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Research Paper

Building the Thematic Web Connection Links through the Distant Education Carried out during Covid-19 Epidemic

Adem Akkuş[a*]

[a](ORCID ID: 0000-0001-9570-3582), Elementary Science Education, Faculty of Education, Mus Alparslan University, Muş, Türkiye, 49250, Türkiye, ademakkus@gmail.com
[*]Corresponding author

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ABSTRACT

Purpose of this study was to create thematic web connection links for distant education. Aim of the web connection links was to summarize and visualize the relationship of each effective factor with other factors. To create the thematic web connection links, the effective factors on distant education were tried to be determined. Data was collected during the Covid-19 epidemic distant education period which was obligatory for educational organizations. Due to that reason, study was carried out a year after the pandemic. Hermeneutic phenomenology research design was used for the study purpose. Study group consisted of 21 students studying at elementary science education program. Sampling method was purposive/convenience sampling. A semi-structured survey with seven questions was prepared and instructed to study group. Survey questions were focused on three topics which were readiness to distant education, distance education effectiveness and distant education fulfillments. A web connection link was created from the emerged themes and topics throughout the data. Four topics seemed to be at the core center of all connections and were effective on each other and sub factors. Those topics were responsibility, instructor, justice and course.

INTRODUCTION

Initial reaction was for Covid-19 was not proactive since virus regarded as a Chinese virus and so, solution of the problem was simply left to China and regarding the country as sole responsible who should deal with it. However, being a contagious virus, Covid-19 soon spread all around the world and almost whole world went into lock downs causing the economies to halt. Covid-19 pandemic had huge impact on the world and was felt on all areas globally. Outcome of the pandemic revealed that it had much more impact on everything and on everyone more than anticipated. Governments and private companies allowed their staff to work at home as a measure. Initially that seemed a reasonable solution and stabilized the work chain back to normal. However, studies put out that productivity of personnel have decreased. Effect of Covid-19 was so big on economies, the disease was soon started to be named as an economic disease (Bloom, Bunn, Mizen, Smietanka & Thwaites, 2020; Maital & Barzani, 2020; McKibbin & Fernando, 2020). For example, Siche (2020) stated that even the production of agriculture was affected and soon problems about food supply chain aroused. The reason why world would not be able to anticipate the effects of Covid-19 lies in the nature of the problem. Initial reaction to Covid-19 regarded as the problem belonging to health care organizations and naturally, they should be responsible for the solution. As a result, health care personnel went under heavy work task. Naturally, related educational organizations were affected by the pandemic. So, initially it was anticipated that training of doctors or in other words medical education were in the effected center (Franchi, 2020; Ryan & Ferrel, 2020). Soon, effect of pandemic was on whole educational system. Face to face teaching turned into online instruction, assessment and evaluation systems were either cancelled or changed. Consequently, those changes have caused trial and error or uncertainty for everyone (Burgess & Sievertsen, 2020; Spiteri et al., 2023; Theoret & Ming, 2020).

International Association of Universities' (IAU) Covid-19 global impact survey showed that transition from face-to-face instruction towards online instruction also indicated challenges related to technical infrastructure, pedagogical lack on distant education and requirements of specific fields (Marinoni, Van't Land & Jensen, 2020). Those challenges have caused loss of instructional time, revealed teachers' preparedness level to online education, loss of vocational education training and ambiguity related to opening time for schools. Additionally, all the student mobilization was halted which also caused cultural and educational loss (Bughrara et al., 2023; Schleicher, 2020). Impact of epidemic on educational system was similar in whole world. Governments tried to take precautions, education ministries adapted online tools into learning and instruction (Abidah, Hidaayatullaah, Simamora, Fehabutar & Mutakinati, 2020). On the other hand, although all countries tried to support online education during the epidemic, material or financial impossibilities increased the inequality in education even, worsened the existing case (Ngwacho, 2020). Additionally, Sahu (2020) indicated that due to distant education, problems might rise, and students may be vulnerable, especially to mental problems. Mohammed and Memmedova (2023) also indicated similar points in their study.

Despite all those negative consequences, Covid-19 epidemic provided opportunities too. Since whole world turned their educational system to online education then, researchers focused on distant education. Studies investigating the situation also provided helpful insights for the future. With developing technologies, online learning materials have already been integrated into education for some decades. Developing technologies makes one be right that those technologies will be continued to be in use. There are many different online learning platforms. Obtaining feedback from the users, in this case from the students, could also shape those tools and make education more efficient. Since, the whole world might be used as data set then, opportunities for the research the problems became possible (Beech & Anseel, 2020; Chen, Peng, Jing, Wu, Yang & Cong, 2020; Di Pietro, Biagi, Costa, Karpiński & Mazza, 2020; Rodríguez et al., 2021). For that reason, sharing experiences and practices are important. Through that instructors who are having troubles in adapting their assessment and evaluation techniques into distant education, could enhance their teaching practices (Cleland, McKimm, Fuller, Taylor, Janczukowicz & Gibbs, 2020). For example, Shah et al. (2020) indicated that online education tools mimicking face to face interaction were helpful in education and provided benefits.

In order to determine the exact situation on what is happening in education, studies should focus on what is being done. For that reason, it is important to get insights by obtaining data from teachers and students (Jena, 2020; Korkmaz, 2022; Pokhrel & Chhetri, 2021; Upoalkpajor & Upoalkpajor, 2020). Since the obtained data could provide useful results on comparing the education before, during and after the epidemic. Through that more valid assumptions and solutions might be proposed (Batubara, 2021; Brazeau, 2020; Liu, Zhou, Chen, Yang & Tan, 2020). However, to do that one must be able to analyze or be aware of the factors which are effective in distant education. Knowledge upon the relationships of effective factors could also provide opportunities to a better distant education. Thus, purpose of this study was to output the effective factors on distant education and to create thematic web connection links through the obtained data from the students' view on distant education and lessons carried out during Covid-19 epidemic.

Consequently, problem state of the study was what is the connection of factors in distant education?
Sub-problems of the problem state are;

i) What is the readiness level of the students to distance education?
ii) What is the effectiveness of distance education?
iii) What are the distance education fulfillments?

