and E-mail logs are used together to enrich the numerical data with qualitative elements. To do this, a Gmail account was given to each mentee to get them to use the account for communication rather than their personal e-mail addresses in order to keep track of what is going on between mentor and mentee in a particular pair. Similarly, two different online forms for mentees and mentors were created to get participants to reflect about their online meetings as a qualitative method. Even though E-mail logs and Online Review Forms gave meaningful data, a semi-structured interview was also used to validate the reflections and the e-mail logs (Kerlinger 1970, cited in Cohen et al. 2011, p.411), and the interview consisted of in-depth data collection related to research questions at the end of the project. Another instrument that was used to collect data was the researcher's diary. Blaxter et al. (2006) point out that diaries may be used to record opinions, events and thoughts about a particular process in any research regardless of context and methodology differences (p.48). In this respect, the researcher had also a mentee role as a novice trainer in the company, and a practitioner who attempted to implement and reflect an e-mentoring system during the project. Therefore, keeping a diary was useful to get the researcher's perspective during his mentoring relationship and implementation period.

Pope, Ziebland and Mays (2000) state that a qualitative data analysis consists of five states, namely; familiarisation, identifying a thematic framework, indexing, charting, mapping and interpretation. The researcher listen the interviews from recordings and read logs, online forms and the diary in order to immerse the raw data for the first step. Then, main themes and key concepts were determined from the data considering research questions. Following this, the data were marked with themes and key concepts in order to have systematic analysis. After this section, all the marked data was rearranged and rewritten as a chart. Lastly, the chart were used to interpret and define the phenomena for the research context (p. 116).

Implementation Process
Preparation
At the beginning of the implementation, the researcher had a face-to-face meeting with the managers and the line-managers in the company in order to explain the research details. Having taken account of organizational needs, novice trainers working at the Training Centre were chosen for the project. One of the important reasons why the participants were selected from this department was an informal mentoring relationship had already been in progress, because the department had hired some new trainers. This on-going informal mentoring relationship was also a motivational driver for the participants to voluntarily join our e-mentoring project. At the end of this stage, the researcher got an agreement from the organization to start the Structuring Step.

Structuring
Firstly, the project's objectives were determined with the line managers considering the organization and the participants' demands. The objectives covered career development, transmission organizational culture, workplace induction for the participants, strengthening the communication among the staff and a quick adaptation of the new workplace for the organization. The length of the process was two months. Although a mentoring relationship is suggested to be a long term period, such as more than 1 year (Kram 1988), this study had to shorten the duration to finish the project in two months due to time restrictions. In this respect, we planned the e-mentoring relationship with a maximum of 4 online meetings, but 2 online meetings were compulsory in order to promote "online socialization" and "access and motivation", as online learners need to get familiar with online software and each other before starting any online teaching activities (Salmon 2002). In addition, mentors and mentee roles in the project were determined with the possible mentors considering the literature.

Matching
The matching process was conducted by the line-managers in the company, as they were more likely to know the staff's characteristics and their strengths and weaknesses. However, the matching process needed much more attention as skills of mentors are crucial for an e-mentoring relationship. Therefore, using a scale for mentor selection might have been better to make matching much more effective.

Implementation
In this stage, the researchers chose Skype and e-mail for the communication between mentors and mentees as synchronous and asynchronous tools respectively. The researchers also prepared a Handbook, which includes objectives, mentors' and mentees' roles, meetings schedule, and the facilitator contact information, to communicate with the participants easier. In addition, online training sessions were held on Skype for 10-15 minutes with each participant to send them the Handbook, explain them the project's details and answers their questions.

Evaluation
Online forms were created and added in the Handbook for on-going evaluation during the e-mentoring relationship. After finishing an online meeting, participants needed to fill out the online forms (Mentee Review Form, Mentor Review Form) in order to reflect on completed online meetings.
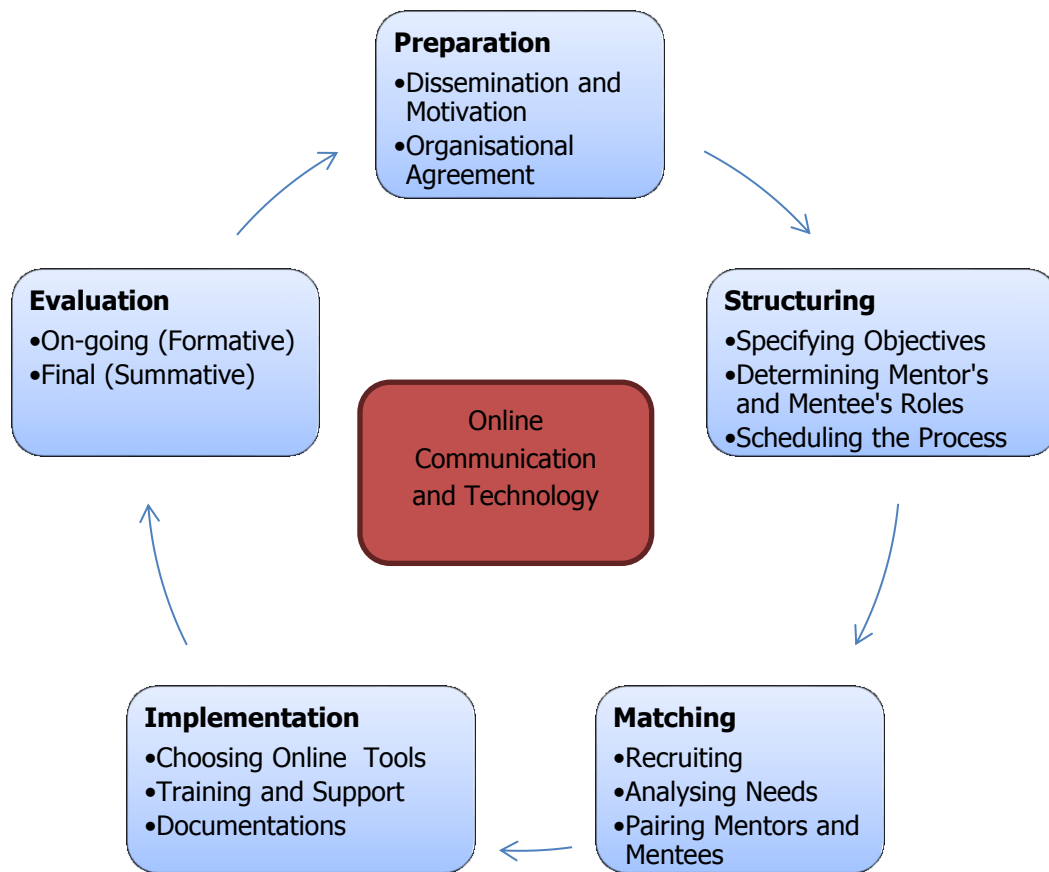
Figure 2. Implementation Process for the Research

FINDINGS AND DISCUSSION

During the two-month time period, three mentor-mentee pairs attempted to achieve the project aims which were given in the Handbook and the expectations defined before the project. Each pair had different numbers of Skype meetings and e-mails.

Table 3. The number of sent e-mails and online meetings by the participants

Pairs	The number of Skype Meetings	The number of sent e-mails	
		by Mentor	by Mentee
Mentor-A	2 online meetings	12	4
Mentee-A			
Mentor-B	2 online meetings	3	5
Mentee-B			
Mentor-C	3 online meetings	8	8
Mentee-C (the researcher)			

The table illustrates the number of e-mails per pair depending on their mentoring relationships. However, only numerical data of sent emails might not give accurate data to interpret the relationships. Therefore, the researcher focuses on the content of sent emails in order to provide the answers for the research questions. Some main themes can be derived from the e-mail logs, semi-structured interviews, reflections on online forms, and researcher's diary as follows:

> The understanding of the mentoring process
> Fostering active learning
> Managing the mentoring relationship
> The roles of e-mail usage

Following this Chapter, the data is analyzed considering these themes.

The Understanding of Mentoring Relationship

The researcher of this study has been interested in mentoring literature in the educational perspective since having a mentor in December 2014 to develop the researcher's personal understanding of mentoring. Since then, the researcher has been in two mentoring relationships. One initial thought towards the mentoring definition was similar to the learning process in traditional classrooms. In other words, the researcher used to think that a mentor has similar responsibilities like a teacher; the mentor has to teach his or her mentee during the mentoring relationship depending on the mentee's learning needs. After a short time period and this research project, the researcher's personal thoughts about mentoring have slightly changed. The mentoring process is not only a teaching and learning activity, but also a period of growth for both mentor and mentee through exchanging knowledge and experiences. From this point of view, if the participants can understand the mentoring process properly, the engagement of technological tools and perceptions of roles might be much more effective. Therefore, the rest of this chapter consists of showing how the participants defined a mentoring relationship at the end of their relationships. Despite the many definitions of e-mentoring in the literature, Single and Muller (2001) define electronic mentoring as a relationship that is established between a more senior individual (mentor) and lesser skilled or experienced individual (mentee), primarily using electronic communications, and that is intended to develop and grow the skills, knowledge, confidence, and cultural understanding of the mentee to help him or her succeed, while also assisting in the development of the mentor. (p. 108)

The definition seems simple, but it is a brief definition that illustrates complex characteristics of an electronic mentoring such as skill development, cultural understanding in a company and mutual relationship. Similarly, other definitions in the literature refer to a basic knowledge transmission from an experienced person to less experienced individuals in the workplace context. In this research, three pairs have different degree of mentoring relationships depending on their needs and perspectives towards mentoring. In this regard, the findings indicate that some participants in this project understand mentoring relationship as a one-way knowledge sharing process from a mentor to mentee in the traditional way.

> *"I did not know what mentoring was before this project. I used to think that someone would teach something to me during this relationship but I realised that it actually depends on questions and answers between mentor and mentee. It is a knowledge transmission from an experienced person to a novice member.*- MenteeA – Interview*"*

MenteeA, for instance, defines mentoring as a question-based communication, which allows the mentee to ask questions and get answers. Indeed, asking questions is one of the main parts of a mentoring relationship to foster the growth of mentee, but when looking at the e-mail logs between MenteeA and MentorA, it seems that the questions by the mentee only foster simple knowledge transmission rather than developing the mentee's skills, knowledge, or confidence in the pair.

> *"I think, mentoring is a relationship to share experiences and knowledge. [...]I also think that mentor and mentee influence each other to get benefit from a mentoring relationship.-MentorC – Interview"*

MentorC, however, defines mentoring based on his e-mentoring experience as a relationship, which enables the participants to share experience and knowledge together. The literature points out that the mentoring process is a "mutually-beneficial relationship" (Homitz and Berge 2008, p.331). That is, not only does a mentee get benefits from a mentoring relationship, but the mentor also benefits in gained skills and knowledge. In this respect, the interview and e-mail logs confirm the literature for this pair; mentors can also benefit from a mentee-centred mentoring relationship. For instance, MentorC and the researcher, as a mentee role, discussed how to implement an innovative in-service system, which can allow the company's staff to learn during playing games. This idea came from a conference and was shared with the mentor at that time. He was also interested in such idea. At the end of the meeting, we decided to implement this kind of system in the company. Although the mentor had some interests on using games for training activities, he did not know the theoretical information in the literature about using games for teaching and training activities. These two different definitions of a mentoring process by the participants – one-way benefit or mutual relationships – would indicate that a mutually beneficial relationship can only emerge if the mentors' professional interests align with the mentees' interests in the company. A mentor might be more experienced and can easily guide his or her mentee, but this does not mean that the mentor will benefit from the process. Having said this, matching process plays a key role in the understanding of a mentoring relationship. A bad matching might cause the participants to misunderstand the relationship and their roles, which might cause an unproductive mentoring process.

Another important point raised by the research findings is that the participants have some confusion in terms of the meanings of consulting, mentoring and coaching.

> *"I did not know what mentoring was before this project. In my opinion, e-mentoring is an online consulting because there is a knowledge transmission from mentor to mentee by asking questions. – MenteeB – Interview"*

> *"I used to think that mentoring was similar to coaching which offers professional develop through a foreman in workplaces. Therefore, mentoring and coaching still seem to me similar terms, but e-mentoring is a different aspect of mentoring relationship. – MentorC - Interview"*

While coaching refers to training activities related to a particular skill development, mentoring covers personal issues such as career development as previously discussed in the literature review part. Different definitions have emerged during the research, because the project was conducted in a business company in which the participants are expected to be more productive and diligent; this relates to skill development. E-mail logs among pairs also support this interpretation; the mentoring relationships predominantly aim for skill and knowledge development rather than their personal issues such as career plans. This might have caused some participants to define the mentoring process in a similar way with coaching, which supports skill and knowledge improvement. On the other hand, one participant describes mentoring as a consulting relationship. This may not emerge because of the participants' experiences in the project, but the confusion might be related to language. Although the words of mentoring and coaching do not have any direct translation into Turkish, consulting has been translated into the corresponding Turkish word. As a result of this, consulting is a widely known word by people in Turkey regardless of context differences. The similarities between mentoring and consulting and translation issues might have misled the participants to define the mentoring process as a consulting relationship.

Moreover, the participants could not distinguish between electronic mentoring and traditional mentoring. They define the mentoring process as an electronic mentoring relationship. The possible reason for this might be that the electronic mentoring process is the first mentoring experience for them. Even though this misunderstanding does not affect the relationships' quality, the misperception of the whole process in theory might cause practical problems for future implementations. For instance, Skype or e-mail usage is not a must for a mentoring relationship, but these tools can support and enhance it. Thus, such misunderstanding might affect the participants' creativity related to using different communication tools for their further relationships.

As a conclusion of this phase, the participants define mentoring in many ways. It must be acknowledged that only two months mentoring period is not enough time for the participants to gain a sense of what a mentoring process entails. However, different definitions might indicate that each participant can perceive the process depending on his or her perspective, background and previous knowledge. This might also illustrate that the training sessions before the mentoring project have a key role in explaining basic characteristics and correct some misconceptions.

Fostering Active Learning

Klasen and Clutterbuck (2001) point out a paradigm shift from a behaviourist approach towards training activities to a constructivist point of view considering people's learning needs in their workplaces. In other words, the researchers explain this change in an adult education context in which today's education and training system do not consider an adult learner as a blank paper to fill full of information, but rather that learning should emerge with a dyadic relationship by shaping and adopting shared knowledge in the learner's workplace. Similarly, this learning process has to be creative in that it foster knowledge construction rather than simply competence transmission in a mentoring process (Crow 2012, p.233). In this research, interesting interpretations might emerge by comparing interviews and e-mail logs. Whilst the major parts of mentors and mentees from different pairs agree that a mentor should take an active role to foster transformative learning, this rarely occurs during the mentoring relationships of this study.

> *"...a mentor should promote active learning. For example, if an engineer starts to work at the company, we can theoretically explain some necessary information related to railways infrastructure, but this person needs practicality in order to use the information for his or her department. At that point, a mentor needs to foster this kind of active learning process rather than only giving information.* MenteeC – Interview"

> *"In a structured mentoring relationship, there should also be project-based learning. I mean, a mentor can plan a project in order to get mentee to finish it during the relationship.* MentorB – Interview"

There are more likely to be two reasons why an active and transformative learning process does not occur: the first one might be the lack of directive questions from mentors; the second one might be that mentors did not allocate enough time to plan and prepare actions before the relationship encounters. Online reflection forms confirm this interpretation since pairs most often decide on the main topics during their online meetings rather than discussing possible ideas by email as a planning activity for the meetings. Nevertheless, it seems that Skype as a tool has helped and supported the mentors to increase collaboration and knowledge construction. The mentoring relationship of the researcher, for instance, is an example of a knowledge sharing process considering e-mail logs. However, during Skype meetings, the mentor had a strong leading position to promote discussion in terms of future career plans, professional learning needs as well as personal issues. This clearly shows that FtF online

communication and e-mail should be used together to promote active learning by mentors in an electronic mentoring system.

> *"What I realized is that Skype meeting enabled us to speak more details and communicate in informal way. At that point, Skype had a role to clarify what I asked by email in detail.-* The Researcher's Diary"

This diary entry also clearly indicates that Skype usage takes place when a mentor cannot foster active learning during e-mail communication, and when s/he wants to clarify given answers for mentee's questions. E-mail can only offer a limited communication opportunity, but FtF dialogue makes this communication much more effective (Pachler and Redondo 2012). In this respect, only communication by e-mail is not enough to adopt information into the mentee's workplace. E-mail can only provide a strong writing communication affordance, when FtF communication is used to complement it.

Another finding that emerged from the research is that the majority of e-mentors have a role in sharing necessary sources associated with their mentee's learning process by e-mail. One of the important roles of a mentor is to be considered as a "resource provider" who can share documents or information for scaffolding to learning in a mentoring relationship (Dorner 2012, p.175). Likewise, e-mentors in each pair share documents and information by e-mail related to the mentee's questions throughout the project. It seems that this action not only transfers information to the mentee, it is also a sort of monitoring of their understanding of questions asked. MentorA and MentorC, for instance, most often asked their mentees to write back to them about what their mentees understand and think about of the shared documents in the e-mail logs. Klasen and Clutterbuck (2001) define this mentor's action as "stimulating ongoing review", which helps the mentee reach his or her targets by reviewing the mentee's reaction (p.184). However, as previously mentioned, only sharing documents and giving answers is not enough to promote transformative and meaningful learning. FtF online communication is a must for clarification of written communication and effective discussion between mentor and mentee in an e-mentoring process.

Managing the Mentoring Relationships

A mentor might have a managerial role which can cover planning educational activities, scheduling time period for the relationship and providing guidance and help through suitable online communication tools (Dorner 2012, p.175). However, the research findings indicate that no matter to what extent a mentoring relationship is structured, the balance of the roles in a relationship is determined by mentors and mentees together. In this regard, while one mentor manages all activities such as initiating online meetings, giving feedback and monitoring mentee's progress to some degree in the research project, other mentors and mentees have more balanced roles in controlling the process. There were, for instance, the same number of sent e-mails between the researcher and mentor. Similarly, e-mail logs show that not only did the researcher ask questions to the mentor in terms of personal professional development by email; the researcher also initiates all the online Skype meetings at the mentee role. On the other hand, MentorA mostly shares information for his mentee's questions, and initiates all the online Skype meetings by email. The reason why mentors and mentees behave differently during the process might be based on the mentee's understanding of the relationship. That is, mentors are expected to manage and control all the relationships since they have a leading and guiding position, but this depends on what extent a mentee wants to achieve his or her goals.

> *"I was mentally ready for the online meeting and I think the meeting went well in terms of what I planned in my mind.* MentorA – Reflection form"

> *"In my opinion, not only a mentor has some responsibilities for the relationship, a mentee also need to be well prepared to ask good*

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questions. A mentor can easily answers to questions but the mentor should be asked effective questions. Therefore, mentee has to come up with good questions to have an effective mentoring relationship. MentorA – Interview"

Although Homitz and Berge (2008) point out that a successful mentoring process highly relies on mentors' skills and competences, the findings indicate that mentees also share this responsibility by asking good questions and showing a willingness to continue the mentoring relationship. Indeed, mentors should guide and help mentees to cope with their problems and career plans, but if a mentee is not willing to ask good questions or get help from the mentor, the relationship might be unsuccessful. Therefore, expectations and demands have to be discussed by mentors and mentees before the mentoring process. All participants need to know what they want to achieve at the end of their relationship, and particular responsibilities, such as initiating online meetings, should be outlined before starting any mentoring process. Structuring the process might help the participants determine their mutual expectations and roles. Otherwise, participants might become unwilling to continue the relationship, which leads to failure in terms of mentoring goals.

Another important point in a mentoring relationship is establishing a rapport among participants. In other words, a mentee should trust his or her mentor (Lavin Colky and Young 2006), and a mentor should be honest, respectful and confidential (Lord, Atkinson, Mitchell, 2008). Indeed, a mentor has a big responsibility to develop this kind of environment during any mentoring process. Likewise, all mentors were willingly volunteer to build up such trusting relationships during the research project.

> *"…I am going to swim now. See you later.* –MentorA
> *…Hope you can enjoy the sea* - MenteeA,
> Email logs"

MentorA, for instance, shares personal information when on holiday. Apparently, using e-mail gives him a flexible communication opportunity to contact his mentee while not at work. The interpretation from this log might be that not only is a mentor responsible to share his experience and foster transformative learning, s/he should also make the relationship more relaxed and comfortable for the mentee. Ensher et al. (2003) discuss that the effectiveness of an informal mentoring relationship is higher than a structured mentoring process. Having said this, sharing such personal information can initiate an informal dialogue in order to develop a comfortable relationship between mentors and mentees. This is more likely to develop satisfaction amongst the participants.

> *"What I realized is that Skype meeting enabled us to speak more details and communicate in informal way. [...] Furthermore, I learnt more information about my mentor that I did not know before. For example, we have some similar professional interests such as using games in training activities and expanding our international networks by cooperating international companies-* The Researcher's Diary"

E-mail might offer written communication in which mentor and mentee can share some informal information. However, the degree of informal communication in FtF interaction is higher than e-mail. The reason is likely that Skype or other online synchronous tools can promote real time dialogue. That is, sharing different feelings and opinions between a mentor and a mentee can be supported by informal body language and gestures. This makes the communication much more comfortable, and facilitates the building up of a rapport between mentor and mentee.

> *"FtF communication is always effective because of body language. Mentor and mentee can also see the environments where they are living,*

which make communication informal and comfortable. MentorA — Interview"

" *In my opinion, the effective learning process is depending on what extend you can stimulate the senses of a learner. I mean, you can see my gestures, my face, and listen to me at the same time on Skype. This makes the learning effective.* MentorC - Interview "

The majority of mentors also think that FtF online communication is important for developing trust and effective relationships with their mentees. For instance, looking at the online forms for reflection of Skype meetings, all participants indicate that Skype meetings are successful and beneficial. Even though they do not say specifically why those meetings were beneficial, the reason might be that Skype allows them to discuss some crucial points related to relationships (Circle et al. 2010) and have an effective and rich communication afforded by visual dialogue (Pachler and Redondo 2012).

As a result, despite a mentor's guiding and leading position in a mentoring relationship (Pachler and Redondo 2012), the findings indicate that the mentee might also contribute to the process by asking good questions and initiating online meetings. Indeed, establishing a rapport can facilitate the communication among participants. Using FtF online communication with e-mail can help mentors build up a trusting relationship with their mentees. Even though an informal dialogue might increase participant satisfaction, structuring the whole relationship is a key factor as well for having a successful mentoring process. Therefore, mentors and mentees are suggested to determine their expectations, roles and meetings' schedule before starting the relationship to avoid communication problems such as mental exhaustion or unwillingness to continue the process.

The Role of E-mail Usage

E-mail usage and online meetings on Skype are at the center of this research project since electronic mentoring offers different communication opportunities to participants compared with traditional mentoring. The literature points out that e-mail is a widely available and ubiquitous medium in educational or organizational settings (Khalil 2008, p.9), and people are more familiar to use it in many contexts (Circle et al. 2010; An and Lipscomb 2010; Headlam-Wells et al. 2006). In this respect, communication by e-mail is a significant part of the e-mentoring relationships during the project. The purposes for using e-mail are as follows:

> ➢ **Scheduling online meetings**
> ➢ **Initiating online meetings**
> ➢ **Information storage**
> ➢ **An alternative for online meetings**

In this part of the phase, considering the above-mentioned themes, this study analyses e-mail usage as a supporting technology and its relations with online meetings during the process.

Although all steps and levels of the research project, including online Skype meetings and time period, were carefully planned to offer a structured mentoring process for the participants, the mentors and the mentees most often use e-mail for communication in order to schedule the meetings rather than looking at suggested dates for online meetings in the Handbook. In other words, most of the participants do not follow the program schedule; rather they prefer to choose their own available times for the meetings. Similarly, opposite to the suggestion in the Handbook, the length of period between online meetings is also diverse. In this regard, the interpretation might be that email can offer a way in which the participant can slightly bend the structure to have an informal schedule in a mentoring process. According to the earlier discussion on the effectiveness of using formal and informal mentoring process together, e-mail might play

an important role to have such balance in a mentoring relationship in which participants can revise and change the schedule depending on their respective work lives.

The participants also initiate all the online meetings by sending e-mails to each other throughout the process. This might be a foreseeable consequence in an electronic mentoring process, but today, people have used a variety tools and software on the Internet to contact each other. For example, Facebook offers instant message affordance for users to communicate in real time. The main reason why the participants preferred to use e-mail to initiate the online meetings might be that it is a much more formal tool in governmental organizations. In particular, Facebook or Twitter is considered as unserious social tools by some organizations in Turkey. As a result of this, people who work in governmental companies generally prefer to use e-mail for communication. This shows that not only does e-mail promote flexible and independent communication (Khalil 2008), it also is the most suitable tool for participants working at governmental companies in Turkey.

Pachler and Redondo (2012) emphasize another affordance of asynchronous tools as having a reflection role which offers storage facilities to record previous discussions and conversations in order to review and construct new knowledge during the mentoring relationship (p. 472). Similar to this point, most of the participants use e-mail as a storage tool in order to re-think and review what they sent each other.

> *"I think, e-mail was a storage tool during our relationship in order to turn back our previous e-mails.-* MenteeB – Interview"

Similarly, reflection (Crow 2012) and feedback (Fletcher 2012) are crucial actions of a mentoring relationship. That is, participants should be aware of what they learnt and how they can develop their learning process in a mentoring relationship. The findings from the research also confirm this. Throughout the project, E-mail is used as a facilitator tool, in particular for the mentors in order to monitor the mentees and get them to reflect for themselves.

