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Study of the Impact on the Development of Competencies: Collaborative Learning and Problem Solving by Engineering Students in a Multidisciplinary Context of Total Immersion

Juan José CARRACEDO-NAVARRO
Tecnologico de Monterrey

Alejandro ARAGÓN-ZAVALA
Tecnologico de Monterrey

Blanca Isabel MALDONADO-GUEVARA
Tecnologico de Monterrey

Abstract: One of the most observed trends in Higher Education is the development of competencies to equip undergraduate engineering students for solving problems that they will confront in real-world situations. One way to develop these competencies is by exposing students to scenarios where they have opportunities to apply the information they have learned beyond an academic level and thereby acquire new, relevant knowledge. The purpose of this paradigm shift in education is to decrease the existing breach between learning in the classroom and learning in work-and-social environments in such a way that learning thus becomes a natural and continuous activity rather than one programmed and limited to university classrooms and labs. This present study shows how multidisciplinary teams of engineering students were called upon to solve a challenge for a week in the context of total immersion in a real-world environment. The study shows how students develop collaborative work skills while generating and applying new knowledge during the process of proposing a solution to the challenge. The importance of collaborative work skills among the team members was observed as a predictor of success in solving this challenge.

Keywords: Educational innovation, Competency development, Collaborative learning, Higher education

Introduction

"I'm not interested in hiring engineers or people with master's degrees or Ph.D. s; I hire people who know how to solve problems and communicate. My strategy to hire is the same as to hire a pianist; a black curtain, the pianist plays on the other side, we listen to him, and then we decide." Thus, began the talk of an entrepreneur at the National Meeting of Teachers (July 2017) of a private educational institution. This talk helped to create a framework of reference to many of the actions that teachers had incorporated into their practice. This event was essential to identify the elements that were needed to be incorporated so that the students of the Institution would generate, from the first semesters, a background of knowledge, skills, and values that would be useful to them when they had to deal with the diverse situations of their working and social lives.

The candidates for graduating from this Institution complete an opinion poll in their final semester of study. One of the most recurrent comments within this survey is about the big difference between the knowledge taught in the classroom and that required for professional life (Villarroel & Bruna, 2014). A second comment relates to the collaborative work that they develop at the university and that it differs significantly from what companies need from a professional; this has also been observed by different authors ((Aguilar Pérez, Cedillo Cuadros, & Valenzuela González, 2015; Guenaga, Eguíluz, Jerez, & Torientes, 2015; Marín, 2017; Morita-Alexander, García-Ramírez, & Escudero-Nahón, 2016; Rivero, Martín, & Gil, 2015; Yepes, Martí, & Garcia-Segura, 2016). These differences between academia and the work world often create obstacles to the recruitment of new

- Selection and peer-review under responsibility of the Organizing Committee of the Conference

graduates in key positions of organizations. The Institution, seeking to identify and understand better the skills that the country, society, and companies require from graduates, consulted with employers, graduates, and civil society; the results caused re-thinking about the educational model of the Institution, in such a way that the model "…aligns the key elements of the vision, organization, and culture of the institution" (Guenaga et al., 2015; López López, Guerrero, José, & Pérez-García, 2018). This re-thinking was denominated as the Tec21 Educative Model.

In an underlying way, The Tec21 model bases an important part of its strategy on the methodology of solving challenges, which are incorporated into different subjects and, specifically, in a format of total immersion during a one-week period that we will call "*IT*.". For the Tec21 model, a challenge is a lived experience designed to expose the student to a challenging situation in the work environment to achieve specific learning objectives. These challenges are expected to contribute to the development of disciplinary and transversal competencies in students as they apply their learning, skills, attitudes, and values individually and collaboratively (ITESM, 2018).

Tec21 and the *IT* seek to achieve the development of both generic (transversal) and specific (disciplinary) competencies. For the Tec21 model, competencies are defined as the conscious integration of knowledge, skills, attitudes, and values that enable students to face both structured and uncertain situations. Competencies include both the knowledge and the procedures of the discipline, as well as the attitudes and values that are necessary for trained professionals who are committed to society.

In the Tec21 Educational Model, there are two categories of competencies; namely, the disciplinary and the transversal. Disciplinary competencies refer to all the knowledge, skills, attitudes, and values that are considered necessary for professional exercise. The development of disciplinary competencies involves a gradual construction starting from the fundamental skills until reaching the terminal competencies of the discipline. On the other hand, the transversal competencies are developed throughout the process of training in any discipline; they are useful for the life of the graduate and have a direct impact on the quality of the exercise of the profession (ITESM, 2018)

Both categories are already defined by this Institution. The transversal competencies are disseminated throughout the curricula of the entire Institution, and the disciplinary ones are established by each School (Engineering; Humanities and Education; Medicine, Architecture, Art and Design) (Maura & Tirados, 2008). According to Bezanilla et al., (Bezanilla et al., 2014; Núñez-Lopez, Avila-Palet, & Olivares-Olivares, 2017; Villarroel & Bruna, 2014) the competencies have the following characteristics: they must be based on actions relevant to meet the challenge that they have to solve; must be learned in a context of total immersion; and also be verifiable, and they must involve a broad range of procedures, attitudes, and skills. The week of *IT* allows teachers to develop, in one activity, two generic and two specific competencies, that fully comply with all the elements set out in the previous paragraph.

Description of the Challenge.

Focused on helping to narrow the gap between theoretical knowledge and the solution of real problems, as well as developing collaborative teamwork skills more relevant to the training of students to be engineers, we developed a challenge that consisted of designing and constructing a handcrafted bread oven with the capacity to cook at least 3 pieces per lot. The bread would have to meet the minimum characteristics of well-cooked bread. Among the essential requirements for the oven, the cost should be less than $75, efficiently conserve energy, and maintain low levels of pollution. The challenge was called "Pan Cracio." In this challenge, we sought to develop the generic competencies of problem-solving (Csp) and collaborative work (Ctc) and the disciplinary competence of energy conservation. The schedule of the week's activities for the challenge is shown in Figure 1.

Pan Cracio was included in the catalog of challenges that the Institute offered to its students at the national level. In this catalog, the objectives of the challenges, their agendas, forms of qualifications (including rubrics), and the disciplinary and transversal competencies to be developed were described in the offering, so that the students could make informed selections.

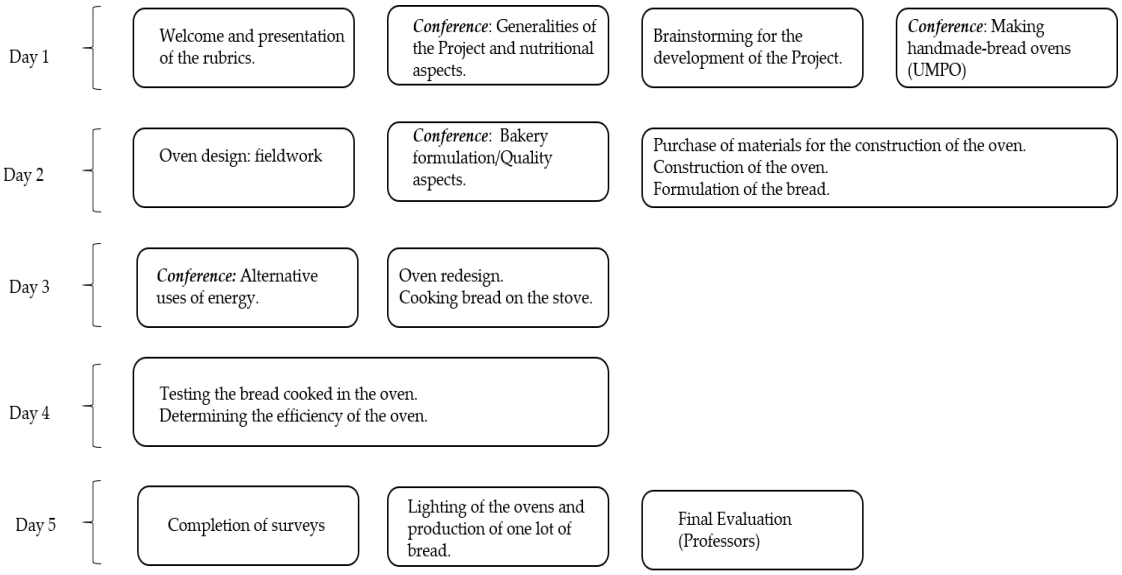

Figure 1. General activities agenda of Pan Cracio

Technical Considerations for the Application of the Challenge

For the formation of the teams, it was determined that each would have members from different academic programs, similar to working environments and that the proportion of students in each curriculum and semester would be as homogeneous as possible. This situation caused bewilderment among students on the first day of activities because they had hoped to work with classmates and friends. The decision about the composition of the teams was made so that communication would flow in as many channels as possible (Carrasco, Fernández, & Perera, 2018).

Although students knew in advance the formats by which they would be assessed for the challenge, they were shown again at the beginning of the activity (Carrizosa & Ballestero, 2012). During the introduction, the following aspects were also emphasized to the students: teamwork, self-assessment, and freedom of the schedules. In this way, they were made responsible for successfully finishing the project (Barraycoa-Martínez & Lasaga-Millet, 2010; Benito, Villaverde, Hortig-ela-Alcalá, & Abella-García, 2016).

Although the group of students had some clarity of what was expected of them in the project, some questions were left unresolved at first, such as, "What is an efficient oven?"; "How is an oven built?"; "What temperature is required inside the oven to cook?" and "What is well-cooked bread?" Leaving these questions unresolved at the beginning was part of the strategy of problem-based learning (Guerra, Mesa, & González, 2017).

During the construction of the oven, the teachers remained mostly as observers of the process; however, they could intervene in extreme cases (Estrella, Pareja, & Tudela, 2015). Their function was to foster opportunities for growth and improvement for the students, generating a conducive environment for dialogue and cooperation (Fernández-Jiménez, Polo, & Fernández Cabezas, 2017; Gallego & Rodríguez, 2017; Morales, Pineda, & Saucedo, 2017). It is important to consider that the challenge-solving strategy is unsuccessful if the students do not fail in some of their approaches (Carrasco et al., 2018).

As part of the challenge, there were four mandatory conferences to attend. The first conference provided general information on the problem to be solved and on the nutritional aspects of bread. The second guided students about cooking handmade bread in ovens, its characteristics, and quality parameters. The conference was given by the association, One Hand for Oaxaca (UMPO). This conference also discussed the social aspects related to Oaxaqueño bakers. The third conference was devoted to the process of formulating the bread and its quality parameters, while the fourth conference was about the alternative use of energy.

From the first day, the students brainstormed, made decisions, and began the construction of the oven, even though they had not received complete information for the process (Carrasco et al., 2018(Saldaña, Contreras, Navarro, & Velásquez, 2017), (Saldaña, Contreras, Navarro, & Velasquez, 2017). This work continued during the week, and the students integrated the knowledge they acquired either on their own or in the conferences through interactions with the invited specialists.

While the present project was born with the idea of strengthening generic problem-solving and collaborative work skills, it was hoped that by knowing the social situation of the Oaxaca bread producers after the recent earthquake in the region, the students would be sensitized to a real, devastating, and current situation, which required intervention and the planning of solutions (Carrasco et al., 2018; Estrella et al., 2015; Lopez, 2015). In this way, the students might develop sensitivity to the social problems that are part of our country.

Method

Objectives

To **e**valuate the development of transversal skills**,** particularly collaborative teamwork and problem-solving, in a group of students from various academic engineering programs from different regions of the country in a multidisciplinary environment in an experience of total immersion.

Population and Sample

The study population corresponded to the students enrolled in the Professional curricula of the August-December 2018 semester, in which were represented the 11 engineering programs of several campuses of the university system located in different states of the republic. The invitation to participate in the Pan Cracio activity was sent; and the subsequent enrollment included 46 students from 9 academic programs: Agricultural Engineering (IA), Biotechnology Engineering (IBT), Civil Engineering (IC), Food Industries Engineering (IIA), Industrial and Systems Engineering (IIS), Mechanical Engineering Administrator (IMA), Electrical Mechanical Engineering (IME), Engineering in Mechatronics (IMT), and Bachelor of Industrial Design (LDI). The students were in semesters 2 to 5 and came from 8 cities or states; namely, CDMX: Mexico City; CHS: Chiapas; EMX: State of Mexico; MTY: Monterrey; PBA: Puebla; QRO: Querétaro; SFE: Santa Fe; and TOL: Toluca. The enrolled students were grouped into seven teams, which were formed accounting for various factors such as their academic programs, semester and campus of origin to assure the highest homogeneity possible among the teams.

Instruments

The study used two types of evaluation tools: the set developed by the professors who designed the activity and the instrument employed by the Institution for assessments. The activities set was comprised of 6 rubrics and two surveys (one entry [EE] and one exit survey (ES]) to assess the development of the competencies selected for the activity. The Institutional Survey (EI) was given to participants of all *IT* week activities throughout the university system. Its purpose was to give feedback to the Institute on general aspects of the quality of the activity and the level of satisfaction perceived by the students.

Some of the rubrics developed by the professor-designers had previously been used in the evaluations of groups of students in some engineering programs in curricular subjects such as Inorganic Chemistry and Organic Chemistry, among others. Also, another set of rubrics was developed specifically for the activity. The list of rubrics used, the information about their design, the types of competencies evaluated, the person responsible for their completion, and their weighting in the final grade is shown in Table 1. The rubric formats are included in the Appendices.

The surveys were intended to evaluate the students' expectations for activity (EE) and their fulfillment at the end (ES), as well as to provide a space in which their opinions regarding their participation in Pan Cracio could be freely expressed. The formats of these surveys are shown in the Appendices.

Table 1. Rubrics for the development of competencies

Rubric Name	Design Type*	Type of Design Evaluated&	Responsible for Completion#	Weighting in the Final Grade
Bread (P)	A	D	P	30%
Oven (H)	A	D	P	25%
Contamination (C)	A	D	P	15%
Energy (E)	A	D	P	15%
Self-assessment (AE)	P	T	A	5%
Co-evaluation (CE)	P	T	C	5%
Collaborative Work (TC)	A	T	P	5%

Design Type*: A: Designed for the activity; P: Designed previously.
Type of competency evaluated&: T: transversal, D: Disciplinary
Responsible for completion#: P: Professor group, A: Student; C: Student team members

Description of the Rubrics

The P rubric aims to evaluate the quality of bread cooked in the oven. This rubric includes measuring its sensory properties (such as smell, color, and texture), as well as the percent of mass growth, its nutritional value, and its cost. The H rubric evaluates the construction of the furnace, considering the parameters of functionality, safety, and energy efficiency. Rubric C assesses the emanation of polluting gases during furnace operation, the review of applicable regulations, and the implementation of devices in the furnace to reduce contamination. The E rubric evaluates the alternative uses of the energy generated by the oven that is not used in the cooking of bread and considers parameters like cost and the importance of alternative uses. The AE and CE rubrics aim to measure the level and quality of student participation in the development of the project, their appreciation, and that of their teammates.

Table 2. Questions that compose the Institutional Survey EI

Question Number	Key	Question	Scale
1	SICLA	The professor established what he expected of me during the development of the activity.	0-10
2	SIEVA	The professor clearly explained to me how the activity would be evaluated.	0-10
3	SIGUI	The professor provided me with guidance and advice during the learning process of the It activity.	0-10
4	SICON	Everything you did in the It activity allowed you to learn new knowledge or apply what you already knew.	0-10
5	SIMET	I had access to clear and accurate explanations and learning techniques or technological tools that facilitated the activity.	0-10
6	SIREF	In the activity in which I participated, there were spaces where I could reflect upon my acquired knowledge.	0-10
7	SIORG	Through the activity, I realized the contribution of value that I can make to the community, the organization, or society in general.	0-10
8	SIRET	The activity offered a different challenge than my classes.	0-10
9	SIACT	I consider that my attitude played a very important role in the outcome of the activity and learning that I acquired.	0-10
10	SIAPR	I think the learning acquired can be applied in other situations.	0-10
11	SCOM	I developed the competencies that the teacher said we would acquire through the activity.	0% -100%
13	SISAT	How satisfied do you feel about participating in this *IT* activity?	0-5
17	SIREC	I would recommend this *IT* activity to my classmates.	0-5

For the study, it was established that the weighted average (Table 1) of the grades obtained under headings P, H, C, and E (HO) would be the indicator for the development of the Problem-Solving (Csp) competency; on the other hand, the grades obtained in TC, AE and CE were used as indicators for the development of the Collaborative Work competency (Ctc). The rating report also includes the parameters, End of Collaborative Work (FC), which corresponds to the weighted sum (Table 1) of the grades obtained in AE, CE and TC; and the Final Grade (FF) parameter, which corresponds to the final grade reported for the Pan Cracio activity. EI, the Institutional survey was developed by a group of professors of the Institute based on the observations made in the three previous offerings of the *IT* week. The institutional survey consists of 13 questions evaluated with three different scales (Table 2). For the study, questions 1,3,4,8,9,10 and11 were selected as indicators of the development of the competencies under study.

Procedure for Data Collection and Analysis

Data Collection

Data collection was carried out through the application of different rubrics and the surveys, which were administered as described in Table 3. The results of the rubrics were expressed as numeric values on a scale from 0 to 100.