MATERIAL AND METHOD

Research Design

Phenomenological research design helps researchers to gain perspectives on the individuals who were in the center of purpose of research (Yildirim & Simsek, 2006). Hermeneutics is focused on interpretation of understanding. For that reason, its use has a broad area from philosophy, nursing, pedagogy, psychology to consumer research (Arnold & Fischer, 1994; Gill, 2014). Hermeneutic phenomenology is one of qualitative research methods which elicit experiences of participants to reveal the effective factors upon the issue (Oerther, 2020). Consequently, hermeneutic phenomenological research design was used for the study.

Study Group

Since it was observed that due to Covid-19 pandemic a lot of questionnaires were directed to students and it was getting hard to get feedback from the respondents, it was decided to direct survey questions to the students who were taking lecture from the researcher. It was decided sample of the study would provide best information for the objectives of the study and it would ease to carry out the study. For that reason, judgmental or purposive sampling method was used for the study (Etikan & Bala, 2017; Miles & Huberman, 1994). Sample of the study consisted of 21 students studying at elementary science education department. 7 participants were male, and 14 participants were female. Sample was informed that their responses would be used for research.

Data Collection Tool

For the study, literature was researched in order to determine the main topics (Bakibinga-Gaswaga, Bakibinga, Bakibinga & Bakibinga, 2020; Beech & Anseel, 2020; Brazeau, 2020; Danchikov, Prodanova, Kovalenko & Bondarenko, 2021; García & Cabañas, 2021; Prokopenko & Berezhna, 2020; Toquero, 2020). Consequently, three topics were determined to be represented in the problem state of the study. These topics were readiness to distant education, distance education effectiveness and distance education fulfillments. Consequently, a semi structured survey was prepared by the researcher (Çepni, 2007). 7 questions were determined and represented in interview questions (Table 1) to reach the topics. To reveal the themes, respondents were asked to justify their answers for each question they replied. By doing that, it was ensured that none of the participants responded the questions by simply giving yes or no answers.

Table 1. Interview questions.

Question 1	Were you prepared to distant education? Please explain
Question 2	What are the advantages of distant education? Please explain
Question 3	What are the disadvantages of distant education? Please explain
Question 4	Do you think that the desired instruction level was satisfied during distant education? Please explain
Question 5	Would you use distant education technologies after pandemic if you have the chance to use? Please explain
Question 6	What problems did you encounter during live lectures? What would be your solution to them? Please explain
Question 7	Which assessment and evaluation techniques should be used in distant education? Please explain

Validity Analysis

For the construct validity of prepared survey, the draft survey and its questions were analyzed by the 3 experts who were working at university at full time. The researchers had publications on the related issue and were giving lectures through distant education. After getting the opinions of the experts, a pilot study was carried out with 2 students. Since there was no problem reported and observed, the draft interview form was finalized as interview form.

Reliability Analysis

For the reliability, responses to the survey were read several times for data coding. After two weeks, same procedure was applied again to be ensure of data coding as suggested. Occurred differences in coding were reanalyzed. After finalizing the data coding, process of determining themes started (Cohen, Manion & Morrison, 2018; Smith, Flowers & Larkin, 2009).

Data Analyzes and Coding

Interviews were distributed through Google Classroom where students enrolled to take the course from the researcher. Student sentences were shown in “” alongside with italic font type. To differentiate the statements, students were coded as S. For that reason, first student is represented as S1 while second student is represented as S2 and so on. Research methodology was chosen with respect to hermeneutics research methodology. In hermeneutics, text passes through naive reading (The Gear Consulting, 2024), structural analysis and comprehensive understanding. In other words, text provides meaning clusters to form sub-themes and those clusters of sub-themes to form the themes (Lindseth & Norberg, 2004).

Data coding determined with respect to empirical coding. In empirical coding, codes are generated through the data to reveal the themes. Words and phrases are treated as data elements which are grouped into clusters where those clusters act as a register value for the themes (Gibson & Brown, 2009; McCaffrey, Raffin-Bouchal & Moules, 2012). Consequently, data analysis methodology is based on productive or projective hermeneutics (Gillo, 2021). For that reason, views of participants are reflected as they are in their respective themes so that readers of this study will find and observe the context of the themes. For example, the statement of “We live out of the box lives” is coded as social aspect. So, codes are represented in student statements and are given under their respective themes and topics with respect to productive or projective hermeneutics. Thus, emerged themes were discussed under their representative headings which were presented below. Additionally, emergence of the themes was discussed within the literature in discussion section.

DATA ANALYZES AND FINDINGS

Emerged Themes

After data analyzes, four themes were determined. Those themes were social changes and its impact, Financial and physical impossibilities, Health concerns, Course and Responsibility and, Professionalism themes. However, it was also observed that Responsibility and Professionalism theme had four distinctive sub-themes which were Student, Instructor and Organization responsibility and professionalism. Additionally, there are three distinctive sub-themes emerged throughout data analyzes. However, emerged sub-themes did not specifically connect to a theme. For that reason, those sub-themes outlined and shown as emerged topics. Those topics were Assessment & evaluation, Justice hidden in Professionalism and Family factor. All the themes, sub-themes and topics are shown in Table 2 for illustration.

Table 2. *Themes, sub-themes and topics*

Themes	Social changes and its impact		
	Financial and physical impossibilities		
	Health concerns		
	Course		
	Responsibility and Professionalism	Sub-themes	Student responsibility and professionalism
			Instructor responsibility and professionalism
			Organization responsibility and professionalism
Distinctive topics	Assessment & evaluation		
	Justice hidden in Professionalism		
	Family factor		

Social Changes and Its Impact

It has been revealed by the study that due to lockdown orders which were issued several times by the government (Narlı, 2021), students' social interaction norms have changed. Due to frequent lockdowns, students were enrolled to courses through Google Classroom. Some of the student statements are shown below indicating the effects of lockdowns.

S16, S17 *"We live out of the box lives."*
S18 *"Being in lockdown was something I never anticipated but now I have to learn living with it."*
S17 *"No social interactions, the only thing we had was technology and it had already its limitations."*

As a result of direct effect on daily life change, time spend on social interactions was started to spend more on studying. Since time spend on socializing were started to spend on studying more than before then, the problem of lagging behind of the classmates seemed to be avoided.

S6 *"I used to hang around before pandemic. Now I don't have that, and I spend more time to study"*
S6, S7, S8 *"I used to hang out ….. to cafes but now I don't. So, I spend more time for studying."*

Virtual classrooms were seen beneficial by the students. On the other hand, being unable to establish connection with their instructor and classmates also caused an inhibition effect on learning which also happen via social interaction and that fact was realized by the students.