> *"After reading the points above, I want you to write me back what you understood-*MentorA – E-mail Logs"

MentorA, for instance, uses e-mail in order to evaluate his mentee's understanding after sharing information. Although synchronous tools, such as Skype, provide a rich and enhanced communication opportunity with gestures and body language, e-mail can offer participants extra time in order to think about what they write and send each other. Furthering this, the researcher would often login to email to read previous conversations to further understand the learning process. Therefore, e-mail might offer a flexible way in which mentors can monitor and review their mentee's responses, and participants can reflect on their selves after the conversation.

Table 4. Shared Documents by E-mail (pdf or doc)	
MentorA	2
MentorB	0
MentorC	1

This table shows that a major part of the mentors used e-mail in order to share some small sized documents such as pdfs and docs. Indeed, sharing and storing any documents are an easy process through online storage facilities today. Google Drive, Dropbox and other web services can offer high capacity of storage space, but e-mail is still a widely used tool to share and keep the documents by users in many contexts. As discussed in the literature review part that effective technology usage is a must in an electronic mentoring relationship, using e-mail is more likely to require lower level of technological knowledge.

As a result of this, if the participants are not aware of different tools and feel unsecure using them, e-mail might be the best choice for this kind of action.

Lastly, one pair in the research used e-mail as an alternative way for online meetings. MentorA did not have a good enough Internet connection to use online meetings on Skype during the short time period when he was on holiday. At that time, he and his mentee used e-mail to ask their questions and share the necessary information rather than using Skype. Although the literature generally points out the advantages of using e-mail "anytime" and "anywhere" (Single and Single 2005), this affordance is more than independence. Flexibility does not only mean independence of time and place, but also eliminating communication problems in a wide sense. In other words, e-mail can offer a problem-solving opportunity that participants can use it in a variety of ways depending on their needs.

CONCLUSION

This research project has described to what extent participants understand their roles in a mentoring process and how Skype usage is related to this understanding. This study has also identified the roles of e-mail usage as a supporting technology. The most attention-grapping finding is that the majority of the participants have confusion in terms of what coaching, counselling and mentoring mean. However, most participants agree on the role of a mentor whose focus is to foster transformative learning rather than a simple skills transmission during the relationship. In this case, different findings emerge between what the participant understands from a mentoring process in theory and how the participant perceives his or her role in the practice. That is, although a majority of the participants think that mentoring should be transformative and situated, their relationships were not able to achieve this aim. Indeed, the length of this research process, two months, was not enough time to adopt the knowledge into participants' workplace. Another significant finding indicates that a mentoring process is not merely a mentee-centered relationship: it also offers two-way beneficial learning activity for both mentee and mentor. This confirms the literature, which points out that a mentoring relationship is a "mutually-beneficial process". However, such beneficial relationship for mentor and mentee is highly dependent on to what extent the participants have similar interests.

Another important finding is that there is a balance between mentors and mentees in terms of controlling and managing relationships. In other words, although the literature states a mentor should lead and guide the process (Pachler and Redondo 2012; Klasen and Clutterbuck 2001), mentees can also contribute to this mentor's leading position by asking good and robust questions in order to encourage the mentors to guide the relationships. Additionally, mentors have a "source sharing" role related to their mentees' questions. During the research project, not only did the mentors give answers to the questions, they were also attempting to share different sources in order to explain their answers.

Skype, as a synchronous tool, has also played an important role during the project. The most interesting finding is that only using e-mail is not enough for participants to convey detailed information sufficient. Skype has a role for clarification and explanation for some topics discussed during e-mail conversation. Moreover, Skype has a key effect of establishing a trusting rapport between mentor and mentee. Indeed, e-mail is suitable and useful to get participants to trust each other through written communication, however, body language and gestures provided by Skype allow the dialogue to be much more effective in building trust. Overall, as Pachler and Redondo (2012) discuss the effectiveness of using CMC and FtF communication together, e-mail and Skype usage together offers powerful modes of communication to establish a trusting relationship in the project.

Lastly, research project has identified several roles for e-mail in electronic mentoring relationships. One of the interesting findings is that e-mail can be used as an alternative communication tool when the participants face some technical problems such as insufficient Internet connection for online meetings. In this case, the participants can convey what they want to say to each other by e-mail. Additionally, e-mail offers the participant flexibility in order to schedule and initiate online meetings although there is a wide range of communication tools on the Internet. This paper's interpretation here is that e-mail is a formal tool in governmental companies in Turkey.

PRACTICAL IMPLICATIONS

Although theoretical background plays an important role in order to implement a mentoring relationship, some practical inputs might be the backbone in a mentoring system. Therefore, this section discusses the implementation experience in company and recommends some bullet points to help practitioners who want to implement mentoring systems in their organizations.

The motivation of organization and potential participants are the crucial part of an electronic mentoring relationship. Although mentors are considered as a source of motivation for mentees in the literature (Klasen and Clutterbuck 2001), such motivational factors should be, according to this research's experience, gained before starting any mentoring process. The organization or the participants have to be informed of the expectations from them for such mentoring relationships. Although a Handbook was prepared in order to explain the aims of this study, it was observed that such a long written document might affect the participant's motivation in negative way. This paper suggests that perhaps a visual online material might be prepared with a Handbook to inform the participants and the organization the benefits of a mentoring process. For instance, a two or three minute's video might be much more effective to convey important information to the participants. As Christie and Collyer (2008) highlight that a video can make the information interesting for the learners, such a video might be uploaded on YouTube and disseminated. This research study also suggests that practitioners create a simple website on the Internet as an information source to offer effective communication during the implementation process. Today, creating a web site is not a difficult process because of many free web services such as WordPress, Blogger, and Tumblr. These kinds of web services can help practitioners gather all necessary information in one platform and offer easy access for anyone who gets involved in the mentoring system. Other advantages of using a website are flexibility and updatability. With a website, practitioners can always keep participants up-to-date in terms of what is going on in the process, rather than with a handbook, if any information is changed, all participants must receive a revised version.

One other implication is using time wisely. Given the previously acknowledged lack of time for this research project as one of the research limitations, scheduling every step is a crucial aspect of a successful electronic mentoring implementation. In particular, the matching process and training possible participants might take considerable time because of unexpected problems. For example, one of the pairs in this project was unable to join the training sessions on time due to workloads in the company. Therefore, the researcher and participants could not adhere directly the planned schedule. In this case, this paper suggests practitioners allocate enough time for implementation process considering such issues. Otherwise, practitioners would have to shorten time requirements for all steps, in particular for the matching process and training sessions. This is more likely to negatively affect the aims of any mentoring system. Additionally, all online sessions should be planned and scheduled before informing the participants. This is important, because some participants might think to go on holiday during the project. To be aware of such issues can help practitioners better plan mentoring relationships thoroughly. In this research project, for instance, one of the mentors went on holiday and had some technical problems. As the research findings indicate, he used e-mail as an alternative for one of the online sessions. Such problems are supposed to emerge during electronic mentoring

relationships since computer technology never work perfectly. Therefore, effectively planning and preparing the relationships can reduce the technical and practical problems during the implementation.

Lastly, the research project was conducted in a particular company where the mentees and mentors working at. This has some pros and cons related to having an effective mentoring process. Firstly, selecting mentors who are working at the same company with mentees could be beneficial for novice employees as experienced mentors working for many years could easily and effectively transfer organizational culture to their mentees because the organizational culture of the company is strong. Beside this, as selecting and matching steps of mentoring is one the important process to have productive relationships, strengthens and weaknesses of mentors and mentees coming from the same company could easily evaluated by line managers, which provides a cost effective matching process. On the other hand, mentors and mentees selecting from the same company could lead to a limited e-mentoring relationship as they might come together in face to face manner without using communication tools. Therefore, selecting mentors from long distance areas to match with mentees working in different places would be more beneficial because mentees and mentors could learn different characteristics of the workplaces in the company.

AUTHORS' NOTE: The paper is derived from master dissertation.

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ISSUES IN E-RESEARCH: LOG IN/OUT VIRTUAL FIELDS

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ABSTRACT

Evolution of technology and its tremendous use in education has changed the ways of educational services in higher education around the world. There is worldwide access to higher education through virtual learning environments. This is a new avenue for 21st century education and within a short time, it has been able to establish new culture of learning i.e. e-learning or online learning. As a result, e-learning has been the greater field for educational research. In this context, this paper focuses on methodological issues of the Internet mediated research (e-Research) with particular focus on virtual fields. Paper explores and discusses on possible sources of data, methods of data collection, process of analysis and ethical issues to adopt research with virtual fields. In doing so, the purpose is to reveal answer to the question: how do e-Researchers deal with methodological issues related to collecting data, determining data sources, data analysis/interpretation, and ethical considerations? Paper presents examples from the Internet mediated empirical studies. Conclusion of the paper is that e-field or cyberspace is an avenue for modern researchers. Researchers are supported with various Information Communication Technology (ICT) tools for field access, data collection, analysis and interpretation. However, they need to pay full attention to deal with major issues such as locating and gaining access to virtual/Internet-mediated fields, selecting e-participants and working with them, and using varieties of ICT tools for data collection, analysis and interpretation.

Keywords: e-Research, virtual field, e-participant, e-data collection, cyber ethics.

INTRODUCTION

The development and innovation of modern technology has changed the way people live, work, communicate and get education. The Internet has become a greater source of information and place for virtually socio-cultural activities. Those activities are reflected through social sites and other web sites or online communities. Scholars have started to define the Internet as culture and cultural artefact (Hine, 2000). Hine also suggests to use virtual ethnographic method to study emerging virtual communities and cultures.

These days in education, we can see the clear existence of two types of learning environments. One is 'virtual' and the other is 'real'. The virtual learning refers to the Internet-mediated learning and the real learning refers to the traditional campus-based learning. Actually, both the ways of learning are real as none of these are imaginary. Likewise, we do have two phenomenon of research. One is 'real field-based' and the other is 'virtual field-based' (Harrington, 2009). Along with the development of innovative Information Communication Technology (ICT), the ways of researching social realities have been changed because people deal with two lives at a time – online and offline. At this point, online world is important in relation to offline lives (Paechter, 2012). In addition, the Internet has been accepted as a social phenomenon, a tool, and also a field site for researchers (Markham, 2011).

Therefore, technology is an additional advantage for researchers as stated by (Buchanan, 2000), "using these technological advancements for research; both qualitative and quantitative, has created significant prospects for obtaining information from specific populations target groups, and communities previously obtainable or only with considerable cost time and effort or not at all" (p.1 as cited in Weeden, 2012). It means, regardless of the type of study design, researchers have technological weapons to dig into depth of their field with less effort, time and bigger size of target groups.

Research through electronic mediums such as computers and the Internet has been getting popularity. 'Virtual reality' has been a great field of research and electronic mediums e-mail, internet, web sites, web blogs, e-learning sites, social medias, web-based online surveys are the source of both primary and secondary data for many researchers. Researchers are privileged with hi-tech tools for research, "ICT offers researcher a new platform for interaction, with novel ways of creating and obtaining data" (Madge & O'Connor, 2002, p.91). Madge and O'Connor further highlight the electronic surveys as the Internet methodologies offering interesting possibilities for interacting with participants in innovative ways. Hesse-Biber and Griffin (2013) also clarified that the Internet-mediated research has capability of transforming traditional practice of research methods. Furthermore, using technology, researchers can disseminate important knowledge and understanding required for appreciation and respect regardless of geographical distance (Harrington, 2009).

In the aforementioned context, there exist various methodological and ethical issues within a particular subject of study and its nature, "the nature of researchers' participation, participant awareness and informed consent all need careful consideration, and solution to the attendant problems found within the context of the particular study" (Paechter, 2012, p.84). On the other hand, the Internet-based researches are considered as an important implication of evolution in the technology as Hesse-Biber and Griffin (2013) have highlighted the power of Web 2.0 technology to harness enabling promise for researchers even in the context of difficult and complex social issues using the Internet-mediated mixed method research. Likewise, Weeden (2012) agrees that use of the Internet in social work research is inevitable in the age of cyberspace.

In this paper, e-Research refers to the research using ICT, especially computers, web tools and the Internet as medium, tool or method. Alternatively, the research on the web-based fields where researchers' entry to the research field starts with web browsing or logging in and exits with logging out or exiting the web browser. To develop the paper, relevant literatures and scientific papers related to issues in the Internet-mediated researches are reviewed. In addition, Virtual ethnography purposed by Hine (2000) and Netnography proposed by Kozinets (2010) are analyzed because Hine claims that the method of virtual ethnography is suitable in e-Research with virtual fields. The field to observe and immerse into is the culture of the Internet valuing the Internet as cultural artifact. Likewise, Kozinets claims Netnography connects online and offline activities of research participants accepting that the research field exists behind the computer screen. However, concentrations of the paper lie on issues on e-Research in relation to the online learning culture rather than the culture as defined in anthropology and sociology. Following sections are thematically developed to discuss the major issues in e-Research.

METHODOLOGY

Together with the advancement of the Internet technology and web tools, methodologies of doing research are being changed. Web survey, email survey, big data research, web based case studies, virtual ethnography, Netnography, digital ethnography etc. are some examples

of changed form of research methods. On the other hand, these days, there is dominant use of hypermedia (hyperlinking and multimedia) in research (Dicks, Mason, Coffey & Atkinson, 2005). It is because technology is supportive to researchers in many ways.

However, there are some pertinent methodological issues to be considered while designing e-Research. "Internet-based research is a relatively new and growing field that presents a number of ethical challenges regarding privacy, confidentiality, and informed consent" (Battles, 2010, p.27). This paper does not limit discussion only on these three issues. Instead, the issues are presented in border thematic titles- Virtual fields: Loss of originality, e-Participants: Crisis of identity, e-Data: Big data, Analysis and interpretation: Logic for duality, and Cyber ethics: Piles of issues.

While designing research on virtual fields, researchers need to be aware of the following *five rules of virtuality* articulated by Woolgar (2002).
- ➢ The uptake and use of the new technologies depend crucially on local social context.
- ➢ The fears and risks associated with new technologies are unevenly socially distributed.
- ➢ Virtual technologies supplement rather than substitute for real activities.
- ➢ The more virtual the more real.
- ➢ The more global the more local. (pp.13-21)

These rules clarify social context and technology use, fears and risks with emerging technologies, virtual as supplement of real, and globalization as death of distance. The death of distance mean, with technology, global and local are not different entities of the world. This also indicates that the researchers have boundary less opportunity for research when they choose virtual fields for research.

It is for sure, e-Research has multi-dimensional prospects, "online virtual worlds, electronic environments where people can work and interact in a somewhat realistic manner, have great potential as sites for research in the social, behavioral, and economic sciences, as well as in human-centered computer science" (Bainbridge, 2007, p.472). However, e-Researchers have argued that there exist various issues that are to be taken care before designing e-Research projects. Key points on those issues are discussed in the following sections.

Virtual Fields: Loss of Originality
While considering e-Research definitely the research fields are different than the fields in the traditional 'real-field' (the field of physical travel) based research. For Rogers (2009), era of the Internet research does not put demarcation of real and virtual. However, researchers' field experiences are very important in ethnographic study (Holmes & Marcus, 2008). In this regards, field refers to virtual field which may consists of virtual community, online individuals, virtual organizations, real but all information are virtually available and accessible. Guimaraes (2005) states that the virtual fields are the palace where two-dimensional multimedia sociability platform provides an environment for synchronic interactions between users. Being specific to a method, Emerton (2003) states "for ethnography to be a valid research paradigm online, sites of computer-mediated human interaction must be understood —at least in part— as forms of community" (p.2). In addition, experimental e-Research may consist virtual groups, simulators and other high technology that provides exact real like experimental environment as Harrington (2009) completed a comparative research in real and virtual Trillium Trail.

In Harrington's study, a virtual field was created for research. However, study was completed in face-to-face fashion through ethnographic observation. The virtual field trip was an environment created for comparative experience of learners. In the virtual field, researcher

may get multiple options, freedom and navigational movement throughout their research project as in the "Virtual field trip" of Hartington. Places/fields in the Internet-based research has been defined by Emerton (2003) as follows:

> Spatiality embedded in browser software greets the Internet user at the *home* page, helps them *navigate* the information *superhighway: back, forward, home*. Webpages use geographical metaphors: Geo*cities*, site *maps*. Interactive sites use architectural ones: chat *rooms*, cyber *lounges,* virtual *cafes*, furnishing them with familiar objects: *bulletin boards, visitors' books.* (p.3)

Virtual fields are feasible for all kinds of research methods because electronic surveys, qualitative methods like participant observation, virtual and real experiences and virtual ethnographies have already been popular in the field. However, Hine (2005) states what constitute the field and how the researcher enters and operates within it are the key issues in online qualitative research. Entry to the field could be challenging for online researcher as there is no physical entry or exit from the community (Paechter, 2012). Paecheter further argues that it is challenging because of changing nature of virtual community, there are the possibilities of joining and dropping target online community by its user population. Therefore, understanding context sensitivity while locating virtual fields is important as Asdal and Moser (2012) highlighted the context and histories come together with the knowledge, facts, and objects.

Peachey (2010) has termed virtual reality as second life while presenting real life community in virtual world. It is beautifully articulated as the life that starts with "log in" and ends with "log out". Likewise, researchers enter into their research field by login and exit by logout. The virtual representation of real means possibilities of representing everything in virtual as it is in real. However, they are just representation in the form of 2D or 3D geometrical models/objects. Therefore, the virtual things might not reflect originality of nature within the subject or an object represented. Similarly, the issue in the field of virtual reality definitely lacks natural setting required especially for qualitative researchers.

The concept of Kozinets (2002), 'the field behind the screen' presents e-gadgets as connecter to virtual fields. When e-gadgets like laptop, tablets, and smart mobile phone are connected to the Internet, researchers find their filed behind the screen of those gadgets. The major issue to be considered by e-Researchers would be the nature (public or private) of the virtual field. Generally, websites are open to public but specific contents and user groups associated to the owner of the site may have private space. Therefore, determining the nature of the virtual filed is important in order to establish authentic filed access/connection.

E-Participants: Crisis of Identity

Participants in e-Research are the Internet users in one or other ways. They are found in the form of active or passive user in some of the online communities, web services and social media. Although, there are many benefits for researcher with e-participants and there are number of ways to reaching them, it is equally challenging to researcher in authenticating the participants. Participants in online research requires a common platform to share commonalities in terms of identity, values, rules, norms and association as in physical form of communities (Fernback, 1999). It is easy to point research participants in virtual community through their network. The best way of knowing about research participant would be "the more you wish to pinpoint an *actor*, the more you have to deploy its *actor-network"* (Latour, Jensen, Venturini, Grauwin, & Boullier, 2012, p.592). Users' network within any online community provides easy access to target participant(s) individual or group. However, their anonymous participation often creates dilemma to researchers' for identity of e-Participants. Identity information such as gender, age, ethnic group, education, nationality etc. are

important part of data in most researches but there is risk for researchers that e-Participants tend to misreport the information. For example, in an online survey, 45.7 % of participants misreported their age, sex and educational status (Akbulut, 2015). The misreporting has also been noted as an issue of 'Faking' by e-Participant in online surveys.

On the other hand, those e-Participants also interact with researchers through e-mail, audio/video/text chat, blog/forum post and personal websites. However, many researches have shown that mostly online users do not disclose their basic identity. This situation also creates problem in authenticating their presence. The researchers carrying research that does not require identities of participants may not encounter the issue of identity. For example, in blended learning context, depending on the nature of research, participants and their activities are comparable as they play dual role participating in face-to-face interaction or observation as well as online discussion as Makagon (2013) conducted discussions of lectures, course readings, and fieldwork reflection via an online forum.

Thus there are various aspects that e-Researchers need to consider. Mainly issues regarding participants while conducting online/e-Researches to be considered are the bases for participants like their identity, authenticity, geographical coverage, selection procedure, homogeneity (if required), and interest. Reviewed papers have focused on ethical parts related to participants which is discussed under the theme "Cyber Ethics" below.

E-Data: Big Data

There are number of technique of collecting e-Data. Online survey, text chatting, online audio/ video calls for interview, forum post for discussion, group calling/video conferencing for online focused group discussion (FGD), screen capturing, downloading graphics, recorded audio, video files or any other relevant file data (archives). As per the nature of the research, various tools and techniques for e-Data collection can be used. Qualitative researchers can design online interview, FGD, and participant observation of online communities and activities of the members. Likewise, quantitative researchers can design online surveys and experimental techniques on virtual vs real space as in the research of Harrington (2009). However, designed online tools may not be handy to the targeted participant. For example, a researcher wants using Google survey from or Skype video call for online interview but participant may not have skill of handling these tools. On the other hand, researchers themselves may lack skill of using new technology and methods of data collection as stated by Hesse-Biber and Griffin (2013), "accessing new modes of data collection may challenge a researcher to come out of his or her methods 'comfort zone' and to develop new skills in both data collection and analysis" (p.45). There is chance of losing data when participants lack technological skills. Likewise, researchers may not be able to identify appropriate tool for data collection if they lack knowledge and skill about latest technological tools available for e-Research.

Another issue comes for quantitative researchers on generalizing the finding from sample to population because in e-Research, population is not fixed and it is always changeable (Hesse-Biber & Griffin, 2013). For example, members of an online community may drop their affiliation at any time from the community or many new members may join the community. The number of people leaving and joining the online community under study are beyond the control of researchers. Hesee-Biber and Griffin also raised issue of losing meaning due to lack of face-to-face interaction while using the Internet technology in data collection. It is also hard to capture the emotions or "silence" through online interview tools which may result researchers' inability to maintain the trustworthiness.

Madge and O'Connor (2002), states that an added layer of deciphering emoticons and acronyms for real emotions and fuller expressions (like lol, omg, smile ☺ ...) are challenging while conducting online written interview because those symbolic expressions are hard to

interpret. Likewise, non-verbal cues, tone of voice, body language, and gesture all or some of these may be missing from Internet-mediated means of data collection (Hesse-Biber & Griffin, 2013) which are important for richness of the data in qualitative research.

As a result of popular use of the World Wide Web, e-Researchers encounter with big data (the flood of information). The bigger data obviously are problematic for processing unless there is new technique and wise tools to smartly assist e-Researchers in transforming such explosive amount of data into meaningful information and knowledge (Han & Kamber, 2000). Big data seems to be an issue to e-Researchers, depending on their research project, they have to be aware of database and data mining tools for proper management of the data.

Analysis and Interpretation: Logic for Duality
While choosing e-Research, novice researchers may be confused in selecting process of data analysis and interpretation. However, the statement of Woolgar (2002), "the more virtual the more real" is enough to exemplify that the technology bridges the gap of virtual and real setting. This provides an opportunity to adopt all possible research methods that are traditionally being used in the 'real' field-based researches. At this point, researchers are free to choose any process of data analysis and interpretation in line with the method they follow for e-Research.

Depending on the nature of data collected, strategies for analysis and interpretation can be adopted. For example, virtual ethnographers may use the process of data analysis and interpretation as guided by traditional ethnographies of physical field visit. For Netnographic research, Kozinets (2010), suggests to use hermeneutic analysis —starting with analytical coding (global meaning of individual elements). Here, hermeneutic analysis and analytical coding are the same strategies being used by qualitative researchers since long. In qualitative research, data analysis is considered as the process of making sense from the information collected "preparing the data, connecting the variables, and drawing deeper understanding, while presenting an interpretation of the larger meaning" (Creswell, 2009). Agreeing with Creswell, e-Researchers may collect data, transcribe audio interviews, screen shots and video data into text. Audio/video player and text/graphics processing software tools also are available to transcribe the picture, audio and video files. Those transcribed texts can further be analyzed for the themes in the first stage. In this process, researchers may use Creswell's idea that the researcher collects data, analyzes it for themes, and reports the findings.

Analyzing data obtained from online learning platforms and social media are already formatted in some ways. It is because technology enables user engagement through predefined activities in social media or any other web platforms which provides analyzable form of data offering to some forms of analysis (Marres & Gerlitz, 2014). Therefore, those data from the Internet would be easy to analyze and interpret. On the other hand, Chi (1997) has purpsoed method of analyzing qualitative data in an objective and quantifiable way as verbal data analysis. Chi has claimed that the purposed method is useful to analyse big qualitative data that includes verbal explanations, observations, and videotapings, as well as gestures.

After transcribing all data into text narratives, it is important to process and analyze in accordance with the outline laid down for the corresponding research questions. Qualitative techniques are transcribing, editing, coding, forming quotations and themes so that they are ready for analysis and interpretation. For this purpose, there are many computer software available that are focused on the area of qualitative data analysis (Flick, 2006). Likewise, quantitative researchers also have many options of software to assist mathematical calculation and statistical data processing. Spread Sheet and SPSS are popular software among quantitative researchers because the software come with highly sophisticated tools for any

kinds of statistical data management and analysis: data entry, data processing, generating tables, charts and reporting.

Furthermore, qualitative researchers give an extension to their analysis and interpretation through theoretical generalizability so that target audiences are able to assess the evidence in connection to their existing professional and experiential knowledge (Smith, 2008). Likewise, qualitative researchers have chances of blending knowledge from theory and literatures to the field data. Then, researchers may start interpretation for meaning making because the core essence of qualitative interpretation lie on meaning making process (Flick, 2006).

While processing and analyzing e-data, 'data mining' techniques are useful especially for quantitative researchers. There are data mining software for big data analysis. In general, data mining is also called knowledge discovery and in the knowledge discovery process, data are analyzed from multidimensional perspectives to arrive into knowledgeable information in the form of patterns or models (Messaoud, Rabaséda, Missaoui, & Boussaid, 2008). Likewise, Social Network Analyses (SNA) is also popular among researchers in social science. Social network is combination of actors and their relations or the relations defined on actors (Wasserman & Faust, 1994). The attempt of SNA is to explore relationships within and between social entities or actors in order to shape knowledge and learning process. In the context of e-Research, SNA is useful to simplify the study of network create through technology. For example, the study of the network of online and distance education where providers, teachers and students are group or individual actors.