Table 3. Delivery times of the rubrics and their formats.

	Stages of the activity		
	Before beginning	Beginning (Day 1)	End (Day 5)
Format	Delivery to Professors	Delivery to Students	Completion of Rubrics
Printed materials	Bread		Bread: professors
	Oven		Oven: professors
	Contamination		Contamination: professors
	Energy		Energy: Professors
	Self-assessment		Self-assessment: students
	Co-evaluation		Coevaluation: team members
	Entrance Interview		Entrance interview: student
	Exit Interview		Exit interview: student
Electronic materials			Institutional survey: students

Data Analysis

All grades obtained from the application of the rubrics were analyzed using Statistica version 13.3 software (Tibco Software, Inc.). An ANOVA analysis was performed for the results obtained in the rubrics by CPS (campus), EQ (team), CARR (curriculum), and SEM (semester) to identify significant differences ($p<0.05$). Additionally, a Fisher's (LSD) test was performed for each competency-assessment parameter to examine the population averages, to group the samples according to the factor evaluated. A correlation analysis was also performed to know the degree or intensity of association among the evaluated variables and also to know their relevance and the meaning of such an association (positive or negative).

Table 4: Minimum, maximum and average values for the assessments

	Minimum	Maximum	Average	SD%	Scale
TC	3.25	5.00	4.86	0.37	0-5
AE	4.58	5.00	4.99	0.06	0-5
CE	2.94	5.00	4.91	0.31	0-5
FC	11.20	15.00	14.78	0.63	0-15
HO	62.70	84.50	74.60	6.54	0-100
FF	73.90	99.50	89.43	6.64	0-100

TC: Collaborative Work, AE: Self-evaluation, CE: Co-evaluation, FC: Collaborative Final, HO: Oven, FF: Final Grade.
SD%: Standard Deviation.

Results and Discussion

Rubric Results

The minimum, maximum, and average values, as well as the standard deviations (DS) of the grades obtained from the application of the rubrics, are shown in Table 4.

Variance Analysis (ANOVA)

a) ANOVA for the teamwork competency (collaborative work). The results obtained by ANOVA for Ctc are shown in Tables 5-8. The analysis indicates that there is no significant difference ($p<0.05$), for TC, AE, CE, and FC when the data were analyzed by EQ, CPS, CARR, and SEM, so it can be said that there is no significant difference in the development of Ctc for these parameters. On the other hand, Fisher's test results showed differences for AE when analyzed by CPS, CARR, and SEM, whereas there are no differences for the rest of the evaluation parameters. Fisher's test grouped the data into three different categories for CPS, CARR, and SEM.

Table 5. ANOVA and Fisher's test results by team number

		EQ [%]						
Parameter[&]	p Value[#]	1	2	3	4	5	6	7
TC	0.493	5.00a	5.00a	4.972a	4.55a	4.73a	4.89a	5.00a
AE	0.263	5.00a	5.00a	5.00a	5.00a	4.94a	5.00a	5.00a
CE	0.558	5.00a	5.00a	5.00a	4.9a	4.69a	4.87a	5.00a
FC	0.457	15.00a	15.00a	14.97a	14.46a	14.36a	14.75a	15.00a

[&]TC: Collaborative Work, AE: Self-evaluation, CE: Co-evaluation, FC: Collaborative Final.
Significant to $p<0.05$
EQ[%]: Team Number (1-7)

Table 6. ANOVA and Fisher's test results by originating campus

		CPS (campus) [%]							
Parameter[%]	p-Value[#]	CDM	CHS	EMX	MTY	PBA	QRO	SFE	TOL
TC	0.8599	5.00a	5.00a	5.00a	4.55a	5.00a	4.89a	5.00a	4.93a
AE	0.4313	5.00a	5.00ab	5.00ab	4.90b	5.00ab	5.00a	5.00a	5.00a
CE	0.9061	5.00a	5.00a	5.00a	4.90a	5.00a	4.94a	5.00a	4.92a
FC	0.9641	15.00a	15.00a	15.00a	14.39a	15.00a	14.79a	15.00a	14.85a

%TC: Collaborative Work, AE: Self-assessment, CE: Co-evaluation, FC: Collaborative Final.
Significant to $p<0.05$
CPS%: Originating campus of the student: CDM: Mexico City, CHS: Chiapas, EMX: State of México, MTY: Monterrey, PBA: Puebla, QRO: Querétaro, SFE: Santa Fe, TOL: Toluca.

Table 7. ANOVA and Fisher's test results by student's curriculum

		CPS (campus) [%]								
Parameter%	p Value#	IA	IBT	IC	IIA	IIS	IMA	IME	IMT	LDI
TC	0.8275	4.45a	5.00a	4.79a	4.97a	4.93a	5.00a	5.00a	4.99a	5.00a
AE	0.5937	5.00ab	5.00a	5.00a	5.00ab	4.93b	5.00ab	5.00ab	5.00ab	5.00ab
CE	0.9704	4.77a	5.00a	4.86a	4.96a	4.92a	5.00a	5.00a	4.97a	5.00a
FC	0.9090	14.22a	15.00a	14.65a	14.93a	14.77a	15.00a	15.00a	14.97a	15.00a

%TC: Collaborative Work, AE: Self-assessment, CE: Co-evaluation, FC: Collaborative Final.
Significant to $p<0.05$
CARR%: Originating curriculum of the student: IA: Agricultural Engineering, IBT: Biotechnology Engineering, IC: Civil Engineering; IIA: Food Industries Engineering, IIS: Industrial and Systems Engineering, IMA: Mechanical Engineering Administrator, IME: Mechanical-electrical engineering, IMT: Mechatronic Engineering, LDI: Licensed in Industrial Engineering

Table 8. ANOVA and Fisher's test results by semester

		SEM[%]			
Parameter%	p Value#	2	3	4	5
TC	0.3877	4.97a	4.90a	4.77a	4.70a
AE	0.0805	5.00a	5.00a	4.93b	5.00a
CE	0.1401	4.96a	4.98a	4.92a	4.65a
FC	0.2098	14.92a	14.87a	14.63a	14.34a

%TC: Collaborative Work, AE: Self-assessment, CE: Co-evaluation, FC: Collaborative Final.
Significant to p<0.05
SEM[%]: Semester that the student is coursing (2 a 5)

b) ANOVA for the Problem-Solving Competency. The data indicated that there is no significant difference in the development of the Csp among students from different campuses, careers or semesters; but there is a different level of competency development among the different teams: HO (oven) showed a highly significant difference (p.0.00001) when analyzing the data by team, with team 6 having the highest grade (84.5%) and team 5 the lowest (62.7%).

Correlation Analysis

Table 9 shows the correlation between the results of the evaluations. This table shows a positive correlation between CE and TC; which would indicate a correspondence between the observations made by the students and those made by the teacher, and also, it would be an indication of the validity of the design and the implementation of the measuring instruments for these parameters.
Table 9 also shows a positive correlation (p<0.05) between FC and TC; as well as FC and CE, indicating that the grades obtained in TC and CE had a better relationship with FC than the grade obtained in AE. This again marks the concordance of the TC and CE observations. There is also a negative correlation between FC and SEM, indicating that the higher the semester the students are coursing, the lower is the grade obtained in FC. This observation agrees, albeit less importantly, for TC, AE, and CE, but not so for HO, so that it can be inferred that in general, Ctc develops inversely with respect to the semester of the students and that there are indications of better development of Csp in students of higher semesters. It can also be said that the development of Ctc is better observed by TC and CE than by AE.

Table 9. Correlations among the evaluation parameters analyzed (surveys).

Variable#	EQ	CARR	SEM	FF	TC	AE	CE	HO	FC
CPS	0.097	0.390	0.101	0.053	0.095	0.018	0.079	0.058	0.096
EQ		0.085	0.127	0.157	0.086	0.068	0.132	0.190	0.121
CARR			0.112	0.148	0.249	0.075	0.156	0.169	0.214
SEM				0.006	0.255	0.144	0.270	0.020	0.295
FF					0.092	0.291	0.237	0.995	0.199
TC						0.033	0.733	0.004	0.938
AE							0.039	0.281	0.059
CE								0.151	0.914

Significant to p<0.05; CPS: Campus, EQ: Team, CARR: Curriculum, SEM: Semester, FF: Final Grade, TC: Collaborative Work, AE: Self=Assessment, CE: Co-evaluation, FC: Final Collaboration

Results of the Entry Survey

The results of the entry survey (EE) are shown in Table 10. The students' opinions were analyzed and quantified by each of the competencies under study. The survey questions tended to explore the students' level of awareness of the primary purpose of the activity at the beginning of the *IT*.

In Table 10, students can be seen to show an important degree of awareness by issuing 30 opinions about the goal of developing Csp and 34 opinions regarding the development of Ctc (question 5), by which one can say that the students more or less know the objective of the immersion activity before it began. It can also be seen that students had high expectations (45 opinions) regarding the development of Csp (question 2). The survey also solicited student opinions related to the enthusiasm or interest in the topic selected for the work during the *IT* week.

Table 10. Results of the entry survey (problem-solving and collaborative-work)

Question Number	Question	Number of Opinions	
		Csp%	Ctc%
1	What motivated you to enroll in Pan Cracio as a Project of *IT*?	25	17
2	What expectations do you have for *IT*?	45	11
3	What knowledge do you hope to gain from this project?	4	9
4	What do you believe is the most valuable knowledge that you can learn in this project?	11	14
5	What competencies do you hope to develop in this project?	30	34

%: Csp: Problem-solving: Ctc: Collaborative Work (Teamwork).

These results indicate that the decision to participate in the activity was influenced in part by the interest of developing the competencies selected for the challenge. This fact is important for the study from the point of view that greater interest is expected to result in greater learning.

Results of the Exit Survey

The exit survey results related to the competencies of problem-solving and collaborative work (teamwork) (ES) are shown in Table 11. The students' opinions were analyzed and quantified for each of the competencies under study. The survey questions tended to explore the students' awareness of developing these competencies by the end of *IT*.

Table 11. Exit Survey results

Question Number	Question	Number of Opinions	
		Csp%	Ctc%
1	Were your expectations of *IT* fulfilled?	0	8
2	What knowledge did you obtain from this project?	15	28
3	What do you consider was the most valuable learning from this project?	10	29
4	What competencies did you develop in this project?	18	77
5	What aspects or skills do you consider as the most important in the project?	*	12

%: Csp: Problem-solving, Ctc: Collaborative Work (Teamwork)
* Specific answers were not given.

The exit survey (ES) shows a significant increase in the number of Ctc-related (teamwork) student opinions compared to those issued in the entry survey (34 VS 77). This fact is an indicator of the relevance that the exercise of this competency had during the activity. *IT* is important to note that in the opinions expressed in the survey, the students emphasized the relevant aspects of the exercise of teamwork (Ctc), including tolerance, resilience, leadership, effective communication, time management, and empathy. This expression of opinions did not happen in the entry survey. Regarding problem-solving skills (Csp), the number of student opinions was notably lower than in the entry survey; however, comments were obtained related to the knowledge acquired, which were directly linked to this competency.

Results of the Institutional Survey

Of the 46 students enrolled in the activity, 37 responded to the survey, except for one of the parameters in which only 36 students responded. The parameters evaluated by the Institute, their keys, the average of the results obtained for each of them, and their standard deviations are shown in Table 12. In order to analyze the results obtained by the institutional survey (EI) with regard to the achievement of the competencies under study, questions numbers 1, 3, 4, 8, 9, 10 and 11 were considered. The results were as follows: that the students perceived clearly the competencies they wished to develop in the activity (1); they felt they had the guidance of teachers during the activity to develop these competencies (3); they acquired new skills (4); the learning during the activity was challenging (8); they understood that attitude towards work played a very important role in the outcome of the activity (9); that their acquired learning could be applied in other contexts (10); and that the skills developed favorably in 97% of students (11).

Table 12. Results of the institutional survey for the activity of the *IT* week.

Question Number	Question	Key	No. Op*	Average	SD&
1	The professor clearly established what he expected of me during the development of the activity.	SICLA	37	9.89	0.51
2	The professor clearly explained the method of evaluating the activity.	SIEVA	37	9.86	0.41
3	The teacher provided me with guidance and advice during the learning process of *IT* activity.	SIGUI	37	8.81	0.61
4	Everything you did in the *IT* activity allowed you to learn new knowledge or apply what you already knew.	SICON	37	9.86	0.47
5	I had access to clear and accurate explanations, including learning techniques or technological tools that facilitated the activity	SIMET	37	9.86	0.47
6	In the activity in which I participated, there were spaces for the reflection of acquired learning.	SIREF	37	9.32	1.79
7	Through the activity, I realized the contribution of value that I can make to the community, organization, or society in general.	SIORG	37	9.76	0.63
8	The activity presented a challenge different from my classes.	SIRET	37	9.68	1.3
9	I consider that my attitude played a very important role in the outcome of the activity and the learning that I acquired.	SIACT	37	9.59	1.68
10	I believe that the knowledge I acquired can be applied in other situations.	SIAPR	37	9.43	1.79
11	I achieved the competencies that the teacher said we would develop through the activity %	SCOM	37	97%	0.16
13	How satisfied do you feel about participating in the *IT* activity?	SISAT	37	4.3	1.16
17	I would recommend to my colleagues this activity at the next *IT* activity.	SIREC	36	4.25	1.14

*No. Op: Number of Opinions written by the students.
Media: Average number of the opinions of the students
&SD: Standard Deviation

Conclusion

The results of the study suggest that the Pan Cracio activity allows discriminating the work of the different teams of students with respect to problem-solving (Csp). It can be inferred that this was a challenging activity, which was one of the objectives of the course-offering. It was also found that there is no significant difference in the development of problem-solving skills among students from different campuses, semesters, or careers. This is important because the academic training of the students from the different campuses of the Institute is expected to be homogeneous. On the other hand, it can be inferred that the new knowledge needed to solve the challenge was accessible to students regardless of their semester or career, suggesting success in the homogeneous training of the teams and the type of knowledge required for the development of the activity. Curiously, it *was* found that the lowest grades in self-assessment (AE) were presented by the Monterrey students (MTY), the Industrial and Systems Engineering (IIS) students, and semester 4 students. The interpretation of these observations requires the application of assessment tools in different populations to validate their repeatability, which would support the idea that the students' ability to self-assess is not homogeneous considering such variables.

The study showed that there is a positive correlation between co-evaluation (EC) and teamwork (TC), which would indicate an important level of concordance of the perception of the quality of collaborative work from the point of view of both students and teachers. This is not the case with self-assessment (AE), suggesting the need to design activities in which students develop the ability to self-assess more objectively; while also designing and testing new assessment instruments that require more consideration of the responses, such as the public assignment of the grade and its reasoning to the task teams. Additionally, it would also be important to consider

narrowing the self-assessment grade to align self-assessment more with co-evaluation (EC) and collaborative work (TC), in order to avoid being employed by the student as a means of raising the final grade of the activity. The results of the study showed that students in the higher semesters had lower evaluations in collaborative work (Ctc) but scored higher grades in problem-solving skills (Csp). These observations would imply that students in the higher semesters, who have a higher level of knowledge, solved the challenge with less effort on their own, measured as a lower level of participation in the activity, as perceived by their peers and teachers.

From the above observations, it can be inferred that knowledge alone does not explain the success (measured as final grade FC) in the activity, but that success is best predicted by the interaction of the knowledge and the teamwork skills that the students possess. This is a reflection of what happens in work environments. The importance of design and student participation in this type of activity becomes, then, understandably important. In the case of the surveys, the entrance survey EE showed that the students decided to enroll in the activity because of their interest in the development of the problem-solving and teamwork competencies, problem-solving being the most mentioned. On the other hand, the exit survey ES indicated that teamwork was the most developed competency during the activity. Indeed, students recognized the importance of teamwork in the solution of the problem, and they stated in the survey that they had developed fundamental skills such as tolerance, resilience, effective communication and coordination of activities under pressure, among others.

The students perceived the activity as challenging and indicated that it met their expectations (the acquisition of Csp and Ctc competencies), which validates the It model, in this case, for the development of those competencies. On the other hand, students also indicated in this survey that they would be able to apply the knowledge acquired in different contexts, suggesting that this educational model develops in them skills that facilitate their transition to life and, therefore, the relevance of *IT*. In addition to being a tool for the development of skills, *IT* allows the student to acquire knowledge in areas different from his or her specialty and opens the possibility of promoting different values in the students (e.g., social commitment), by linking the designed challenges to current social issues.

Future work considers the development of new *IT* activities with different combinations of variables: campus CPS; curriculum CARR; semester SEM; team EQ, with different scenarios and competencies to develop to understand better the impact of this model on the development of competencies in students. Besides, the monitoring of students after they graduate and the measuring of their success in entering professional life would produce important data that could finish validating the model and its relevance to the new and changing demands of the work world.

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Author Information

Juan José Carracedo-Navarro
Tecnologico de Monterrey, Escuela de Ingeniería y Ciencias.
Ave. Epigmenio González 500, Querétaro 76130, Qro, México.