S15 *"In a normal classroom you can develop better communication."*
S3 *"Before the pandemic we could ask upper grades about the courses and learn but, now, I know no one"*
S13, S17, S21 *"I used to understand what I would learn by noticing my instructor's facial expression as well as reaction of my classmates."*
S12 *"We could learn from each other with group works through face-to-face interaction."*
S3 *"Because of socializing I also had to opportunity to learn since I could ask things to my friends."*
S4 *"I experienced adaptation problem to virtual classrooms."*
As a result, students experienced low motivation problems. For example, few students stated that they
S15 *"Had healthy communication with instructor and classmates. On the other hand, in virtual classrooms we can't have classroom environment."*

Because,
S15 *"On live lectures there was only a screen which created undisciplined situation".*
So,
S14 *"Since we don't have face to face lectures, it made us in holiday mood"*
S21 *"Because teacher didn't see me and wasn't aware of what I was actually doing during the lesson."*
S14 *"Because of distant education I had constant motivation lack towards lessons."*

Consequently, the lack of motivation towards courses also created the low motivation for the lectures and exams. Naturally, students
S16, S19 *"experienced exam stress less than normal classrooms"*

All the above statements indicated that virtual classrooms caused low motivation issue and students couldn't establish connection with their teachers and classmates. Due to fact that all the social settings returned to minimum level of basic connection, a slow but spontaneous pace of becoming alien to instructor and classmates happened in return. Be that as it may, Students became aware of web technologies and their usage and, they integrated those technologies into social settings.

S1 *"I learned how to use zoom, meet, classroom and it provided advantages to me. I could arrange a Google meeting and invited my family members to come together. I think I will continue to use those technologies."*

Financial and Physical Impossibilities

It has been revealed by the study that students experienced problems due to financial and physical impossibilities. For example, most students did not have personal computers (PC) since they are expensive. For that reason, they have used their smart phones to do their homework assignments and completed their exams via their smart phones. Smart phones are useful materials in reaching information for the students who don't have PC and after the start of epidemic usage of smart phones have increased intensively. However, phones aren't designed for studying like PCs. PCs simply allow students to sit in front of a screen placed on a desk and allow them to search the web or study. However, smart phones were not comfortable due to their design. Additionally, students were using their smart phones in unhealthy sitting positions thus, it also caused physical health issues which were discussed in detail under health theme. Moreover, constant need of internet connection required to buy data packs which were not always available due to financial impossibilities. Student statements outlining the cases are given below.

S19*, "I had problems about buying data packs …. During the exams my data pack finished …. Instructor wouldn't listen to me. … I was late only for a minute to deliver the exam."*
S1 *"Most students had PC, tablet or internet problems."*
S6 *"Most of the people didn't attend live lectures at all due to financial impossibility of having internet connection …. I observed it was same for everyone. For example, for the school experience course I joined classes and there were only few students in elementary school classrooms …. I had to use the meet program to attend live lectures. On the other hand, phone memory wasn't sufficient enough so, I bought a memory card."*
S13 *"Sometimes I was having internet connection problem, or my phone battery was draining so quick."*
S7 *"I didn't have computer …. Screen froze most times due to internet connection …. voice cuts or no voice at all during live lectures …. I used to borrow notebook."*
S15 *"Distant education is more costly than regular education…. I needed constant internet connection… I needed a better smart phone …. I had problems on exams."*

Even, if the students didn't experience financial impossibilities, they were still experiencing different problems. For example, a few students were from rural area and infrastructures were not sufficient to use the high-speed internet. Even for few students, they didn't have the chance of using internet at all. They were experiencing lack of basic infrastructure capabilities.

S19 *"We don't have internet substructure in my village, so I had to use mobile data packs but after 10 minutes my data pack was finishing. I had to go higher grounds since mobile connection wasn't so good in my village."*
S9, S11, S12, S19 *"I had limited internet…. I had internet problems…."*
S9, S19 *"when I was in the village, no internet at all…. Thankfully a few instructors understood the case."*
S5 *"I didn't have computer and experiencing electrical power shortages."*
S2, S20 *"Connection problems, voice cut downs, freezing screens …. System wasn't accepting us to live lecture, experienced problems on online exams."*
S2, S3, S5, S6 *"Sometimes instructor's voice was cut during live lecture."*
S2 *"There was internet connection problem, sometimes on our side sometimes on the instructor."*
S5 *"I was in the village and experiencing connection problems and when I used Wi-Fi, there was electrical power shortages, so I missed most live lectures."*
S11 *"Sometimes I was having electrical power shortages which meant live lecture automatically was over for me."*
S18, S20*"Not everyone has notebook or internet connection at home."*

Although there was digital inequality before the epidemic, the situation gets worse after the breakout of Covid-19. While users with financial possibility enjoyed the faster connections and data packs, other users with financial disabilities experienced the inequality because of not being able to afford such opportunities. Opportunity of having equality in education was distorted and that case was anticipated by the students.

S10, S20 *"Not everyone has equal level of playing field to take the exams …. Before pandemic there was equality between students due to face-to-face instruction. Now there is no just evaluation."*
S6, S19 *"We have 30 students in my classroom, but I noticed maximum attendees to lectures was only 7."*
S16 *"Not everyone had the equal level of education due to pandemic. It was same for elementary school students too. I noticed on my school experience course that the schoolteacher prepared a weekly study schedule for his/her students since they were unable to attend lessons due to financial impossibilities."*

Libraries are important source of reaching information or studying place. In addition to that, libraries also eliminate the inequality in education by providing free access to everyone. However, since epidemic, like all other educational organizations, libraries were also closed to visits and that increased inequality between the students. As stated by one of the students by

S12 *"Not every district has internet substructure in my city and, data packs I bought to connect via mobile weren't enough. Library was too far to my home. I didn't have such problems before the pandemic since, university and dormitory were providing computer and Wi-Fi connection …. Library was accessible to me."*

Physical & Financial impossibilities caused and increased the inequalities between the students. To avoid inequalities a few students had to take dramatic measures such as relocating to another city to live in one of siblings' house. One example is given below to outline the case.

S6 *"I live with my parents in the village, but the internet connection is weak there. Sometimes, I was going on the roof to have good internet connection. Because of that, I asked my friends to send me videos of the lessons. Yet, it didn't work for me so, I moved to Istanbul."*

Health Concerns

Having education online initially created a relaxing feeling since it relieved the stress of getting Covid-19. So, students didn't need to worry about their or families' health as indicated below.