Keeping all above discussions in mind, in order to deal with analysis and interpretation related issues in e-Research, researchers need to be clear on logic of dualistic arguments to justify the existence of the real and the virtual, truth and fiction, the authentic and the fabricated, technology and nature, and representation and reality (Hine, 2000). In addition, researchers are compelled to reevaluate the traditional taken-for-granted rubrics of social research because of the dialogic feature of social reality highlighted by emerging communication technology (Gatson, 2011). Therefore, dialogic and dualistic arguments are added value to clarify understanding the existence of 'virtual' and 'real' in the context of the e-Research.

Cyber Ethics: Piles of Issues

The term cyber ethics may be defined in various ways depending on the context of its use. Here, the term refers to all ethical issues related to e-Research and access to e-field or e-participants discussed above. Maintaining ethical issues in e-Research differs from traditional researches because of its ICT mediates facets. However, ethical standards of confidentiality practiced traditionally equally applies in online research (Battles, 2010). Moreover, it is hard to obtaining informed consent if participants do not want to disclose their identity in e-Research. Negotiating for informed consent creates distinct problems in the context of online environments Emerton (2003). Therefore, researchers need to be aware starting from initial communication with prospective research participants or the owner of the web site or online group or virtual community under the study.

There are piles of issues about ethics in relation to e-Research. Weeden (2012) raised major ethical issues such as participant enrollment; choosing right participant, avoiding selection of racial, sexual and cultural bias, verifying and tracking the participants, and inclusion. Likewise, maintaining anonymity and no interference by informed consent is difficult because of the unclear context of online research in varying available venues, and public information vs informed consent. The ways or media of data transmission and storage raises higher level of privacy issue. Other issues raised by Weeden are deception (lying, manipulation, misleading or exaggerating information) and avoidance of harm as participants cannot be seen by

researchers. On the other side, eliminating visual and auditory cues related to distress would be challenging when researcher and participants are virtually connected at distance.

Hesse-Biber and Griffin (2013) have suggested to the researchers to be mined full of the 'ethical caps' in between private/personal and public data. Paechter (2012) encountered the issue of verifying participants and conflicting role of researchers as insider and outsider in sensitive issues. Moreover, Emerton (2003) cites from NHMRC (1999) that in any context of research, researchers need careful consideration over physical, psychological, spiritual or emotional harm to participants, the exploitation of cultural knowledge and/or property, confidentiality or ownership rights attached to that information.

Thus, maintaining ethics is challenging job for researchers while selecting the methodology to undertake research in cyberspace. Nonetheless, it is wise to understand the reality of ubiquitous digital technology and media that draws widespread concerns about the 'bias' of online information and knowledge (Marres, 2015). In addition, it is also very important to consider rules of Woolgar (2002) that 'the virtual technologies supplement rather than substitute for real activities' while setting path for ethical issues on research that uses virtual field of studies.

DISCUSSION

Choosing methodology for e-Research needs clear knowledge about virtual or electronic fields, data collection software tools, methods of the data analysis and interpretation; skill of handling software tools required for the research, and advantages and disadvantages of the software tools. Field for e-Researchers would be the web tools and services, online communities and groups, and technological services and products. For example, scholar interested in online/distance learning can choose websites of online courses as field for the study. E-contents or resources for distance learners and student services at online/distance learning providers could be other fields for the study. Gatson (2011), presents five possible tensions for qualitative study of the Internet-mediated contexts (a) defining the boundaries of the field, (b) determining what constitutes data, (c) interpreting the other as text, (d) using embodied sensibilities to interpret textuality, and (e) representing the other ethically in research reports.

The form of data in the e-Research would be web text, verbal data, video recording, observational data, survey responses and numerical data from database etc. For the collection of those data, html text, audio/video interview, browsers, databases, survey form, chat room, discussion forums, web conferencing and email etc. are tools for data collection. Both qualitative and quantitative data collection and analysis software tool are available in different forms. For example, simple text processing and spreadsheet software can assist for higher productivity and analytical/interpretational efficiency. Without having good skills of handling these tools, planning for e-research is worthless.

E-Researchers get various advantages of technological tools. For example, researchers need not to travel physical distance for field visit and data collection. In many cases, use of technological tools for data collection and analysis are time and resource saving. A survey form can be distributed to thousands of respondents within a minute. Research fields and research participants can be connected at anytime from anywhere around the globe. Software tools for qualitative data analysis provides robust tools for coding, theme and quotation formation, and extraction of text from primary and secondary sources into desirable form. Likewise, increasing access to the Internet contributes to the volume of large scale survey research (Akbulut, 2015). It is because online surveys are easy to distribute, can be automatically collected, summarized and analyzed as soon as the responses are added into the designed

form. Major advantages of online surveys listed and discussed by Akbulut is preferable to e-Researchers who designs online surveys. For offline data, there are database tools for ease of data entry, processing and using out puts through desirable form, query and reports. Tabulation, graphing and general descriptive reports are auto generated with quantitative data analysis software applications like SPSS, and Excel Spread Sheets.

However, there are disadvantages of all technological tools for researchers. Major disadvantage would be time and devotion required to learn an additional skill to handle the tools. For qualitative researchers, currently available software tools such as NVivo, WebQDA, Atlas.ti etc. may not assist for meaning making process. Because, the process of meaning making is subjective and the software tools do not produce analytical result with subjective discourse. Likewise, in case of web technologies for data collection including online surveys, there are chances of fraud/fake entry, bad data (Akbulut, 2015) and no response. Akbulut has also suggested to examine predictors of undesirable responding patterns. It is important to review Akbulut's lists of major limitations of online surveys to better understand shortcoming. If the tool is designed for open communication, there is higher risk of getting fake data comparison to the closed communication because of identity of the respondent. Data provided in one-to-one communication may differ from the data provided through open forum discussion. Another disadvantage would be the poor technology and slow Internet connection at the end of the both researcher and research participants.

For qualitative researchers, 'presenting data qualitatively' has been the major issue as Hammer and Berland (2013), presented their critique on confusing practices in qualitative research that researchers present text as data after they apply coding schemes, describing the coding scheme and illustrating that with examples, then presenting result of the coding as the data. Instead, for Hammer and Berland, data means the qualitative records, not the results of coding. In order to avoid this danger of quantification of qualitative data through coding, e-Researchers with qualitative design can detailed out methodological process and present the body of data as it was revealed from the field.

CONCLUSION

Virtual field or cyberspace is an avenue for modern researchers with number of supportive ICT tools that assist field access, data collection, analysis and interpretation. There are many research opportunities with varieties of option to locate fields, get into the field, choose participants, collect data, analyze and interpret data using varieties of online/offline ICT tools in any types of e-Research design. Terminologies: low cost, no cost, time and resources saving, access to ample literatures are enough to describe benefit of e-Research. However, careful investigation on the possible shortcoming would lead to an excellent research outcome. If the Internet is the culture and cultural artefact as stated by Hine (2000), ethnographic study with virtual field would be an appropriate design inconsideration with the notion of 'virtual does not replace face-to-face'. Nonetheless, Netnography of Kozinets (2010) shows a clear methodological blueprint to combining participants' online and offline context.

Changing nature of cyberspace users, unpredictable population leading to complex sampling, difficulty in verifying the identity of participants, fake reporting, mode of data transmission and security, digital divide among target participants and researchers themselves, inability of capturing emotional feeling while conducting online interview are the major issues to be clear and well informed before starting e-Research projects.

E-Researchers are privileged of using any means of ICTs for their support through entire process of research: designing projects, field work and reporting results. Any type of research design qualitative, quantitative or mixed would be feasible in the context research mediated

with ICT means especially computers, the World Wide Web and the Internet. For educational researchers, e-Research design best fits in the context of online and distance learning as well as the blended learning environments.

Scholars these days are creating methodological paradox through various arguments to establish their own way of doing the Internet mediated research. For example, just for ethnographic e-Research, the claims are 'virtual ethnography', 'netnography', 'digital ethnography', 'cyberethnography', 'discourse-centered online ethnography', 'internet ethnography', 'ethnography on the internet', 'ethnography of virtual spaces', 'ethnographic research on the internet', and 'internet-related ethnography', 'visual ethnography', and 'ethnographic hypermedia' etc. For this author, there is no significant difference in these various methodological claims rather than the use of ICT especially computers, the Internet and the World Wide Web in different form and context of research. Therefore, further researchers need to avoid producing such confusing claims/arguments.

E-Research is useful for those researchers who want to explore any researchable issue on and about ICT, be it computer technology, the World Wide Web or the Internet. In education, e-Research is better option for the scholars working in the field of open/distance education, and the Internet mediated teaching and learning context (for example online learning with open and or closed courses). Meanwhile, the connection of e-Researcher with non-technological aspects of life for wellbeing of humanity through research is always important.

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COLLABORATIVE WORK COMPETENCY IN ONLINE POSTGRADUATE STUDENTS AND ITS PREVALENCE ON ACADEMIC ACHIEVEMENT

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ABSTRACT

The purpose of this research was aimed to establish a relationship between the level of collaborative work competency and the academic performance of students in an online master's degree program. An Ex-post-facto investigation was conducted through a quantitative methodology and descriptive analysis. A collaborative competency checklist was designed to evaluate 46 teams in order to estimate their collaborative work competency level. This competency was assessed through interactions and performance, registered in discussion forums. Results confirmed a positive correlation between high level of collaborative work competency and academic achievement. Didactic recommendations of this study included collaborative learning activities as one way to promote useful academic and personal skills development. For future research, experimental approaches could be applied to get higher level of certainty about collaborative competency benefits.

Keywords: Collaborative work, team work, online course, higher education.

INTRODUCTION

Collaborative work is as old as the history of humanity concept. Even in nature itself, it is practiced, as in the flight of geese forming a V in the sky when directing the flock, looking for warmer places to spend the winter. Goose flapping their wings produces a movement in the air that helps the goose that goes behind it to increase their power of flight. Then, every time a goose decides to leave the training experience, air resists and it is difficult to fly; for that reason, when a goose flies alone they quickly return to training, understanding that teamwork is better (Daft, 2010).

Collaborative learning competency can be defined as a learning phenomenon where individual in a social constellation (e.g. group, team, or community) within a physical and/or

virtual environment interact on the same or different aspects of a share task to accomplish implicit or explicit share and individual learning goals (Strijbos, 2016). Another way of defining this competency is the following: A student who works in collaboration is able to use dialogue as knowledge construction base, as well as received and give feedback from others during interactions. Simultaneously, he/she must interact with empathy, responsibility, and on time by using ITC (Villa & Poblete, 2008).

This concept of collaboration in the teaching-learning process expects students to help each other to learn together; some authors said that it is beneficial for students to share knowledge, as the student who teaches might actually be learning twice (Ioannou, Demetriou & Mama, 2014; Yeo & Tan, 2011). Later in the eighteenth century, Joseph Lancaster, who reported about the benefits of collaborative group, coined the term computer. As seen from ancient times, the need for people to interact with each other is important in order to learn and achieve common purposes (Ferreiro & Calderon, 2007). Piaget's theory states that human beings are involved in schemes to interpret the world around them. Then, learning is acquired through knowledge building; this means that people, according to their physical and mental development, have certain mental structures that store knowledge and learning. The processes related to these interactions are mainly two: accommodation and assimilation. Assimilation involves changing the perception of an individual about their reality; it means to signify new acquired information to suit in a person's mindset. Accommodation involves changing mindsets to adapt to reality built with newly acquired information. On this note, it is natural for children as they grow to increasingly develop sophisticated and integrated schemes thanks to the two complementary processes of assimilation and accommodation (Piaget, 1972).

Vygotsky's theory expressed that sociocultural perspective proposes that their social environment directly affects an individual's learning. According to this theory, as children develop, they internalize these processes until they use them without the help of those around them. The process in which social activities are transformed into internal mental activities is called internalization, where inner speech occurs. It is also argued that in this cultural perspective through formal schooling, as well as informal, conversations between adult and children transmit schemes and patterns of behavior on their culture, which interprets and responds to the world. Under this view, human beings are the protagonists of their own existence, capable of changing the world and themselves (Vygotsky, 1978).
The research question the guided this study was: Is there a relationship between the development of the competency for collaborative work and academic achievement of students in a graduate course in a virtual learning environment?

The difference between *collaborative* and *cooperative* arises from its etymological and semantic roots. Cooperative learning arises from the American educational tradition whose teaching origins is based on peer learning, Jean Piaget being the precursor. Some of the authors who have published on cooperative learning are Deutsch (1949), Slavin (1987) and Johnson and Johnson (2001), stated that cooperative learning is an educational approach in which instructional motivating methods are applied by students to work together on academic tasks, in order to maximize their own and peers' learning. In this way, a student achieves its objective only if the other students achieve theirs.

Collaborative learning has its origins in European educational tradition. Its predecessor was the renowned psychologist Vygotsky who adopted the term collaboration. Some researchers of collaborative learning are Bruffee (1993), Driscoll and Vergara (1997), and Gros and Adrian (2004). As they explained, collaborative learning refers to the process in which students maintain a constant interaction between them, for the construction of solutions to a

problem, and where the participation of all stakeholders is necessary to achieve a goal that could not be done individually.

The main difference between cooperative learning and collaborative learning in a face-to-face classroom, is that in cooperative learning the teacher is the designer of the activity and maintains complete control over interactions and the results to be obtained; while in the collaborative learning, students design the activity to be performed and are responsible for interactions and the results. According to Johnson and Johnson (2001), there are five elements that help promoting cooperation in collaborative teams: (a) positive interdependence; (b) individual and group responsibility; (c) face-to-face interaction; (d) interpersonal; and team skills; and (e) group evaluation.

The main element of collaborative learning is positive interdependence. The mere fact of belonging to a team of collaborative work is not sufficient to ensure improved achievement of the group. There must be a commitment or need for each of the members, a positive interdependence between them. This implies that all team members are aware of the importance of their participation in the team, since each depends on the contributions of the other. Thus, it is known that none of them alone can achieve success without the others.

The second essential element of team collaboration is individual and group responsibility. As noted by Johnson and Johnson (2001), individual responsibility occurs when students are evaluated on their achievement, and the results are communicated to each student to determine who needs more support, motivation, and encouragement to achieve the learning goals, both individually and as part of a team. For this purpose, an atmosphere of respect and cordiality must predominate in the team and avoid peer ridicule, which would be negative since the aim of the evaluation is to improve the areas of opportunity of the weakest members.

The third element of face-to-face learning is interaction. Students interact together among the group or in pairs; in this context, all experiences and conversations are oriented to the activities and to achieve common goals.

The fourth element of collaborative learning is to teach students interpersonal and team skills. Collaborative learning, in comparison to individualistic, is more complex because students must not only learn to correctly execute a task, but also they must learn to interact with each other, to create a climate of trust and open communication channels to handle conflicts arising between them to function well as a team. For this reason, the professor should teach group techniques with the same intensity in which he teaches learning materials.

The fifth element of collaborative learning is the group evaluation. This assessment occurs when team members analyze to what extent they are achieving goals and how close they are to obtain a favorable working climate for collaboration. Collaborative work in a virtual environment involves that all actions must be taken by a group of people to achieve specific goals, supported by technological tools that facilitate the integration of ideas, experiences and contributions to the team project. Collaborative work in a virtual environment is not to simply gather a group of people from different states and define them as a team, and neither is a synonym of assigning a task among team members. Collaborative work in a virtual environment requires positive interdependence and interest to learn and teach each other (Salinas, 2000).

In a Learning Management System (LMS) as Blackboard, students in distance education interact in virtual rooms, focused on certain learning objectives. These spaces allow an

asynchronous participation on discussions; it provides storage of files during the development of learning activities, and spaces for evaluation and feedback.

Academic achievement in collaborative work competency is based on an external manifestation that shows the level of learning, knowledge, and the development of students' skills and values. In any educational context, the importance lies not only the fact of acquiring knowledge and skills, but also the individual's ability to correctly apply them (Argudín, 2006).

To assess competencies, it is necessary to consider the following aspects: define what achievement criteria are needed, define the expected results, gather the evidence of individual achievement, and compare it with the expected results. Then, it is necessary to make judgments about the results and assess its competitiveness to establish a development plan to improve areas that are not considered competent, and finally to evaluate the final product (Argudín, 2006).

The evaluation with a focus on virtual learning skills has advantages. According to Colvin and Mayer (2008), it promotes the creation of scenarios for peer assessment and self-assessment, so it is easier for the professor to motivate and encourage participation of students in this type of innovative assessment (Topping, Smith, Swanson & Elliot, 2000).

To assess the participation of students within the online discussion forums is essential to study the interactions occurring in forums, which is understood as the interaction among students' publications of the ideas that will help knowledge construction. For this, the participation frequency must be considered as an indicator and the quality of contributions. The participation frequency counts the number of contributions of each participant in a discussion forum, a time set by the course calendar. The indicator of quality of contributions involves revision by the teacher, who must read each of the contributions and assign a score, depending on how valuable it is for the achievement of the team activity (Valenzuela, 2003).

Another common evaluation practice in collaborative work is peer assessment, which is the process where students evaluate the achievement of teammates depending on their participation, quality of inputs, and cordial communication with each member. Moreover, peer assessment and self-assessment can be either quantitative or qualitative; obligatory or optional; a supplement or replace the grade the teacher assigns to teamwork, and it may be anonymous or public.

To assess the level of mastery of collaborative competency, four indicators were chosen: work participation, organization, cohesion and social assessment. The working participation indicator assesses whether the student achieved the assignment within the time required by the team, and the quality of delivery. This indicator also assesses whether the student is actively involved in the team meeting spaces to share experiences and knowledge. The organization indicator assesses whether the student contributes to the definition, distribution and organization of team activities. Cohesion indicator assesses whether the student promotes goal setting and team integration. The social assessment indicator assesses whether the student integrates the opinions of others and constructive feedback. For each of these indicators there are five levels: 5 excellent, 4 good achievement, 3 regular, 2 deficient, and 1 poor achievement (Villa & Poblete, 2008).

In recent studies, a paper reports the results of a case study where mechanical engineering students studying at a newly established branch campus in Dubai of a British university were exposed to vertical and horizontal integration. Different activities were included to ensure that students worked together with their peers and colleagues at different levels. The implemented processes and practices led to improved academic achievements, which were better than those of a similar cohort of students were no effort had been made for

collaboration. The analysis revealed that cooperative learning and the degree of academic support provided by teachers are positively and directly correlated to academic as well as the students' own sense of personal achievement. The results are discussed in light of previous research and with reference to the cultural context of the study (Al-Zubaidy, Abdulaziz & Dashtpour, 2012).

Another exploratory study examines the impact of a collaborative research-based afterschool program in an urban high school with students using information technology (IT) for science, technology, engineering, and mathematics (STEM). The study used a mixed method, involving 77 participants within two cohort groups, each participating in an eighteen-month intervention period. Data were collected from the pre- and post-surveys, analysis of the participants' IT/STEM projects, external evaluation reports, and follow-up interviews. Findings indicate that the program had a significant impact on students' technology and IT/STEM skills, frequency of technology use, and understanding of the field. There was some of attitude changes toward IT/STEM and career aspirations in these fields. The study demonstrates that IT/STEM experiences supported through technology have significant impact (Duran et al., 2014).

Another research examined the influence of Jigsaw, which is a collaborative learning (CL) method, on students' views and decision-making processes concerning the use of nuclear energy. The research included 60 fourth-year undergraduate students attending the science teacher-training program of a university in Turkey in the 2013–2014 academic year. In the research, firstly an attempt was made to provide students with scientific literacy on the subject through the Jigsaw method. Then the groups created argumentative texts to express their views. In the end, the students developed positive attitudes and supported the establishment of nuclear power plants in Turkey. They had negative views about the use of nuclear energy before teaching (Tekbiyik, 2015).

Another reviewed research project focused on documenting statistical learning among 16-17-year-old Finnish upper secondary school students (N = 78) in a computer supported collaborative learning (CSCL) environment. The value of this study was in reporting the shift from teacher-led mathematical teaching to autonomous small-group learning in statistics. The aim was to examine how student collaboration occurs in learning statistics in a CSCL environment. The data included material from videotaped classroom observations and the researcher's notes. The intersubjective phenomena of students' interactions in a CSCL environment were analyzed by using a contact summary sheet (CSS). The results show that collaborative learning can facilitate cohesion and responsibility, and reduce students' feelings of detachment in a class-less school system. The interactive material and collaboration in small groups enabled the statistical learning (Oikarinen, Jarvela & Kaasila, 2014).

METHODOLOGY

The research used a quantitative, ex-post facto and descriptive design. The study was conducted in an online course of a university's master program located in Northeastern Mexico. The participants were students enrolled in the online course *Psychology of Learning*, which was offered from January to May 2014. This course included individual and collaborative activities. From 13 individual learning activities, three were collaborative. Two of the collaborative learning activities were designed in the Problem Based Learning (PBL) technique. The evaluation criteria of this course included peer assessment in certain group activities.

A total of 380 students were enrolled in this course. Their age ranged between 25 to 50 years old. They belonged to various professional backgrounds and worked as teachers or professors. Their countries of residence was Mexico, Colombia and Costa Rica. For academic activities, groups of 3, 4 and 5 members were formed. A sample was selected only with the groups that were formed by 4 students. In the frame of these criteria, the research was conducted with 46 teams (184 students). This amount of students represented 48% of the population (Hernández, Fernandez & Baptista, 2012).

Instrument

A checklist of the criteria of collaborative competency domain was elaborated through an Excel worksheet. According to the learning modality, the fourth criteria was modified from its original version. Thus, the five criteria included in the instrument were: (a) positive interdependence; (b) individual and group responsibility; (c) stimulating asynchronous interaction; (d) interpersonal and team skills; and (e) group evaluation (Johnson & Johnson, 2001; Villa & Poblete, 2008). In addition, a scale of three levels of proficiency was included. The levels were poor, medium and high.

Procedures

On one hand, all three-discussion forums content developed on the collaborative learning activities were store for further analysis. On the other, a excel checklist was designed to classify and evaluate interaction within the five criteria explained above. Then, two groups were defined: one with high and other with low collaborative competency level. Simultaneously, assignment and coevolution grades were added to the database. These data were correlated. SPSS was used for statistical analysis.

RESULTS

All students' interactions within their groups were registered in Blackboard forums. A score was assigned for each interaction using the scale mentioned above. This procedure ended in a classification of groups in two possible categories: collaboratively poor or high. Based on this classification, a list of grades and peer-assessment scores were obtained by the end of the collaborative activities.

It was found that from the 46 teams that were assessed with the instrument to define the collaborative competency, 14 teams (30 %) were found with a high degree of collaborative work competency development, while 32 teams (69 %) obtained poor development.

Analysis of the five key elements was done according to the existence of elements that permit to infer the high or low level of collaborative competency features (Johnson and Johnson, 2001). These elements were found in electronic interaction forums. Table 1 contains the results expressed in percentage.

Table 1. Scores of the five elements of the collaborative work in the teams of high degree and poor of competency

Competency elements	Teams of high degree of competency punctuation	Teams of poor degree of competency punctuation
	N=14	N=32
Positive interdependence	98%	72%
Individual and group responsibility	62%	12%
Stimulating asynchronous interaction	98%	62%
Interpersonal and team skills	46%	34%
Group evaluation	85%	62%

From the results, the three main characteristics of high collaborative teams can be identified: positive interdependence, stimulating asynchronous interaction and group evaluation. In the case of poor collaborative teams, even if the results are lower, the three characteristics already mentioned of high collaborative groups are also well considered. We can infer that both, responsibility and interpersonal interactions are not developed enough to consolidate students as a team. It was found that in, the most poorly collaborative teams missing features were positive interdependence, individual responsibility and group evaluation; which translates into a lack of commitment to the team to deliver on time their contributions and poor communication between team members. It was also considered important to test correlation (Sperman's rho non-parametric) between final grades and collaborative work competency results. Table 2 shows the analysis.

Table 2. Spearman's rho correlation

			Work collaborative competency	Academic Achievement
Spearman Rho	Work collaborative competency	Correlation coefficient	1.000	.351**
		Sig. (bilateral)	.	.000
		N	100	100
	Academic Achievement	Correlation coefficient	.351**	1.000
		Sig. (bilateral)	.000	.
		N	100	100

**The correlation is significant at the 0.01 level (bilateral).

We calculated the Spearman's rho coefficient (0. 351), which means that there is a moderate positive correlation between the variables of academic achievement and collaborative work competency. Besides, an analysis of the academic achievement was made for the entire group and for each kind of team according to their collaborative competency level. The average score for the entire group reached 88.02 out of 100. The standard deviation was 6.37. Table 3 contains these results.

Table 3. Academic achievement of the high/poor collaborative degree of competency

	Teams of high degree of competency	Teams of poor degree of competency
	N=14	N=36
Mean	91	86
Standard deviation	5.25	6.52

Note: In a Chi Square Analysis, even if the difference between groups was not significant, positive likelihood was found (0.013).

Peer assessment was another tool that allowed students to participate in the evaluation of the performance of their mates (Topping et al., 2000). Through peer assessment, the perception of other's work was collected. Table 4 contains peer assessment results.