Alejandro Aragón-Zavala
Tecnologico de Monterrey, Escuela de Ingeniería y Ciencias
Ave. Epigmenio González 500, Querétaro 76130, Qro, México

Blanca I. Maldonado-Guevara
Tecnologico de Monterrey, Escuela de Ingeniería y Ciencias
Ave. Epigmenio González 500, Querétaro 76130, Qro, México
Contact e-mail: bimaldon@tec.mx

Appendices:

Rubrics used for the assessment of the challenge

Rubric P

The Bread (30 %)	
Flavor	
Aroma	
Appearance	
Texture	
Color	
Size (Individual Portion)	
Percentage increase in bread mass from the original size	 Deficient Adecuate
Nutritional Value	 Low High
Cost	 Low High
Comments:	
Final Grade for Bread:	

Rubric H

The Oven (25 %)	
Functionality It is easy to put in and take out the dough from the oven; the doors open and close easily. It is easy to turn on.	 Difficult to operate Simple to operate
Safety It is easy to light the oven; there are no combustible fumes, the possibility of being burned is low	 Dangerous Safe
Efficiency The oven efficiently uses energy. The elements guaranteeing the oven's thermodynamic efficiency are shown.	 Low efficiency High efficiency
Comments:	
Final grade for the oven:	

Rubric C

Contamination (15 %)	
Combustible Gases Indicators are present that show the level of contamination the oven is generating. Reference is made to international indices or Official Mexican Norms (NOMs).	 Very contaminant Little contaminant.
Implements of Reduction Some device has been implemented to reduce contamination.	 No Yes, functions adequately.
Comments	
Final Grade for Contamination:	

Rubric E

Alternative uses of unused energy in cooking (15%)	
Heat not used for cooking bread has a viable alternative use.	 There is no proposal Yes, and it is viable
The proposal submitted for the use of lost heat solves some real problem.	 It doesn't resolve Yes, there is relevant resolution
The proposal is economical, accessible, and durable.	 No Yes.
Comments	
Total (Alternative Uses)	
Final Grade for alternative uses of heat rubric	

Rubric AE

Self-Assessment	1	2	3
Punctuality	I arrived late most of the time, or I missed some of the meetings.	I arrived punctually at most of the meetings.	I attended all the meetings punctually.
Cooperation with the group	Little or none	I cooperated with what was assigned to me.	I took the initiative; I helped with everything that was asked; I was available.
Task Accomplishment	I didn't perform on time with one or more of the assigned tasks	I completed most of the tasks assigned on time.	I completed all the assigned tasks on time.
Attitude	I wasn't willing, or I was intolerant most of the time.	I was willing and tolerant most of the time.	I listened, observed and participated with understanding, tolerance, and empathy, always seeking the common good of the group

Rubric CE

Co-evaluation	1	2	3
Punctuality	Unjustifiably missed some of the meetings and/or was late on more than one occasion	Missed some of the meetings or arrived late.	Punctually attended all the team meetings and was ready to work.
Responsibility	Did the minimum necessary and/or did not attend prepared or with the assigned materials	Sent his work or material in his absence or was distracted during the sessions	Worked diligently (arrived prepared with work/assigned material, did the job in the best way)
Contribution	Don't do their part or very little or very poorly.	Did their part but processed the information very little.	Provided valuable information or work exceeding expectations.
Collaboration	Did not support the team and/or only imposed their ideas.	Did not share; accepted others' ideas in a very limited way.	Shared and accepted other points of view, ideas, and suggestions.
Attitude	Didn't listen to others; criticized others negatively; wouldn't apologize when he was late.	Acted respectfully but distant from others.	Kind behavior; listened to, observed and participated with understanding, tolerance, and empathy, always seeking the common good of the group

Rubric TC

Collaborative work (Teamwork)	1	2	3
Roles defined	Roles are not defined.	The team roles are not clear.	The roles of each team member are very clear.
Team Integration	The team is not integrated.	The team is not well integrated.	Perfectly integrated.
Commitment	No commitment	Little commitment	Very committed.
Communication	The team does not communicate well and/ or work independently	The team members communicate.	The team members effectively communicate with each other.
Problem and conflict resolution	The team does not resolve presented problems	Regularly solves problems	Great capacity for solving problems that present themselves.
The team accomplishes on time what is required.	No	Moderately, fairly	Yes
Social Empathy	Its design, scope do not contemplate the good of the Institution	Its design, scope contemplate very little the good of the Institution	Its design, scope contemplate clearly the good of the Institution.

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Analysis of the Social Studies Course Book of 4th Grades in terms of Values

Tugba KAFADAR
Erciyes University

Abstract: In the research, it was aimed to analyse the social studies course book of 4th graders in Turkey in terms of values. The research was designed in the form of a case study, which is one of the qualitative study design forms. The research data were determined according to the purposeful sampling method. As the book related to a grade in which the social studies education is given at the elementary school level, the social studies course book of 4th graders was generated. The research data were obtained through document analysis. And the data obtained were analyzed through content analysis. According to the outcome of the research, the following results were obtained. In the learning area of "individual and society " the values of; scientificity, responsibility, patriotism, respect for differences, success, benevolence, and in the learning area of "culture and heritage " the values of; giving importance to family unity, respect for elders, love, respect, tolerance, forgiveness, peace, success, honesty, courage and patriotism have been obtained. In the learning area of "people places and environments " the values of; benevolence, scientificness, being a sharer, patience, courage, love of nature, sensitivity to the natural environment, giving importance to family unity, in the learning area of "production, distribution and consumption" the values of; being healthy, benevolence, justice, austerity and success have been determined. In the learning area of "active citizenship " the values of; equality, respect for differences, love, being healthy, freedom, benevolence, responsibility, self-confidence, diligence, friendship, solidarity, being a sharer, peace, patriotism, success, scientificity, secularism, courage, in the learning area of "global connections " the values of; hospitality, responsibility, reliability, honesty, self-confidence, politeness, respect for differences, peace and love were the values obtained.

Keywords: Social studies, 4th graders, Course book, Value

Introduction

Values are criteria that direct social life, ensure social continuity, and are considered important among the members of society. According to Zecha (2007), values are anything that supports individual life or human health without harming others or the society as a whole. Values are not independent entities according to Aspin (2007). It is a part of human action and humans' relationship with the society. According to Schwartz (2012), people turn to appropriate goals to cope with their own problems, and they communicate and cooperate with each other with regard to their goals. Values are socially desirable concepts used to mentally express these goals. They are also a terminology used to express these goals in social interactions.

Values are classified in the literature as follows: Spranger (1928) classified values as scientific, economic, aesthetic, social, political, and religious values (as cited in Akbaş, 2004); Rokeach (1973), as terminal values (goals) and instrumental values; and Schwartz (1992) classified them in 10 dimensions as *self-direction, stimulation, hedonism, achievement, power, universalism, benevolence, security, conformity,* and *tradition*. Schwartz et al. (2012), on the other hand, grouped values in 4 dimensions: *self-enhancement, openness to change, self-transcendence,* and *conservation*.

Values education starts with the family and continues throughout life. Schools play an important role in this process. It is aimed that students gain these values through many classes in schools. One of these courses is Social Studies. Due to its content, social studies is one of the courses in which values are provided the most. Therefore, social studies course assumes an important role in the process of gaining values. Course boks play an

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important role in the process of teaching social studies to students. For this reason, it is important in value education to determine how much values are included in social studies course books. This study can fill an important gap in the field in terms of examining the values in Social Studies course books and determining if there are deficiencies.

When the relevant literature is examined, there are many studies on value education. When we look at these studies, there are studies on value preferences of educational administrators (Haydon, 2007), value priorities of individuals from different cultures (Schwartz et al. 2001), value orientation of teachers (Kuşdil & Kağıtçıbaşı, 2000), value preferences of teacher candidates and their relationship with different variables (Dilmaç, Bozgeyikli and Çıkılı, 2008), values education given in schools (Halstead, 1996; Doğanay, 2006 Lovat, Toomey, and Clement 2010), the effectiveness of the values education program (Demirhan İşcan, 2007), the examination of social studies curricula of different countries in terms of values education (Kafadar, Öztürk & Katılmış, 2018). However, no study was found that examines the 4th grade social studies course book in terms of values in Turkey. The current study is expected to fill an important gap in the related literature in this aspect.

Purpose of the Study

The overall objective of this study is to examine Turkey's 4th grade social studies course book in terms of values

Method

Research Model

This research has a qualitative research design. Qualitative research can be defined as “research aimed at revealing perceptions and events realistically and holistically in the natural environment” (Yıldırım and Şimşek, 2011, p. 39). In studies, “you need to choose a research design linked to the problem statement and review whether this design you choose is suitable for your worldview, personality, and abilities” (Merriam, 2013, p. 1). In the research, one of the qualitative research designs, case study was preferred. Case study "is an empirical research method that is used (1) in studies on a current phenomenon within its real-life framework (content), (2) where the boundaries between the phenomenon and its content are not clear, and (3) when there is more than one evidence or data source" (Yin, cited in 1984, Yıldırım and Şimşek, 2011, p. 277).

Study Group

The study group of the research was specified according to the criterion sampling, one of the purposeful sampling methods. According to Patton (1987), the purposeful sampling method that emerged within the qualitative research tradition “enables in-depth study of situations that are considered to have rich information” (cited in Yıldırım & Şimşek, 2011, p. 107). The 4th grade social studies course book in Turkey constitutes the study group of the research.

Data Collection and Analysis

In the research, data were obtained by document analysis. Document analysis can be used alone in the data collection process in cases where observation and interview methods are not possible in qualitative research. Documents are “rich data sources that should be used effectively in qualitative research. The researcher can obtain the data in accordance with the nature of the research without observation and interview. Therefore, document analysis saves the researcher time and money” (Yıldırım & Şimşek, 2011, p. 187-188). The research data were analyzed with the content analysis method. “The main purpose of content analysis is to reach concepts and relations that can explain the data collected” (Yıldırım and Şimşek, 2006, p. 227).

Findings

When Table 1 is examined, the values found in the "individual and society" learning area in the 4th grade social studies course books are: scientific (f7), responsibility (f5), patriotism (f4), respect for differences (f4), success (f4) f3), and love (f2).

Table 1. 4th grade course book, values in the "*individual and society*" section

Grade level	Learning Field	Values	f
4th grade	"Individual and society"	Scientific	7
		Responsibility	5
		Patriotism	4
		Respect for differences	4
		Success	4
		Benevolence	3
		Love	2

When Table 2 is examined, the values in the "culture and heritage" learning area in the 4th grade social studies course book are: importance of family unity (f8), respect for elders (f7), love (f7), respect (f7), tolerance (f4).), forgiveness (f2), peace (f2), success (f2), honesty (f1), courage (f1), and patriotism (f1).

Table 2. 4th grade course book, values in the "*culture and heritage*" learning area

Grade level	Learning Field	Values	f
4th grade	"Culture and Heritage"	Importance of family	8
		Respect for the elders	7
		Love	7
		Respect	7
		Tolerance	4
		Forgiveness	2
		Peace	2
		Success	2
		Honesty	1
		Courage	1
		Patriotism	1

When Table 3 is examined, the values found in the "people, places and environments" learning area in the 4th grade social studies course book are: benevolence (f9), scientific (f8), sharing (f8), patience (f5), courage (f4), love of nature (f4), sensitivity to natural environment (f4), and importance of family (f2).

Table 3. 4th grade textbook, values in the "*people, places and environments*" learning area

Grade level	Learning Field	Values	f
4th grade	"People, Places, and Environments"	Benevolence	9
		Scientific	8
		Sharing	8
		Patience	5
		Courage	4
		Love of nature	4
		Sensitivity to the natural environment	4
		Importance of family	2

When Table 4 is examined, the values found in the "science, technology and society" learning area in the 4th grade social studies course book are as follows: Scientific (f6), sensitivity to the natural environment (f4), success (f4) and sensitivity (f3).

Table 4. 4th grade course book, values in the "*science, technology and society*" learning area

Grade level	Learning Field	Values	f
4th grade	"Science, technology and society"	Scientific	6
		Sensitivity to the natural environment	4
		Success	4
		Sensitivity	3

When Table 5 is examined, the values found in the "production, distribution and consumption" learning area in the 4th grade social studies course book are as follows: Being healthy (f5), benevolence (f5), justice (f3), saving (f2), and success (f1).

Table 5. 4th grade course book, values in the "*production, distribution and consumption*" learning area

Grade level	Learning Field	Values	f
4th grade	"Production, distribution, and consumption"	Being healthy	5
		Benevolence	5
		Justice	3
		Saving	2
		Success	1

When Table 6 is examined, the following values are found in the "active citizenship" learning area in the 4th grade social studies course book: Equality (f11), respect for differences (f10), love (f8), being healthy (f7), freedom (f7) , benevolence (f6), responsibility (f6), self-confidence (f5), hard work (f5), friendship (f3), solidarity (f2), sharing (f1), peace (f1), patriotism (f1), success (f1) science (f1), secularism (f1) and courage (f1).

Table 6. 4th grade course book, values in the "*effective citizenship*" learning area

Grade level	Learning Field	Values	f
4th grade	Active Citizenship	Equality	11
		Respect for differences	10
		Love	8
		Being healthy	7
		Freedom	7
		Benevolence	6
		Responsibility	6
		Self-confidence	5
		Hard Work	5
		Friendship	3
		Solidarity	2
		Sharing	1
		Peace	1
		Patriotism	1
		Success	1
		Scientific	1
		Secular	1
		Courage	1

When Table 7 is examined, the following values are found in the "global connections" learning area in the 4th grade social studies course book: Hospitality (f5), responsibility (f5), reliability (f4), honesty (f3), self-confidence (f2), kindness (f1) respect for differences (f1), peace (f1) and love (f1).

Table 7. 4th grade course book, values in the "*global connections*" learning area

Grade level	Learning Field	Values	f
4th grade	"Global connections"	Hospitality	5
		Responsibility	5
		Reliability	4
		Honesty	3
		Self-confidence	2
		Kindness	1
		Respect for differences	1
		Peace	1
		Love	1

Discussion

According to the results of the research, the following results were obtained. The values of scientific, responsibility, patriotism, respect for differences, success, benevolence were found in the field of "*individual and society*" learning; the values of importance of family, respect for elders, love, respect, tolerance, forgiveness, peace, success, honesty, courage and patriotism were found in the learning area "*culture and heritage*." In the learning area "*people, places and environment*," the values of benevolence, scientific, sharing,

patience, courage, love of nature, sensitivity to natural environment, importance of family were found; in the learning area "*science, technology and society*," scientific, sensitivity to natural environment, success, sensitivity; in the learning area "*production, distribution and consumption*," being healthy, benevolence, justice, saving, and success in the learning area "production, distribution and consumption." The values of equality, respect for differences, love, being healthy, freedom, benevolence, responsibility, self-confidence, hard work, friendship, solidarity, sharing, peace, patriotism, success, scientific, secular, courage in the learning area "*effective citizenship"* were found*;* hospitality, responsibility, reliability, honesty, self-confidence, kindness, respect for differences, peace, and love, in the learning area "*global connections.*" According to Schwartz (2015), although the nature and structure of values are universal, the importance individuals and groups give to values differ greatly. That is, individuals and groups have different value priorities or hierarchies. Each person has a multitude of values (e.g. success, safety, benevolence) that are important to varying degrees. A particular value may be very important to one person but not to another. In this context, value priorities for individuals and societies may change. And therefore, the density of the values given in the course boks and the distribution of the values in the content of the social studies course book may also differ.

Successful value education is the process of adjusting intuition, encouraging reasoning, and developing skills and motivation for moral behavior. The aim of value education should not only be individuals who do not harm others, but to be moral (Lapsley & Narvaez 2006 cited in Narvaez, 2007). When the 4th grade social studies course book in Turkey is evaluated in general, scientific, importance of family, respect for elders, love, respect, tolerance, forgiveness, peace, success, honesty, courage, patriotism, benevolence, science, sharing, patience, love of nature, sensitivity to the nature, being healthy, helpfulness, justice, saving, equality, respect for differences, freedom, responsibility, self-confidence, hard work, friendship, solidarity, sharing, secularism, hospitality, reliability, and kindness have been the determined values. According to Kafadar (2019), giving the necessary importance to value education in teaching programs and course boks can contribute to the training of individuals to acquire basic human values. Prencipe (2001) concluded that value education programs have a positive effect on students' acquisition of values. For this reason, importance should be given to gaining values course boks textbooks and teaching programs.

Recommendations

In the study, 4th grade social course book in Turkey was examined in terms of values. Values can be examined in course boks at different grade levels in further studies. In the study, it was found that there is limited content in gaining some values. When the course boks are being renewed, it may be better to enrich the content aimed at gaining many different values in terms of value education. In different studies to be conducted, value teaching approaches can be examined in course books. Again, in different studies, the course boks of different countries can be examined in terms of value education.