S19 *"I had no stress since all my interaction was via technology, so I didn't think about my family's health."*

On the other hand, heavy reliance on electronics such as phone and computer in distant education also made students to spend more time on that equipment. Additionally, reading from screen for long times along with sitting in unhealthy positions increased the physical and psychological tension. Moreover, requirements on completing the online exams in specific time intervals and experiencing electrical shortages or internet connection problems caused and increased the intense stress perceived by the students. A few statements were shown below indicate the situation.

S9, S18 *"I was constantly exposed to phone screen, my eyes went out of focus. It was harmful to my health."*
S4 *"My eyes were hurting because I had too much screen time."*
S1 *"I experienced internet connection problem during the exams, and I answered some questions wrong due to stress. Teacher wouldn't accept my exam if I was late even for a minute."*

A detailed look upon the answers of students, it was revealed by the study that since the number of homework assignments increased dramatically then, the amount of perceived stress also increased dramatically which in return caused to experience physiological and psychological health problems or issues. Few of the statements are shown below to indicate the case.

S17 *"We need to work harder more than we used to and it increased the pressure and stress on us"*
S2, S4, S9, S20 *"Each week I had several homework and live lessons. I had to do everything to a due date. It really affected my psychology …… constant exposure to PC, phone or tablet screen, and most students' eyes went out focus as well as mine too…. I will use digital technologies but not as much as in pandemic era. I don't believe it is healthy."*
S10, S18 *"It wasn't so good to push the limits of students since their psychology was already not good."*

Course

Through the data analyze, the course theme emerged from the data. Instructors assumed everything would work fine and students would learn if they simply shared pdf files, notes and slides with students. The most significant thing was that instructors mostly focused on teaching by giving assignments as a way of classroom activities.

S5 *"Instead of giving lecture, instructor only gave homework and assumed we have learned."*
S1 *"We were responsible from the topics that we didn't actually learn, it was assumed we learned through homework."*
S5 *"Instructors were giving pdf files and didn't make live lectures …. They were giving homework assignments …. And they wouldn't appreciate our homework assignments."*

Since instructors assumed students would learn through homework assignments then it seemed a better idea to give homework assignments more than expected, eventually causing the dramatic increase in number of assignments. Many students indicated the problem about assignments. Few student statements were shown below.

S8 *"It wasn't so hard like that before the pandemic, we have so many homeworks …. Many homeworks were given just to be given. It is waste of time."*
S2 *"The entire thing I did was doing homework. I was having at least 3 homework assignments daily."*
S4 *"Homework assignments increased up to two times."*
and consequently, homework assignments made students tired and increased their work stress.
S3 *"I didn't think that distant education would be so tiring."*
S9 *"I had several homework each week, it affected my psychology badly."*

Although the word "course" may only seem to define the lesson or the lecture alone, data analysis indicated that it had a subtopic, and that subtopic had several subtopics which were in relation with each other. That topic was responsibility and professionalism. The data revealed that the responsibility and professionalism topic had three distinctive subtopics as student, instructor, and organization responsibility yet, it didn't provide sufficient data to emerge as a theme. On the other hand, data clusters were gathered under the course theme outlining itself as a single topic having three subtopics. Consequently, the responsibility topic has three distinctive subtopics which are student, instructor, and organization responsibility. The relationship of the theme with its subtopics are explained below under their respective headings.

Responsibility and Professionalism

The topic responsibility and professionalism were characterized in three different dimensions. Those dimensions were student, instructor and organization (university).

Student responsibility and professionalism

Students recognized their responsibility and acknowledged that they needed to fulfill their tasks and they could do that through the knowledge they obtained during distant education. A few student statements are shown below.

S1, S5, S11 *"When I become teacher, I can use digital games through educational applications and teach to children."*
S19 *"I watch other institutions' recorded lessons and it is effective as in face to face."*
S12 *"Students need to attend courses on time."*
S5, S11 *"Learning the application will make me a better teacher."*
S3 *"Before pandemic I might lag the course but in distant education lessons are recorded. ... distant education flexible, advantageous"*
S17 *"I can access the course content whenever I want … classroom is now our home …. education is now comfortable."*
S18, S19 *"Informative homework taught us because we made research and analyzed topics in detail."*
S14 *"Because distant education doesn't have time and place, it provides flexible learning."*

Instructor responsibility and professionalism

There was strong emphasis on instructors' responsibility and professionalism. Students believed and indicated that instructors mostly failed to fulfill their responsibility. It was understood that tendency of providing pdf files, notes, slides and focusing on giving homework assignments was seen as an unprofessional behavior. The most professional instructors regarded by the students were the ones who provided live lectures constantly.

S6 *"Instructors just sent presentations and made exams. What did they do and what did they expect from us?"*
S13 *"There wasn't any advantage of distant education. All we did was reading documents, there were few videos to watch."*
S12 *"Exams discriminate students, but a homework assignment doesn't. It could be done in few days."*
S16 *"The desired learning didn't happen … students are only rote learning."*
S5 *"Instructors didn't make live lectures, they just sent articles and carried out course like that."*
S11 *"Instructors should inform students about what they want exactly. There are tons of information on the web, and it is confusing."*
S10, S21 *"None of the courses I took provided a qualified education."*
S2 *"The instructors who made constantly live lectures, they taught us."*
S1 *"Instructors could make video lesson and upload it to YouTube."*
S19 *"Using only instruction, answer and question technique prevents us to reach the desired acquisition. They really need to develop themselves."*
S9 *"Sometimes instructor would email and say we have lecture today at …. and I saw some emails late so, missed the lectures."*
S3 *"If lectures are based on schedule, I can attend but if not on schedule then I might forget the lesson and it happened several times"*

The above statements indicated that instructors also should have responsibility and exhibit professionalism. They should provide live lectures, follow strict course hours on time and should also provide recorded videos of lectures for the students who couldn't attend the live lectures. Exhibiting the stated behaviors were also sign of an instructor having responsibility and professionalism which were also expected by the students.

Organization responsibility and professionalism

The emerge of subtopic the responsibility and professionalism of organization (i.e. responsibility and professionalism of university) was an interesting outcome of the study. As an organization and having its own trademark, universities create email addresses for each of their students.