Table 4. Peer assessment by of the high/poor collaborative degree of competency

Punctuation of peer assessment	Teams of high degree of collaborative work competency	Teams of poor degree of collaborative work competency
	N=14	N=32
Good + excellent	100%	65%
Approved + sufficient	0%	34%

High level of coherence was shown through the results of peer assessment in high degree of collaborative work teams (100% good and excellent work). On the opposite, lack of coherence was appreciated within poor degree of collaborative work teams. More than 50% assessed their peers with qualifications of excellent or a good performance, although collaborative competencies were not well developed.

DISCUSSION

Results let researchers infer that collaborative work competency requires more than instructional design strategies. It is not sufficient to include work collaborative activities to engage students' commitment. One possible explanation for these low results would be the fact that these students were novice on virtual education matters (Arbaugh, 2004).

Another finding that would support the idea above is the fact that the lowest feature in both, high and poor collaborative work level teams was Interpersonal and team skills. One possible reason for this is the inexperience of students communicating each other in asynchronous electronic rooms. This could affect the recognition of individual strengths in favor of collaborative work (Johnson & Johnson, 2001).

When analyzing grades as a way to infer students' performance quality related to collaborative work competency, it was found a moderate positive relation between these variables. Even if the Chi-square analysis determined a negative result about differences in grades between high and poor collaborative work competency, likelihood measure was positive. This can be taken as a second proof of the existence of a relationship between high academic achievement and high collaborative work competency (Argudín, 2006; Al-Zubaidy et al., 2012; Duran et al., 2014; Oikarinen et al., 2014 Tekbiyik, 2015).

Peer assessment was not a helpful measure to corroborate high and poor collaborative work competency differences. This assessment could have been interfering with students' interests as peer assessment results were considered part of the final grade.

The reasons mentioned in these studies of why collaborative work competency favorably affect the academic achievement of students are:
- ➢ It is believed that teamwork favorably improves student intrinsic motivation to learn and, therefore, obtain a better result; this is evident on the results of the scores obtained in collaborative activities.
- ➢ The perception of students toward peers is favorably improved through collaborative participation.

This is supported on Johnson and Johnson´s statement (1989): members of highly collaborative teams have important characteristics: (a) empathy; (b) responsibility and develop tasks according to a schedule; (c) timely communicating individual contributions to encourage the active participation of the team; (d) emit and receive feedback during interaction using argumentation which motivates them to have a committed and, (e) outstanding participation that is reflected in academic the achievement of the team.

The three most outstanding features of the highly collaborative teams in this research, which is supported in literature (Johnson & Johnson, 2001) confirms that members of highly collaborative teams: act empathetic, they are responsible and develop in timely manner the task, and notify individual contributions on time. It is important to encourage the active participation of the teams. All members emit and receive feedback during interaction using argumentation, which motivates them to be committed and demonstrate outstanding participation reflected in academic performance of the team.

CONCLUSION

The results of the study provide evidence of a positive association between the collaborative work competency and academic achievement of teams of an online course, that allow direct interactions in discussion forums, and a high participation when the members collaborate in learning activities.

The instructional design of the studied course provided the conditions to develop a positive interdependence, individual responsibility, and group assessment, which resulted in highly collaborative teams to act empathetically, responsibly and develop activities on schedule.

Regarding the perception that students had on their computers, there is consistency in the results found on the peer assessment of equipment and its relationship to academic achievement. Online learning environments and the appropriate instructional design for collaborative learnings activities are an outstanding space to develop the collaborative work competency for postgraduate students.

PRACTICAL AND FUTURE RESEARCH

Most of the revised research, including the study shown in this article, correlate positively both, collaborative learning competency and academic achievement. Besides, it is known that students develop additional competencies in parallel: negotiation and mediation, interaction problem solving, collaborative use of ICT, among others. These variables around learning process should be studied within different methodology designs as quasi-experimental studies for shaping and get more precise data about its benefits.

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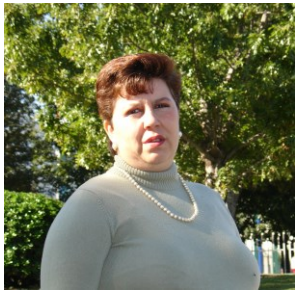
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EXPLORING GRADUATE STUDENTS' PERSPECTIVES TOWARDS USING GAMIFICATION TECHNIQUES IN ONLINE LEARNING

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ABSTRACT

Teachers and educational institutions are attempting to find an appropriate strategy to motivate as well as engage students in the learning process. Institutions are encouraging the use of gamification in education for the purpose of improving the intrinsic motivation as well as engagement. However, the students' perspective of the issue is under-investigated. The purpose of this research study was to explore graduate students' perspectives toward the use of gamification techniques in online learning. The study used exploratory research and survey as the data collection tool. Forty-seven graduate students (n = 47) enrolled in an instructional technology program studied in a learning management system that supports gamification (TalentLMS). The average total percentages were calculated for each survey section to compose the final perspective of the included students. The results showed a positive perception toward the use of gamification tools in online learning among graduate students. Students require effort-demanding, challenging, sophisticated learning systems that increase competency, enhance recall memory, concentration, attentiveness, commitment, and social interaction. Limitations of the study are identified, which highlights the need for further research on the subject matter.

Keywords: Gamification, graduate student, online learning, game element, perspective, technique.

INTRODUCTION

In the education system, it has been argued that traditional approaches to teaching and learning have proven to be ineffective and unexciting to the students (Dicheva, Dichev, Agre, & Angelova, 2015). The Generation Y and Z students have different experiences as well as prospects in the type of education that will be effective to them (Poole, Kemp, Patterson, & Williams, 2014). Moreover, these students process and comprehend information differently as compared to the earlier generations (Poole et al., 2014). Glover (2013) reported that nowadays students are demotivated and less engaged in the learning process, a problem highly recognized by teachers, tutors, and education management. The Millennial generation has been found to enjoy the concept of teamwork and collaboration achievements in learning. They possess characteristics, such as being "skilled, social, demanding, and energetic" (Poole et al., 2014, 2). According to literature, they are technologically conscious and prefer the world with, for example, computers and the internet (cited in Poole et al., 2014).

Understanding the desires of students in this category give educational systems the urge to incorporate an appropriate activity, which will support their learning process through alteration of behavior. Glover (2013) argues that learning is an active continuous process,

which is driven by motivation from the beginning. Teachers and educational institutions are attempting to find an appropriate strategy to motivate as well as engage students in the learning process (Wilson Calongne, & Henderson, 2015). Technological advancements (computer and internet) have however, played a vital role in the education system and have promoted the introduction of online learning programs (Nguten, 2015).

Research has suggested that giving instructions and learning through the use of technology is a trending practice in the education world (Tsai, 2013). Gamification is the process of transforming or mechanizing a system to be approached in a game-like or playful manner. In other words, it is the use of elements designed for games in non-game scenarios (Deterding Dixon, Khaled, & Nacke, 2011) Institutions are encouraging the use of gamification in education for the purpose of improving the intrinsic motivation as well as engagement (Wilson et al., 2015). As an approved and successful strategy in several social platforms, research has anticipated gamification to have related outcomes in education, specifically making students be more engaged and display a real desire to learn (Dominguez et al., 2013). Using elements rather than full-designed games is the trick in using gamification. Ideally, the incorporation of an effort demanding activity guide the success of gamification since it has been found to motivate as well as engage individuals (Deterding et al., 2011).

Gamification is directly related to several elements of the motivational theory. Mark Lepper (Kapp, 2012) once proposed a series of design principles that was tested to promote intrinsic motivation. Those principles are control, challenge, curiosity, and contextualization. On the other hand, Thomas Malone (Kapp, 2012) postulated three key elements that make a game motivating; challenge, fantasy, and curiosity. The two researchers combined their finding into one theory and named it the taxonomy of intrinsic motivation. The taxonomy is divided into two parts; the first focused on internal motivation and the second focused on interpersonal motivation. The elements in each part of the taxonomy exemplify the effects of gamification on students' behaviors and feelings during the online learning process. For example, in the internal motivation part, challenge is required to fuel learners' interest to compete and complete the tasks. That kind of challenge can be built in the course activities by designing activities with incremental difficulty level. Another example related to the interpersonal part of the taxonomy is related to the social aspect of gamification. Students in the gamified environment compete against each other or next to each other to reach a final goal. The solidarity created between the students in an online environment due to the use of gamification tools helps to build an online community that make up for the decreased physical interaction usually related to feeling isolated or lonely.

Investigation of the application of gamification in education is vast. In a literature review by Hamari, Koivisto, & Sarsa (2014) it was shown that gamification works. Researchers encourage the use of the technique, suggesting that it is motivating and makes students more engaged. In their study, Buckley & Doyle (2014) investigated the impact of gamification intervention in the online learning of undergraduate students. They found that a positive link existed between gamification and online learning (Buckley & Doyle, 2014). However, the positivity depends on whether the student has intrinsic or extrinsic motivation (Buckley & Doyle, 2014).

Urh, Vukovic, Jereb, & Pintar (2015) conducted a study to develop a model of introducing gamification into the e-learning systems of higher education. The model suggested the incorporation of elements of gamification (e.g., rule-based system), the game mechanics (e.g., points), and game dynamics (e.g., rewards) in all levels of e-learning (Urh et al., 2015). The overall outcome of this aspect is the increase in "engagement, satisfaction, effectiveness, efficiency, experience, knowledge acquisition, and state of flow" (Urh et al.,

2015, 392). The motivational aspect realized from the effects of gamification in online learning outlines the interest to most researchers. Dicheva et al. (2014) conducted a systematic literature review where they reported that most studies show positive results of gamification application in education.

While most studies concentrate on the outcome of gamification in education, few identifiable studies are conducted from the students' perspective of its application in their learning process (Cheong, Filippou, & Cheong, 2014: Franco-Mariscal, Oliva-Martinez, & Gil, 2015; Armier Jr., Shepherd, & Skrabut, 2016). Cheong et al. (2014) conducted a study on undergraduate students' perception of game elements, in which they found that systems that use games are highly appreciated by students. According to this study, students are more socially interactive, engaged, and appreciative of feedback (Cheong et al., 2014), all of which are provided by gamification. In another study, Franco-Mariscal et al. (2015) examined the perception of high school students and found a positive attitude towards the use of game tools in education. They perceived games as interesting, enjoyable, and favorable in making them understand the learning concepts.

Armier Jr. et al. (2016) investigated the inclination of students to participate in gamified learning activities. Examining an experimental (gamified activities) and control group, Armier Jr. et al. (2016) found a significant difference between the groups. The experimental group was more willing to attend group meetings than the control group (Armier Jr. et al., 2016). Gamification influences the psychological aspects of students. Lander & Callan (2011) investigated the psychology of gamification on undergraduate student and found that students chose to complete questions that incorporated gamification. The option to complete was triggered by the fact that students perceived gamified quizzes as fun, enjoyable, and rewarding (Lander & Callan, 2011).

Dominguez et al. (2013) reported gamified activities as being less motivating than traditional activities. These findings contradict other identified studies, and the authors reported the student to be undecided about whether gamified activities were enjoyable, easy to use, involving, or worthwhile (Dominguez et al., 2013). Gamification also influences the cognitive abilities of students. Sanmugam, Abdullah, & Zaid (2014), in a literature review found gamification to improve the attentional capacity of people, in that they can differentiate between distracting variables and the intended learning purpose. Morris, Croker, Zimmerman, Gill, & Romig (2013) found that gaming elements increase the ability to simulate and develop reasoning skills. Moreover, games enhance intellectual development by promoting self-acceptances of oneself (Morris et al., 2013). Supportively, Ke (2009) found out that computer games do not distract the learning process, but rather improve the students' intellectual development.

Problem Statement

Institutions are embracing online learning because of its effectiveness in educating and communicating with students. Moreover, technological advancements have made most of the students spend a lot of time on the internet (Aghazamani, 2010). As a result, it is more appropriate to teach and learn from online platforms. Game elements have been appreciated by today's students, and their introduction in online learning can have an impact on the learning process as well as outcomes. The successful implementation of any new teaching

strategy is dependent on the students' perception of it. Students at the university level have reported to dislike the traditional methods of teaching (Aghazamani, 2010) and with the development of new strategies to enhance the learning process, it is vital to understand their perception towards these approaches. Understanding perceptions help policy makers make informed decisions based on true experiences of the targeted learner.

It is critical for the learners to have positive attitude and perception on particular education-enhancing strategy if educators are to succeed in implementing it in education. Research has shown the positivity of gamification in education, but there is limited research on this strategy from the student's perspective. Students are a key part of the education system since they receive the inputs of the teachers. Therefore, the level of understanding of how they perceive gamified activities is important for the educational strategists as well as teachers. With the few studies, it is difficult to make a valid and reliable conclusion on the issue which will highlight the need for further studies. The purpose of this research study was to explore graduate students' perspectives toward the use of gamification techniques in online learning. It intends to contribute to the literature and highlight the need for further research in this new and under-investigated area.

METHODOLOGY AND DATA COLLECTION

Ethical Consideration
Participation in the study was voluntary and participants were given extra credit grade that goes toward their graduate courses upon completion of all online courses requirements. Participants were provided with a detailed informed consent form showing the purpose of the study. Inclusion in the study required each participant to sign an informed consent before the start of the data collection process.

Design and Participants
The research study used an exploratory research approach. This method allows the researcher to think, imagine, as well as use their experience, insight, and skills to reveal innovations (Reiter, 2013). Unlike confirmatory research, exploratory research is rigorous, hence able to achieve a greater level of validity (Reiter, 2013). The study included graduate students (n = 47) enrolling in an instructional technology program. The enrolled students had an average age of 29 years, ranging between 25-33 years.

Data Collection Strategy
Before the data collection, forty-seven participants were introduced to the LMS in two training sessions and then were divided in groups of 3- 4 students/group to create 10 different online mini courses. The mini courses were designed based on specific guidelines that encompassed effective online course design principles, and were hosted in a learning management system that supports gamification (TalentLMS). This LMS provides the course developer the option to integrate gamification tools such as points, badges, and leaderboards as part of any activity the learner engages into during the learning experience. They were given three week time frame to create the courses. Then, when the courses were ready and checked buy the researcher for quality, each participant was enrolled in at least two mini online courses with one condition that participants should not be enrolled in courses that were designed by them. For example if group 1 created course 1, they could not be enrolled as students in that course, they can rather be enrolled as students in course 2 and 3. The courses were managed and taught by the groups that designed them.

All participants were divided into groups ranging from 7-8 students in each course with each student registering in at least two courses. Students were instructed to actively participate in course discussions and assignments within their respective group. The completion time

allocated for the courses was three weeks. At the end of the three-week period, participants responded independently to the survey.

Courses Design

Because of the fact that the participants were students in a graduate instructional technology program, the researcher found this research opportunity a great one to give those students the chance to apply their acquired knowledge relating to online course design in creating and managing the mini courses. Students were given specific guidelines to follow in the course design such as the minimum number of modules (three modules) and activities in the course which the researcher asked to fit three week time frame. The modules should be of increased difficulty as well as the activities designed in them. They were also asked to include a discussion activity as well as hands-on activities depending on the topic of the course. The activities should also reflect blooms' higher order thinking skills as well as lower thinking skills. For final assessment, participants were required to add a final test. For every designed activity, the participants were asked to attach a specific number of points that match the difficulty level of the task. They used the gamification tools available in the LMS. Other instructions were also provided to the participants relating to the aesthetic part of the course and other design guidelines geared to reducing cognitive load.

Data Collection Tool

The study used a survey as the data collection tool. The survey had a total of 31 items and was developed to use a five-point Likert scale ranging from strongly agree to strongly disagree. Moreover, the survey had six sections including, 1) positive effects of incorporating game elements (Leaderboards) in learning management systems with three underlying items. 2) Psychological effects of incorporating game elements (points, badges, Leaderboards) in learning management systems with eight items. 3) Positive effects of the instant feedback the game elements provide with three items. 4) Cognitive effects of incorporating game elements (points, badges, Leaderboards) in learning management systems with four items. 5) Formation of good learning habits as a result of using game elements with eight items. Finally, 6) negative effects of incorporating game elements (points, badges, and Leaderboards) in learning management systems with five items (see Appendix A). Cronbach's Alpha was conducted to measure the survey's reliability. The survey was found to be highly reliable (31 items; α = .89).

Data Analysis

Responses from the survey were analyzed using percentages of every point of the five point Likert scale on each item. Overall, the average percentage was calculated for each survey section to compose the final perspective of the included students. Tables and figures (pie charts) were used to support and summarize the theoretical results. Additionally, the level of agreement reported as strongly agree and agree were grouped as agree while those reported as strongly disagree and disagree were grouped as disagree.

RESULTS

The average percentages of each item in the sections were used in the analysis. The results showed a general positive perception toward the use of gamification tools in online learning among graduate students. The table below shows the average and detailed percentages of students' responses to each Likert scale point.

Table 1. *The level of agreement responses on each item in the six sections in percentage.*

Items	Total	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Positive Effects of Incorporating Game Elements (leaderboards) in Learning Managements Systems						
Comparing my performance with the performance of other students in the online course through Leaderboards fueled my interest to compete.	47	43%	40%	13%	4%	0%
Comparing my performance with the performance of other students in the online course through Leaderboards fueled my interest to work hard.	47	43%	49%	4%	4%	0%
Comparing my performance with the performance of other students in the online course through Leaderboards motivated me to succeed.	47	49%	36%	13%	2%	0%
Average	47	45%	42%	10%	4%	0%
Psychological Effects of Incorporating Game Elements (points, badges, leaderboards) in Learning Managements Systems						
Game elements increased my sense of belonging to the online community.	47	43%	30%	15%	13%	0%
Game elements reduced the loneliness feeling I used to experience in online learning.	47	32%	38%	15%	15%	0%
Game elements increased my feeling of connectedness with other students in the class.	47	28%	34%	17%	19%	2%
Using game elements reduces the feeling of boredom I used to feel in traditional online courses.	47	40%	43%	9%	9%	0%
Using game elements reduced the anxiety feeling I used to experience in traditional online courses.	47	28%	40%	19%	11%	2%
Using game elements conveyed to me the notion of risk-free environment where I felt less stressed while studying because of the playful feeling associated with game elements.	47	28%	47%	13%	11%	2%
Using game elements in online learning changed in me the negative perception usually associated with traditional online courses due to increased difficulty and social disconnect.	47	38%	38%	17%	6%	0%
I enjoyed learning in online courses that employ game elements.	47	49%	38%	6%	6%	0%
Average	47	36%	39%	14%	11%	1%
Positive Effects of the Instant Feedback the Game Elements Provide						
The instant feedback helped me to know how well I am doing in the course.	47	62%	32%	6%	0%	0%
The instant feedback fueled my interest to continue.	47	53%	36%	9%	2%	0%
The instant feedback increased my engagement level in the online course.	47	62%	28%	4%	4%	2%
Average	47	59%	32%	6%	2%	1%
Cognitive Effects of Incorporating Game Elements (points, badges, leaderboards) in Learning Managements Systems						
I believe that using game elements in online learning contributed to an increase in my feeling of being competent.	47	47%	45%	2%	6%	0%

I believe that having game elements in online learning may increase my chance of remembering the learned content for a long period.	47	34%	36%	19%	9%	2%
Using game elements in online learning improved my concentration level while studying.	47	49%	34%	9%	6%	2%
Using game elements motivated me to pay more attention to all changes in the course requirements that can add for me more points.	47	57%	36%	2%	2%	2%
Average	**47**	**47%**	**38%**	**8%**	**6%**	**2%**

Formation of Good Learning Habits as a Result of Using Game Elements						
I believe that using game elements in online learning increased my desire to do more than what I was required to do in the course.	47	43%	32%	15%	11%	0%
Using game elements motivated me to invest more effort to understand the content more deeply.	47	34%	53%	6%	6%	0%
I believe that using game elements in online learning increased my desire to redo the required tasks to raise my points.	47	30%	26%	23%	17%	4%
I believe that using game elements in online learning motivated me to complete all course requirements.	47	66%	28%	2%	4%	0%
I was motivated to participate more often in the discussion board to gain more points.	47	66%	26%	0%	4%	4%
I was motivated to interact more often with other students in class.	47	47%	21%	13%	15%	4%
I was more relaxed when completing the required tasks because I know I can redo them in case I make any mistakes.	47	38%	38%	11%	11%	2%
Unlike tasks, I was more cautious about not making mistakes when completing the final test because I know that I have one chance to do well in it.	47	49%	32%	13%	6%	0%
Average	**47**	**47%**	**32%**	**10%**	**9%**	**2%**

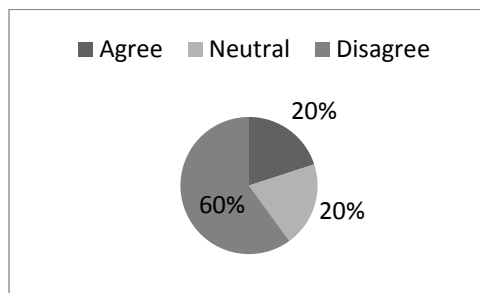| Negative Effects of Incorporating Game Elements (points, badges, and leaderboards) in Learning Managements Systems						
Incorporating game elements in online learning created negative feelings between students due to the adverse effects of competition.	47	4%	32%	19%	19%	26%
Incorporating game elements in online learning discouraged the formation of strong relationships between students.	47	4%	13%	32%	19%	32%
Utilizing game elements in online learning lowered my motivation to complete the course.	47	0%	4%	13%	32%	51%
Utilizing game elements in online learning made me feel anxious while working on the course.	47	2%	9%	15%	36%	38%
I was more concerned about collecting points than effectively learning the materials.	47	9%	23%	21%	30%	17%
Average	**47**	**4%**	**16%**	**20%**	**27%**	**33%**

The results of the first construct (the perceived positive effects of incorporating game elements (Leaderboards) in LMS's) showed an 87% total percentage of agreement among

graduate students, 4% total percentage disagreed with the remaining, and 10% having neutral (neither agree nor disagree) perception (Figure 1). The results for the second construct (the perceived psychological effects of incorporating game elements (points, badges, Leaderboards) in LMS's) showed a 74% total percentage of agreement and 12% of disagreement. In this section, 14% of the total percentage had a neutral perception concerning psychological effects (Figure 2). The results of the third construct (the perceived possible effects of the instant feedback the game elements provide) showed a 91% total percentage of agreement and 3% total percentage of disagreement. A small percentage (6%) provided a neutral response (Figure 3).
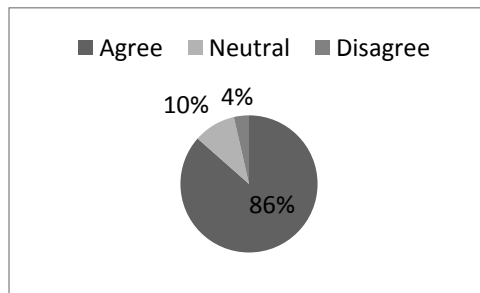
Figure 1. Positive effects of incorporating game elements (Leaderboards) in learning management systems.
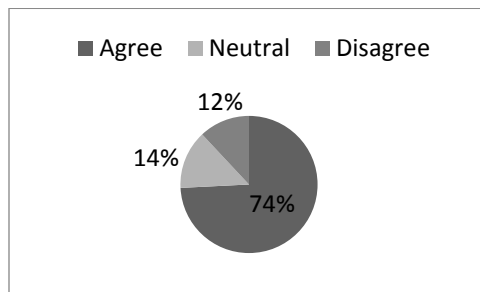
Figure 2. Psychological effects of incorporating game elements (points, badges, Leaderboards) in learning management systems.
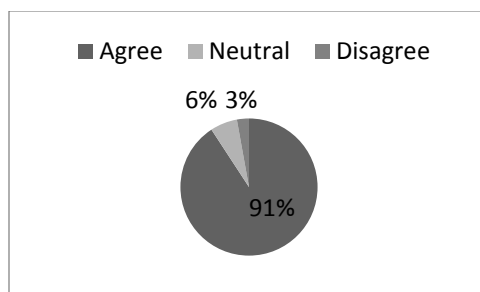
Figure 3. Positive Effects of the Instant Feedback the Game Elements Provide

The results of the fourth construct (the perceived cognitive effects of incorporating game elements (points, badges, Leaderboards) in LMS's) showed an 85% total percentage of agreement and a 7% total percentage of disagreement among graduate students with 8% neutral (Figure 4). The results of the fifth construct (the perceived formation of good learning habits as a result of using game elements) showed a 79% total percentage of agreement, an 11% total percentage of disagreement among graduate students, and a 10% total percentage neutral (Figure 5). The results of the sixth construct (the perceived negative effects of incorporating game elements (points, badges, and Leaderboards) in LMS's) showed

a 60% total percentage of disagreement, a 20% total percentage of agreement, and a 20% neutral response among graduate students (Figure 6).
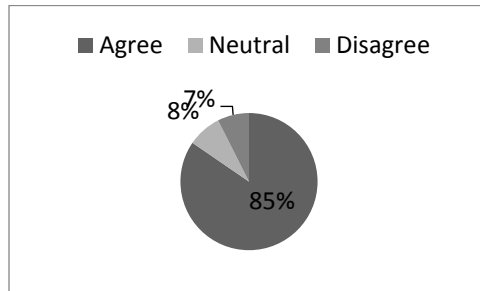
Figure 4. Cognitive effects of incorporating game elements (points, badges, Leaderboards) in learning management systems.
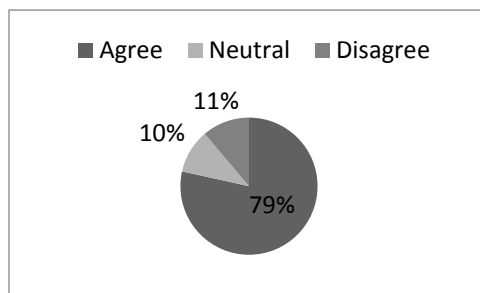
Figure 5. Formation of Good Learning Habits as a Result of Using Game Elements

Figure 6. Negative Effects of Incorporating Game Elements (points, badges, and Leaderboards) in Learning Management Systems.