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Author Information

Tuğba Kafadar
Erciyes University
Erciyes University, Faculty of Education, Kayseri, Turkey
Contact e-mail: tugbakafadar@gmail.com

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Use of Scientific Articles by Social Studies Teachers in the Preparation for Lessons

Sule EGUZ
Inonu University

Abstract: Scientific articles are recommended as a tool that professionals can use in the teaching process to increase evidence-based education practices in the classroom. In this study, it was aimed to determine the social studies teachers' use of scientific articles in the preparation process and their views on this. The study group of the research consisted of 30 social studies teachers working in Istanbul, Samsun and Malatya provinces. In the study designed according to the case study, one of the qualitative research designs, a structured interview form was used as a data collection tool. The data collection tool was sent to the participants via digital media. Descriptive analysis, one of the qualitative research techniques, was used in analyzing the collected data. The results of the study showed that the teachers preferred mostly short articles with practical suggestions during the preparation process for the lesson. In addition, the participants stated that they found scientific articles generally useful in the preparation process for the lessons, but they saw themselves as weak in using them frequently.

Keywords: Social studies, Scientific article, Teacher

Introduction

Human needs knowledge in order to survive and regulate relationships with nature and other people (Ucak Ozenc, 1997). In the knowledge society, it has been knowledge, and especially scientific knowledge (Ozkan, 2009). Raising individuals who produce knowledge, share what they produce, have research, scientific attitudes and behaviors is one of the main objectives of education systems (Unal & Ada, 2007). In this respect, educators should be effective in the production and use of knowledge in the society where knowledge production and transmission is widespread. Because teachers have the biggest role in raising creative and innovative people who understand, interpret, use the data of the scientific world, reveal new ones, and have acquired problem-solving skills. For this, it is especially important that they include scientific articles in the preparation processes and in the course.

For more than two decades, empirically validated educational practices have not been adequately used by teachers in their classroom; there is a widespread scientific belief that applications are maintained when they are used (Rowe, 2019). At this point, scientific articles are suggested as a tool that professionals can use to increase evidence-based education practices in the classroom. In this study, it was aimed to determine the social studies teachers' use of scientific articles during the course preparation process and their views on this. In line with this general purpose, the following questions were sought:

- How many scientific journal articles did teachers read last year?
- Do teachers use scientific articles in the preparation for classes?
- How often do teachers use scientific articles?
- What types of scientific articles do teachers use?
- What are the important elements in your articles according to the scientific article type (knowledge generation or application assistance)?

Method

The research was conducted according to qualitative research methodology; It was designed with a case study, which is one of the qualitative research models. The most basic feature of the qualitative case study is the in-depth investigation of one or a few situations. In other words, the factors (environment, individuals, events, processes, etc.) related to a situation are investigated in a holistic approach and the focus is on how they affect the relevant situation (Creswell, 2007; Yildirim & Simsek, 2016).

Study Group

The study group of the research consisted of 30 social studies teachers working in the provinces of Istanbul, Samsun and Malatya, who were selected through purposeful sampling in the fall semester of the 2019-2020 academic year. In the sample chosen for the purpose, the main goal is to use individuals who will provide more information about the subject studied and to allow flexibility in number (Patton, 2002). Descriptive information of the study group of the study is included in Table 1.

Table 1. Descriptive information about the study group

School	Participants	Gender	Professional seniority	Graduation
Istanbul	T1	Female	9 year	Master's degree
	T2	Female	12 year	Bachelor's degree
	T3	Male	22 year	Bachelor's degree
	T4	Male	20 year	Bachelor's degree
	T5	Male	27 year	Bachelor's degree
	T6	Male	18 year	Bachelor's degree
	T7	Male	7 year	Master's degree
	T8	Female	11 year	Bachelor's degree
	T9	Female	20 year	Bachelor's degree
	T10	Male	25 year	Bachelor's degree
	T11	Male	7 year	Bachelor's degree
	T12	Female	14 year	Bachelor's degree
	T13	Male	3 year	Bachelor's degree
	T14	Female	13 year	Bachelor's degree
Samsun	T15	Female	10 year	Master's degree
	T16	Female	24 year	Bachelor's degree
	T17	Male	30 year	Bachelor's degree
	T18	Male	5 year	Bachelor's degree
	T19	Male	11 year	Bachelor's degree
	T20	Female	21 year	Bachelor's degree
Malatya	T21	Male	11 year	Master's degree
	T22	Male	16 year	Bachelor's degree
	T23	Male	28 year	Bachelor's degree
	T24	Female	24 year	Bachelor's degree
	T25	Male	18 year	Bachelor's degree
	T26	Male	16 year	Bachelor's degree
	T27	Female	21 year	Bachelor's degree
	T28	Male	2 year	Bachelor's degree
	T29	Female	8 year	Master's degree
	T30	Female	14 year	Bachelor's degree

When Table 1 is examined, it is determined that 43% of the participants are women, 57% are men, and 17% have a master's degree and 83% have a bachelor's degree. In the framework of the research ethics, the names of

the participating teachers were not used directly in the study. For this reason, nicknames ranging from T1 to T30 were used for the participants.

Data Collection and Analysis

In the study designed according to the case study, one of the qualitative research designs, the structured interview form was used as a data collection tool. The data collection tool was sent to the participants through digital media. Structured interview is a type of qualitative interview in which the "interview plan", which determines in detail how the questions prepared previously are asked and how the data will be collected, is directly applied. The freedom of movement left to the interviewer is the least in this type of interview. Checking and digitizing the answers is easier in this type of interview (Karasar, 2005). Descriptive analysis, one of the qualitative research techniques, was used to analyze the collected data. The descriptive analysis method (Yildirim & Simsek, 2016) was preferred since the conceptual structure and the themes that will serve as the basis for the analysis of the study were determined in advance. In order to present the original opinions of the participants, direct quotations were used from time to time in the study.

Findings

Teachers' Scientific Article Reading Levels

How many scientific journal articles did you read last year?' To determine the articles that teachers read in 2019. The question has been posed. The answers given are included in Table 2.

Table 2. Number of articles read by the participants

	Number of Scientific Articles Read			
	Those who never read	1 scientific article	2 scientific articles	More than 3
Participants	T3, T8, T11, T12, T18, T19, T23, T25, T26, T27	T2, T4, T14, T16, T20, T22, T24, T30	T1, T5, T15, T21, T28	T6, T7, T9 T10, T13 T17, T29
TOTAL	*f*=10 (%33)	*f*=8 (%27)	*f*=5 (%17)	*f*=7 (%23)

When Table 2 is examined, it was determined that 33% of the participants did not read any scientific articles in the last year, while 27% of the participants had 1, 17% 2 and those who read more than 3 articles had a share of 23%. Teachers who do not read scientific articles mostly in Samsun and Malatya provinces; It was observed that teachers who read 3 or more articles mostly concentrated in Istanbul provinces.

The Use of Scientific Articles by Teachers in The Preparation Process for Classes and Their Frequency of Use

17 of the 20 participants who stated that they read an article last year, used scientific articles in the preparation process for classes; the other 3 participants stated that they have benefited from articles that support their academic life. Table 3 contains data on the frequency of using the articles by 17 participants who stated that they used them in the preparation process for the lessons.

Table 3. Participants' article usage frequency

	Usage Frequencies			
	Before every lesson	Every week	Once a month	Once a year
Participants (f)	X	1	5	11

When Table 3 is examined, it is seen that there is no teacher using scientific articles before every lesson. It was determined that there are 1 (6%) participants who use it every week, 5 (29%) who use it once a month, and 11 (65%) who use it once a year. Some of the participants' views are as follows:

It is not possible before every lesson. However, I prefer it once a month when I need it. (T6)

I am in the master's thesis period. For this reason, I try to integrate what I read into my lessons every week. (T15)

Actually, I follow it myself. I am curious as I had a postgraduate education before. But I don't see myself competent when it comes to using it in pre-lesson preparations. I have reflected it only once a year. (T21)

Scientific Article Types Used

17 participants who stated that they used scientific articles during the course preparation process asked: "What kind of scientific articles do you benefit from during the course preparation process? The question has been posed. The distribution of the answers given according to the types of scientific articles is given in Table 4.

Table 4. Types of articles used by participants

Article Types	Participants		
	Istanbul	Samsun	Malatya
Research Articles	T6, T4, T7, T9	T11, T13, T15	T24, T29, T30
Graduate Thesis Articles	T1	T16	X
Compilation and (Literature) Review Articles	T2	T17	T21
Conference Papers	X	X	T28
Abstract Paper	T5	X	X
Technical Note	X	X	X

When Table 4 was examined, it was found that the participants used the most research articles during the course preparation process. Postgraduate thesis article, review and (literature) review article, conference paper and summary papers were other types of articles used. Technical note type articles were not preferred by the participants.

The Most Important Elements in Articles According to Article Types

Participants stated that they preferred the most important elements in the articles according to the types of scientific articles as they provide experimental evidence, suggest activities, include application steps, include visuals and general information resources. 68% of the answers given in general showed that non-length articles containing practical activity suggestions were more useful in the preparation process for the lessons. Participants with a share of 32%, on the other hand, highlighted the usability of the articles as a source of information in general. The participants expressed their views on this issue with the following sentences:

Successful articles including educational practices are useful for me. I use short and concise ones. (T5)

I see it as important resources in expanding a knowledge. For this reason, it is useful in expanding the information that I think will interest students.(T11)

Since social studies lessons are a verbal lesson, students may get bored after a while. Articles containing suggestions for activities can help prevent this. (T30)

Results and Discussion

In this study, it was aimed to determine the social studies teachers' use of scientific articles in the preparation process and their views on this. When the results of the research were examined, it was determined that 33% of the participants did not read any scientific articles in the last year, 27% of them had 1, 17% had a share of 23% of those who read more than 2, 3 articles. Teachers who do not read scientific articles in the study mostly in

Samsun and Malatya provinces; It was found that teachers who read 3 or more articles mostly concentrated in Istanbul provinces.

Of the 20 participants who stated that they read scientific articles in 2019, 17 of them used scientific articles in the preparation process for classes; The other 3 participants stated that they have benefited from the articles to continue their academic life. The results of the study showed that there was no teacher using scientific articles before each lesson. In addition, it was determined in the study that there were 11 participants who used scientific articles once a week, 5 times a month and once a year. Participants stated that they found the articles useful in the preparation process for the lessons in general, but they saw themselves weak in terms of using them frequently.

Another result reached in the study was that the participants used the most research articles during the course preparation process. Postgraduate thesis article, review and (literature) review article, conference paper and summary papers were other types of articles used. Technical note type articles were not preferred by the participants. According to the types of scientific articles, the most important elements in the articles were listed as presenting experimental evidence, suggesting activities, including implementation steps, including visuals and general information resources. 68% of the answers given in general showed that non-length articles containing practical activity suggestions were more useful in the preparation process for the lessons. This result corresponds exactly to the findings in Lastrapes and Mooney's (2020) study. Participants who have a 32% share in the research highlighted the usability of the articles as a source of information.

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Author Information

Şule Egüz
Inonu University
Inonu University, Education Faculty, Department of Social Studies Education, Turkey
Contact e-mail: *suleeguz@gmail.com*

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Attitudes of Deaf and Hard of Hearing Persons towards Health Care System in Macedonia

Teuta Ramadani RASIMI
Tetova University

Arita AGAI
Tetova University

Abstract: If the deaf community in the world has reach the point of recognizing their need for health care and accessing the health care institution in a different way, then we can say that they have been accepted as a cultural and linguistic community. Even though there has been a growth in demand for improved service in health care system, respecting their individual lifestyle, very little has been done in that direction in Republic of North Macedonia. The different way of communication of deaf people and hard of hearing, in Republic of North Macedonia, disables them to get the appropriate health care services that they are entitled in equally as the general population. That is why we made a research with a purpose to recognize the initial problems that people with hearing impairments in Republic of North Macedonia face with when accessing the health institutions. In this research, conducted in two municipalities of Republic of Macedonia, Tetovo and Gostivar, participated overall 40 respondents, which provided us with their prospective of how they percept the health care system in this country. It was a qualitative type of research, were we used the technique of an interview, and all the answers of the respondents were recorded on a video camera, then analyzed with a technique called interim. The results of this research shows that, even though the deaf community in this state has the right of accessing the health care institutions with an interpreter, (secured by the law of sign language of Republic of North Macedonia), they do not enjoy those rights, they have been disadvantaged when trying to access the health care system. Our recommendation is to inform these people about their rights for using interpreter secured by the law of Sign Language, and then the state to respond to their needs by providing them not just an interpreter, but also facilitating materials and methods for information for every health care center.

Key words*:* Deaf community, interpreter, Sign language, health care.

Introduction

Access to health care without barriers is a clearly defined right of people with disabilities stated by the un Convention on the Rights of people with disabilities (Kuenburg, Fellinger, & Fellinger, 2016). Access is a broad topic, it involves access to communication, information, education and culture, as well as access to services, including to health services, which is why researches (Gulliford, et al., 2002) state access to health care is generally conducted with regard to sociodemographic factors, investigating the relationship between need, provision and utilization of health services. If language is a communication tool and a way of obtaining information, then hearing impaired persons, respectively total deaf person, are discriminated from the beginning, hence only a small percentage of the general population are familiar with their sign language. Thus, when seeking health care, the main obstacle faced by deaf people involve the professionals lack of knowledge of sign language, and the lack of interpreters in the units (Abreu, Freitas, & Rocha, 2014). In the literature for deafness, there are some distinction between "deaf" and "Deaf" (Kritzinger, 2011), the audiological condition that results in lacking hearing is commonly referred to as being deaf, whilst "Deaf" dentoted with capital letter refers specifically to a distinct cultural group which uses the local sign language in their daily lives and considers deafness as a problem located within society and not individual (Chon-Hee, Sadler, Fullerton, & Stohlmann, 2007; Jones, Renger, & Firestone, 2005). In this paper our main concern are Deaf individuals, that use sign language as dominant mode of communication, regardless whether they are deaf or hard of hearing, and their

perspective towards access to information. The lack of informative and accessible systems for the Deaf increases their vulnerability to preventable disease as a results of lack of mechanisms that take into account the peculiarities of minatory groups when obtaining health information (Richardson, 2014). The information that patients receive support their relationship with medical doctors, and thus may reduce their feelings of isolation, as well as increasing their satisfaction and adherence to treatment because medical doctor have a duty to communicate health-related issues (diagnosis and therapy), thus patients have the right to receive such information (Chaveiro, Porto, & Barbosa, 2009).

So how a person with hearing impairments access information after all? In the contemporary life, we can access to certain information by using television or internet. The first presents audio-visual tool for passing new information and news, but the audio part hampers people with hearing impairment to get this kind of information, even though on the national television program of Macedonia it is provided translation in sign language by an interpreter, but only two TV casts with 15 min of translation during the main news. The latter provides more in-depth information for everything, however it is self-financed, he has to secure by itself the internet. So we can conclude from these last two paragraph, that the state hasn't done much to enable the deaf people and hard of hearing an equal access to information, and this is a very important issue that has impact in the quality of the services that they receive from public health care institutions, while for example in UK, a deaf person or hard of hearing is entitled to use several communication services that the Royal National Institute of Deaf provides, depending what their need is:

• A BSL/English interpreter, who interprets from one language to the other. In the UK, this will usually be British Sign Language (BSL) to spoken or written English, or spoken or written English to BSL.

• A lip-speaker, who repeats what a hearing person or speaker is saying without using their voice so that you can lip-read them.

• A speech-to-text reporter (also known as a palantypist or stenographer), who types every word that is spoken using a special keyboard. Everything that is said appears on a computer screen.

• An electronic note

taker types a summary of what has been said. This appears on a computer screen for you to read.

• A notetaker, who is trained to take accurate and clear notes for deaf people. A notetaker does this in handwritten English or by typing the notes on a laptop computer.

• A communication support worker (CSW), who offers support to students in education in various ways such as taking notes, interpreting or clear communication. (2004)

In this paper we tried to give a brief analyze about the health care system in Republic of North Macedonia, its three main components of services that mostly impact the life and wellbeing of persons with hearing impairments, the legal rights that they enjoy and results of a research that we have conducted with persons with hearing impairments.

What Includes Health Care Services in Republic of North Macedonia?

Health is defined as a state of complete physical, social and emotional well-being, and not merely the absence of disease or infirmity (WHO, 1946)**.** Hence, health care services include many aspects of health caregiving. For the interest of this paper, we summarized only three aspects that concern deaf persons in Republic of North Maxedonia. Early intervention as part of health care service refers to early detection of hearing loss, by using neonatal screening, then early rehabilitation and the use of hearing aids and cochlear implants. Early intervention as a strategy is differently regulated in different state, in North Macedonia, there is no such net of early intervention, there are several independent institutions that act independently as an early intervention, Neonatal screening represents measuring of otoacoustic emissions with a simple and relatively cheap device, first applied by David Camp. The complexity consists of organizing the team who will be responsible for the measuring process, as for the continuous counseling of the parents. It is used TEOAE method (Transient evoked otoacoustic emissions), which means that the device only inform us for existence of the hearing loss, but not for the level of the loss. (Богоеска, 1998). But not in every state, not even in Republic of Macedonia is imposed as a routine procedure, which is very important because , the newborn should be treated before the ending of basal maturity process of the auditory path. (Јачова, 2009).