S6 *"University made us to use university mails compulsory."*

On the other hand, students didn't have phones of good quality and when they tried to use Google Meet software via their school email accounts, they
S6 *"Experienced phone memory problem"*

Students were required to join virtual classrooms by only their school email accounts. For that reason, they criticized the university by indicating,

S6 *"We could use our own personal email addresses to attend the lectures."*

In fact, universities could inform students how to link their school email addresses with their personal Gmail accounts. By doing so students might have avoided the encountered problems. However, that case also indicated that students' lack of knowledge of merging two email accounts were not anticipated by the university. In addition, it was understood by the study that the limited interaction capacity of Google Classroom was another obstacle in education. Although,

S19 *"A few instructors created WhatsApp groups for students to communicate faster."*
rest of the instructors didn't act in that way due to personal privacy. However,
S19 *"University could provide another program."*
since the aim was to interact faster and effectively.

Emerged Topics

Several topics emerged through the data analysis. However, clusters creating the topics were not sufficient to define them as themes. Additionally, those topics did not fall under any specific theme to be discussed. For that reason, they were discussed separately.

Assessment & Evaluation

Through the analysis the topic Assessment & Evaluation emerged. It was revealed by the study that responsibility is also related with professionalism. It was expected by the students that instructors should have professional attitude and behaviors towards assessment and hence evaluation.

S14 *"I learned in the assessment and evaluation course that you should prepare exams with respect to what was given."*
S6, S8 *"Instructor who constantly made live lectures can make exams, but others cannot …. Education is labor and you can demand what you gave. Not, what you didn't give."*
S6 *"I wouldn't use tests for the exam instead, I would make it essay type. So, I would understand if the student comprehended the topic or not."*
S14 *"An exam should make you learn."*
S8 *"No assessment and evaluation at the end of lecture. So, many students just dream away."*

For that reason, if instructors exhibit professional attitude, then it would be also a professional act to,

S15 *"Make live exam".*

It was understood from the student statements that quality of assessment & evaluation was based on justice between the students and what was given in the course.

S20 *"You can't fully assess the success of a student by taking account of participation in the lecture and success on activities. Successful students may not attend the lectures due to circumstances … homework assignments are better in evaluation."*
S13 *"An instructor should share tests and make individuality-based exams … points taken from those should be added as a final grade."*
S5 *"A few instructors were asking too many detailed questions, and they were giving too little time to prevent the cheating. To prevent that they could ask questions with respect to higher order thinking skills."*

The reason why students mostly focused on live exams and wanted the individualized tests were based on the will of discrimination between successful and unsuccessful students or between studying students and students who don't study. The most interesting thing that although students would prefer live exams instead of homework assignments yet, they would choose homework assignments instead of live exams if instructors didn't clarify the purpose of the course and didn't make live lessons. That case was also an indication of students' confidence in instructor would fade away if the behavior of the instructors were not clear which eventually would cause ambiguity of the purpose. In such case, studying students might fail and get lower grades than they deserved or even get lower grades than the students who don't study. To avoid such negative impact of ambiguity of

the exam, they would prefer to settle for being at the same level with unsuccessful or lazy students. Consequently, they would prefer homework assignments instead of live exams.

S6 *"The difference between lazy and successful students should be output."*
S16 *"Instead of tests, everyone should take individualized exam."*
S1 *"It is so easy to cheat on the exam with that system, homework assignments are better."*
S19 *"Students are cheating … exam doesn't make sense …. Instructive homework assignments could be given."*
S6 *"I think everyone cheats on exams. A student getting low grades before pandemic now gets high grades."*

As a final point for the argument, although no data obtained from this study, it may be argued based on researcher's previous classroom observation, that students think science courses are based on conclusive results and arguments. On the other hand, social sciences were based on subjective arguments so, whatever you write on the exam paper in social sciences it must be true! Consequently, science courses were hard to cheat if you don't know the subject, but social sciences were easy to cheat even if you didn't know the subject. Thus, a misconception on the term social science exists for the students or societies that "social" before the "science" would make it different from science.

For example, one of the students stated that s/he

S3 *"Would prefer exams for mathematical courses, and would prefer homework assignments for social sciences."*

This was also an indication of the stated idea above.

Justice Hidden in Professionalism

It was understood by the study that professional attitude exhibited by the instructors also provided the feeling of justice or equality between the students. On the other hand, lack of professionalism by the instructors creates the opposite feeling. A few statements of the students were given below.

S8, S9, S10, S13 *"I was nervous because I didn't know what kind of evaluation would be made at the end"?*
S6 *"If instructor made constant live lectures, then they could make a detailed online exam."*
S7 *"In fact course schedule is right but instructors' instruction was not good enough."*
S19 *"Live lectures were in chain so we couldn't meet our needs."*
S6 *"A few instructors just made presentations. They didn't ask questions to students and integrate them to lesson."*
S10 *"Homework assignments are cheapjack, and it isn't certain what instructor wants … each week we had homework assignment and accused by passing the course easily … when we asked help, the answer was no"*

One of the major problems for the students was financial or material impossibility. Yet, instructors wouldn't care or notice the impossibilities and wouldn't take account the impossibility problem in evaluation. Being aware of what is happening with students was also regarded as a professional act. Because professionalism demands the realizing the facts. Any opposite case was an indication of unprofessional behavior.

S5 *"Instructor was taking attendance and marked students absent. Not everyone had the opportunity to attend the classroom. It is unfair"*
S19 *"Not every student has the technological equipment and hence the equal chance in the exam."*

Combination of those factors emerged the topic justice which was indicated by the student as

S10 *"Before the pandemic there was justice in lecture and hence in assessment. No one argues about that".*

Disturbance on professionalism created the feeling of injustice. Findings of this study suggest that there has been a dramatic increase in the feeling of injustice anticipated by the students during the distant education.

Family Factor

Although the data analysis didn't reveal family factor as a theme yet, it emerged through the data as a topic. Through the data analysis it was understood that families were one of the effective factors on the distant education. Determining the families' attitude wasn't a problem state of this study so, survey didn't acquire any item questioning the case. Hence, no research problem proposed and investigated. As a result, not enough data obtained to reveal the case. Be that as it may, families' attitudes towards the courses had been outlined by the students and reflected in their statements. It was understood that families didn't care about the courses or didn't give pay attention to the courses. Since the lectures were online and students had the opportunity of

S10 *"Re-watch the course whenever they want."*

then, attending a live lecture might be seen a comfort which could be reimbursed. So, asking help from their children to do the housework during the online education wasn't a big deal for the families.