DISCUSSION

This study explored graduate students' perspectives towards the use of gamification techniques in online learning. The results showed a general positive perception toward the utilization of those techniques.

Positive Effects of Incorporating Game Elements (Leaderboards) in LMS
Results from this study illustrate a positive perception of incorporating gamification into online learning. 86% of the graduate students believe that incorporating leaderboards in the learning management systems makes them more competitive, hardworking, and successful. This is supportive of Flores (2015) who found out that some of the advantages of gamification are creating a healthy competition, employee motivation, and realizing outcomes. The reason behind this perspective is that leaderboards allow students to visually compare their performance against each other which may have increased their motivation level, and therefore affected their attitude toward the required course tasks.

Psychological Effects of Incorporating Game Elements (Points, Badges, and Leaderboards) in LMS

Online learning is usually associated with feeling lonely and socially disconnected. In an exploratory factor analysis study done to understand students' barriers to online learning, researchers found that two of the most critical factors to effective online learning are learner motivation and social interactions (Muilenburg & Berge, 2005). One reported challenge that may lower students' motivation in online learning and that might be partly responsible for students' attrition is the emotional aspect of online learning where students feel disconnected and isolated due to the lack of physical interaction between each other and the teacher (Dyrud, 2000, as cited in Bocchi, Eastman & Swift, 2004, Singh & Pan, 2004 as cited in Li & Irby, 2008). To increase students' motivation and persistence in online classes, researchers recommend increasing students' engagement and sense of community in the online learning environment (Bocchi, Eastman, & Swift, 2004).

Psychologically, the finding reveals that gamified online learning increases the students' sense of belonging to the online community, reduce lonely experiences in online learning, increase the interaction, and connection to other course learners. Also, it reduces boredom and anxiety found in traditional online learning. Online learning with game elements reduces stress due to the idea of a risk-free learning environment, reduces negativity associated with traditional online learning, and offers an enjoyable learning platform. The idea behind risk-free learning environment is related to the joyful feeling students' experience as a result of being placed in a game like environment. These findings correspond with Lander & Callan (2011) who realized gamified learning activities as fun, enjoyable, and rewarding. They also agree with Franco-Mariscal et al. (2015) who examined the perception of high school students and reported game elements to be interesting, enjoyable, and favorable in enhancing the student learning outcome. Unfortunately, the results of the current study were not in line with the findings of Dominguez et al. (2013) who revealed a neutral response concerning the enjoyable nature of gamified education activities.

Positive Effects of Instant Feedback Provided by Game Elements

Students' engagement and sense of community in an online environment (Angelino, Williams, & Natvig, 2007) depend on the quality of interactions in the online course. For example, if feedback and support are slow in the online course, students' feeling of isolation, disconnectedness, and frustration will increase (Takiya, Archbold & Berge, 2005 as cited in Tyler-Smith, 2006). The results of this research study revealed that instant feedback provided by the incorporated game elements helps students to determine their progress in the course. The instant feedback also encourages and makes online learning more interesting, hence the desire to continue. This was seen in the high percentage of agreement (87%) that students expressed toward the statement (I enjoyed learning in online course that employ game elements). Also, students expressed that having game elements contributed to an increase in the engagement level of online learning. These results are consistent with previous research such as that of Cheong et al. (2014), which illustrated that gamification offers feedback that is appreciated by students. Moreover, they reported that gamification makes students more engaged (Cheong et al., 2014). Also, the results are consistent with Franco-Mariscal et al. (2015), who found that students develop an interest in their courses when given feedback by their teachers.

Cognitive Effects of Incorporating Game Elements

The results of this study revealed that the incorporation of game elements in online learning promotes cognitive development. Students believed themselves to be more competent, have effective memory storage, information retrieval, have increased concentration during studies, and be more attentive to any new opportunities in the course that give them more

points. The reason behind these findings may be related to the motivating effect of the game elements. Acquiring points for successful accomplishments has two advantages. First, it gives the instant feedback that the learner usually need to in order to feel assured that he/she is on track. Feeling assured imposes a feeling of competence in learners which in turn raises their motivation level. Second, acquiring points motivates learners to pay attention to their actions. The excitement associated with gaining points makes the learner cognizant of those opportunities as well as careful of not losing what has been gained. Moreover, being careful not to lose points increases learners' concentration levels, and therefore increase their chance of remembering what has been learned.

These results are in agreement with the findings of Sanmugam et al. (2014), Morris et al. (2013), and Ke (2009), which suggested that game elements promote intellectual development, especially the attentiveness capacity. Through the complex gaming systems, students can explore their unused brain parts while being fully engaged in the learning process (Lee & Hammer, 2011). Gauthier, Corrin, & Jenkinson (2015) argued that game mechanics enhances the development of problem-solving strategies, hence increasing the predictive abilities of a learner.

Formation of Good Habits by Incorporating Game Elements
Incorporating game elements in online learning were found to create good learning habits. Game elements enhance the desire to complete all course requirements. Also, it motivates the students to put more efforts in understanding the concepts and contents of the course as well as re-evaluating the required tasks for better grades. Franco-Mariscal et al. (2015) realized that game elements stimulate students to participate in all learning activities. Students can understand the main concepts of the total course units (Franco-Mariscal et al., 2015). Moreover, it motivates students to complete the course requirements, participate in group discussions and interact with other students. The findings were consistent with Cheong et al. (2014), who found that students are attracted to gamified learning because it allows them to be interactive. It also agrees with Lister (2015), who after performing a deep literature review found that gamification leads to increased class attendance and participation. Students perceive gamified online learning as more relaxing since making mistakes offer the chance for corrections. Also, as discussed above, game elements increase the student attentiveness to final tests with the understanding that it is offered only once.

The reason behind the formation of those good habits can also be attributed to the motivating aspect of the game elements. Students want to gain more points in order to compete with their friends and gain higher status. The exciting feeling associated with competition make students want to gain more points by being involved in every opportunity that offers them. This can be observed in redoing the activities or participating more often in the discussion board. The great advantage that can come out of this is to help students form strong bonds between them and other students in the online course. Consequently, reduce the lonely feeling the students usually experience in online learning due to decreased physical interactions (Bocchi, Eastman, & Swift, 2004).

Negative Effects of Incorporating Game Elements
In response to the negative effects of incorporating game elements in learning management systems, the results showed that most students did not have a negative feeling of game elements due to the creation of competition. This group of students did not perceive game elements as discouraging regarding creating a strong academic and social relationship. They, also, disagreed with the statement that game elements demotivate the student's urge to complete the course, create anxiety, and leads to poor learning habits. Some students, on the other hand, agreed that game elements discourage socialization, create anxiety, cause poor learning habits, and inhibit the completion of the cause. The findings from the majority of

students conflict with those of Hanus & Fox (2015), who found that leaderboards could exert a negative influence on students' motivation.

Also, they contradict the findings of Charles et al. (2011), who depicted that students are dissatisfied by the competition created by the game elements. The results from the students who had a positive response to the negative effects of incorporating game elements in online learning support the findings of Hanus & Fox (2015) and Charles et al. (2011). Moreover, they are consistent with Haaranen et al. (2014), who realized that students have a negative perception about badges when incorporated in their learning process. Supportively, Lister (2015) argues that game elements can be a distraction from academic goals as well as cause careless learning habits, hence not always a successful strategy in the learning process.

Overall, the study reveals that students regard gamification as an important strategy in enhancing their achievements in online learning. The findings support and reinforce previous research, especially on the positive, cognitive, psychological, and instant feedback effects of gamification. These areas are important in designing the gamified learning systems. However, it is also crucial to understand the negative aspects of game elements to academic. On the other hand, the results have shown that students do not perceive game elements to impact them negatively, which is not in line with previous studies. Gamification introduces play in learning for purposes of enjoyment and, therefore, a deprived gamified approach can lead to forced play, which is demotivating and discouraging (Lister, 2015). Students prefer a gamified learning system that is flexible and easy to navigate, hence the need for appropriate implementation strategies of game elements by course instructors.

LIMITATIONS

Multiple limitations were identified in this study. First, since the concept of gamification is fairly novel, there are few empirical studies on the topic. It is therefore difficult to develop a deep insight of research achievement. Moreover, the examination of perception of student used a small sample size, which limits the generalizability of the study results. The research design being cross-sectional, it only examines students using a gamified learning system at a specific time. It, therefore, makes it difficult to understand the long-term perception and perspective of the use of gamification in online learning. Gamification is composed of several elements, including game mechanics and game dynamics (Urh et al., 2015). Finally, in this study, only game mechanics, which are the objects of the game, are used, leaving out game dynamics, which captures the behavior emerging from playing games.

CONCLUSION

The findings from the study have revealed that students have a positive perception towards using gamification in online learning. Precise and consistent with the findings of previous studies, graduate students are more competitive, hardworking, and successful with gamified learning management systems. These findings suggest that graduate students in this technological era require an effort-demanding, challenging, and sophisticated learning system. Graduate students believe that incorporating game elements in learning enable them to have a sense of belonging, enjoy, feel less lonely, increase connectivity, reduce boredom, reduce anxiety, reduce stress, and increase positivity in the learning process. Gamification, therefore, positively impacts the mental part of the students. These findings depict that graduate students need learning systems with minimal psychological distress. The findings also showed that gamified learning offers instant feedback, which contributes to progress monitoring, building interest in the course, and increasing student learning engagement. Such outcomes reveal that graduate students need an engaging learning system with frequent monitoring.

Gamification increases the level of competence, enhances the recall memory, improves concentration, and attentiveness. As such, it leads to cognitive development and clearly showing that students appreciate a learning system that motivates and improves their brain function. Gamification contributes to the formation of good learning habits, for example, putting efforts to understand beyond the course requirements. It encourages revision, full completion of the course, undertakes discussion, interaction, and through completion of tasks. These findings show that graduate students prefer learning systems that devote them to commitment, social interaction, flexibility, and relaxing aspects of education. The study findings implicate online education instructors to employ strategies that are preferred by the students. It also, influences education system designers to develop gamified learning systems since students have a positive perception towards them. In conclusion, the study identified some limitation, which highlights the need for further investigation on the topic. However, gamification is a highly appreciated and successful strategy for improving the student online learning experience.

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Survey on Gamification in Online Learning: A Students' Perspectives

Item	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Positive Effects of Incorporating Game Elements (leaderboards) in Learning Managements Systems					
1. Comparing my performance with the performance of other students in the online course through Leaderboards fueled my interest to compete.	☐	☐	☐	☐	☐
2. Comparing my performance with the performance of other students in the online course through Leaderboards fueled my interest to work hard.	☐	☐	☐	☐	☐
3. Comparing my performance with the performance of other students in the online course through Leaderboards motivated me to succeed.	☐	☐	☐	☐	☐
Psychological Effects of Incorporating Game Elements (points, badges, leaderboards) in Learning Managements Systems					
4. Game elements increased my sense of belonging to the online community.	☐	☐	☐	☐	☐
5. Game elements reduced the loneliness feeling I used to experience in online learning.	☐	☐	☐	☐	☐
6. Game elements increased my feeling of connectedness with other students in the class.	☐	☐	☐	☐	☐
7. Using game elements reduces the feeling of boredom I used to feel in traditional online courses.	☐	☐	☐	☐	☐
8. Using game elements reduced the anxiety feeling I used to experience in traditional online courses.	☐	☐	☐	☐	☐
9. Using game elements conveyed to me the notion of risk-free environment where I felt less stressed while studying because of the playful feeling associated with game elements.	☐	☐	☐	☐	☐
10. Using game elements in online learning changed in me the negative perception usually associated with traditional online courses due to increased difficulty and social disconnect.	☐	☐	☐	☐	☐
11. I enjoyed learning in online courses that employ game elements.	☐	☐	☐	☐	☐
Positive Effects of the Instant Feedback the Game Elements Provide					
12. The instant feedback helped me to know how well I am doing in the course.	☐	☐	☐	☐	☐
13. The instant feedback fueled my interest to continue.	☐	☐	☐	☐	☐
14. The instant feedback increased my engagement level in the online course.	☐	☐	☐	☐	☐
Cognitive Effects of Incorporating Game Elements (points, badges, leaderboards) in Learning Managements Systems					
15. I believe that using game elements in online learning contributed to an increase in my feeling of being competent.	☐	☐	☐	☐	☐
16. I believe that having game elements in online learning may increase my chance of remembering the learned content for a long period.	☐	☐	☐	☐	☐
17. Using game elements in online learning improved my concentration level while studying.	☐	☐	☐	☐	☐
18. Using game elements motivated me to pay more attention to all changes in the course requirements that can add for me more points.	☐	☐	☐	☐	☐
Formation of Good Learning Habits as a Result of Using Game Elements					
19. I believe that using game elements in online learning increased my desire to do more than what I was required to do in the course.	☐	☐	☐	☐	☐

20. Using game elements motivated me to invest more effort to understand the content more deeply.	☐	☐	☐	☐	☐
21. I believe that using game elements in online learning increased my desire to redo the required tasks to raise my points.	☐	☐	☐	☐	☐
22. I believe that using game elements in online learning motivated me to complete all course requirements.	☐	☐	☐	☐	☐
23. I was motivated to participate more often in the discussion board to gain more points.	☐	☐	☐	☐	☐
24. I was motivated to interact more often with other students in class.	☐	☐	☐	☐	☐
25. I was more relaxed when completing the required tasks because I know I can redo them in case I make any mistakes.	☐	☐	☐	☐	☐
26. Unlike tasks, I was more cautious about not making mistakes when completing the final test because I know that I have one chance to do well in it.	☐	☐	☐	☐	☐
Negative Effects of Incorporating Game Elements (points, badges, and leaderboards) in Learning Managements Systems					
27. Incorporating game elements in online learning created negative feelings between students due to the adverse effects of competition.	☐	☐	☐	☐	☐
28. Incorporating game elements in online learning discouraged the formation of strong relationships between students.	☐	☐	☐	☐	☐
29. Utilizing game elements in online learning lowered my motivation to complete the course.	☐	☐	☐	☐	☐
30. Utilizing game elements in online learning made me feel anxious while working on the course.	☐	☐	☐	☐	☐
31. I was more concerned about collecting points than effectively learning the materials.	☐	☐	☐	☐	☐

CLOUD COMPUTING TECHNOLOGIES IN WRITING CLASS: FACTORS INFLUENCING STUDENTS' LEARNING EXPERIENCE

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ABSTRACT

The proposed interactive online group within the cloud computing technologies as a main contribution of this paper provides easy and simple access to the cloud-based Software as a Service (SaaS) system and delivers effective educational tools for students and teacher on after-class group writing assignment activities. Therefore, this study addresses the implementation of the most commonly used cloud applications, Google Docs, in a higher education course. The learning environment integrated Google Docs that students are using to develop and deploy writing assignments in between classes has been subjected to learning experience assessment. Using the questionnaire as an instrument to study participants (n=28), the system has provided an effective learning environment in between classes for the students and the instructor to stay connected. Factors influencing students' learning experience based on cloud applications include frequency of interaction online and students' technology experience. Suggestions to cope with challenges regarding the use of them in higher education including the technical issues are also presented. Educators are therefore encouraged to embrace cloud computing technologies as they design the course curriculum in hoping to effectively enrich students' learning.

Keywords: Cloud computing, Google Docs, user satisfaction, user preference, interaction, learning styles.

INTRODUCTION

E-Learning is usually understood as instruction delivered through an educational technology in teaching and learning. A wide range of terms are interchangeable with e-learning, including online learning, computer-based learning, web-based learning, virtual learning, digital learning, and so on. In recent years, e-learning appears to be brought about by advances in information technology. These advances indeed have given a rapid and dramatic rise to research and development in cloud computing. Emergence of cloud computing technologies and accessibility of learning, it is expected that more online cloud-based applications will be used in higher education in new generation of e-learning. Study (Deters, Cuthrell, & Stapleton, 2010) describes that educators and students are increasingly adopting many of these cloud computing software services for their projects and assignments. Koh and Lim (2012) also indicated that 64% of students in higher education used online collaboration applications such as Google Docs and Microsoft Office 365 at least several times a month to stay connected with their classmates, to study, and to work on course assignments. The new or the future learners are totally digitalized, also called digital natives, digital immigrants, .net generation, and Generation @ (Oblinger & Oblinger, 2005; Prensky, 2001). Therefore, the need for adequate research in cloud-based learning environments in higher education will be soon necessary. Understanding how students learn with cloud-based applications will be important because it will guide future educators develop a better improvement of course design in cloud learning

environments, making cloud apps more effective in the field of education. This study was conducted to gain a better understanding of how students' characteristics and learner factors impact their learning experience with cloud computing technologies. The results can be shared for future educators to integrate cloud computing apps as a regular part of their instructional practices.

Cloud Computing
The cloud uses software and data stored on the servers in its system. Cloud computing uses the Internet and central remote servers to maintain shared documents, files, software, knowledge, and applications through a cloud-based service that computers or mobile devices can access on demand. The large vendors such as Microsoft, Google, Yahoo, Amazon, and IBM operate and maintain the cloud system. A Service-Level Agreement (SLA) is a term created by the cloud provider.   It is a service contract between a cloud provider and the service user that defines the particular aspects of service expected from the service provider, including scope, quality, and responsibilities. Three service models can be summarized (Mell & Grance, 2011; Vaquero, Rodero-Merino, Caceres, & Lindner, 2008).   Software as a Service (SaaS) is an operational expense in which the service user uses web-based applications that are provided by the cloud provider. The consumer has no control over the infrastructure, such as Google Docs and Microsoft Office 365. Platform as a Service (PaaS) are on-demand tools from the Internet that develop the computing environment. This allows the service user to develop applications using the provided service, such as Google App Engine or Microsoft Azure. Finally, Infrastructure as a Service (IaaS) is what runs the Internet for the service user. There, the cloud provider allows the users to run virtual machines on their infrastructure, such as Amazon Elastic Compute Cloud and Rackspace.

In general, cloud computing is characterized by resource pooling which allows the users access to data from any computer anytime anywhere, in real time. The data can be presented at one or multiple locations based on service level agreements established between the service provider and user (Katz, 2008).

Cloud Computing for Higher Education
Cloud-computing is already used extensively in higher education for a wide variety of functions including word processing, spreadsheet, presentation, videoconference programs, and e-mail (Lin, Yu, & Wang, 2014; Slahor, 2011). It indeed enhances students' active participation, increases the learning engagement, and enriches their learning process (Parker & Chao, 2007). Cloud computing technologies are free or low-cost for users such as students and teachers to support learning, social interaction, context creation, publishing, and collaboration.   A variety of cloud apps do not actually require installing software on the user's computers.   Some large software enterprises offer educational editions of cloud based learning management system for free of charge, for example Microsoft (Microsoft, 2015) and Google (Google, 2015). Examples of cloud-based apps include Microsoft Office 365, Dropbox, Google Apps, and YouTube.   SLA is one of the characteristics that make cloud computing appealing to educational administrator as it helps to provide access to students for software and apps that are not previously available.

Essentially, cloud computing is beneficial to the learners, school administrators, and educators. Cloud computing affords opportunities for greater student choice in learning. Students can access a wide array of resources and software tools that suit their learning styles and interest using an Internet-connected device. Meanwhile, the increasing ease of access have attracted learners to analyze their data in greater depth with utilization of cloud computing technologies (Susa, 2009).   In addition, it is truly beneficial for the educational sectors to use cloud formation with their budget restrictions. Cloud-based service can help schools reduce capital investment costs. More importantly, particularly in higher educational settings, benefits from

conducting collaborative activities in cloud, higher educational professionals therefore meets the necessary requirements in educational contexts, including accessibility and interactivity (Honeycutt & Herring, 2009); immediate feedbacks from peers (Ebner, Lienhardt, Rohs, & Meyer, 2009); motivation and virtual face-to-face discussion with instructors or classmates (Grosseck, & Holotesku, 2008); supports of collaboration (Lin, Yu, & Wang, 2014); learning dynamics (Borau, Ullrish, Feng, & Feng, 2009); and the new generation of learning favor (Jabbour, 2013).

Purposes of the Study and Research Questions

The purposes of the current study are to contribute to the literature on student learning experience using Google Docs cloud application on after-class group writing assignment activities and to assess the learner characteristics factors that influence the students' learning experience. The goal is to gain knowledge regarding how students learn with the cloud computing technologies and how to improve learner satisfaction for further cloud applications implementation. The following research questions were considered.

> What are the students' learning effects by using Google Docs in writing assignment activities?
> What factors influence students' learning experience using Google Docs app on after-class writing assignment activities?
> Which aspect(s) of Google Docs do student users like and/or dislike in an educational setting?

BACKGROUND

Numerous research studies explored different variables that may influence the students' learning experience of e-learning, such as the problems and difficulties they encountered in terms of communications, interactions, and technologies (Hara & Kling, 1999), as well as the level of interaction and learning styles (Moore & Kearsley, 1996). Therefore, understanding how these factors influencing the students' learning experience facilitates the creation of appropriate cloud-based e-learning environments for teaching and learning. Thus, the educators can design and deliver better effective cloud-based instructional activities to the new generation of students.

Technology Tools

Liaw and Huang (2007) list four criteria influencing students' learning satisfaction in an e-learning environment, including environmental characteristics, environmental satisfaction, collaboration activities, and learners' characteristics. Previous study (Sun, et al., 2007) has shown seven factors affecting learners' learning satisfaction in e-learning: (1) learner computer anxiety, (2) instructor attitude toward e-learning, (3) e-learning course flexibility, (4) e-learning course quality, (5) perceived usefulness, (6) perceived ease of use, and (7) diversity in assessments. Several studies (Piccoli et al., 2001; Webster & Hackley, 1997) indicate that technology and Internet quality have great impacts affecting learner satisfaction. Piccoli et al. (2001) addresses that computer anxiety significantly affects learning satisfaction in virtual learning environments. Regarding technology experience, studies have indicated computer skills have little impact affecting the level of learning satisfaction in a virtual classroom (Sturgill, Martin, & Gay, 1999; Swan, et al., 2000). For other learner characteristics factors, research results are rather inconsistent (Kearsley, 2000; Sun et al., 2007; Swan, et al., 2000). Therefore, further research is needed to explore the relationship between learners dimension and learning satisfaction in cyberspace.

Learning Styles

Each individual learns in a different way.   Studies have revealed that there is a relationship among learning styles, strategies, and course performance (Curry, 1987; Keefe, 1991; Terell,

2002). Kolb (1985) advocates that the effective learner relies on four different learning modes, Concrete Experience (CE), Abstract Conceptualization (AC), Active Experimentation (AE), and Reflective Observation (RO). Consequently, the following brief description of four basic learning styles is based on four modes (Kolb, 1985). First, convergers are characterized by AC and AE. They are good at problem solving using deductive reasoning. Second, divergers are characterized by CE and RO which has the opposite strengths of the convergers. They are good at brainstorming with their imaginative ability. Third, assimilators are characterized by AC and RO. They are good at planning theoretical models using inductive reasoning. They are less interested in people as the convergers.   Last, accommodators are characterized by CE and AE which has the opposite strengths of the assimilators. They are good at actively planning things and learn best from trials and errors, relying heavily on other people for information.

Honey and Mumford (2006) adapted Kolb's learning model and aligned four learning styles named Activist, Reflector, Theorist, and Pragmatist.   Kinsella (1995) indicated that learning "styles" is for a general term, being "an individual's natural, habitual, and preferred way of absorbing, processing, and retaining new information and skills" (p. 171). Particularly, in addition to the cognitive domain, learning styles should also contain the affective and physiological domains (Oxford, Hollaway, Horton-Murillo, 1992), and learning strategies (Anderson, 2005; Cohen, 1998; Oxford, 1995). Leaning strategies are the particular mental and communicative process that leaners use to learn (Chamot, 2005).

Other learning styles that might have an impact on web-based learning include, active/reflective, sensing/intuitive, visual/verbal, and sequential/global. Sabry and Baldwin (2003) indicate that sequential/global learning style has a significant relationship with the level of interaction among students in web-based learning environments. Learning style influence how students learn, how teachers teach, and how they interact (Zhou, 2011).

Interactions

Learners learn best when they actively involved in the learning process through social interaction with the immediate learning environment (Vygotsky, 1978; Woo & Reeves, 2008). Research studies suggest that frequent constructive interaction with the instructor and among students in a dynamic communicative learning environment can affect the level of learning success (Doolittle & Hicks, 2003; Swan, et al., 2000). Studies (Wang, 2013; Wang, Yu, & Wu, 2013) have shown that perceived individual accountability and quality of feedback were two important elements in Web-based e-learning environment. Studies (Tsay & Brady, 2010; Biasutti, 2011; Rovai, 2002) also revealed that course interaction has a significant relationship with student performance and satisfaction.

In collaborative language learning, interaction is the key element as a means of identifying quality of learning for improving performance and developing language skills (Dippold, 2009; Lin, Yu, & Wang, 2014; Swan, et al., 2000; Wang, 2013; Wang, Yu, & Wu, 2013). Learning is naturally a social activity that engages interaction with one another.

METHODS

Participants

A total of 28 students enrolled in Business Writing course at a university in central Taiwan. Participants were college senior students who were studying full-time.   The majority of the participants were females (82% female & 18% male) with the average age of 22.1 years old. After using the SaaS model for 18-week, particularly Google Docs, the participants were asked to complete an online questionnaire. All 28 students answered the survey and no missing or invalid responses were found on questionnaires.