As part of an early intervention are included hearing aids which can determined only with audiometry. Audiometry as an integral part of health care system, represents a test method for examining the degree of hearing loss, implemented by an experienced audiologist, who release sounds with a different frequency, so they

can evaluate the degree of the hearing loss, is it a conductive hearing loss, or a perceptive, or combined. In Republic of North Macedonia there are several centers for audiometry where regularly are examined all persons with hearing loss, but unfortunately not everywhere the examination is implemented by an audiologist. In addition, cochlear implants are considered as part of early intervention, however the decision of whether to use an aid or to be subjected to a surgery is up to the parents after they are familiar with the pro and cons of each one. Most of the children with hearing loss have some residual remains, and the duty of multidisciplinary team is to use the remains of the hearing for choosing the most appropriate hearing aid, and only in case when there is no benefit from the aid, it is considered the possibility of cochlear implant. This famous operation has already turned on in routine operation with several benefits, but it costs very much. How does a cochlear implant function? The cochlear implant is a surgically implanted device that enables a development of a hearing sense to a person who has profound or severe hearing loss. (Јачова, 2009) The Republic of North Macedonia, the Ministry of health covers only several procedures, i.e. several children per year can be entitled to the operation where the state covers all the expenses necessary for the operation and postoperative period, and the procedure will take place in Macedonia. There are different opinions regarding the cochlear implant from deaf people, and precisely their attitude towards this procedure was one of our research question.

Legal Rights of Person with Hearing Impairment in Terms of Health Services

The rights of persons with disabilities in terms of health care and health insurance are not particularly regulated in Republic of North Macedonia, but certain rights are provided in several laws and decrees, which implies an obligation to the state to create conditions where the right to health care will be practiced in an equal way. In the Constitutions of Republic of Macedonia, in article 39, it is regulated the right to health care, and the access to it for each one in equal conditions, but it is not highlighted especially for persons with disabilities. In the Law for Health Care in Republic of Macedonia are governed some rights, like reimbursement of travel and subsistence expenses and exemption from participation, (38/91, 46/93, 55/95, 17/97, 10/04, 84/05, 111/05, 65/06, 5/07, 77/08, 67/09, 88/10), respectively participating with personal means in the prices of health services and drug, except for treatment abroad. (19/2011, 91/2013) In the same law, article 9, line 3, a person is entitled to medical aids, where the state covers 80% of the costs. According to the National Convention on the Rights of Persons with Disabilities, respectively article 25 regulates the right to the highest attainable standard to health without any discrimination on grounds of disability. The state signatories are obliged to take all appropriate measures to ensure access to persons with disabilities to health services (Најческа, 2011). As we can see from the above text, the state has signed and adopted the necessary laws to enable an equal access to information and health care system, but how much of this is implemented on the field was a question that intrigued us to make this research.

Persons with hearing impairments in Republic of North Macedonia face difficulties when trying to access any information, however over time the state tried to reduce these difficulties, especially with the adoption of the Law for Sign Language in 2009 ,, which under Article 2, when sign language is recognized as a completely natural way of communication equivalent to oral communication, while in Section 4 a deaf person or hard of hearing has the right to use sign language as a party or as participants in proceedings before state bodies, health care services, local government bodies, judicial authorities, public enterprises, institutions, agencies, funds and other organizations. (2009/105).

According to the law, deaf and hard of hearing persons have the right to use an interpreter of sign language for different basic needs depending to their choice, in cases where hearing loss is an obstacle to his needs, but no more than 30 hours per year. One can legitimize this right after handing over the necessary proof about his hearing loss at the center for social affairs. (2009/105). In North Macedonia, the National Association of Deaf and Hard of Hearing counts 31 licensed interpreters for the entire state (2020), where the number of population is approximately 2 million. In 2014, the National Association of Deaf and Hard of Hearing in Macedonia, in collaboration with the Ministry of Social welfare, started with trainings for new interpreters which are now licensed, also they have started trainings for pharmacepht workers for the basic level, just to facilitate the communication with people with hearing impairments. The Association itself tries to improve the quality of life of every person with hearing impairment, but it is hard for them to realize everything without financial support.

The research entitled "The experiences of people with hearing disabilities in access to health services" conducted by Laura Ringham, in the UK, gives a clear picture of the accessibility of the health institutions in the same state. The final results were presented in 2012 in the Panel for Research of hearing impairment. The study involved 607 participants with varying degrees of hearing impairment, all 900 participants were invited to

participate. From them 69% were users of hearing devices, 4% were users of British sign language, and 64% were of working age. The subject of research was to detect the difficulties faced by people with hearing disabilities in access to health centers, which were divided into three areas: experience in contacting and visiting the family doctor, adaptations in the family doctors center and counseling from the health personnel, and access to pharmaceuticals stores. According to the results in the first area are described which methods are used for contact by the deaf respondents and which one they would prefer to use for health center contact.

- 72% reported that through telephone they contact with their health center, but only 44% of them prefer this method of contact.
- 46% confirmed that they personally go to health center to schedule the examination, but only 10% prefer this way of scheduling.
- 9% contact the health center via email to schedule a review, but 31% would like to use this method of contact.

As for the second field, the results were divided into two areas: supply of health center with a visual screen in the waiting room and communication with the health staff. In the first concept the participants responded:

- 44% confirmed that their doctors' offices have visual information display in the waiting room.
- 14% said that at least once they missed the order for the review because their doctors' offices had no visual information display. The second concept included the following responses:
- To 28% the diagnosis given had not been clear;
- To 26% for the particular diagnosis given, the medical advices were not clear enough
- To 19% the prescript medication were not clear
- 59% think that the nurse is not always addressed face to face; (Ringham, 2012)

Krityinger (2011) has divided in two group the most frequent ways of, where in the absence of interpreter, providers very often turned to alternative inadequate form of communication with deaf persons, like speech reading (lip reading) as the most common alternative methods used, however it was inadequate in circumstances where face masks were used by health professionals, or hurried speech, not facing the patient while speaking, or having foreign accent, and written communication which also was inadequate because deaf personal lack vocabulary and t handwriting of health care professionals, which is why one proper way to overcome this kind of barriers is the use of interpreter. Interpretation is defined as a process of receiving a massage in one language and sending it in a different language, making sure that the exact message is conveyed (Pillay, 1999).

Research Methodology

The **subject** of our research was to analyze the attitudes of people with hearing impairments in the municipalities of Tetovo and Gostivar, in relation to the health aspect, respectively access to health institutions. The objectuce was to determine the status of people with hearing impaired in terms of the function of health facilities and their access to the same institutions. Based on this objective we proposed several research question that then directed us to use appropriate technique, like interview. The research questions were as follows:

1. What kind of barriers do they encounter when they try to obtain information?
2. What kind of barriers do they encounter when they access health care institution?
3. What kind of facilitation do they use that is secured by the state to obtain information??

Research Methods and Techniques

As a research technique it was used interview, i.e. as an instrument we used protocol of semi-structured interview, conducted with the help of pre-prepared questions of topics relevant to the survey, which provided direction for the development of the conversation, thus giving space for the full expression the participant. We used a convenience sample, snowball sample, which means that we chose subjects that were available, for which we had previous information from the Association of Deaf in Tetovo. Exactly 40 respondents participated, with varying degrees of hearing impairment, 20 of Gostivar, 20 of Tetovo, aged 18-65, all in good mental condition and were able to participate in research. We elected this two cities, because very little surveys have been conducted there, and the population is more than 50 % consisted from Albanians, that consist approximately 25 % of entire populations in Macedonia. The survey was conducted in the municipalities of Tetovo and Gostivar,

at the Association for the Deaf and Hard of Hearing in the same city, and every interview was documented on video.

Data Processing and Results

The data obtained from this qualitative research were analyzed by a type of analysis known as interim or interim analysis, where we grouped the most frequent and similar answers of the respondents, which were duvededi into topics. Regarding the first question of the survey, three topics prevailed, one regarding the language as a barrier, second the use of interpreter, and the satisfaction from the use of interpreter. For the first topic, 34 respondents declared that linguistic barrier is the biggest factor when accessing information and for that reason they ask for more translation/interpreters, while 6 respondents believe that they can be informed by other means such computer, newspapers etc.

> I think we need at least written translation on flat screen in the waiting halls, as in court, in the municipality, in health care offices, even though a translation with an interpreter would be better because there are people that don't know even how to read.
>
> No I have no problem when accessing information because thank God I can read, use the Internet, open various web pages, read newspapers, only if the TV show something more specific that is life streaming, otherwise every information you can find online.

The second topic resulted to interesting information, i.e. none of the respondents had ever used a translator/interpreter entitled by the Law of the use of sign language, because most of them, 33, weren't even aware for the existence of this law, while 7 respondents knew about the Law, but never utilized this right.

> No, I did not know, I am hearing from you for the first time, till now the Secretary of the Association accompanied us wherever we needed, but it is much better if this is true.
>
> I know, but I think they do not come to our cities because the state do not pay them, and I think that we should have interpreters in our town, there is no need t come from Skopje (capital city of Macedonia).

The third topic resulted in two concepts, 36 respondents believe that 30 hours of free translation per year are enough because until then they had not used even an hour, while four respondents thought that that number is very small**.**

> I think that 30 hours are enough, before we did not have even an hour, not 30, if we use 2,5 h per month, I think it will be enough for a start."
>
> I think it is very little, imagine if you are in a court trial and the trial lasts several hours, that means that you have wasted all the rights for other translations?.

Regarding to the second research question, three topics prevailed. The first one referred to communication with medical staff, i.e. 22 respondents have great difficulty in communicating in obtaining health services in primary health care (22), 18 participants consider that the primary health care institutions do not face any communication barriers, while all respondents unanimously said that there are communication barriers in tertiary and secondary health care facilities:

> I have difficulties when it comes to understand the doctor, I have learned Macedonian in Bitola, and the doctor thinks that because I'm Albanian I will understand him better, but I don't really understand anything that he says, I cannot read his mouth when he talks in Albanian because I don't know Albanian language"
>
> No, I don't have any problem to understand my family doctor, I speak and read from his mouth because I already know him, and he understands me.
>
> In the hospital I have difficulties when it comes to understand the doctors, sometimes I even want to take my kids to help me, but I don't want them to worry about me.

The second topic referred to facilitation method of communication, and it was divided into two concepts, where all respondents unanimously stated negatively for any facilitation materials or method.:

> No, at my doctor there is no help given, at least there should be a tv and while we wait to write our names, when it's our turn, we would know

> No, there is absolutely nothing, we don't have a live interpreter, not to mention a screen, those kind of stuff only the west has.

The third topic refers to the coverage of health services by health insurance, which prevailed positive responses, i.e. 34 have health insurance, only 6 respondents did not have any health insurance.

> I work, that's why I have blue cards, I never pay the doctor, I think I'm exempt from paying.

> I'm retired, I pay a little amount of money when I go to the doctor 50, 60, 100 denar.

> My husband works in a sheltered workshop, but they do not pay his health insurance, on the other hand in the Labor they said that because my husband is an employee I'm not entitled to health insurance by the fund, so everything we pay is private

The third research question prevailed with two topics, the use of hearing aid, and how much the use of the device is covered by health insurance. The answers were surprisingly, only 4 respondents use a hearing aid, 36 did not use, and to all the device is provided by the health insurance.

> I wear the aid, I have taken it from the fund, but I pay 2000den private for repairing it.

> Before I wore the aid, but now I don't because it broke down, and I can't afford myself to buy it private.

The second topic was divided into two perspectives, and it prevailed negative attitudes regarding the cochlear implant, i.e. 37 of the respondents were against, while only 7 respondents have a positive attitude.

> There is no way, it's too bad, you could end up paralyzed, everyone thinks it's very good, it can be done only to adults, example to those who become deaf after the year of 30, to experiment with children it's not nice at all, I have contacts through FB with parents who have children with cochlear implant, and they find it very difficult.

> No, there is no way, it's better to communicate with signs than to do surgery, because we have our own language, and why be like the others, it is very dangerous.

> Yeah, why not, I know a kid in Gostivar they operated him, he is great, he listens, talks, why not, while they're still children they can do it.

Conclusion and Discussions

Regarding the first question of the survey, all respondents agreed that in media should be more long interpretations in sign language than translations in written, and the interpret should use the sign language that is used by the majority of deaf people in North Macedonia. 85% of respondents agreed that language barrier represents a very important factor in accessing information as a result of their poor reading and writing skills, although they master sign language relatively well. From the second and third topic of the first research question, we can conclude that that none of the respondents used the right for free interpretation, 83% of respondents were not even familiar with this right. 90% of the participants said that 30 hours for free interpretation are enough for a start, because till then they haven't used it at all, and they would used it mostly in public institutions like medical health care. As a conclusion of the second research question we found that 55% of respondents have difficulty in communicating with access to primary health institutions (family doctor), and never go alone, always accompanied by another person, with better communication skills, usually a person who isn't deaf, which overlaps with the results of the several researches like of Laura Ringham, where 44% of patients were not able to understand good the medical staff, not to mention the prescribed recopies (Ringham,

2012; Santos & Portes, 2019). In terms of secondary and tertiary health institutions, all respondents are faced with difficulties in communication with the health personnel, which is the case in other researches as well (Reynolds, 2007; Farias & Cunha, 2017). Unlike the results of a survey of Laura Ringham, where 44% of respondents reported that their doctors' offices have at least one visual display of information for patients, our research shows that the family doctors' offices of our respondents, none of them has provided adaptation for the access of the necessary information, but they hope that one day it will provide the state.

Regarding to the third research question, we found that 85% of respondents have health Insurance, but none of them are familiar with the right OS exempt participation, meaning all users of health insurance co-pay. In the context of health aspect, we separated the views regarding the cochlear implant, 82% of respondents consider it a risky procedure, unnecessary, because they feel as a special linguistic minority, and there is absolutely not necessary to adapt to the hearing population.

Recommendations

Based on the discussion over the results, we have spoted some recommendation for the relevant institution in order to improve access to health services, and thus to improve the health of persons with hearing impairments, respectively Deaf persons. Firstly, we suggest, a proper informing of deaf people and hard of hearing with the right to use the 30 hours' free translations, as well as increasing the number of hours, then we suggest training of medical staff, starting with the primary health services than continuing with secondary and clinical health care, at least for the use of basic signs in sign language. In addition, we suggest that every primary and clinic health service to provide at least one visual screen in the waiting room so persons with hearing impairment be informed at least for direction and basic information. Furthermore, there is a need of proper information persons with hearing impairment about health insurance and benefits of cochlear implants for their children if they are deaf as well. As can be seen, there are many steps that need to be undertaken in order to improve the health of persons with hearing impairments.

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Author Information

Teuta Ramadani Rasimi
Tetova University
Education Faculty, Faculty of Education Republic of North Macedonia
Contact e-mail: *teuta.rasimi@unite.edu.mk*

Arita Agai
Tetova University
Education Faculty, Faculty of Education Republic of North Macedonia

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Teaching Internet of Things on 3D Virtual Environment - Platform VRIOT

Ali GERIS
Manisa Celal Bayar University

Nesrin OZDENER
Marmara University

Osman Gazi YILDIRIM
National Defence University

Abstract: In recent years, a considerable amount of research has been conducted on the theme of Internet of Things (IoT). Evidence suggests that IoT is among the most important factors in smart technologies and near future. However, understanding IoT concepts is technically not easy. This paper reports on a study in which a three-dimensional (3D) virtual environment was designed and utilized for teaching IoT (http://www.virtualiot.net/). The main purpose of this research is to investigate the change in students' knowledge about IoT after using the VRIOT platform. To reach its goals, this study was designed as action research and participants comprised twenty-four university students studying in the Department of Information and Communication Technology at a public university in Turkey. A questionnaire consisting of open-ended questions was developed and used as data collection tool. The first step in this study was to determine students' knowledge level of IoT with the questionnaire. Then, students took a course related to IoT concepts on VRIOT platform. The platform was designed using Unity Technologies as a 3D virtual environment for teaching IoT as part of an Erasmus+ KA2 project. After completion of the course, post-test was administrated. The results of the study showed that although the majority of the participants stated that they heard the concept before using the VRIOT platform, they had misconceptions about IoT. Correlatively, the students also had problems in giving correct examples about IoT. On the other hand, almost all students were able to give correct definitions and examples about IoT after the training on VRIOT platform. Taken together, these results provided important insights into students' perception of IoT. Further research needs to examine different methods and tools to teach IoT concepts more effectively.

Keywords: Internet of Things, virtual environments, teaching IoT, ideography, VRIOT.

Introduction

Considering the Internet of Things (IoT) in its most general sense, it defines a phenomenon in which all existing objects can be managed over a network, any desired data can be collected, objects can interact with each other or with users regardless of whether it is industrial or in daily use (Jankowski, Covello, Bellini, Ritchie, & Costa, 2014). Although different names such as Internet of Everything, Network of Things, Machine to Machine have been used for this connection situation between machines, the title Internet of Things, which was first used by Kevin Ashton in 1999, is the most widely used definition (Gözüaçık, 2015). While IoT was considered as one of the promising and most invested technologies in 2015 (Akkuş, 2016), Gartner (2017) stated that 8.4 billion objects could be connected to the internet in the next two years. By 2020, it is estimated that the number of objects that can is connected to the internet will be 20.5 billion (Kassab, DeFranco, & Laplante, 2020).