S2 *"It was hard to focus on the lesson at home. Instructor was giving lectures, and I was washing the dishes and trying to listen the instructor"*

In the same fashion, despite lockdown, inviting guests to home also was not a big deal. Therefore, ideal environment for the education at home was not provided since,

S2 *"Home was noisy, and we always had guests, so live lectures were troubling for me".*

In addition, noisy environment disturbed the students because,

S18, S19 *"Most students don't have study room at home thus, they can't focus on the lectures due to noise at home."*

Consequently, students were constantly.

S18, S19 *"Distracted with noise at home".*
For that reason, it was essential that,

S2, S7 *"House environment should be proper for live lectures". and*
S1 *"Families should be informed about their responsibilities".*

For that reason, it was understood that educational organizations should have taken the family factor into account and establish a connection with families in order to provide a better learning environment for the students.

Tag Word

A tag word was created from the data of the study and is given below (Figure 1).

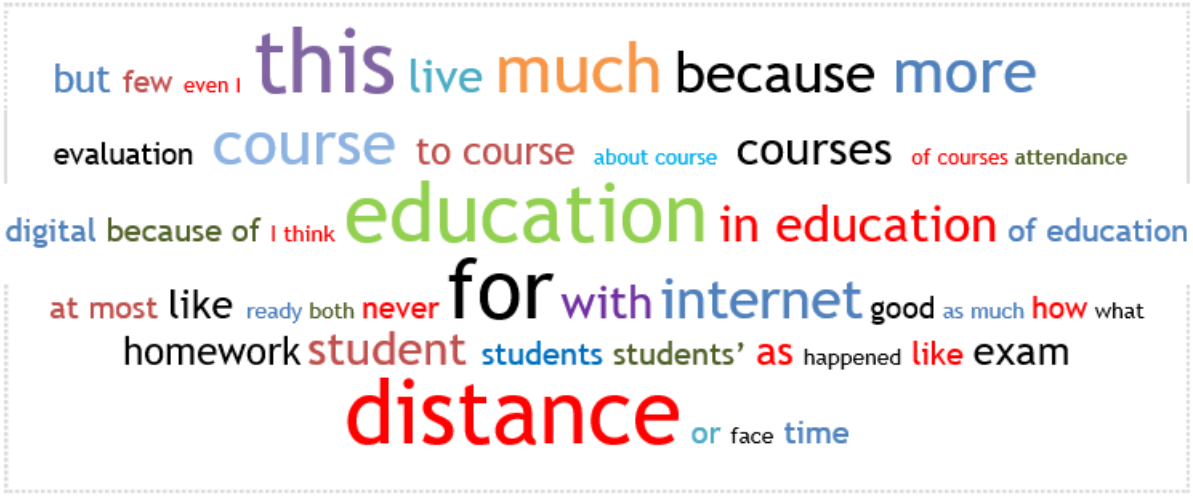

Figure 1. *Tag word*

The distinctive tag words are live, evaluation, course, attendance, digital, education, internet, how, homework, student, exam, distant, face, time. Tag words are also another revealing of output themes and topics. Thus, they comply with each other in coherence

Establishing the Web Links

Based on analysis, connections among themes, topics and subtopics were drown and explained in detail in findings part. Purpose of the web links is to summarize and visualize the relationship of each factor with other factors. A thematic web connection graphic (Graphic 2) was created and given below. Themes are indicated in ■ squares with turquois color. Responsibility & professionalism theme was separated in two sections for better connection illustration since, assessment & evaluation topic was more emphasized for professionalism. Those are shown in ◆ light turquois color in aslope square. Sub-themes are shown in ■ smaller squares with orange color. Topics are included in ● circle with red color. Finally, distinctive factors are shown in ⬣ hexagon with yellow color. Although those factors were significant yet, there were not enough data to identify them as theme, sub-theme or topic.

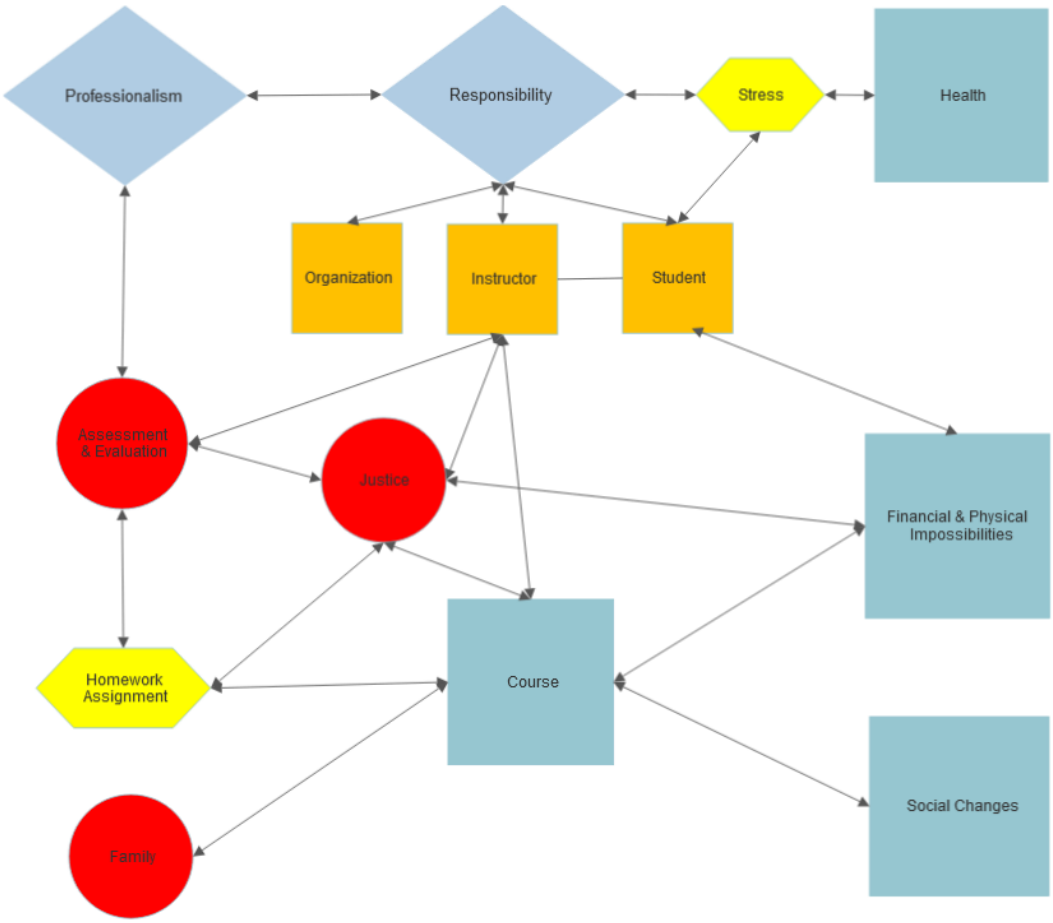

Figure 2. *Web traffic*

Four factors seem to be at the core center of all connections and were effective on each other. Those factors were responsibility, instructor, justice, and course. Interestingly, the topic justice was also the most affected topic by the factors.