Regarding students' technical skills, the data showed that most participants considered themselves as experienced users of computers (94%), social networking apps (87%), and e-mail (92%). Indeed, most the participants (88%) felt easy using computer technology. About their learning styles, the majority of the students were divergers (43%) and assimilators (32%) as shown as Table 1. The results of ANOVA indicate that there is no significant differences ($p= .05$) between the mean ages of the four learning styles of the groups.

Table 1. Participant characteristics

Learning Style	Gender		Total
	Male	Female	
Accommodator	0	4	14%
Diverger	2	10	43%
Assimilator	2	7	32%
Converger	1	2	11%
TOTAL	5	23	100%

Instrument

An online questionnaire was used for collecting students' learning experience of the course. Two categories of questions were included, a quantitative evaluation of specific aspects, and a qualitative evaluation of students' overall comments.

The quantitative evaluation consists of 30 closed questions. Except two demographic questions, all of the item responses were measured with Likert scale. The five sections of closed questions were technology experience, learning style, interaction, user satisfaction, and user preference as shown in Table 2. The Cronbach's α value of reliability in each section ranged from .68 to .85.

Table 2. Quantitative Questionnaire

Sections	# of Items	Sample of Questions	Internal Reliability α
Technology Experience	4	I considered myself as an experienced e-mail user. I felt it's easy using computer technology.	.68
Learning Style	12	When I think about what I did yesterday, I am most likely to get a picture. I prefer to get new information in pictures, diagrams, graphs, or maps.	.76
Interaction	4	We maintain effective interaction working together using Google Docs. I enjoyed talking to my instructor online.	.85
User Satisfaction	4	I am satisfied with using Google Docs functions. I am very satisfied using Google Docs for my group project.	.82
User Preference	4	I prefer using Google Docs to discuss homework with my classmates. I prefer face-to-face to discuss homework with my instructor.	.79

Regarding the qualitative aspects, the participants were invites to provide overall comments of their learning experience. These 2 open-ended questions gave the researcher insights into the effectiveness and ineffectualness of the cloud learning environment.

1. Please indicate which aspects of the writing assignment activities with Google Docs app you like most?

2. **Please indicate which aspects of the writing assignment activities with Google Docs app you dislike most?**

Procedure

This research was conducted in Business Writing class, at a vocational 4-year university in central Taiwan. Students were seniors majoring in Applied Foreign Languages. In the school zone, students can access to free Internet with their student ID numbers to log in; in the off-school zone between the classes, 100% of students have their own mobile data plan allowing them to access to Internet. It is a norm that every of college students in Taiwan has his/her data plan to keep them to access to Internet. In this study, the proposed interactive online group with the cloud-based instruction integrated with Google Docs app provides students simple access to the cloud-based learning SaaS model and delivers interactive tools for students and the professor to discuss between classes.   The SaaS model was conducted in Business Writing, one-semester course work which met in two 50-min lecture sessions with a once-a-week. At the beginning of the study, the participants (n= 28) were introduced to the course content and to the cloud learning environment. During the second week of the semester, the students were introduced to the Google Docs app and received an hour-long training session on how to use Google Docs working or co-write a group writing assignment together. Therefore, during the training session, those who did not have a Google Gmail account were asked to create a free Google account in order to open (login to) the Google Docs website. All students were asked to create their first document, save and retrieve the file as they would do on a Microsoft Word application. Then they were taught how to tag and share a document with another reader. Meanwhile, they were given an opportunity to view their peers' document and a permission to edit and co-write the document. A variety of course activities along with the features of Google Docs include reading the assignment instruction or others' document online, editing one's own document or others' work, suggesting or commenting on others' document, and sharing one's own documents. Google Docs app allows access from any computers to collaborate by sharing a document with other users as viewers, collaborators, or by publishing it on the web (Conner, 2008).

In this study, a cloud-based application supported learning environment in between classes was proposed to foster and connect classroom teaching and learning experience. Figure 1 shows the framework of the proposed learning environment consisting of three major components, cloud app, teacher, and student. During the study, each of the students was asked to read the academic materials as different business scenarios in the cloud and was required to write six different writing styles of documents with up to 300 words as his/her individual assignments, including inquiry email letter, requesting email letter, invitation message, concerning payment, memo and fax, and complaint letter.   After students were getting more familiar with Google Docs app, at the week five they were assigned a term project, designing a business proposal. The students were highly encouraged to work in groups, using Google Docs to collaborate with whom they gave permission to edit and work with. The focus of this feature was to encourage students to continue their work and share accomplishments after class in the cloud. While working with others, the students also interacted with their instructor regularly in the cloud. The instructor edited the phrases, sentence structures, and posted his comments and shared compliments in this cloud-based learning environment both to their individual and group assignments in between classes. Though Google cloud has a perfect track record, the instructor still recommended his students to store their documents both online and on hard-copy. Upon completion of the writing assignment activities, an email was sent to students inviting them to complete the online questionnaire at the week 18. Participation was voluntary and students were not required to provide any personal information such as name or contact number in the survey.
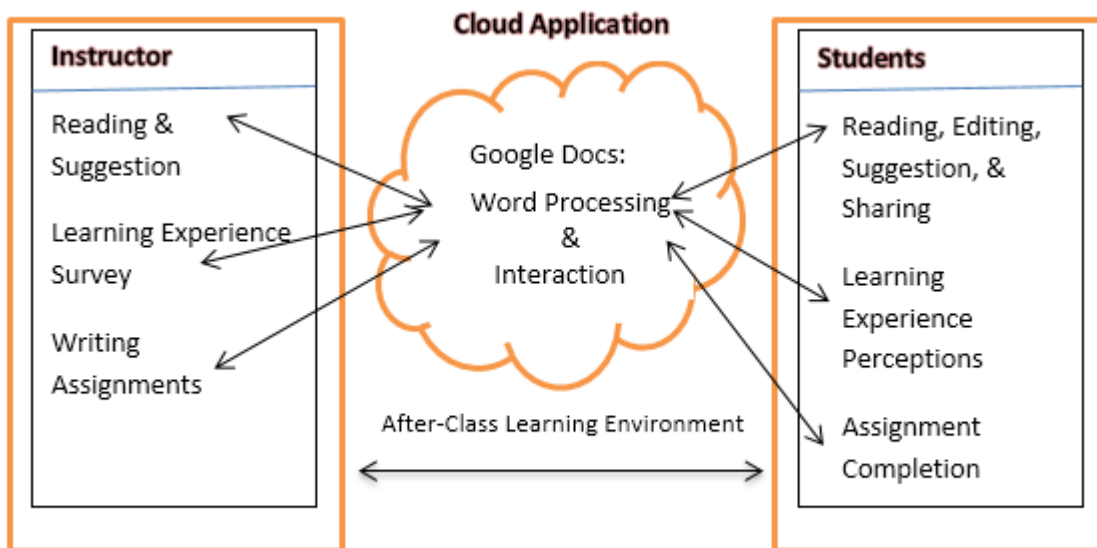
Figure 1. The framework of the cloud app supported learning after class

Writing Assignments: Group Project and Individual Assignments

A group project was a major assignment in this course. Each group was comprised of 3-4 students and required to design a business proposal project. Students were asked to complete the business proposal and submit their group projects within 6 weeks. The mission of group project was to enhance students to learn from each other, and collaborate with others. The group project also provided students with opportunities to recognize how to work with their peers in cloud learning environments. The primary course objective was to encourage students to collaborate with others and provide an easy-to-access data cloud learning tool between classes.

Throughout the semester, students participated in this course were required to complete reading tasks, processes of peer feedback, sharing, editing, and cloud collaborative tasks. A total of 6 individual assignments were assigned and everyone was required to complete and submit his/her homework within 2 weeks. The purpose of these individual assignments was to encourage students to share or obtain suggestions with/from their peers on document editing through the Google Docs cloud-based app.

RESULTS

Research Question 1: Does use of Google Docs app on after-class assignment activities effectively help the participants learn the course content? To answer this research question, the individual assignments that participants carried out during the activities were evaluated. The means (maximum 100) of each assignment were found as shown in Table 3. The first assignment scored 75.46 at the beginning of the cloud-based activities. The last assignment scored 78.43. The results indicate that use of Google Docs app on after-class assignment was effective.

Assignment	1	2	3	4	5	6
Mean	75.46	74.01	76.22	77.85	78.52	78.43

Table 3. Means of individual assignments

Learner Factors

Research Question 2: What factors influence students' learning experience using Google Docs app on after-class writing assignment activities? To answer this question, the principle component analysis was conducted on all learning variables and user characteristics to identify key factors. The analysis yielded three factors with eight values greater than 1.00 (Table 4). Factor 1 related to individual technology experience. Factor 2 related to learning styles and includes accommodator, diverger, assimilator, and converger. Factor 3 related to communication interaction with the instructor and among students. After identifying three learner factors, a multivariate regression was conducted to examine the relationship between the factors and the students' learning experience in the cloud learning environment. User satisfaction and user preference on cloud app or face-to-face were used as criterion variables.

Table 4. Factor analysis of the survey

	Factor 1	Factor 2	Factor 3
Computer experience	.74		
Social Networking apps experience	.89		
E-mail experience	.71		
Internet connection	.81		
Accommodator		.86	
Diverger		.76	
Assimilator		.71	
Converger		.84	
Interaction with instructor			.76
Interaction with students			.86

Regression analysis revealed that three learner factors were predictive of user satisfaction (R^2= 29) and user preferences (R^2= 22) as shown as Table 5.

Table 5. Multivariate regression with three learner factors

	Learning Experience	Sum of Squares	df	F	p
Factor 1: Technology Experience	User satisfaction	.21	4	11.23	.11
	User preference	.87	4	4.36	< .001***
Factor 2: Learning Styles	User satisfaction	.29	4	4.22	.54
	User preference	.00	4	.00	.88
Factor 3: Interaction	User satisfaction	.54	2	7.87	< .01**
	User preference	.35	2	6.48	< .001***

*** significant at the .001 level

** significant at the .01 level

* significant at the .05 level

Factors Influencing User Satisfaction in a Cloud Learning Environment

Regression analysis revealed that the Interaction (Factor 3) significantly predicted the participants' satisfaction of learning with the cloud-based app (F= 7.87) at the *p*< .01 level. It could be explained that the participants who perceived more communication or interaction opportunities with the instructors and/or among students in groups through the cloud-based apps in this course were more likely to feel the satisfaction of learning in the cloud learning environment.

Factors Influencing User Preference Cloud Learning Environment
Factors Technology Experience (F= 4.36, p< .001) and Interaction (F= 6.48, p< .001) significantly predicted the preference of learning in a cloud.

That is, students who received more interaction from the instructor and peers tended to be more likely to prefer cloud learning environment. In addition, those with more technology experience were more likely to prefer cloud learning environment.

Additional Findings
To examine if there is a relationship between particular learner factors and the mean score of user satisfaction and user preference, a correlation matrix test was conducted. Regarding technology experience factors, Pearson's r (p< .05) revealed a significant substantial positive relationship between social networking apps experience and user preference (Pearson's r= .51). The students with more social networking apps experience tended to prefer learning in the cloud. For the interaction related factors, the results revealed that female students tended to be more likely to interact with their peers more frequently than male students (Pearson's r= -318, p< .05). However, in terms of interpretation, it has to be noted that female participants in this study was unbalancedly high (82%).

In addition, to further investigate the relationship between learning styles and user satisfaction, a linear logistic regression analysis was conducted (R^2= 7). Although only 7% of the user satisfaction was explained by the 4 types of learning styles toward the cloud learning environment, results revealed that diverger learning style was a significant factor predicting user satisfaction (F= 6.87, p< .05) with the highest Beta weight (β= .39, p< .05). The rest of the three learning styles did not show any significant Beta weights and thus did not significantly contribute to user satisfaction (Table 6).

Table 6. Multiple regression analysis for variables predicting user satisfaction

Learning Style Factors	B	SEB	β
Converger	-.05	.14	-.05
Diverger	.30	.16	.34*
Assimilator	.00	.17	.00
Accommodator	.15	.16	.14

*p< .0

Open Questions of the Questionnaire
Research Question 3. Which aspect(s) of Google Docs app do you like/dislike? To answer these two open-ended questions, an inductive reasoning based on the constant comparative method was conducted to analyze the qualitative data collected from the two open questions. Inductive method of analysis has been greatly adopted in earlier research examining online music learning (Seddon & Biasutti, 2009, 2011). There, in the current study, the researcher analyzed and categorized the similar data into different phenomenological themes.

After carefully reading the answers several times, 61 and 24 discernibly different answers were scanned and coded for the positive and negative aspects, respectively. The themes and the categories of both the positive and negative aspects to a quantitative table were then completed. In the phenomenological process, five themes emerged regarding the positive aspects, which were interpreted by the researcher as: collaboration, self-expression, technological structure, rapid deployment, and secure environment. Three themes emerged regarding the negative aspects, which were interpreted by the researcher as: peer interaction, technical issue, and unnecessary chat. In the categorization process, the similar answers were sorted together, and 15 categories formed for the positive aspects (Table 7) and 8 for the

negative aspects (Table 8). It has to be noted that 2 participants provide no comments for the positive aspects and 5 participants left no comments for the negative aspects. In addition, for the question about the positive aspects, participants wrote more comments as compared to the few or blank answers for the negative aspects. Table 7 and Table 8 also present the frequency of these answers mentioned by each participant.

Table 7. Qualitative data of the positive aspects of learning experience in iCB activities

	Category	Participant	Frequency %	Total %	Theme
1.	Project collaborating	11	18.03	45.90%	Collaboration
2.	Information sharing	8	13.11		
3.	Interacting	6	9.84		
4.	Knowledge sharing	3	4.92		
5.	Usefulness	5	8.20	13.11%	Self-Expression
6.	Self-advancement	3	4.92		
7.	Ease of use	4	6.56	14.75%	Technological Structure
8	Chatting simultaneously	3	4.92		
9.	Technical support	2	3.28		
10.	Productivity	4	6.56	18.03%	Rapid Deployment
11.	Running immediately	3	4.92		
12.	Fast update	2	3.28		
13.	Punctuality	2	3.28		
14.	Application Reliability	3	4.92	8.20%	Secure Environment
15.	Stable data storage	2	3.28		

Table 8. Qualitative data of the negative aspects of learning experience in iCB activities

	Category	Participant	Frequency %	Total %	Theme
1.	Too much time spent	7	29.17	66.67%	Peer Interaction
2.	No common agreement	5	20.81		
3.	Different levels of participation	4	16.67		
4.	Lose of data	3	12.50	16.67%	Technical Issues
5.	Functional errors	1	4.17		
6.	Distraction	2	8.33	16.67%	Unnecessary Chat
7.	Obligatory use	1	4.17		
8.	No educational function	1	4.17		

Positive Comments

The participants identified many positive aspects of cloud learning environments. Based on the collected comments, five themes were emerged in the phenomenological process, including collaboration, self-expression, technological structure, rapid deployment, and secure environment.

Theme 1. Collaboration: A total of twenty-eight students emphasized how it provides opportunities to work together with their peers. Of the total of 61 positive comments, the participants (45.90%) pointed out that this cloud app is a good tool for interacting with others

(n= 6), sharing information (n= 8), collaborating group project together (n= 11), and sharing knowledge (n= 3).

Theme 2. Self-expression: After all, the participants (13.11%) felt the use of cloud activities is useful (n= 5), and they were glad to have this new learning (n= 3).

Theme 3. Technological structure: Similarly, the participants (14.7%) also valued the technological structure of Google Docs services. Some participants specified that Google Docs is a tool easy to use (n= 4) allowing members to chat simultaneously (n= 3), and it also provides technical support (n= 2) when they encounter some technical problems.

Theme 4. Raid deployment: The participants (18.30%) considered Google Docs' rapid deployment. Four participants noted that Google Doc is productive, running its function immediately (n=3), fast update (n= 2), and no delay or lag (n= 2).

Theme 5. Secure environment: Finally, Regarding the cloud platform, the participants (8.20%) appreciated the secure environment that Google Docs provided for their saved documents, such as reliable (n= 3) and stable data storage (n= 2).

Negative Comments
The participants wrote only 24 comments for the negative aspects. The participants concentrated on three themes, peer interaction, technical issues, and unnecessary chat. First, more than two thirds of the participants (66.67%) were not pleased about their peer interaction. The students complained that some of their group members did not engage their group projects or did not contribute equally to the assignments (n= 4), and group members have no common agreement (n= 5). Seven students (29.17%) even stated that they spent too much time on cloud activities. S7 reported, "with the Google Docs app working on our group project, some people don't even contribute enough, but rely on other people to finish the job". Similarly, S10 stated, "... now some lazy people can have a full excuse having a free ride". S3 commented that "it spent too much time to reach a compromised idea"; students 5 stated that "we just spent too much on chatting".

Examples of the second them of technical related issues included functional errors (n= 1) and lose of data (n= 3). Students (16.67%) indicated that sometimes the editing part is lost when they edit on the same document at the same time with another user. S22 stated, "... I so hate this group project using Google Docs. I cannot find my saved document". For the last theme of unnecessary chat, the participants (16.67%) focused on Google Doc's distracting effects from the chatroom (n= 2), not useful for educational purpose (n=1). S22 stated that "Google Docs app is definitely not a useful tool for education. It is completely a waste of time here using Google Docs to work on a group project."   One student was not pleased with the obligatory participation with other students.   S13 questioned "why we have to use Google Docs to do our group project? I am not very happy for being forced to use this app".

FINDINGS AND DISCUSSION

The current study provided the participants perceptions of a cloud-based learning SaaS system, cloud collaborative activities in an asynchronous e-learning environment and provided the comments about learning process that occurred during the cloud learning activities.   A new perspective in the app of cloud service for the current generation of the students or within the next generation education has made its mark. With regards to the higher means of each writing assignment, the results proved that the system has provided an effective learning environment between and after class for the students and the instructor to stay connected. Thus, the results of the current study support the previous studies (Schneckenberg, Ehlers, &

Adelsberger, 2011; Tsay & Brady, 2010) which found that participants have better learning performance facilitated with cloud-based apps. It can conclude that utilizing cloud computing to enhance students learning performances showed positive results. Furthermore, the students liked the outcomes of their writing assignment activities through the use of cloud computing apps. Therefore, understanding what learning factors influencing students' learning experience with a course is significant for further educators develop an effective curriculum design with cloud-based apps.

Overall, the results indicated that two learning factors should be simultaneously considered in the development of cloud learning environment: frequency of interaction online and students' technology experience. The results found that the frequency of interaction significantly predicted the students' satisfaction of learning in a cloud environment. An interactive communication among students and an interaction between students and the instructor are significantly essential in a virtual learning environment (Woo & Reeves, 2008). With a high frequency of interaction among students and between students and the instructor can help students develop a sense of community with their peers and the instructor, which is consequently leading to higher learning satisfaction with their course (Rovai, 2002). The strong connection between interaction and user satisfaction found in this current study is supported by previous studies (Biasutti, 2011; Doolittle & Hicks, 2003; Swan, et al., 2000; Wang, 2013; Wang, Yu, & Wu, 2013). High frequency of interaction or communication between students and the instructor and among classmates will lead to greater learning satisfaction. Therefore, apparently, it is to suggest that instructors of cloud-based or virtual courses should make an extra effort to create more interaction and encourage student interacting with classmates and the instructor. The more they interact with each other, the more they are satisfied with the course learning.

Although students' preference with Google Docs app and its features can be explained by the level of computer technology experience, other factors also play a fundamental role in ensuring effectiveness in educational settings. First, as noted in results, Google Docs app provides a stable service and secure platform. It is fact that programs running on the cloud computing technologies do not required extensive memory capacity on the computer using them. Second, Google Docs app enables a number of students to simultaneously edit or comment on a document without geographical or temporal limits. It also allows students and instructors share documents with 200 email addresses instantly and securely. With Web 2.0 technology tools, students are given lots of possibilities to interact with each other, work on a project together, edit/modify each other's saved files, and thus increase the effectiveness of instruction (Woo & Reeves, 2008). Third, Google Docs app supports synchronous communication through synchronous chat services during the cloud activities in real time. It therefore fosters students' self-expression from interacting at the same time. More importantly, from the qualitative data, several benefits in collaborative cloud activity participation in a cloud learning environment were specifically found, including fostering team work, computer skills, and development of communication skills which were consistent with previous studies (Blair, 2006; Bottge et al., 2009). Google Docs is a particularly promising tool for after class collaborative assignment.

About learning styles, the results found that most of the students were groups of diverger and assimilating learning styles which was consistent with previous studies (Gurpinar et al., 2010; Robinson, 2002), and that diverger may predict user satisfaction with the cloud-based instruction. The findings were found to be theoretically consistent with the definition of the Kolb learning style model. Based on the Kolb's (1985) learning characteristics, diverger is characteristic of people from liberal arts background that was exactly similar to the sample group in this study. In addition, Diverger possessed the character of Concrete Experience (CE) and Reflective Observation (Kolb, 1985). Therefore, part of the reasons that diveregers was

the significant factor in this study was that students constantly interacted with one another through Google Docs and consequently, they benefited from peer discussion (CE) and instructor's class lectures (RO). However, only 7% of the user satisfaction was explained by the overall learning styles. Loo (2004) found that relationship between learning styles and learning preferences was weak. Therefore, it is possible to conclude that learning styles did not greatly influence user satisfaction in a cloud learning environment.

In addition to these positive impacts found in this study, educators should also focus on potential challenges of Google Docs in an educational setting. Some negative comments about conflicts between group members. If two users are editing the same document and working at the same time, the conflict might occur. In addition, students spent too much time arguing or discussing the projects which left them no common agreement. And perhaps these negative aspects can lead to learning distraction. Regarding the technical issues about lose of data and function errors, it can be explained by the possible limitation for the use of Google Docs. It tow users are editing the same region and working at the same time, the conflict may occur. To solve this problem, the original document owner needs to organize the editing task. Broin and Raftery (2011) also pointed out this problem in their study.

Jabbour (2013) and Wang (2014) advocate that mobile technologies or Web 3.0 has great potentials to be planned and utilized in the next generation of education. Therefore, studies that guide educational researchers how to best use cloud service into classroom should be highly needed. As clarified in this study, students who considered themselves as experienced computer user tended to more likely to prefer cloud based instruction. New generation of students use emails, instant messaging, video conferencing, and various web-based tool to collaborate instead of traditional face-to-face method for group projects (Koch, 2010). Cloud computing is the core technology of the next generation of network computing platform in education which is the basic environment of the future e-learning (Zhu, 2009). Considering the fact that cloud computing and Web 3.0 have rapidly evolved over the last few years, the current study suggests that studies on effectiveness use of mobile cloud apps in educational settings might be critically important. On April 30, 2014, Google launched mobile apps for Google Docs on Android and iOS. Educators need to embrace this trend in technology as they design the course curriculum in hoping to effectively enrich students' talents and expand their skills.

LIMITATIONS

While this study uncovered the learner factors predicting learning experience in a cloud learning environment with Google Docs app on after-class group writing assignment activities, it might be noted this study is one preliminary investigation on cloud-based applications in higher education. This study has some limitations. The first is about validity of the questionnaire instrument that was used in this study. Some items may have directed the participants to favoring cloud-based apps. Another limitation was the sample size. Since the results represent only one small group of students in one college writing class, they cannot be generalized to other populations.   All the participants were enrolled in the same class. Therefore, the sample was very homogeneous and may not be representative of all college students.   A longitudinal study in larger group size is recommended for more generalizable results. The final limitation is the instructor's characteristics. The high level of teacher engagement with the students after class might be the major contribution for strengthening the connection between students and instructor. The instructor's passion in designing a series of cloud learning activities may enrich and promote teaching and learning environment.

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E-COACHING, E-MENTORING FOR LIFELONG PROFESSIONAL DEVELOPMENT OF TEACHERS WITHIN THE SYSTEM OF POST-GRADUATE PEDAGOGICAL EDUCATION

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ABSTRACT

The research considers the readiness of teachers and postgraduate pedagogical educational establishments to use e-coaching and e-mentoring which can provide continuous professional development of teachers. The use of theoretical methods of systematization and comparison of scientific statements, experience in implementing e-coaching, e-mentoring has identified the possibility of using e-coaching and e-mentoring in postgraduate pedagogical education in continuous professional development of teachers. Monitoring and questioning have proved the idea that teachers require the new content of postgraduate education for their own professional development. They are interested in mastering new technologies, delivering master-classes and demonstration lessons. The results of the discussion in focus groups including representatives of the administration of educational establishments, teachers and lecturers of postgraduate pedagogical educational establishments are shown in the SWOT-analysis. The experts confirmed the need and possibility of the e-coaching and e-mentoring implementation in postgraduate pedagogical education. The major risks of e-coaching and e-mentoring implementation in postgraduate pedagogical education are e-coaches' and e-mentors' training and ICT competence. The Internet services, e-coaching and e-mentoring applications and programs are able to provide continuous professional development of teachers. The educational and professional e-coaching and e-mentoring programs require further studying in postgraduate pedagogical education.

Keywords: e-Coaching, e-mentoring, postgraduate pedagogical education, professional development of teachers, ICT.

INTRODUCTION

Postgraduate pedagogical education should provide the professional development of teachers needed to deal with the challenges of the development in the current information society and the knowledge society on the principles of andragogic, individualization and lifelong education.