The number of objects that can interact with each other and with people increases day by day and while it is a part of daily life, it did not take long for educators to show interest in this field. With the introduction of the education world to the IoT, there has been a great increase in the use of development cards and sensors for

teaching purposes. As a result of many studies in the field of IoT, it has been stated that IoT education can contribute to students in different aspacts. Contributions in the literature can be summarized as follows:

a. Improved creative thinking skills have been observed in students (Osipov & Riliskis, 2013),
b. Students' skills of learning by doing and experiencing have increased (Yaren, Süel, Yeniaydın, Sakacı, & Kizir, 2014),
c. IoT education has enabled positive results in project-based and problem-solving activities (Charlton & Avramides, 2016),
d. IoT education has enabled collaborative and interdisciplinary work (Zhong & Liang, 2016),
e. It has been made possible to enrich the education life with the applications developed(Uskov et al., 2016),
f. IoT has the potential to contribute to open and distance education (Altınpulluk, 2018).
g. IoT education increases motivation of students and teachers (Callaghan, 2012).

As the studies in the literature show, the issue of the IoT can have positive effects on both learners and teachers. When we analyze the researches in general, it can be seen that almost all of the studies are carried out face-to-face due to the nature of the IoT subject, and the process of teaching the subject through distance education is not focused enough. In a limited number of studies, it has been determined that the internet technologies of objects used in distance education processes affect the academic performance of students (Yang & Yu, 2016). In addition, Bao (2016), who brought a new approach to evaluation processes in distance education, took an important step towards using IoT technologies in this field. Despite the aforementioned researches, Fırat (2016) showed the IoT as one of the subjects that must be researched in distance education. On the other hand, using the great potential of IoT technologies can only be possible with well-equipped and knowledgeable teachers. Because the proficiency of teachers on the internet of objects that increase their influence day by day will play a key role in informing and guiding the learners on this issue. At this point, the perceptions of pre-service teachers, who will be new generation trainers, about the concept of the IoT emerges as an important issue that needs to be investigated. It should be noted that the concept of the IoT is an interdisciplinary subject that brings together complex systems such as electronics, hardware and programming. It will be possible for teacher candidates to comprehend the IoT by bringing different disciplines together. However, IoT technology should be one of the most important issues to be covered in distance education processes, which is an indispensable part of society. Students will be able to increase their knowledge of the concept by experiencing the IoT education that they could not catch in face-to-face environment in virtual environments. Based on these points, the main purpose of this study is to determine what pre-service teachers know about the concept of the IoT and to examine the effect of education given in a three-dimensional virtual environment on pre-service teachers' conceptual understanding of the internet of things.

Method

Research Model

This research was planned as an action research and the participants were considered as a single group. The study was carried out within the scope of the Information Learning and Teaching Approaches course taught in the Faculty of Education in the spring semester of the 2019-2020 academic year. The students were introduced to the VRIOT Platform developed and after they were registered, they were asked to complete the IoT education on this platform as part of the course. After all the participants completed the training the "Conceptual Understanding Test" used as a pre-test was presented to the students again. The obtained data was qualified as post-test. The post-test was administered after a period of approximately thirty days after the pre-test.

Research Group

The participants comprise 24 university students in a state university in Turkey studying at the Department of Computer Education and Instructional Technology Department.

Data Collection Tools

Platform VRIOT

The Platform VRIOT used in the research was developed within the scope of the Erasmus + KA203 project conducted between 2017 and 2019 under the coordination of Marmara University. The Platform VRIOT was developed by a team including the authors of the study and created as a three-dimensional learning environment using Unity 3D (Figure 1a). The system has been developed to support four different languages. The platform contains comprehensive information on IoT education and a content of nine projects in total. The projects included in the content were created, recorded and integrated into the system by the research team. At the same time, there is a three-dimensional object collection laboratory on the system to control the information that users have learned in the training content (Figure 1b). The platform has a chat screen and a question - answer section that also supports student - teacher interaction (Figure 1c). In addition, an administrator panel for teachers was created as web-based, allowing the follow-up of learners' processes (Figure 1d). Participants' follow-up and completion status of the training was examined through the admin panel developed for teachers on the VRIOT Platform and used in data analysis.

Figure 1a

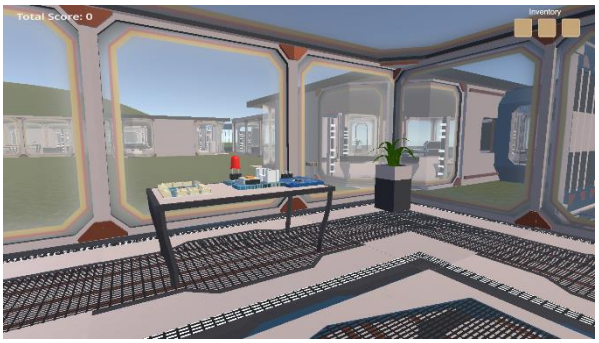

Figure 1b

Figure 1c

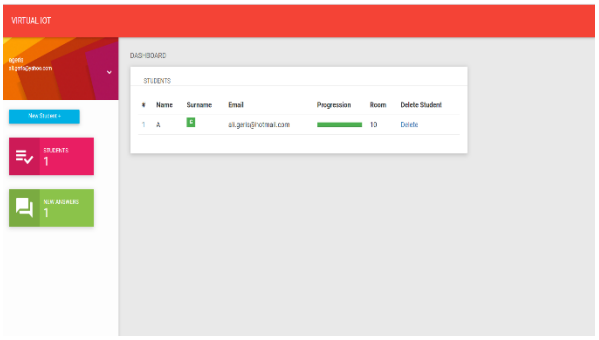

Figure 1d

Figure 1. Platform VRIOT screenshots

Conceptual Understanding Test

The test developed within the scope of the study was created to determine what the participants know about the concept of IoT and how they form the concept in their minds. In order to determine the effect of the training carried out on the VRIOT platform on the participants 'understanding of the IoT and to examine the changes in students' minds, the test was used twice as pre-test and post-test before and after the application. A total of six open-ended questions were included in the Conceptual Understanding Test, and these questions are given below:

1. Have you ever heard of the concept of the Internet of Things (IoT)? If so, where did you hear it first?
2. What comes to mind when you say the IoT? Explain in a sentence.
3. Can you explain what the concept of IoT means by giving an example?

Findings

In order to determine whether students have heard of the concept of IoT before and after the training held on the VRIOT platform, "Have you ever heard of the concept of the Internet of Things (IoT)? If so, where did you hear it first?" question has been posed. Their answers to this question have been analysed and the results are presented in the ideographic in Figure 2.

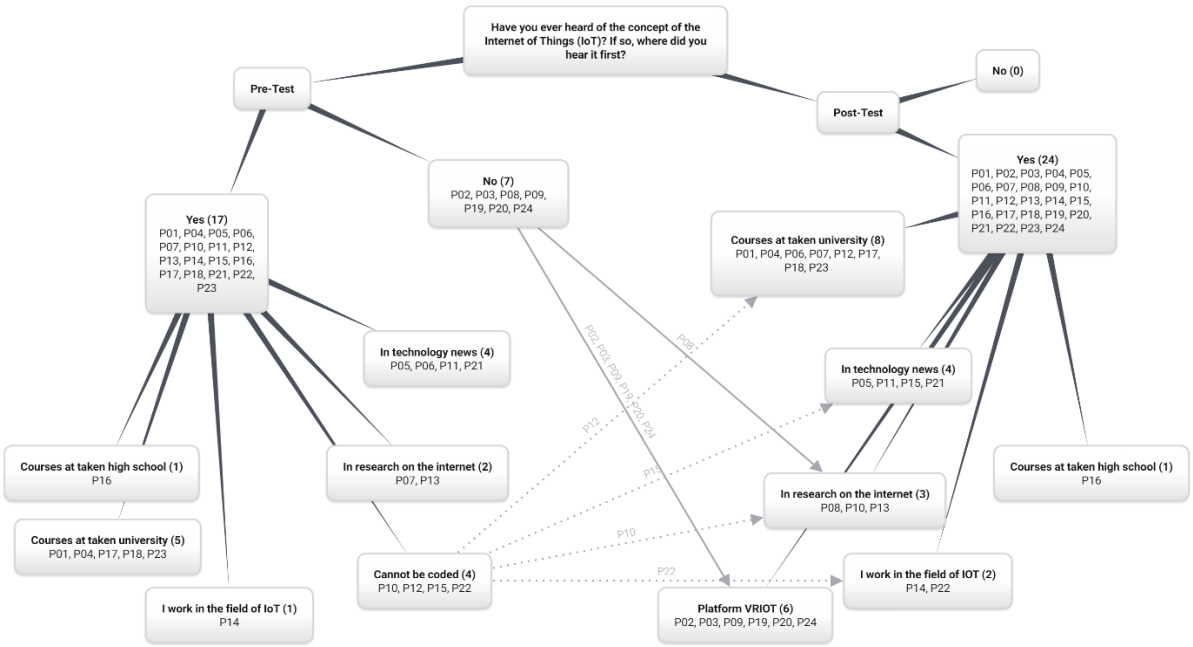

Figure 2. Ideographic analysis of the first question

As seen in Figure 2, the rate of the participants who stated that they heard the IoT concept before the training on the VRIOT platform was 70.8% (17). 7 (29.2%) participants stated that they had not heard the concept before. The sources of the participants, who stated that they have heard the IoT concept before, varied. While 5 participants stated what they heard about the concept in the courses they took at the university, there are also differences in these courses. For example, while the participant with the code P01 used the expressions " *Yes I heard. I heard about it in our current practices in education course last semester*", the participant P17 stated that he heard the concept of the internet of objects in the "*Programming course of 2020*". On the other hand, four participants stated that they heard the concept of the IoT while following technology news. P06, one of these participants, informed that "*Yes, I first heard it on a technology channel I followed".* While two of the participants reported that they saw the concept of IoT while they were doing research on the internet, one participant said that they heard it in a class in high school. On the other hand, the participant coded P14 stated, "*I heard, I have been working with Arduino and Raspberry Pi for 3 years*". Since four participants only answered "*Yes*" to this question, their information on where they heard the concept could not be coded.

All of the participants stated that they heard the concept after the training held on the VRIOT Platform. When the answers of the people who stated that they heard the concept were analysed, the rate of those who stated that they heard in the lesson in the university increased compared to the pre-test stage. However, the situation of first hearing about the concept in the class in high school, encountering the concept in technology news or obtaining information about IoT in the internet environment found its place in the post-test phase. On the other hand, six of the seven participants (P02, P03, P09, P19, P20, P24) who answered "No" to the question "Have you ever heard of the IoT concept" in the pre-test phase stated that they got acquainted with the training made on the VRIOT Platform in the post-test; It was observed that the P08 coded student met the concept during the research on the internet.

In order to determine how students can explain the concept of the IoT before and after the training held on the VRIOT platform, their answers to the question "What comes to mind when you say IoT, explain it with a sentence" were analysed. During this analysis, whether the components of the IoT, the connection of the objects to the internet and the ability to interact with each other or with users, are included in the explanation. The results obtained are presented in the ideographs in Figure 3.

The reason why the responses of the participants are partially coded as correct descriptions is that they leave some of the IoT components missing in their explanations. For example, while explaining the P24 coded internet of objects, he/she used the expressions "*Each object has its own electronic software and objects can control each other*". In this explanation, the participant P24 ignored the situation that objects need to be connected to the internet. For this reason, he/she has made a partially correct definition, but the internet component is missing. Similarly, the participant coded P18 ignored that the objects should be in communication

while using the expressions "*Connecting two objects to each other over the same network*". When the answers given by the participants were analysed according to their codes, it was seen that there were also people whose answers were completely wrong. Seven people in the study could not find a correct definition of IoT in the pre-test phase. For example, one of these answers, "*Connecting many tasks to faster and more practical automation*", was used by the participant P14. At this stage, it was observed that a participant could not answer the question at all. When the answers of 17 participants who stated that they heard the IoT concept in the pre-test phase of the first question of the study were examined, it was determined that 6 participants made correct definitions, 9 participants made partially correct definitions, and 2 participants made incorrect definitions. While 1 of the 7 participants who stated that they had not heard of the concept before was partially correct, 1 could not make any definitions, and 5 of them had incorrect definitions.

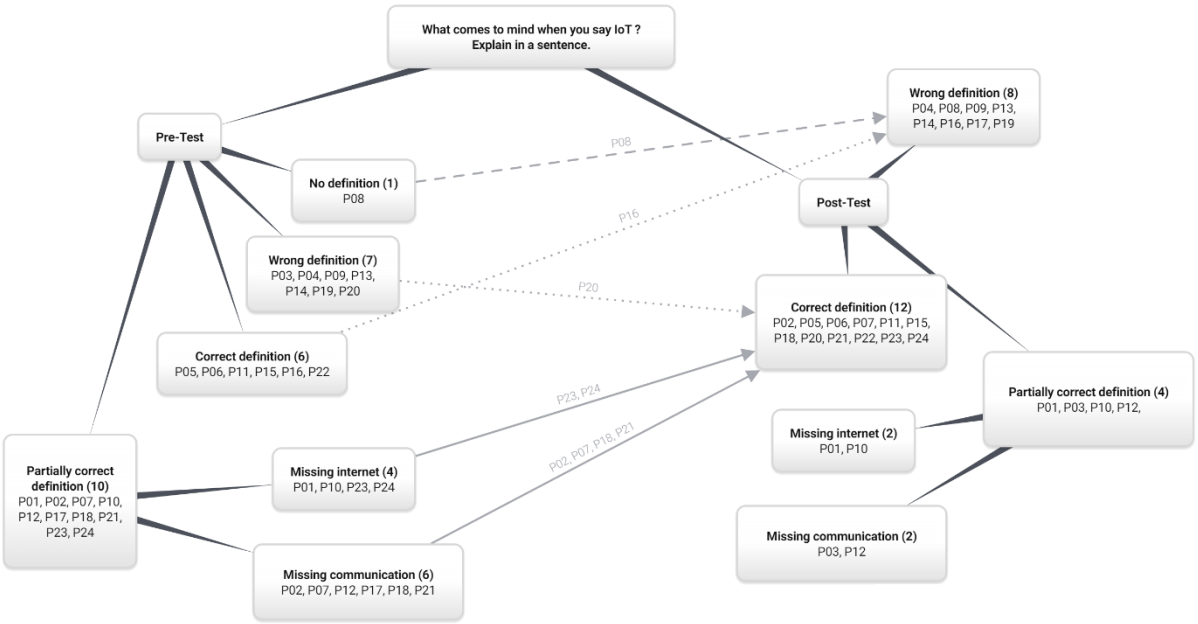

Figure 3. Ideographic analysis of the second question

When Figure 3 is examined, it is seen that the rate of participants who correctly define the concept after the training on the VRIOT Platform increased from 25.0% to 50.0%. However, it was observed that the participant P08, who did not answer the question at the pre-test stage, tried to make a statement about IoT in the post-test stage and his/her explanation was wrong. Another striking situation is the lack of a desired level of positive development in the participants who answered incorrectly. In the post-test phase, 33.3% of the participants made a false statement about IoT. In the post-test phase, it was observed that one of the seven people who gave the wrong answer in the pre-test made the correct definition, and the one who gave the correct definition partially. The definitions made by six people, who made a partially correct definition in the pre-test stage, developed in the post-test stage and made correct explanations. After the training on the VRIOT platform, it was observed that the participants who had deficiencies in the communication component of the IoT concept made a great improvement and made correct definitions. It was observed that the participants who had deficiencies in the internet component of the concept experienced an average improvement. For example, in the "*Interaction of physical objects with the Internet*" statements, which is the answer given by one of these participants, P02 coded pre-service teacher, in the pre-test phase, the communication component between objects is missing. On the other hand, in the post-test phase, he/she made a correct statement with the words "*Electronic devices make our life easier by communicating with each other via the internet*". However, after the training, third of the six participants (P02, P20, P24) who said that they heard the concept of IoT on the VRIOT platform for the first time, made correct definitions, while one (P03) made partially correct definitions, and the participant coded P09 and P19 also made a wrong definition. In order to see what examples students can give about the IoT before and after the training carried out on the VRIOT platform, "Can you explain what the concept of IoT means by giving an example?" The answers they gave to the question were analysed and the results are presented in the ideographs in Figure 4.