DISCUSSION

Social Changes and Its Impact

Students indicated that distant education provided them the opportunity of learning and prevented them lagging of the objectives of the courses. Zawacki-Richter (2021) also points out the same conclusion and indicates that providing both synchronous and asynchronous learning, students are having the chance of rewatching the courses, reaching the information online and interacting through the social media. Students emphasized the socialization as a means of reaching information. Socializing provides benefits for learning even, there are methods based on social interaction such as cooperative learning model (Senemoğlu, 2013). However, students also indicated that they were having low motivation towards the courses. The main reason for that was outlined as virtual classrooms didn't provide the basics of a classroom. Arora & Srinivasan (2020) indicate low motivation towards virtual classrooms may create less benefit than expected and similar results were obtained in their study too.

Web technologies created a compensatory means yet, swaying away from real world to virtual social interactions causes inner dilemma. This case was also output by Chaturvedi, Vishwakarma & Singh (2021) by indicating that usage of online social media is mostly due to unconscious behavior of students to protect their mental health. It was also noted that as the age of students increases motivation towards online courses gets lower. Students' integrity to courses might be enhanced by making them to feel the real work is going on. For that reason, during online education keeping cameras on will stimulate basic face to face socialization among the students. Consequently, it is important to keep the cameras on even if the instructor doesn't take participation in the process (Dwivedi et al., 2020). For example, a study revealed that virtual reality simulations (VRS) showed promising effects on successful education (Tabatabai, 2020). There are also studies indicating that positive results might be also related with satisfaction level from the online courses (Chang, Park, Baek, Kim, Bosco, Hey & Lee, 2020).

Financial and Physical Impossibilities

Inequalities between the students were emphasized and students pointed out that it also occurs through the digital means which is referred as digital inequalities. The term basically may refer the access of technical equipment and internet connection.

Research revealed that the digital inequalities were a main problem during the Covid-19 pandemic. Due to financial impossibilities the digital inequalities revealed to surface (Beaunoyer, Dupéré & Guitton, 2020; Williamson, Eynon & Potter, 2020). Governments' reaction towards pandemic was similar around the world and few governments took precautions to prevent digital inequalities. For example, and one of the good examples, Council of Higher Education in Turkey has made an agreement with mobile operators to provide free data packs to students for online courses (CHE, 2020). On the other hand, the efforts weren't sufficient due to drastic changes in education. Consequently, injustice in education caused by digital inequality has surfaced all around the world (Belay, 2020; García & Weiss, 2020; Kuhfeld, Soland, Tarasawa, Johnson, Ruzek & Liu, 2020). The reason why digital inequalities didn't reveal itself before the pandemic might be explained by the cover of the facilities offered by the universities such as libraries. As stated in this study by one of the students, libraries are free for everyone to study or make research. However, due to epidemic libraries were also closed to visits. In that case, inequality between the students increased/surfaced (Ngwacho, 2020).

Health Concerns

The number of homework assignments increased although the lecture hours were same. Students had to complete their assignments, task and exams with a due time. However, students indicated that they were having financial and physical impossibilities which in return was causing increase in perceived stress alongside with physical traumas. Similarly, Auxier & Anderson (2020) indicated that most students don't have enough possibilities to complete the homework. Although researchers focus on homework gap, they also mentioned that homework assignments increased, and it meant for the students as spending almost their whole time on completing the assignments. Moreover, requirements on completing the online exams in specific time intervals but experiencing the electrical shortages or internet connection problems caused and increased the intense stress perceived by students which was also indicated and discussed by Salceanu (2020). Sahu (2020) pointed out lack of information or support from academics might cause mental health problems for the students. For that reason, students should have support from their instructors too. In that sense, it might be said that this study has pointed out a key problem which needs to be taken account.

Students had to use their phones and rely upon them heavily due to financial and physical impossibilities. However, lack of efficiency of smart phones for studying was also emphasized by the students. Additionally, they indicated that they were suffering physical problems due to heavy usage of smart phones. Iyengar, Upadhyaya, Vaishya & Jain (2020) revealed the similar case by indicating that heavy reliance on smart phones might cause physical health problems, such as pain in the neck, elbow, wrist, shoulders, hand or fingers. For that reason, students may also experience burning or cramps caused on mentioned body parts. Other researchers also output similar results and pointed out that students were experiencing both mental and physical health problems started with epidemic (Mack et. al., 2021; Wang, Pan, Wan, Tan, Xu, Ho & Ho, 2020). Chaturvedi et. al., (2021) indicated similar case from India. In their research, they reported that more than half of the students in India were using smart phones for education. Constant exposure to screen had negative impacts on psychology of students. Pragholapati (2020) indicated that students' mental health has gone worse during the epidemic and the situation was defined as panic epidemic and it has been detected broadly. Chandasiri (2020) indicated that almost quarter of the students suffering from depression occurred by the factors due to epidemic. Moreover, researcher argued that as the perceived stress increases the probability of the disruption of mental health also increases.

Course

Statements of students indicated that students saw distant education as a chance to continue their education. Moreover, they learned how to use softwares which would help their professional development as teacher candidates. Marinoni et. al., (2020) indicated that transition to distant education also provided flexible learning. Thus, online education provided opportunities of combining synchronous and asynchronous learning. Paudel (2021) similarly pointed out that distant education during epidemic promoted the online research and more freedom to students. Similar arguments were also proposed by Bailey & Lee (2020). On the other hand, dramatic increase in homework assignments might cause an inhibiting effect on such positive outcomes. Studies already indicated that during the epidemic burden of teachers decreased while burden of students increased. Students feel that they had to use electronic devices for too long and were unhappy due to increasing homework assignments. Additionally, since teachers feel their responsibility was removed, they may only use simple interaction and teaching software (Lestiyanawati, 2020; Maatuk, Elberkawi, Aljawarneh, Rashaideh & Alharbi, 2021; Salceanu, 2020). To avoid such results teachers may need guidance in adapting and transforming their pedagogical knowledge with respect to distant education (Henriksen, Creely & Henderson, 2020; Tatlı, 2023).