Knowles, Holton & Swanson (2014), Guskey & Huberman (1995) summarized the experience of the world researchers who dealt with the theory and practice of the professional development of teachers. They showed that the professional development is one of the most essential components that provide increasing of the educational level. The models of the professional development of teachers were studied by Harland &

Kinder (2014), Davies (2010). The importance of ICT competence for professional development was observed by McGarr & O'Brien (2007).

The professional development of teachers should be defined as a process of formation of a teacher as a specialist in terms of lifelong professional education, self-education and professional activities. The teacher who is developing professionally manages to acquire professionally important qualities: communicational, motivational, reflexive, educational, intellectual and so on.

Among the tasks of postgraduate education which are to be solved, the main ones are the following: the development and improvement of learning content based on the target learning and job duties of experts, professional experience, personal interests and needs of teachers; the use of modern educational technologies that imply differentiation, individualization, implementation of distance, part-time and external learning.

The strategic functions of postgraduate education are to unite the personal development and the increase of a person's professional capacity and to provide the proactive nature of the professional training according to the requirements of the society. The tactical functions of postgraduate education provide implementation of the strategic objectives, motivating teachers to continuous professional development, creating effective technologies of adult learning, researching acmeological and andragogical problems.

PROBLEM OF RESEARCH

Cranton (1996) in his research determines how to stimulate and sustain a teacher's and educator's personal development. Darling-Hammond & Sykes (1999) emphasize the importance of the educational policies implementation concerning the professional development of teachers.

The development of information and communication technologies promotes the change of forms and methods for the professional development of teachers. Higher and postgraduate education do not manage to reform according to the requirements of the society and technology development. The increasing number of open online resources for training and professional development gives teachers opportunities to provide non-formal learning and continuous professional development. But not all teachers possess the following skills: "life-long learning", "time management," "formation of individual professional development path." This intensifies the need of the educational consulting, mentoring, implementation of new methods and technologies for teachers and students. Regulations regarding demonopolization of postgraduate teacher education are being adopted, training centers that are competitors to the formal system of postgraduate education are being opened in Ukraine.

Evidently, there is a number of contradictions between: social needs to improve the quality of education and teachers' reluctance to implement it; socially based needs resulting from personal and professional development, individual professional growth of teachers and conservatism of postgraduate education; a significant increase in the objective requirements for the professional level of teachers, the rapid development of ICT, informatization of education, the increasing number of electronic resources and the reluctance of teachers to introduce new forms and methods of work.

According to this there is a key issue of detection, study and adaptation of educational potential of international training technologies and its use in domestic practice for the professional development of teachers in the framework of postgraduate pedagogical education.

Research Objective

The objective of the research is to determine the readiness of teachers and the system of postgraduate education to use e-coaching and e-mentoring for providing continuous professional development. The questions of the research are the following: to analyze the readiness of teachers for new content and forms of postgraduate pedagogical education, to identify adaptive educational potential of e-coaching and e—mentoring for the teacher professional development in the framework of postgraduate pedagogical education; to identify ICT tools for the use of e-coaching and e-mentoring.

Research Focus

Analysis of the professional development models allows to distinguish external and internal conditions of teaching professionalism, stages of this process, hierarchical variability of its expression. In this context personal teachers' awareness of self-development as a special kind of activity is becoming essential that is highlighted in the studies on the issue of professional development of a specialist, including teachers. The peculiarities of teacher training for creative, research and innovative activity, his/her involvement in the scientific and theoretical knowledge in postgraduate education define ways of improving the educational process in institutions of training, which enable to conclude about different possibilities of the impact of training on the development of a teacher as a person and professional his/her encouragement, promotional intensifications.

The peculiarities of adults' activity were studied by Knowles, Merriam, Rogers; didactic and methodological principles of teaching adults were studied by Jones & Davis (1965), Jung (2014), Puhovska, Shennikov; the development of curricula and educational materials for adult teaching were in the sphere of interest of Jarvis, Holford, & Griffin, (2003); peculiarities of teachers' work in the process of teaching adults were described by Jones (1984).

Postgraduate pedagogical education in Ukraine follows the world tendencies of the development of andragogics and postgraduate education. It requires constant changes of the content in order to create personal readiness to master the profession, professional awareness, competence, skills, and culture of a teacher.

The theoretical basis for studying the issue of the professional development of teachers is the works of such famous educators and psychologists as Ananiev, Burberger, Goodson, Hargreaves, Puhovska, Tromen, Vygotsky, Derkach, Kuzmina and others. The researchers who studied various aspects of personal and professional development of teachers are Abulkhanova-Slavska, Atkinson, Maslach, Knowles, Markova, Mitinay and others. The creation of conditions for professional development in postgraduate education of adults was under the consideration in the works of Pirs, Danylenko, Sorochan, Oliinyk. The stages of professional development were studied by Kudryavtsev, Povarenkov, Zeyer. The works of the American, European and Ukrainian researches concerning lifelong learning (Dave, Delors, Edwards, Legrand, Verchlovskii, Kremen, Nychkalo, Sysoeva) and the development of postgraduate education (Krygko, Lugovyi, Protasova and others) are of great interest.

In order to improve postgraduate education content in Ukraine we suggest turning to the most common technologies used in the international practice and trying to adjust them in accordance with Ukrainian reality: coaching (coaching aims to achieve the full use of human resources), e-coaching (coaching online), mentoring (mentoring, targeted transfer of experience), e-mentoring (mentoring online), supervising (control, monitor of the educational and professional work of teachers and evaluation of the level of his/her competence formation), secondment (intership, rotation), shadowing (observation of the process of work), tutoring (support of the learning process, discussion of experience, transfer of the acquired knowledge into real practice), buddying (involvement of a learner in the sphere of another person's activities), storytelling (telling stories) and so on.

According to the research issue it is necessary to focus on the notions of coaching and mentoring and e-coaching and e-mentoring. The essence of coaching was mainly studied by the researches in the sphere of business, particularly: Douglas (2000), Zeus & Skiffington (2000) O'Connor, Du Boisand Bowes (2015), Houck (2011), and others. As for coaching researches, it is reasonable to single out works of such Ukrainian researchers as Borova, Nagara, Petrovska, Chernova, Kudryk, Surmyak and others

Whitmor (2002) interprets coaching as a new style of human resources management, its technologies contribute to the mobilization of internal abilities and potential of employees, continuous improvement of their professionalism and skills, the increase of their competitiveness level. Coaching is the establishment of interaction between a client who has managerial authority and responsibility in the organization and a consultant who uses a wide range of psychological (behavioral) methods and techniques to help clients achieve goals (O'Connor, 2008). Coaching results in the improvement of knowledge and assistance in self-development of an employee. The main advantages of using coaching for the professional development of teachers are the following: delivering of natural potential based on the relationship with the coach (trust, individual approach to a learner), self-esteem raising; creative thinking formation, creative approach to solving problems and situations; internal abilities and potential mobilization; personal and professional development for achieving personal goals in life and job.

Mentoring is known to differ from e-coaching. Mentoring is learning from personal experience, practical transfer of professional or other skills and knowledge from older and more experienced to younger employees. A mentor guides an employee's activities in a particular sphere of production, implementing "follow-my-example" principle. Mentoring is an essential function for career success. The very combination of such technologies contributes to the professional development of teachers. Interest in these technologies is also sprawned by the fact that teachers have different experience duration, they are at certain levels of professional development and they need mentoring (e.g. those teachers who have less than 5 years of work-related experience need mentoring) and coaching (e.g. continuous cooperation of teachers who have some achievements in their profession).

The development of information and communication technologies, the formation of people's ICT competence promotes the use of the Internet resources and applications for the organization of coaching and mentoring and the development of e-mentoring and e-coaching.

Elen, Heun and Blanchard (2003) describe the possibility of the Internet training and consulting for various types of cooperation in the sphere of e-mentoring and disadvantages of their use. Walther (1996) determined if the persons who communicate are members of one and the same group, for instance, they have common occupation, sometimes they can better perceive and understand each other. The researchers Shrestha, May, Edirisingha, Burke & Linsey (2009) in the report on e-mentoring, which was held at the University during a year, defining the benefits of electronic or virtual mentoring, point out that the majority of the students involved in the experiment noted an increasing number of opportunities of access available for students in comparison with the past and social activity of participants.

Clutterbuck and Hussain (2010) have summarized numerous individual case studies on the use of e-mentoring and e-coaching and their opportunities. They claim that virtual tools complement the possibilities of coaching of professional development making mentoring available for new audiences and new applications. The researchers also distinguish the difference between mentoring, coaching, e-mentoring and e-coaching.
While online mentoring has burgeoned rapidly in the last several years, to date there have been very few scholarly articles published relating to this phenomenon other than program descriptions (Knouse, 2001; Single & Muller, 2001).

Knouse (2001) points that e-mentoring was developed on the basis of the unique possibilities of ICT and e-mentoring can encourage a positive attitude to learning opportunities throughout life. The common feature of electronic mentoring programs is the possibility to engage new participants regardless of geography and time constraints (Knouse, 2001). The concept of mentoring and its benefits for the implementation of STEM education is also studied in the article. The abovementioned tools have been efficient and productive for fifteen years (www.MentorNet.net). The emerging of convenient email programs and web browsers created opportunities for the use of e-learning programs. The researchers Single P. & Single R. (2005) examined the history of electronic mentoring programs and determined their structure to ensure social justice and educational development. E-mentoring and e-coaching cannot be considered as something universal, but only as a cheap alternative to mentoring and coaching. These technologies have the following advantages: informational, social, psychological and instrumental. Some groups of people have difficulties in finding a mentor. One of the solutions is virtual mentoring - selection and online interaction with tutors (Houck, 2011). The researcher observes the benefits of virtual mentoring in comparison with other forms of mentoring, describes examples of online mentoring for various special groups and purposes, considers online mentoring programs in the framework of differences between generations, technological advantages and communication styles.

The development of the Internet technologies, including cloud, Web 2.0 and Web 3.0 technologies (Morris, 2011), video broadcasting, organization of webinars, teleconferences allow to provide e-coaching and e-mentoring in different educational systems, including postgraduate pedagogical education.

The studies analysis determined the researchers' interest in the implementation of e-coaching and e-mentoring and opportunities of their implementation not only in the sphere of business and sport but in education as well. Although, the researchers did not consider the possibility of using e-coaching and e-mentoring within the framework of postgraduate pedagogical education in order to ensure the continuous professional development of teachers.

METHODOLOGY

It is reasonable to identify research methods of our study. The following theoretical methods were used: systematization and comparison of scientific statements and experience in implementing e-coaching, e-mentoring to determine their possible use in postgraduate pedagogical education for continuous professional development of teachers. Empirical ones are observation, survey, testing, SWOT analysis of the work of the expert group to summarize the advantages and disadvantages of e-coaching and e-mentoring; content analysis for determining the list of ICT which are appropriate for the use in e-coaching, e-mentoring.

Participants
During 2015-2016 academic year, the authors of the article conducted a survey of 1,440 teachers in Kyiv who were taking extension courses at the Institute of Postgraduate Education of Borys Grinchenko Kyiv University. The aim of the questionnaire was to determine the teachers' level of satisfaction by the content of postgraduate education. Among the respondents of the survey there were teachers of 50 specializations from different types of Kyiv educational establishments (secondary schools, high schools, educational complexes, lyceums).

Data Collection and Analysis
After having studied the needs of teachers on the possibilities of postgraduate education, there was the discussion on the implementation of e-coaching, e-mentoring for continuous professional development of teachers. The results are presented in SWOT analysis of the implementation of e-coaching, e-mentoring for continuous professional development of teachers in postgraduate pedagogical education. 20 experts from four

focus groups took part in the discussion: school administration and methodists (1 head of school, 2 deputy heads of schools, 1 methodist of district methodical center), teachers of different subjects – 9, teachers of Information Science– 4, teachers of postgraduate education -3. The discussion took place in June 2016 at the Institute of Postgraduate Education of Borys Grinchenko Kyiv University.

The Scale

The number of survey participants was determined using Cherepanov's calculation method (2006) according to the formula (1):

$$N_T = \frac{N \cdot t_\alpha \cdot d^2}{t_\alpha \cdot d^2 + 36 \cdot N \cdot \alpha^2},$$

in which N_T – the required number of survey participants in the studied groups that form the sample;

N – the total number of students who are taking extension courses and form the general totality;

α – the level of significance;

t_α – Student's criterion value that depends on α;

d – the grading scale scope.

Therefore, at the level of significance $\alpha = 0,05$, with the grading scale scope value of $d = 3$, $t_\alpha = 3,18245$ i $N \approx 2000$ it is enough 275 participants for the sample.

The method of expert review was used to gain the objective. The number of experts was determined by using Reichman & Azgaldov's (1974) methods, according to the formula:

$$N = \frac{t_\alpha^2 \cdot S^2}{\varepsilon^2}$$

in which N – the number of experts, S – standard deviation of experts' assessment, t_α – tabular argument; ε – absolute error of assessment. If the group of experts is being formed and the value of S is unknown, the formula (2) is used:

$$N = \frac{t_\alpha^2}{\varepsilon_1^2},$$

in which ε_1^2 – the maximum permissible relative error (specified at the beginning of the expert assessment). Taking into consideration the abovementioned it was determined that there should be less than 15 experts to hold the expert review.

The experts' objectivity was determined by their ability to assess the computer-oriented learning environment of the institution of postgraduate education adequately; their ability to solve problems at the extension courses. The experts' interest was determined by their positive attitude towards the implementation of innovative technologies and willingness to participate in the experiment.

FINDINGS

Analyzing the needs of teachers and offering new technologies during postgraduate education we must take into consideration the fact that 59.8% of the respondents are of age from 30 to 50, 29.6% of the teachers are older than 50, 10.6% - younger than 30. The choice of technologies that will contribute to professional development of teachers in Kiev according to their abilities and needs (e-coaching or e-mentoring) must coincide with their needs and potential.

Table 1. Teaching experience of the respondents

Experience	Score Value (%)
less than 5 years	11,0
from 5 to 10 years	15.3
from 10 to 15	15.1
from 15 to 20	13.8
more than 20 years	44.8

The teachers were proposed to define "What forms of organizing classes are the most effective for you within the framework of extension courses". Responses of teachers have reflected their needs: master-classes – 71.8%, practical classes – 63.7%, training – 52.2%, lectures – 37.8%, coach-session – 5.8%. Most teachers need mentoring (71.8%) and only 5.8% of teachers are ready for coaching while it doesn't decrease the importance of traditional forms of extension (lectures, practical classes and workshops). Answers to the questions "What professional experience could you share within the framework of extension courses? What form of representing your experience is the most acceptable?" show that more than 50% of respondents chose demonstration lessons, reports with the presentation, master-classes, demonstrating videos with commenting. Therefore, we can make a conclusion that 50% of teachers are willing to become a mentor to other teachers and share their professional experience.
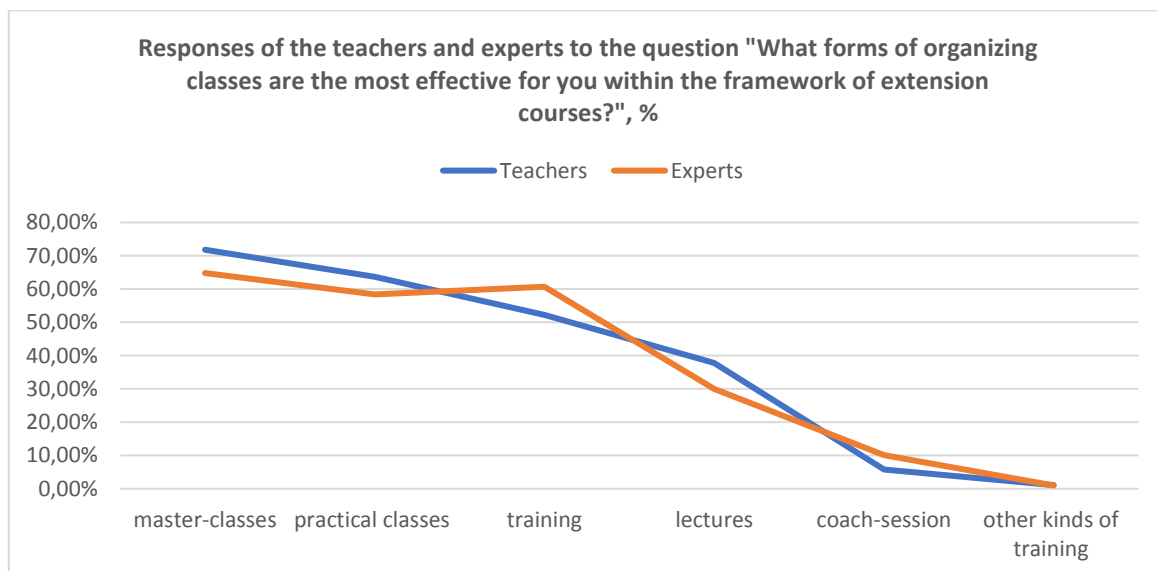

Figure 1. Responses of the teachers and experts about the forms of organization of training

More than 50% of the teachers accentuate to add topics about the development of modern researches in their branch to the content of courses. 64.6% of the teachers would choose to study modern pedagogical technologies during extension courses, 62.6% - to study innovative projects. The fact that innovations and new technologies arise teachers' interest can contribute to the implementation of innovations to the system of postgraduate pedagogical education.

In our opinion, the necessity of extra knowledge for professional development and understanding peculiar problems and necessity of solving them in the future provoke the teachers' choice of topics "Psychology of communication" (65.4%), "Prevention and diagnosing of professional burning out" (48.1%). The teachers proposed some ideas to the organization and content of the extension courses: more ICT classes, more practical classes, trainings; more contacts with professional lecturers of other universities and authors of educational programs, excursions.

During the extension courses for teachers (every 5 years) it's impossible to provide teachers with continuing professional development. Therefore, we made an attempt to identify the specialty of professional activity which is interesting for teachers to obtain as extra training during the period between extension courses. The researches show that teachers chose ICT (more than 45%), psychology and pedagogy (more than 35%), time-management, management of educational activity. The teachers are ready for personal and professional development which is offered in the training centers but not by the system of postgraduate education.

While 80.0% of the respondents use self-training to develop their ICT competence, 44.0% - possess basic skills and rarely use ICT, 90.7% of the teachers estimate their skills of using the Internet highly (4 and 5 points according to a five-point evaluation scale). More than 70.0% of the respondents use social networks for professional development and experience exchange.

Table 2. The use of ICT by teachers in the professional environment

Skills and the use of ICT	Score Value (%)
Those who do not have enough skills and use ICT rarely	44.0
Those who use ICT frequently	47.3
Those who did not learn ICT and do not use	8.7

SWOT analysis of the implementation of e-coaching and e-mentoring technologies in the postgraduate pedagogical education is formed on the basis of analysis of the scientific and pedagogical researches of using e-coaching, e-mentoring in business, education and supervision, and discussion of 20 experts in the sphere of postgraduate and secondary education.

Table 3. Using e-coaching, e-mentoring in the postgraduate pedagogical education

Internal environment	**Strengths** • individualization of the professional development of teachers in the postgraduate education; • continuity of teachers' professional development; • forming the information and educational environment for teachers' professional development; • motivating the teachers with pedagogical experience less than 10 years to develop professional skills, • involving teachers with pedagogical experience more than 10 years in mentoring	**Weaknesses** • ICT competence of teachers and coaches; • availability of computers, the high-speed Internet among the participants; • training of coaches and e-coaches in the system of postgraduate pedagogical education; • loading e-coaches and e-mentors; • motivating e-coaches and e-mentors; • motivating the teachers with pedagogical experience more than 10 years to develop professional skills
External environment	**Opportunities** • interest of the administration of educational establishments to develop teachers' professional skills; • development of ICT (free Internet services, applications, courses which simplifies communication and mutual activity); • demands of the labor-market to the teacher's qualification; • possibility for a teacher to become an e-coach	**Threats** • increase in the quantity of training centers, coaches and mentors who render teachers services • no standard legal framework of providing continuing professional development of teachers; • insignificant experience of using domestic experience of e-coaching in the education

Advantages of the internal environment (for instance, forming information and educational environment of the postgraduate pedagogical education) correlate with the possibilities of external environment (free Internet services, applications, courses which simplify communication and mutual activity) and reflect the perspectives, possibilities and needs of e-coaching, e-mentoring in the postgraduate pedagogical education.

Threats of the external environment (for instance, the increase of training centers, coaches and mentors who render teachers services) can be used for identifying new strategies of cooperation between postgraduate pedagogical education and other institutions (for example, involving coaches and trainers in the process of postgraduate pedagogical education and teaching lecturers who work with teachers using new technologies). Threats of the internal environment (for instance, motivating teachers with pedagogical experience of more than 10 years to develop professional skills) can be used for identifying new strategies of the development of postgraduate pedagogical education (involving teachers with pedagogical experience of more than 10 years in mentoring).

Investigation of the process of the ICT standards implementation in education (Ng, Miao, & Lee, 2009), including the creation of conditions for training teachers to use ICT (Morze, 2013), (Guo, Dobson, & Petrina, 2008) allows to use international practice for the implementation of information and communication technology in postgraduate education (Jones, 2003), (Ololube, 2006) based on International standards of ICT competence of teachers of UNESCO.

Summarizing the experience of the ICT use for teacher training in postgraduate pedagogical education, the results of content analysis of ICT we have concluded that providing that participants of postgraduate education have necessary computer devices, high-speed Internet and knowledge and skills required to use Internet tools there is a large number of applications and programs which can be used for e-coaching, e-mentoring: messaging (email, ICQ Miranda IM, IRC, MSN Messenger, Viber, Windows Live Messenger, WhatsApp); meetings, consultations, discussions (Skype, Google Hangouts), video creation, interactive video collage (weavly.com/education, zaption.com, educanon.com, Screencast-o-mattic, Camtasia, VideoNot.es, Zentrick.com, www.sparkolpro.ru, coub.com/ create), brainstorming (https://ru.padlet.com/, https://www.periscope.tv), creating presentations (Prezi, https://mix.office.com/en-us/Home, https : //animoto.com), testing and monitoring achievements (Google Forms, Survey Monkey, https://getkahoot.com), intellectual cards (https://bubbl.us, freemind.sourceforge.net, mindmeister.com, mindomo.com), webinars, conferences, workshops (Hangouts On Air, Skype for Business), online boards (https://www.pinterest.com, https://www.twiddla.com, https://vyew.com), a platform for distance learning (Moodle, EDX), cloud services (www.slideshare.net, resources for hosting projects, portfolios (https://create.lensoo.com, https://www.blendspace.com,) creating online courses (https://www.lessonwriter.com, https://www.smartbuilder.com); environment for professional development, online communities, channels (social media community, Google plus, http://blog.izzui.com/); forums, calendars.

DISCUSSION AND CONCLUSION

Having analyzed the teachers' needs in the new technologies and forms of continuing professional development and taking into consideration adaptive educational potential of e-coaching and e-mentoring for the use in practice of the professional development of teachers in postgraduate pedagogical education, we have made a conclusion that teachers are ready to use e-coaching and e-mentoring for continuous professional development in postgraduate pedagogical education. Postgraduate pedagogical education should take into account the teachers' needs and contribute e-coaching and e-mentoring to the traditional methods of teaching involving teachers and lecturers.

Little (1993) identifies the need for reforming in education with the implementation of new models of professional development of teachers. He states that the dominant educational and coaching model which focuses on introducing of individualization of education is not sufficient for the implementation of the educational reform. The impact of teacher education has provided the perception of the role of mentor teachers in professional development schools (Klieger & Oster-Levinz, 2015). The basis of coaching is

the potential of a trained person. (Whitmore, 2014). Supporting the professional development of information technologies pre-service teachers with e-mentoring approach is needed (O'Connor, DuBois & Bowes, 2015).

The use of the methods of participants' reflective activity in e-coaching and e-mentoring is of great importance because information and communication technologies cannot substitute face-to-face communication and have disadvantages of impersonal perception of the participants. Teachers have different needs for professional development so there is a necessity to work out programs of e-coaching and e-mentoring in postgraduate pedagogical education.

E-coaching must be used in training teachers with pedagogical experience of less than five years including mastering new technologies along with occupational disciplines and methods of teaching the subject. For teachers with pedagogical experience of more than 10 years it is preferable to implement subjects about professional burning out, time-management, and psychology. It is reasonable to involve experienced teachers with great achievements in e-mentoring. Such trainings are organized in the methodological association of teachers and contribute to continuing professional development of teachers of different ages. One of the components of e-mentoring is the creation of video resources with pedagogical experience and uploading them on the site.

The results of the research have shown that the teachers require the reconsideration of the content of postgraduate education for their own professional development and they are interested in learning new technologies (more than 70%), participating in the experience exchange, conducting workshops, demonstration lessons (more than 50%), that is they are ready to be engaged in the process of mentoring together with their colleagues. The teachers' needs for professional development are not limited by major subjects, they also include topics of "Time management", "New educational technologies", "Innovative projects" and "Information and Communication Technologies", "Psychology of Communication", "Prevention of professional burning out," all these factors justify our assumptions about the possibility and the necessity of the reconsideration of the forms and content of postgraduate education.

The teachers are ready to perceive the experience of colleagues and they offer to increase the number of visits of demonstration lessons, excursions to enterprises, educational institutions; study foreign experience of professionals. The teachers are ready to master ICT (45%) and to implement them to professional activities (more than 57%) and professional development (70%). The teachers specify that they have the best skills in using the Internet services that can encourage the implementation of e-coaching and e-mentoring. The results of the discussion with 20 experts show that the teachers are willing to use ICT to save their own time and for continuous professional development and they have already started using some elements of e-coaching and e-mentoring. Taking into consideration the discussion the SWOT analysis of the implementation of technology of e-coaching, e-mentoring in postgraduate education has been developed.