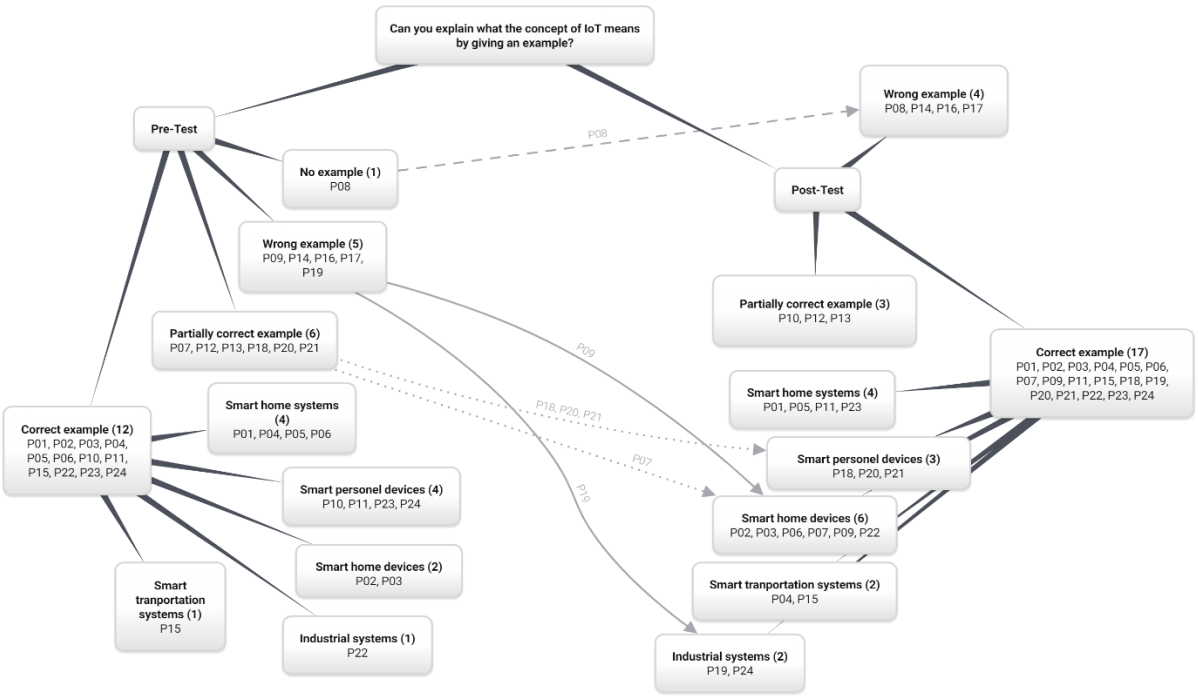

Figure 4. Ideographic analysis of the third question

As can be seen in Figure 4, it was determined that the rate of participants who could give correct examples about IoT before the training on the VRIOT platform was 50.0%. It was seen that the examples mostly given by these participants were on smart home systems and smart personal devices. For example, the participant with the code P05 stated that "*It is possible to adjust the temperature of our house beforehand by means of the phone while away from home with IoT*". The participant P10, who gave an example on personal devices, said, "*The smart toothbrush connects with our phone and reminds us when to brush our teeth*". Four people who gave partially correct examples have component deficiencies in their answers as in the IoT definition. For example, when he/she said P12 "Smart watch" could be an example, he/she did not elaborate in what extent he/she gave this example. On the other hand, the answers of seven participants who made similar statements to the participant number P14, who gave the example of "pulse detector", were coded incorrectly. One of these participants, P16, could correctly explain IoT in the previous question in the pre-test phase, but could not give a correct example on the subject. On the other hand, other participants who could define correctly were able to give correct examples.

When Figure 4 is examined, the ratio of the participants who can give correct examples about IoT after the training on the VRIOT Platform rose to 70.8%. When the given examples were examined, it was seen that examples were given mainly on smart home systems and smart devices in the post-test phase as well as in the pre-test phase. A person who did not give an example during the pre-test phase answered this question in the post-test phase, but the answer given was wrong. The user with the P08 code replied "Internet networks" to the example question about IoT. On the other hand, two people who gave wrong examples in the pre-test phase gave correct examples in the post-test phase. Similarly, the examples given by four people who gave partially correct answers after the training were coded correctly. One of these participants, P21, responded in the pre-test stage as "*Smart watches record the number of steps taken*", while in the post-test stage, "*Smart watches record the number of steps, count the heart rhythm, and give us information by calculating the calories burned*". After the training on the VRIOT platform, it is possible to say that the rate of participants who can give correct examples has increased by almost half and the rate of participants who give wrong answers has decreased.

Conclusion

The main purpose of this study was to determine the current knowledge of pre-service teachers about the concept of the IoT and to examine the effect of IoT education given in a three-dimensional virtual environment on pre-service teachers' conceptual understanding of IoT. Studying is important as prospective teachers will train and guide future generations. The results obtained from the study have been comprehensively discussed

through ideographies. With the Conceptual Understanding Test, which was developed within the scope of the study and used in the pre-test post-test phase, the students' knowledge about the IoT concept was examined. The first question of the six-question test focused on whether the participants had heard of the concept of IoT before, and if they heard, its source. It is a very important result that 29.2% of the students have never heard of the IoT concept, although it is one of the most invested technologies before the education given, and it shows that the education curriculum in pre-university education should be updated on this subject. In addition, it was observed that the system, which was developed as a three-dimensional virtual education platform and enables distance education, created an awareness of IoT in participants. After the training held on the platform, all participants stated that they heard the concept of the internet of things, while the VRIOT platform made it possible for many participants to hear the concept for the first time.

Secondly, the participants were asked to define the concept of IoT. Although the number of people who could explain the concept correctly in the pre-test phase was insufficient (25.0%), this situation showed a positive change in the post-test phase (41.7%). Despite this, it is not possible to say that the rate of this change is high. It was determined that the participants ignored some components of IoT in their explanations. It can be thought that this is due to the fact that IoT consists of multiple components. IoT has a structure that requires objects to be connected to the internet and allows them to interact with each other and users. It is one of the striking results of the study that there are deficiencies in these three basic components, especially in the communication between objects and communication with the user. However, after the training on the VRIOT platform, it was observed that the deficiencies in the internet component of the concept were largely eliminated, while the participants increased if they made correct definitions. The content used in the training carried out on the platform enabled the participants to complete the shortcomings they experienced on these issues. On the other hand, in the third question asked related to this question, the participants were asked to give an example about IoT. While many users could not give a correct answer to this question during the pre-test phase, it was determined that they wrote more correct examples after the training on the VRIOT platform. It has been observed that the training carried out on the platform has a positive effect on reaching the right examples for teacher candidates. This situation supports the results of Osipov and Riliskis (2013) which stated that IoT contributes to students' thinking skills. At this point, the striking point was that the answers given by the participants both in the pre-test and post-test stages were mainly focused on smart home systems and smart personal devices. It is thought that smart home technologies and personal smart devices, which are becoming widespread every day, may be one of the main reasons for this situation. Another reason is thought to be that the examples and projects used in the VRIOT platform related to IoT are developed on the smart campus theme.

The most basic result that can be expressed after this study is that pre-service teachers have conceptual deficiencies about IoT. Although it looks like a practical education (Charlton & Avramides, 2016; Uskov et al., 2016), IoT takes place in all areas of life and increases its prevalence day by day (Kassab et al., 2020). At this point, especially the pre-service teachers' level of knowledge about the concept should be increased. The VRIOT platform is an important step towards serving this purpose. It was observed that the education provided through the platform positively affected the pre-service teachers' comprehension of IoT. Another important point is that the platform enables IoT education to be carried out in a three-dimensional virtual environment with the method of distance learning. As a basis for the suggestions of researchers such as Bao (2016), Fırat (2016), and Altınpulluk (2018) in the literature, it was seen in this study that the realization of the internet education of objects by distance learning method can produce positive results. On the other hand, with the results obtained from the study, it was determined in which aspects there were problems in comprehending IoT. It was concluded that the participants had problems because IoT is from different components.

Recommendations

Some suggestions for future research have been made. The first of these suggestions is to take steps towards more comprehensive implementation of IoT subject with the method of distance education. This training was carried out on a conceptual level and supported by the ability to interact with objects. In addition, more contributions can be made to prospective teachers and students on IoT with purely practical and experience-based trainings. On the other hand, it has been observed that the platform developed in this study is effective in introducing the Internet of Things, especially the interaction / communication component to students as a concept. With new activities to be added to the platform or new software to be developed, steps can be taken to bring the concept to students by focusing more on the internet component of the concept. Thus, educational content can be shaped more accurately in terms of facilitating the comprehension of IoT. Finally, in the studies to be carried out on IoT, different perspectives can be given to prospective teachers by conducting research on other areas related to the concept, except smart home systems and smart personal technologies. This situation is

an issue that can be a solution to the lack of producing new and original project ideas experienced by teacher candidates.

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Author Information

Ali GERİŞ
Manisa Celal Bayar University
Manisa Celal Bayar University, Manisa, Turkey
Contact e-mail: *ali.geris@cbu.edu.tr*

Nesrin ÖZDENER
Marmara University
Marmara University, İstanbul, Turkey

Osman Gazi YILDIRIM
National Defence University
National Defence University, Balıkesir, Turkey

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Analysis of Primary School Students' Creative Thinking Tendencies towards Social Studies

Tugba KAFADAR
Erciyes University

Abstract: In the study it was aimed to examine primary school students' creative thinking tendencies towards social studies. The research was designed according to phenomenology design form, which is one of the qualitative research design forms. The participants of the study were determined according to the criterion sampling, which is one of the purposeful sampling methods. The participants of the study are the 4th graders where the social studies course is given. Research data are gathered through the interview method. An open-ended interview form was used while collecting research data. In the interview form, students were asked to form metaphors in one question and to answer the questions by drawing a picture in the other questions. Data obtained within the scope of the research were analyzed with the content analysis technique. The results obtained according to the outcome of the research are as follows: Life, right, experience, life science, friendship, communication, children's rights, knowledge lesson, responsibility, box full of information, physical science, scholar, smart board, entertainment, information garden, culture, scientists, machinery, history, technology, justice, geography have been the metaphors obtained. When asked about their dream social studies course, they drew pictures illustrating activities where they actively took part. As for their dream social studies teacher; The illustrations of mostly more well-groomed, modern, smiling, more caring, polite behaving teachers and mostly the female teachers as a social studies teacher are among the pictures they drew. Regarding the question of what would you like to learn more from the social studies course, they mostly drew pictures illustrating subjects focused on social activities, sensitivity, child rights, subjects related to Ataturk and with themes of information related to the natural environment, protecting the natural environment, traffic rules they might use in their daily life, information on their personal identity and family, science and technology.

Keywords: Social studies, Creative thinking, Elementary school students

Introduction

Creative thinking is an important skill for an individual to be successful in life. It is very important for individuals to have creative thinking skills starting from an early age. Educational environment plays an important role in this process. According to Ersoy & Başer (2014), the most important function of education is to raise self-confident, curious, creative, innovative individuals who can understand differences at the same time. How students with these characteristics will be noticed is an important issue in that all students can think about the source of the problem and what the solution should be. Creative thinking, one of the thinking skills, includes a number of skills; it facilitates learning by imagination, provides an opportunity to think, to express ideas easily, and to obtain new information. In the education process, according to Eragamreddy (2013), teaching creative thinking skills plays an important role in both teaching and learning and building a better society. Therefore, it is very important for individuals to acquire creative thinking skills starting from an early age. Identifying the perceptions of the individual regarding social studies, which is one of the important scientific fields in the educational life, by using creative thinking skills is an important method to better learn what the younger age groups think. For this reason, the question of what are the primary school students' creative thinking tendencies in social studies constitutes the problem of this research. When the studies in the literature are examined, there are many studies on social studies (Shaver, 1979; Weiss, 1978; Van Kessel & Crowley, 2017; Grant, Swan & Lee, 2017; Edinyang, 2016). As for creative thinking, there are many studies such as (Zubaidah, Fuad, Mahanal & Suarsini, 2017; Ritter, & Mostert, 2017; Siburian, Corebima, & Saptasarı, 2019; Rahardjanto, 2019). However, there are no studies examining primary school students' creative thinking

tendencies in social studies in the relevant literature. The current study is expected to fill an important gap in the related literature in this aspect.

Purpose of the Study

The general purpose of this study is to examine primary school students' creative thinking tendencies in social studies.

Method

Research Model

This research has a qualitative research design. Qualitative research can be defined as "*research aimed at revealing perceptions and events realistically and holistically in the natural environment*" (Yıldırım and Şimşek, 2011, p. 39). The study was designed according to phenomenology, one of the qualitative research designs. Phenomenology "*focuses on phenomena that we are aware of; however, we do not have an in-depth and detailed understanding about. Phenomena may appear in various forms such as events, experiences, perceptions, orientations, concepts, and situations. Phenomenology provides a suitable research ground for studies that aim to investigate phenomena that are not completely alien to us, but that we do not fully understand*" (Yıldırım and Şimşek, 2011, p.72).

Study Group

Study group of the research was determined through criterion sampling which is among purposive sampling methods. 69 4th grade students took part in the research. According to Patton (1987), purposive sampling method *"enables in-depth study of situations that are thought to possess rich information"* (cited in Yıldırım and Şimşek, 2011, p. 107).

Table 1. Metaphors regarding the concept of social studies

Grade Level	Metaphors	f
4th grade	Life	12
	Equity	11
	Experience	5
	Life science	5
	Friendship	4
	Communication	2
	Children's rights	2
	Knowledge lesson	2
	Responsibility	2
	Information-filled box	2
	Physical sciences	2
	Scholar	2
	Smart board	1
	Entertainment	1
	Knowledge garden	1
	Culture	1
	Scientists	1
	machine	1
	history	1
	technology	1
	justice	1
	geography	1

Data Collection and Analysis

The data of the research were collected through survey method. A standardized open-ended interview form was used in data collection. In the interview form, students were asked to provide a metaphor in one question and to

answer the questions by drawing a picture in the other questions. The obtained data were analyzed via the content analysis technique. Codes were extracted from the obtained data within research questions and then these codes were collected under categories. The codes collected under the categories are listed according to their frequency densities and the findings are specified

Findings

According to Table 1, primary school students formed the following metaphors regarding social studies: Life (f12), equity (f11), experience (f5), life science (f5), friendship (f4), communication (f2), children's rights (f2) , knowledge lesson (f2), responsibility (f2), information-filled box (f2), science (f2), scholar (f2), smart board (f1), entertainment (f1), knowledge garden (f1), culture (f1), scientists (f1), machine (f1), history (f1), technology (f1), justice (f1), and geography (f1).

According to Table 2, 4th grade students drew activity-based (f45) pictures related to the social studies of their imagination.

Table 2. Social studies in 4th grade students' imagination

Grade level	Themes of the pictures	f
4th grade	Activity based	45

According to Table 3, 4th grade students drew presentable (f32), modern (f25), cheerful (f22), paying more attention to them (f11), kinder to them (f4), and female social studies teacher (f2) pictures in the pictures they drew about the social studies teacher in their imagination.

Table 3. Social studies teacher in 4th grade students' imagination

Grade level	The social studies teacher in their imagination	f
4th grade	Presentable	32
	Modern	25
	Cheerful	22
	Paying more attention to them	11
	Kinder to them	4
	Female social studies teacher	2

When Table 4 is examined, the following themes were reached in the pictures 4th grade primary school students drew indicating what they want to learn in social studies class: Social activity-based subjects (f25), information about the natural environment (f19), issues themed protecting the natural environment (f7), sensitivity (f5), traffic rules that they can use in their daily lives (f4), Atatürk-related issues (f4), information about their own identity and family (f3), children's rights issues (f1) and science and technology themed topics (f1).

Table 4. Pictures that 4th grade students drew indicating what they want to learn in social studies lessons

Grade level	What they want to learn in social studies class	f
4th grade	Social activity-based subjects	25
	Information about the natural environment	19
	Issues themed protecting the natural environment	7
	Sensitivity-themed	5
	Traffic rules that they can use in their daily lives	4
	Ataturk-related issues	4
	Information about their own identity and family	3
	Children's rights issues	1
	Science and technology themed topics	1

Results and Discussion

The following results were reached in the study, which examined the creative thinking tendencies of 4th grade primary school students in social studies: The metaphors students created for the concept of social studies are mostly: Life, equity, experience, life science, friendship, communication, children's rights, knowledge lesson, responsibility, information-filled box, science, scholar, smart board, entertainment, information garden, culture,

scientists, machine, history, technology, justice, and geography. According to Yaman & Yalçın (2005), creative thinking is a dynamic activity that takes place consciously and subconsciously and includes mental processes. In this context, students have produced various metaphors for social studies.

In terms of series of skills, creative thinking is different from analytical and practical thinking (Birgili, 2015). One of the thinking skills required for students to have a more meaningful learning experience and to develop their thinking skills in solving daily problems is creative thinking. (Tohir, Abidin, Dafik & Hobri, 2018). The students mostly drew pictures in which there are activities and they are more active for the question of social studies class in their imagination. As the social studies teacher in their imagination, they generally drew a presentable, modern, cheerful, more interested, kinder, and female teacher. Regarding the question of what would you like to learn at the social studies class, they mostly drew pictures that include social activities, information about the natural environment, the theme of protecting the natural environment, sensitivity, traffic rules that they can use in their daily lives, Atatürk-related issues, information about their own identity and family, children's right issues, science and technology. When these results are evaluated in general, the wide inner worlds of students regarding social studies emerge when the social studies perceptions of primary school students are revealed through creative thinking activities. According to Özerbaş (2011), creativity is breaking the existing patterns, being open to the lives of others, going beyond the usual, exploring new ways, looking at life from different perspectives, wondering about and acting upon the unknown, breaking the imposed line of thought and introducing a new line of thought, finding alternative solutions to the problem, getting off the path of others, finding something new that leads to other things, establishing a new relationship or relating to existing thoughts, coming up with a new idea, inventing a new technique or method or making additions to the existing ones. Encouraging children to be creative is a very important goal of the learning process. Teachers need to make sufficient efforts to achieve this goal. Creativity plays an important role in the development of a society. In this context, it is very important for children to acquire creative thinking skills from an early age for an effective education.