The last subtopic of course theme was responsibility and professionalism of university which was criticized by the students. It was understood from the student statements that university didn't get any feedback from the students on the distant education which was being carried out and software used for it. Organizations should provide simple, functional courses to students and comments of students should be considered to increase the efficiency of education (Peyravi, Marzaleh, Shamspour & Soltani, 2020). Vlachopoulos (2020) reported that although institutions are in negotiations with companies offering educational software yet, sale of those companies hasn't increased noticeably. Researcher argues that the main cause for such result was due to institutions' indecision on their investment plan to such products whether it should be long-term or short-term plan. Additionally,

it was noted that such result might be also occurred due to universities' budget capacity meaning they don't have enough budgets to buy the software.

Emerged Topics

Assessment and Evaluation

Statements of students indicated that students would prefer live exams even if the exam was defined as hard to pass. The main reason for that seemed for the preference of seeing their own level and difference with other students. A sudden move from face-to-face instruction to distant education due to Covid-19 pandemic didn't change the will of students. Universities tried to adapt the conditions created by pandemic and there have been already some efforts providing the supportive materials for the students, instructors, or universities (García-Peñalvo, Corell, Abella-García, Grande-de-Prado, 2021). For example, adapting the face-to-face assessment and evaluation to online education could be done through via e-portfolio and with support of multimodal tools (Sabzwari, 2020). However, Assunção Flores & Gago (2020) pointed out that assessments must be based on carried out activities. Additionally, Huber & Helm (2020) indicated that students might study more if they believe that instructor monitor the learning tasks.

Students need constant support to develop themselves. For example, they believed social sciences didn't have concrete bases since they didn't see solid evidence for that. This misconception indicates instructors should focus on higher order thinking skills as emphasized by the students. Through that such common misconceptions would also be avoided. Andrew (2021) and Latour (2000) already point out the case and indicated the misconception on the term social science exists for the students or societies that "social" before the "science" would make it different from science.

Justice Hidden in Professionalism

The topic justice was seemed to be one of the important topics which was in relationship with other topics and themes. Students clearly emphasized that they needed help from their instructors in learning. However, getting negative responses from the instructors and their lack of professionalism in teaching caused frustration. Horan, Chory & Goodboy (2010) also indicated similar findings and noted that the feeling of injustice might cause negative behavioral and emotional responses from the students. Chory-Assad (2002) noted that students' perception of justice is positively related with student motivation and affective learning and negatively related with student aggression. Berti, Molinari & Speltini (2010) indicated the ideals of classroom justice are based on communication dialogue between students and teachers. It is also based on how much teachers consider the students' efforts and needs. It was pointed out that motivation is related with the feeling of being treated just. For that reason, methodological and technological adaptations should be done for the online education while keeping the equity and transparency for the students (García-Peñalvo, Corell, Abella-García & Grande, 2020; Sudrajat & Saefi, 2021).

Family Factor

Families support their children by providing material and study opportunities and that may increase students' academic success. On the other hand, decreasing income due to epidemic negatively affected the support of families to their children (Di Pietro, Biagi, Costa, Karpiński & Mazza, 2020). However, students need also emotional support from their families too. Families might not be aware of that their support is essential and important for the education of their children (Azubuike, Adegboye & Quadri, 2021). Lack of support from their families was indicated by the students. Several arguments might be proposed for why families neglected the emotional support. Firstly, it may be speculatively argued that professionalism exhibited by the instructors was realized and acknowledged by the families. Consequently, families also didn't act in a professional manner towards the course and online education like instructors. Secondly, another argument might be proposed with the traditional approach of families towards courses. Families had the traditional approach towards lessons in which education is the activities carried out in classrooms or at schools in general. Thus, online education wasn't perceived as real education by the families. Consequently, importance of online courses wasn't also realized by them, and their attitudes were shaped with respect to this thought. It was output that after start of Covid-19 pandemic, students might be at disadvantage if not supported by their families. For that reason, it is recommended that educational organizations should use software to integrate families into education and inform them on what is going on. This could simply create a communication link between schools and families and in return a beneficial online education could be carried out (Clausen, Bunte & Robertson, 2020).

CONCLUSION

Although study was carried out during and a year after the epidemic start, it should be noted that covered issues were, are and will be in interest of education due to advancing technologies and their integration into educational settings. For that reason, outcome of the study shouldn't be taken only for epidemic area but afterwards. All in all, study reveals that education has four components affecting each other. First component is effect of families. To obtain more efficient education, families should be integrated into educational settings. Families should be informed about how their behaviors affect the students' academic life. Second factor was determined as instructor factor. Instructors should inform the students about course objectives and

requirements. Instructors should inform students how assessments will be carried out and assessments' compliance with objectives of the course. Professionalism in teaching has direct and indirect effects on education. Third factor was determined as physical possibilities of the students. Course instructors should be aware of the physical and capital possibilities of the students. Fourth factor was determined as school factor. Schools should provide materials and means for the students to improve students' possibilities. Last and fifth factor was determined as psychological conditions. Changes affecting social conditions and norms also have impact on students. During unusual times, students may struggle with ongoing situation which affects their psychological wellbeing.

In summary, distance education progresses should take course objectives into account and expected behaviors from families, organizations, students, and instructors should be defined prior education semesters. For that purpose, evaluation methods of the courses also need to be defined.

Limitation of the Study

Relational depth of the topics and their effect upon each other are limited with survey items. For detailed analysis, focus group interviews might be carried out for at least few sessions. Also, studying with different samples could reveal more in-depth data.

Recommendations for Future Studies

Distinctive topics were revealed by the study. Since distant education will be part of educational system in the future it was revealed by the study that for a better education emerged themes and topics should be taken account into consideration. For example, a software might be developed to integrate the families into education. For that reason, developed software and their effectiveness related to education might be analyzed. Another suggestion is that instructors might provide online course information handout to students. Objectives, requirements, and assessments information should be included on those handouts. Effect of such activities might be analyzed and, based on analysis there might be helpful suggestions.

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