The content analysis of ICT has shown that modern applications, programs and services can provide different functions of e-coaching and e-mentoring (education, communication, collaboration, presentation of the professional development results).

This research indicates the beginning of the implementation of e-coaching and e-mentoring in the system of postgraduate education in order to ensure the continuous professional development of teachers and requirements of their further implementation. The conducted research doesn't cover all aspects of proposed scientific issues. It is necessary to improve the system of cooperation in e-coaching and e-mentoring for teachers of different ages and to develop diagnosis and programs of e-coaching and e-mentoring, to work out methods of diagnosing which contribute to the teachers' needs to identify their personal qualities, to evaluate the level of ability for self-government, self-esteem, the system of values, professional and educational motivation.

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BOOK REVIEW

CALL TEACHER EDUCATION:
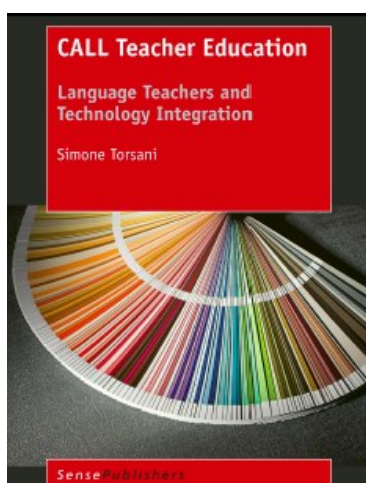## LANGUAGE TEACHERS AND TECHNOLOGY INTEGRATION
Written by Simone TORSANI

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INTRODUCTION

As the title suggests, Simone Torsani's book sets out to bridge the gap that exists between the theory and the practice about the integration of technology in distance language learning. The book is comprised of ten chapters with two sets of aims which are raising teachers' awareness to computer-assisted materials and procedures about the integration of technology in distance language teaching. The chapters are structured to address different topics such as Computer Assisted Language Learning (CALL) training activities, designing a computer assisted language learning course and processes in Computer Assisted Language Learning Teacher Education (CTE) for the internet. Above all, the technologically skilled teachers are associated with "the mythological character of Daedalus" in the introductory section (p. xvi). The book calls for all teacher trainers to put themselves in language teachers' shoes in order to see computer-assisted language learning not independent from the language acquisition theory. Therefore, language teachers need to implement and practise developing online materials to address their learners' linguistic difficulties.

The introductory chapter provides an overview that CALL teachers, trainers and practitioners need to see technology as an experimentation of an application rather than a simple tool for teaching. Torsani highlights the importance of the Web 2.0 applications in providing learners with a constant everyday language contact for communication. He also warns against the technical problems with the interactive whiteboard, Wi-Fi connection and technological unavailability that untrained language teachers might face in their classrooms. The introductory chapter makes the case that CALL teacher education can be seen as a separate field in language teaching. Thus, computer mediated

instruction requires a successful language lesson plan and didactic approaches in order to use computers in class. Furthermore, Torsani closes the introductory section by discussing the integration of computers not only as grammar teaching tool. But he also encourages language teachers to adopt a more learner-centered approach by taking the pedagogical, the institutional and the personal factors into account in the classroom. Torsani ends the introductory chapter by quoting a few crucial lines of the researchers about computer assisted language learning. In other words, the main purpose of this book, as Torsani explains, is to develop teachers' knowledge of the options about technology that are available for the benefit of learners.

Torsani distinguishes between two broad facts about the definition of computer assisted language learning in order to explain his theory. Firstly, he identified the technology application by which teachers can develop the lesson content by organizing and supporting skills for the learner autonomy. Secondly, the focus is on the learning process where linguistic activities are designed for the CALL curriculum. Then, he proceeds to wander through the history about the development of CALL. Torsani quotes from Warshauer (1996) about the three phases of computer assisted language learning (pp.4-5). Firstly, Behaviourist (structuralist) phase of CALL (1950s-1970s) examined language structures and grammatical accuracy. Secondly, Communicative phase took place between 1970s and 1990s with the simulation of interaction by computers. Finally, the Integrative phase focused on Task Based Learning from 1990s onward.

REVIEW OF THE BOOK

Chapter 1, *Computer Assisted Language Learning as a Study Branch,* sets the tone of the book by discussing how the social network, the sociocultural and the social interactionist approaches led to the present status of computer assisted language learning. Torsani also mentions how the diffusion of mobile devices, online interaction and social networks can contribute to the second language development. This dynamic nature of computer assisted language learning is followed by a suggestion of a vast number of research themes such as "(a)synchronous courses, Virtual Learning Environments (VLEs), Mobile Assisted Language Learning (MALL) and long-distance courses" (p.12). One of the real strengths of the book is that it draws the readers' attention to the relationship between software applications and Computational Linguistics.

Torsani advanced one of his main ideas that computers play a vital role in providing automatic and immediate feedback. Computer-aided instruction also has the potential to increase the motivation of anxious language learners who learn the target language at their own pace. This is what Torsani called "Intelligent CALL" (p.13). Teachers' roles have shifted to the supporters of the learning process. He also suggested how the content delivery with projects assists learners by having a great control on their language production.

Chapter 2, *Technology and Language Education*, sticks to the relationship between the technology and the language pedagogy. Torsani emphasizes that CALL pedagogy does not differ from the language teaching pedagogy. The same chapter is dedicated to the benefits of asynchronous communication tools of blogs and wikis which assist reflective writing. Teachers can maximize learners' communication opportunities with native speakers by synchronous tools of Instant Message (IM) and chat rooms. Learners can also create comics using Pixton and infographics with Piktochart.

Chapter 3, *The Integration of Technology into Language Teaching*, is indispensable as it defines the reconstruction of teachers' teaching practice in terms of the integration and the normalization of CALL in the classroom. The term 'normalization' is described as an "ongoing use of technology in the daily work" (p.49). Integration is defined as a process in teaching and this chapter draws attention to the complexity of technology integration in learning. Hence, economic and social factors, geopolitical, institutional, contextual and human factors are identified as barriers to the integration of technology in the classroom.

Nevertheless, Chapter 3 establishes the idea of not taking technology for granted just for its efficient use in class. Therefore, CALL teacher education which is an essential part of an effective training needs to meet various teachers' and learners' needs and expectations in the language classroom.

In chapter 4, *Foundations of CALL Teacher Education*, the author states the causes and the remedies for the lack of digital competence and standards. For instance, a good CALL teacher education model involves a careful needs analysis of the context, learners, appropriate methods, standards and online tools, i.e. blogging, dictionaries, discussion forums. Torsani is concerned that CALL teacher education research needs to focus on measuring teachers' habits, perceptions and abilities for improving their teaching practice.

Torsani's book succeeds at being what it was written to be in chapter 5, *CTE from Theory to Practice*, which provides a guide for two models of CALL teacher education, i.e. Technological Pedagogical and Content Knowledge (TPACK) and CALL Competences. Here, the online pedagogy is stated to be a crucial factor in determining a unique computer-assisted language learning curriculum. The readers' attention is also drawn to the technical area where the theory and the practice are linked by linguistic and didactic procedures.

In chapter 6, *Approaches and Processes in CTE*, teachers are advised to take the advantage of the situated learning where learners are immersed in real contexts in order to practise everyday language with authentic tasks. In depth approach is investigated with the demonstration of online applications, i.e. Web Quest and project-based learning.
This book is unique with its focus on raising the issue of the web pedagogy. So, different domains of networked CALL are examined in chapter 7, *CALL Teacher Education for the Internet*. Teachers are encouraged to adopt a pyramid of skills model and experiment mobile technologies for improving their information skills and their knowledge about various computer applications.

Chapter 8, *Procedures*, contextualizes learning activities by grouping them in three main areas of knowledge which are "linguistic, procedural and technical skills" (p.144). This section covers a wide range of effective Distance Training tasks, CALL training activities and procedures, i.e. tutorials, video demonstrations, designing a Moodle cloze test and complex activities (multiple choice tests).

The most prominent contribution is devoted to the designing of a computer assisted language learning course and curriculum in chapter 9, *The CALL Course*. The author offers a series of suggestions about the curriculum not only as a general course for pre-service teachers, in-service teachers and CALL specialists but also as a course for researchers, experts and instructors. This chapter places a focus on the key issues such as the diversity of CALL processes and evaluations. Torsani advises that teachers should interpret their context before they design and evaluate the feasibility of practical online exercises on Virtual Learning Environments, i.e. Hot Potatoes, gap-filling, online vocabulary matching exercises and guided tutorials. This book adds richness to the computer assisted language learning field with especially chapter 9 with different proposed designs on computer assisted language learning curriculum. Further explanations of notes about the research literature are also listed at the end of each chapter.

The book is well written in the sense that it links the web-based teaching and learning theory and practice. Torsani concludes in chapter 10, *Conclusions: The Future of CALL Teacher Education*, that the integration of technology can only take place with the normalization, transfer and the reconstruction of knowledge by teachers. As the author reconfirms, the future of successful computer assisted language learning activities depends on a careful needs analysis, effective strategies for observation and reflection and second language teacher education for developing a better CALL curriculum and Distance Education. The appendices section of this book includes a list of skills for using a Virtual Learning Environment (Moodle), six criteria for computer assisted language learning tasks evaluation and computer assisted language learning applications.

CONCLUSION

On the one hand, it is easy as a reader to focus on Torsani's work on CALL teacher education. On the other hand, one can miss the fact that Torsani also spends a great deal of time in his book explaining the main goals of integrating the digital media applications into the language education. The author never loses steam in the book. He succeeds in weaving his integration theory into succeeding chapters by encouraging the readers to stay focused and alert throughout the book.

In summary, the book provides a positive contribution to why computer assisted language learning teacher education is crucial for developing online pedagogies in the language classroom. The author places a special emphasis on the matrix of the linguistic knowledge, the procedural knowledge and the technical skills. Torsani proposes a theoretical framework for the computer assisted language learning syllabus design on three areas of expertise. Firstly, the linguistic experience is based on the knowledge about the second language acquisition and language education. Case studies which involve simulations of activities provide trainee teachers with an opportunity to compare their experience with the research literature. Secondly, the procedural knowledge defines how to use technology effectively by getting familiar with the online tools. Therefore, online tutorials can take place in language laboratories in order to foster trainee teachers' motivation about using technology. Lastly, the technical knowledge is described as the combination and the integration of two different tools such as the HotPotatoes match exercises and Hypertext Markup Language (HTML) codes on the Learning Management Systems.

Taken as a whole, the book is well worth considering for postgraduate students, computer assisted language learning teacher trainers as well as in-service teachers who are interested in improving their ability to embed technology in their language teaching curriculum design.

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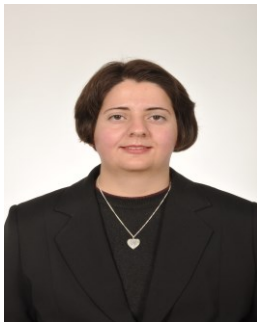
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BOOK REVIEW

INSPIRING THE SECONDARY CURRICULUM WITH TECHNOLOGY:
LET THE STUDENTS DO THE WORK
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This book is about how teachers can inspire their students to use technology for their subjects. It is not about what softwares or hardwares can be used in secondary curriculum. It is about how teachers can inspire students to use apps found in their personal devices like smartphones and tablets efficiently and responsibly in their subjects. It is not to ban the technologies or devices to classroom but to motivate students to utilize these technologies. The students should be engaged to use technology for their school subjects' learning apart from entertainment and socialization. This book is to harness the power of students' technology knowledge and skills in their lessons. The writers have clarified the fact that this book is not about teaching databases, spreadsheets or word processing. It is not important for the teachers to have technical knowledge of some particular technologies related to that subject but more important is that how they teach and advise their students to use technology responsibly and efficiently in their subjects. This book is to inspire the students to use the technology as a problem-solving tool through hunting the internet for open-source softwares, download applications and solve the problem.

This book has three focuses. One is to take away from teachers that they need to keep up-to-date constantly with new technology in ICT. Second is to show teachers that how can they get their students to focus on their lessons and learning with the same zeal as they do in gaming, social networking and other technology. Third is to develop pedagogy that can help to cope with ever changing nature of technology. A teacher is not a font of all knowledge and technology; rather she has to construct opportunities for students to transfer their own skills in technology to her subject. It is not that teacher should learn new technologies it is to make students use their knowledge of technology in their learning. This book encourages

those teachers also to be inspirational who have very little knowledge of technology to harness their students' knowledge of technology.

It is how to utilize students' devices for the classroom learning rather than banning those devices. It is to make the students inspire to do the work rather than teacher does the work for them. The writers has related their concept of use of technology with different subjects at secondary level, that how can they use technology or inspire students to use technology.

This book consists of nine chapters which are introduction; blended learning, mobile technologies and their impact on the secondary curriculum; developing interactive students; student safety; eportfolios and virtual learning environments; the extended school, embedding ICT in practice; and conclusion.

The teacher has to create the scenarios. Instead of seeking technical knowledge teachers should seek the knowledge of trends and opportunities. The teachers should blend their basic subject pedagogy within these trends to contextualize ICT skills. It is all about to harness future trends, technology and softwares and embed them into different subjects teaching. Throughout the book it is reinforced that the teacher has to be inspirational in using technology in the classroom. As we all know that when a student is inspired the learning accelerates and becomes effective. The writers have drawn our attention to the fact that technologies are improving day by day. As the new versions come the old versions and technologies become outdated and obsoletes. So it is impossible for a teacher to keep her updated with technology. It is overwhelming and an extra burden on the teacher along with other responsibilities on her. More important is that that the teacher should have the knowledge that how can she put her students to put the same energy and focus into her lessons in the classroom as they do use their devices or screens outside the school.

Chapter 1: Introduction

The first chapter starts by highlighting the importance of inspiring students. Because everyone knows that if students are inspired they attain better and achieve better. Moreover, it is much better for a teacher to teach inspired students. The inspired students feel that they have been given permission to feel enormous passion for a subject. It is that a teacher has created such an environment where he discovers that a stream of dopamine and positive endorphins can be experienced while exploring and learning the skills and knowledge of a subject. A teacher creates such an environment by taking something that a student already likes and uses this to refocus his perspective of the subject. The chapter highlights and suggests those ways through which non-schooling life of a student can be converged to the content of the course. It is to makes students realize that courses they have in school are not decontextualized but they are relevant and genuine part of their life. It is to give a student a confidence to use that knowledge and skill they have already mastered and help their learning in school lessons.

The technology is not to get rid of books but it is to give space to both ebooks and traditional paper books. The book suggests that a teacher should construct opportunities for students to read a book by incorporating students' desire to interact through social networking. The students should be encouraged to read ebooks and share these books' on facebook and blogs. The students should be asked to write a review of that book and share it with their peers. This will provide them the opportunity to learn through collaborative learning in their undirected own time for classroom reading.

The authors have pointed out to the facts in the introduction that future is in mobile computing. The authors have asserted that instead of spending so much money on such less interactive resources which are available on students' smartphones and screens like

dictionaries or calculators. As these things are already available in apps these resources must be used somewhere else. A smartphone at the same time can be an ebook reader, a GPS tracking device, a survey device etc. In short a smartphone can be anything that can be imagined.

The chapter has highlighted the fact that there are a lot of schools who have attempted to stop the infusion of mobile technology by banning all electronic devices from the school and have tried to impose the artificial learning environment of late twentieth –century. They say that society has upgraded in the way that everywhere the technology has replaced the manual work whereas some schools and teachers are struggling to cope with this upgrade. They assert that there is a great need to change such kind of mindset and bring technology into classroom teaching. They recommend teachers to embrace change and encourage students to use their knowledge and skill of technology to enhance their learning rather than banning the technology.

The chapter also signifies the fact that society has become disposable. Everything within no time becomes outdated and if in such a scenario we force our students to spend their precious time on learning and recalling such concepts that are available 24/7 in the form of a smartphone, that time must be utilized on some other constructive activities. So if the student forgets the date of signing the Magna Carta, it is not a big deal as they know that they can google it whenever they require from their smartphones. It is a poor approach to invest students' energies in learning those facts or knowledge which will might never need again, we should encourage the learners to learn core knowledge and skills that are required on regular basis.

Moreover, the chapter has drawn the attention of the reader to the facts that as softwares are constantly changing, therefore it is a foolish approach to learning all new versions of softwares. The authors encourage the teachers that instead of learning about the technology or the softwares it is more appropriate to introduce your students with the notion of temporary skills and knowledge. So each time the learner explores a new area within their subject, the teacher should coach them to ask that does there any technology exist right this moment that could solve this problem. So the responsibility is not on teachers but on students to explore options and justify bringing in technology to solve a problem.

The authors have very inspiringly drawn the attention to the fact that there is a dire need for a teacher to accommodate diversity of learners in her class. The students with visual impairment as well as a student with autism can be found in the same class as schools are making every effort to be as inclusive as possible. Utilizing technologies which are already in students' possession are the best way to make classrooms as inclusive classrooms and providing maximum opportunities of learning to students of diverse needs and achieving the aim of maximum parity.

They have also focused on the importance of digital footprints. They suggest the teachers to explore that how online technologies have affected both in school systems and private social networking systems.

The authors have used two terms technophile and technophobes. Technophile means those people who are keen of technology and technophobes mean those who have fear of technology. They say it is a wrong assumption that all students are technophile and all teachers are technophobe. The success lies to not to be afraid of technology but use it efficiently and effectively. They have quoted Franklin D. Roosevelt's words that the only thing we have to fear is fear itself. Therefore, teachers should use the known environment to teach the unknown skills and knowledge to students. They should encourage the students to

use their existing knowledge and skill of technology to explore new knowledge and skills related to a particular subject. Moreover, the authors has provided the explanation of some common terms in a very easy and comprehensive way like android, app, BYOD, cloud computing, cloud storage, drag and drop, external memory, and world wide web etc.

Chapter 2: Blended Learning

In the chapter two Shea and Stockford have explained that what it means by blended learning. The say that blended learning is a term used to refer to a teacher blending online learning opportunities with physical learning opportunities .Homework is the part of an online structured learning experience. It also blurs the concept of time and this blended learning is beginning to have impact on a range of teaching strategies.

The concept of flipped classroom is also explained. They say that in a flipped classroom learning takes place outside the formal teaching environment and the critical reflection and assessment takes place in a physical lesson. They suggest a different philosophy of pedagogy of inspiring students and enhancing learning. They assert that the notions of 'in class' and 'outclass' can be blurred to include more than one location and multiple points in time. They have suggested that as students are using technology at their home on their smartphones and apps in their personal life then why not teachers encourage them to us same technology, and smartphones for their learning of subjects. As they enjoy unsupervised learning of their interest that is why they should be encouraged to study the subjects and transfer their skills to their subject which they have learnt in their personal time. Blended learning does not mean that a teacher should upload homework on blog or website and ask the student to log on and find homework over there. It is not the purpose of blended learning to use technology for the sake of just using it but it is to make the learner more interested to and more inquisitive to learn. Blended learning should ensure more learning in less work. The teacher should blend online learning with the classroom learning. The teacher job should be to help students to select the high quality guides and write interesting reviews about a story and provide sensible peer reviews.

The authors are of the view that learning can occur at any time and this should be reinforced by teacher. The teachers should encourage students to have more collaboration within blended learning. The inspirational teacher should be thinking about designing activities by the capacity of ICT to enhance the notion of learning community. A teacher should develop group work beyond the classroom. Through online interaction a teacher can harness these extended learning opportunities. They have given examples of different subjects like history that how teacher can engage students in blended learning through encouraging students to work in structured groups on different areas of the same theme. The book also suggests ways to create a relationship between online and classroom learning.

Chapter 3: Mobile Technologies and Their Impact on Secondary Curriculum

This chapter has started by informing readers about arrival of mobile technologies. They have pointed out that as tablet computers, mobile phones and ebook readers have been around at least ten years. But three specific market changing mobile devices have fuelled mobile technology use through the tipping point. These three devices are iPhpone, iPad, and the Kindle. What was unique about these three products was that they were inspirational. The book suggest that instead of investing so much money on PCs and their updating after a small time, the schools should go for purchasing mobile technologies. The school should give students smartphones. The students may install only those apps that are relevant to them. The book also describes about Kindle and how it help in improving reading. It has also suggested a certain mobile technology policy for schools, and convergence in mobile technologies to compete with the once powerful desktop PC. Shea and Stockford have compared traditional teaching and modern teaching through mobile teaching. As mobile

technology makes the lesson interesting, improves curriculum, and improves status of teacher. It provides the studnets better ways to create a poem than traditional teaching. Mobile technologies can better be used as specific source of personalization of curriculum.

Chapter 4: Developing Interactive Students
The authors have started chapter 4 with introducing a notion of 'interactive students as the key to all the work a teacher does to inspire her students through technology. They say that the future of learning lies in interactive students in class. They proclaim that a teacher should not be frustrated that his school will not spend so much money in purchase of ICT. One should be confident that this technology is not something that his students are not familiar with. They all are using ICT for their social networking and there is always a space in social networking for learning. The students are already interacting to help themselves perform well through mobile technologies. They suggest that there is a great need to recognize and improve the students' current online social networking through behavior for on line learning. They have also highlighted the characteristics of a typical interactive student very eloquently and succinctly. The authors suggest that a teacher should compete with students'' social networking by offering her own online learning. Then the authors has suggested a teacher that she need to think laterally about how her notion of 'lifelogging impacts on her subject' and how can she use this information to inspire her students.

Chapter 5: Student Safety
Shea and Stockford have focused on a possible question that any one may ask when a teacher does something with ICT in her school. The question that will be asked to a teacher will be: what about student safety? The answer is, that students are already using these technologies by filming one another, and posting comments about other friends. They are interacting not just with their friends but also with complete strangers, online and with pictures and videos and all in a fairly unregulated arena. No doubt, they are exposing themselves to risk and danger regardless of whether you choose to have them undertake a safe version of this interaction in your lesson or not. The safe practice can be ensured by setting certain standards for home and in school.

The authors have also discussed cyber bullying and what steps should a teacher take when a child is experiencing cyber bullying. They suggest that immediate and quick online reaction to bullying may be required and teachers should be ready for such events. Every possible action should be taken against the bully. The book also highlights the BYOD security and safety. It recommends also that a school should train students in cybersafe practice. The book highlights common security threats in a simple language and also suggests to design a code of conduct policy.

Chapter 6: Eportfolios and Virtual Learning Environments
The authors have compared advantages of eportfolios over traditional portfolios, coursework or 'controlled assessment', and then have explained in a simple sentence that portfolio is an online interactive storage of students' work and learning. Then the authors have described the connection between eportfolios and virtual learning environments. They have suggested that a teacher should prepare students for technology at their next level of education. A suggestion is given by them is to mimic the type of activities that the students are likely to have in higher education. One of such activity can be to give students some work with virtual learning environment. The students should be supposed to write and then upload it on turnitin an anti-plagiarism tool and to guide the students how to improve their written expression. The authors have also suggested different other activities related to VLE in school.

Chapter 7: The Extended School

In this chapter the writers have firstly given an introduction to the extended school and the online extended school. An extended school is one that considers the range of services or activities that it provides and how well they matched up to the needs of the local community as well as their students. Technology again can be very helpful to extend its reach beyond the physical boundaries of school and provide such support that is needed by society. It may be in term of having a good website with lots of helpful information, or maybe it is to provide valuable resources related to parents to help their children in studies. Again the writers have emphasized that let the student do the work. They say again that teachers and students should be looking to recognize that schools' digital footprints both in terms of online offerings and physical media devices can be utilized to help promote opportunities within local community.

Chapter 8: Embedding ICT in Practice

Shea and Stockford again reinforce that being a teacher one should ensure that learning experiences are undertaken by the students, whether they are done through traditional pedagogies or through modern pedagogy of using ICT. They say that instead of fearing students' knowledge or skills of ICT a teacher should harness it. Then the Authors have suggested different guidelines on ways to approach both planning to use ICT and delivering it in the classroom. Then they have given certain core strategies for making a lesson with technology a success. They also suggest four point strategy to keep the students attention in the teacher. They have advocated use of headcam or digicam, In-car cam, digital voice recorder, decibel (noise) meter and the smartphone. These all devices are engaging for the students and helpful in students' learning. They have again pointed to the fact that a teacher should always keep in mind that she is not the one with specialist knowledge rather she is specialist at evaluation and decision making. The teacher job is to create opportunities and letting the students to do the work to solve a problem.

Chapter 9: Conclusion

The last chapter highlights the fact that ICT, or technology changes at an ever increasing speed. The main players today google, facebook, apple, Samsung and Microsoft are all purchasing such app or startup companies which makes an instant success. The authors highlight the fact that young people are at the forefront of this rapid progress. They are often the first adopters of new technology. They say that the mobile technology is competing with PCs. Two obvious reasons of keeping PCs in schools were access to fast internet and powerful pieces of technology. Now with mobile broadband and wi-fi the mobile phones have given an opportunity to move the office into the mobile world of the user. There are many schools which still are using technology of 19th century, but outside the world is quite changed. We see young people clustered around tablets and smart phones, interacting in groups and online, this is what future will look like for education. The writers assert that technology is changing with bewildering speed. But school pedagogies are still the same. There is the great need to design pedagogy that can withstand the disruption from the fast-moving technology medium.

The authors have ended up the book while giving brief hints of the concepts discussed and sticking to the mantra: let the students do the work. They say that a teacher has to inspire students to love learning and to love a subject in the way we have all learned to do. The teacher to be inspirational and this inspiration will result in an appreciation from the students.

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