Recommendations

In the research, the creative thinking tendencies of 4th grade primary school students in social studies were examined. In further studies, creative thinking tendencies of students in different courses can be examined. Teachers can make students engage in activities that will improve their creative thinking skills in the classes. Contributions can be made to the improvement of students' high-level thinking skills in this way.

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Author Information

Tuğba Kafadar
Erciyes University
Erciyes University, Faculty of Education, Kayseri, Turkey
Contact e-mail: tugbakafadar@gmail.com

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Evaluation of Quality of Students' Characteristics and Motivations in UT-FNS, Albania

Frederik DARA
University of Tirana

Arbër QOSHJA
University of Tirana

Abstract: Academic quality improvement in higher education has recently been considered in many universities over the world. The aim of the study was to investigate the quality of students' characteristics and motivations in the Faculty of Natural Sciences at Tirana University. From the long experience, we know that universities can provide the best services to the community if they worry continuously to improve the quality of their services. Therefore, evaluation is one of the powerful tools for strategic development in higher education institutions. Higher education reform started about 6 years ago. It brought about many changes in the way students are admitted to higher education. Now is the time to investigate these changes and judge their goodness. In literature was identified a lot of factors in study success at the individual level. The most important of them are student's characteristics (socioeconomic status, gender, background, etc.), and student's motivations. In order to gain insights into both topics, an exploratory study was conducted within a sample of 800 students in the Faculty of Natural Sciences (University of Tirana, Albania). Participants were selected on the basis of their voluntary participation after lessons. The research method we used in this study is descriptive-analytic; perceptions were gathered and measured with open-ended and multiple-choice items. The results of this study indicate that the students come mainly from general secondary schools and very few (about 1%) from vocational ones. They come from middle and lower-income families (about 60 %). The main factors motivating students continue to be parents/family and professional career. The motives for choosing the program are found "The best for the study program I wanted" and "Convenience in finding jobs" (respectively 53 % and 41 %).

Keywords: Faculty of natural sciences, Students characteristics, Students motivations, Higher education

Introduction

Education is a very important component for the development of a country, therefore it has started to develop since ancient times. Like any other element, we need a quality education at all levels to fulfill the aspirations of individuals and society. Educational service is intangible, expendable and it is produced by the universities and consumed by students. The quality of education services in higher education institutions cannot be objectively measured. It also is a complex and varied concept that should be explored. Measuring service quality in higher education institutions is full of challenges. Recently the conditions in which they operate higher education institutions have significantly changed. But, what is meant by 'quality' in higher education is unclear (Brockerhoff, Huisman, & Laufer 2015). Jethro Newton (2006) presented a paper titled 'What is quality?' to the 1st European Forum for Quality Assurance in Munich. He found that there is no authoritative definition of 'higher education quality', nor can there be one. He suggested a pragmatic approach: "quality as 'stakeholder-relative'". It is a multidimensional term (Elton 1998; Krause 2012), simultaneously dynamic and contextual, but may also be perceived differently by different stakeholders (Schindler et al., 2015).

As some argue, quality has always been part of the academic tradition (Newton, 2006) and quality control was historically based on informal peer reviews and self-regulation (Van Damme, 2011), the situation has significantly changed in recent decades. According to Rai (2012) quality is an attribute that is seen as subjective, depending on perception and usually is differently understood by different people. The term quality can be

- Selection and peer-review under responsibility of the Organizing Committee of the Conference

looked at from two opposite sides: the producer (higher education institutions) and the customer (students). Quality is a diversified concept, which encompasses how learning is organized and managed, the content of learning and the level of achievement in terms of outcomes and what goes on in the learning environment, (Materu, 2007).

High quality service is an essential prerequisite for competitiveness and survival in the market of higher education. Numerous studies in this area have shown that students' satisfaction has a positive effect on students' motivation, their attendance, to attract prospective students and increase revenue (Vranešević, 2006, p. 13). From the long experience, we know that universities can provide the best education services to the community if they worry continuously to improve the quality of their services. Therefore, evaluation is one of the powerful tools for strategic development in higher education institutions. In literature was identified a lot of factors in study success at the individual level. The most important of them are student's characteristics (socioeconomic status, gender, background, etc.), and student's motivations. The first step in this direction is to evaluate these characteristics.

Method

The empirical research was conducted at Faculty of Natural Science of University of Tirana. Ethics approval was granted by the Ethic Commision of Faculty of Natural Science. The permission to conduct this study (distribution of the questionnaire) was granted by the Dean of the Faculty.

Data and Research methodology

The primary data was collected through a model questionnaire. Questionnaires have long been used to assess the education quality by higher education institutions. They are usually distributed online. Their main drawback is that very few students complete them. Therefore we chose to distribute the questionnaire manually. The questionnaire was distributed in 7 June 2019, and the data was collected in 27 June 2019. Authors has distributed 800 questionnaires to current students at Faculty of Natural Science of University of Tirana, and all the questionnaires were valid. Respondents were selected randomly, on the basis of their voluntary participation after lessons according to years of study. The respondents that were of interest were current students of two cycles of study, Bachelor and Master (of science and professional).

The questionnaire was divided into three parts. The first part of the questionnaire dealt with demographic questions. In the second part of the questionnaire were asked questions related to factors that influenced the students to decide to study at Faculty of Natural Science. The third part of the questionnaire examined the student's motivation that lead them toward the study at Faculty of Natural Science of University. The model questionnaire that was used had 20 items and measured with open-ended and multiple-choice items. The attributes were assessed by the respondents by using a ten-point Likert scale where 1 represented "strongly disagree"/"not at all" and 10 represented "strongly agree"/"fully".

Respondents' profile

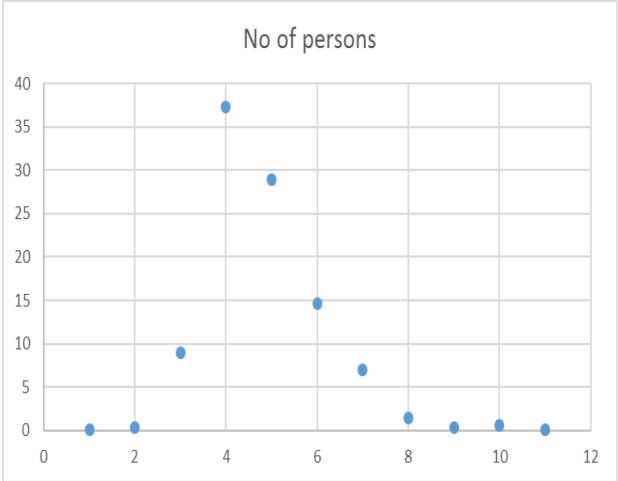
Demographic features of the respondents are shown in Table 1 and were analyzed through descriptive statistical analysis. The sample had twice as much female respondents (67.6%) than male respondents (32.4%). Most of the respondents, 79.5% are studying at the first cycle of study (bachelor) and others 20.5 % at the second cycle of study (master of science and professional)

Table 1. Profile of respondents

Item	Percent (%)
Gender	
Female	67.6
Male	32.4
Level of study	
Bachelor – 1st cycle	79.5
M.Sc. – 2nd cycle	18.6
M. Proff.	1.9

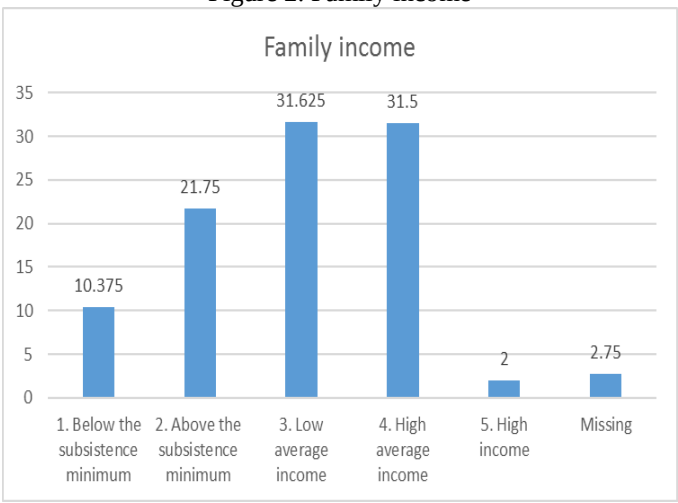
Figure 1 shows the distribution of the number of members in student's family. It is noticed that most of the families consist of 3-5 members (75.75%).

Figure 1. Family composition



From Figure 2 we see that the vast majority of students come from low and middle income families (63.8%) and only very few of them come from high-income families (2 %).

Figure 2. Family income



Results and Discussion

In the following tables and figures there is given detailed overview of the attributes that students were asked question. From the Table 2 we see that the most students come from the general high school.

Table 2. High school from which students come from

Type of high school	Percent
1. General	98.75
4. Electronics/informatics	0.5
9. Religious/Madrasa	0.125
11. Technical/technological	0.375
12. Other professional	0.25

There are no students from other schools (linguistic, Sports, arts, economic/commercial, Pedagogical, Agricultural, Tourism/fishing school). In Table 3 are given the education level of student's parents. As we see there are no significance difference between fathers and mothers education.

Table 3. Education of parents

Education	Father (%)	Mother (%)
1. Primary school	0.6	0.5
2. Middle school	11.9	16.5
3. High school	52.9	55.2
4. University	33.6	26.7
Missing	1.0	1.1

In Table 4 are indicate the answers to the question "which of the factors influenced to continue the study". From this table we see that the two main factors still are Parents/family (34.5 %) and Personal career (54.6 %).

Table 4. Factors influenced to continue the study

Factor	Has influenced (some) (%)	Primary (only one)
1. Parents/family	69.6	34.5
2. Relatives/friends	13.6	0.9
3. School/teachers	18.2	1.4
4. General opinion	16.1	2.2
5. Personal career	73.5	54.6
6. Other	9.2	6.4

The result for the question "For what reasons did you choose this faculty" are displayed in the Table 5. Students have chosen 6 reasons which more affected to choose the faculty (Good academic reputation - 28.5 %, Best for the study program I wanted – 43.1 %, Convenience in finding jobs – 56.1 %, Relatives/friends recommended me – 23.9 %, The only institution that offered the study program I wanted – 25.4 %, My family/parents recommended me - 22.8 %). From them they are choose 2 most influenced reasons "Best for the study program I wanted" and "Convenience in finding jobs" with 25.6 % and 35.8 %, respectively.

Table 5. Reasons for choosing the faculty

Reasons	Has influenced (some) (%)	Primary (only one)
1. Good academic reputation	28.5	7.2
2. Best for the study program I wanted	43.1	25.6
3. It is close to home	5.1	0.6
4. Good facilities for curricular activities	2.4	0.4
5. Convenience in finding jobs	56.1	35.8
6. Good reputation in terms of social life	16.9	3.0
7. Graduates from this faculty have social prestige	8.8	1.9
8. Relatives/friends recommended me	23.9	2.6
9. The only institution that offered the study program I wanted	25.4	13.6
10. Faculty information and promotional activities	2.2	0.1
11. Only he accepted me	3.8	1.8
12. My family/parents recommended me	22.8	5.4
13. Good facilities for non-curricular activities	2.0	0.0
14. The cost of tuition	7.8	1.7
15. Friends chose it	0.9	0.3

Conclusion

The quality of higher education is becoming more and more important and remains an important issue in practice. As the competition between universities continue to intensify, the quality with which higher education institutions offer the higher education become a substantial concern for the university themselves. Users of services leave quickly from that educational institution whose services do not meet their expectations.

The results of this study indicate that the students come mainly from general secondary schools (99 %) and very few (about 1%) from vocational ones. They come from middle and lower-income families (63.8 %). The main factors motivating students continue are Parents/family (34.5 %) and Personal career (54.6 %). The motives for choosing the program are found "The best for the study program I wanted" and "Convenience in finding jobs"

(respectively 53 % and 41 %). Therefore the Faculty should continue to work in this direction to maintain and strengthen its position in the competition between other universities in Albania.

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Author Information

Frederik Dara
University of Tirana
University of Tirana, Faculty of Natural Sciences
Bulevardi Zogu I, Tiranë, Albania
Contact e-mail: *frederik.dara@fshn.edu.al*

Arbër Qoshja
University of Tirana
University of Tirana, Faculty of Natural Sciences
Bulevardi Zogu I, Tiranë, Albania

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The Use of Digital Storytelling in the Education of Social Studies Teacher Candidates

Sule EGUZ
Inonu University

Abstract: The aim of this study is to determine the topics and reasons that social studies teacher candidates prefer after receiving digital story creation, use and evaluation training; to reveal their plans to integrate digital stories into social studies lessons in their future professional lives. The research is designed as a case study, which is one of the qualitative research methods. This study was carried out with 26 teacher candidates attending the Education Faculty Social Studies Teaching Program of a state university in Eastern Anatolia. Participants of this study, which is conducted with 1st grade students, have not received any training on the creation, use or evaluation of digital stories and have not prepared a digital story. Within the scope of the research, training was provided for 4 weeks on the characteristics of digital stories and their integration into social information. After the training, a semi-structured interview form was developed and used to determine the topics they preferred in the secondary school social studies curriculum and their reasons, and to determine their plans for using digital stories in their future professional lives. At the end of the research, it was determined that the most preferred subjects were in the field of active citizenship and global connections learning and that they displayed a positive approach to using digital stories effectively in their future professional lives.

Keywords: Digital storytelling, Social studies, Education, Teacher candidates

Introduction

Today, digital applications are used in all areas of life, and digital technology draws a rising graphic. The prediction that digital technologies will develop further in the future and continue to exist in our lives is important in terms of the diversification of usage areas in education. At this point, teaching methods and modern teaching materials gain importance. In this context, digital stories are good examples that can be given to teaching materials in the teaching of many subject areas.

Digital stories can be expressed as informative, instructional, motivational, demonstrative, and narrative of personal experiences, whether real or fictional, depending on the integrity of the subject (Robin, 2009). Digital story making, as a social pedagogy, creates a safe and competent space for learning through intercultural collaboration. Digital story creation enhances students' creativity and empowers students intellectually and culturally (Benmayor, 2008). As a matter of fact, it is necessary to evaluate the stories in social studies education as we evaluate them wherever humanity exists. The aim of this study is to determine the preferred topics and reasons for social studies teacher candidates after receiving digital story creation, use and evaluation training; to reveal their plans to integrate digital stories into social studies lessons in their future professional lives. In line with this general purpose, the following questions were sought:

- What are the topics and preference reasons for social studies teacher candidates in the digital story creation process?
- What are the contributions of the education provided to teacher candidates?
- What are the social studies teacher candidates' plans to integrate digital stories into their lessons in their future professional lives?

Method

Qualitative research methodology was used in the research and in this context, descriptive case study model, one of the qualitative research designs, was used. In this descriptive model, it is aimed to make the unknown situations clearer (Davey, 1991).

Study Group

This study was carried out with a total of 26 teacher candidates, 15 of whom were male (58%) and 11 (42%) female, who attended the Education Faculty Social Studies teaching program of a state university in Eastern Anatolia. In determining the participants, criterion sampling, one of the purposeful sampling methods, was used. The criterion for this study is that the participants are social studies teacher candidates and have not had any experience with digital stories. In the framework of research ethics, the names of the participating teacher candidates were not used directly in the study. For this reason, nicknames ranging from S1 ... S26 were used for the participants.

Data Collection and Analysis

The participants of this study, which was carried out with the first-grade students of social studies teaching, had not received any training on the creation, use or evaluation of digital stories and did not prepare a digital story**.** Within the scope of the research, training was provided for 3 weeks on the features of digital stories and their integration into social studies. After the training, a semi-structured interview form was developed and used to determine the topics they preferred in the secondary school Social Studies Curriculum and their reasons, and to determine their plans for using digital stories in their future professional lives. Relevant literature was used to ensure the content validity of the prepared form. Afterwards, they were asked to check the questions in the developed form by submitting to the expert opinion that they are clear, understandable, cover the subject area and the purpose of the research. Form 2 was submitted to the opinion of the field expert and necessary corrections were made and it was made ready for application. The data of the research were analyzed using the descriptive analysis technique. In this analysis, the data can be organized according to the themes revealed by the research questions, or it can be presented by considering the questions or dimensions used in the interview and observation processes (Wolcott, 1994). The data obtained in accordance with the nature of the descriptive analysis were summarized according to previously determined themes and interpreted by the researcher.

Findings

The findings of the study were examined under the titles of “the subjects preferred by the participants and the reasons for their preference”, “the contribution of the training given to the teacher candidates” and “the plans of the participants to integrate digital stories into the lessons”.

Participants' Preferred Topics and Reasons for Preference

Participants were tasked with choosing a topic from the Social Studies Curriculum and planning a digital story on this topic. The topics preferred by the participants within this task are listed in Table 1. When Table 1 was examined, it was seen that the participants mostly concentrated on the 7th grade subjects, and they chose the subjects in the 5th and 6th grade curriculum. “The Effects of Natural Disasters on Our Lives” and “Children's Rights” in the 5th grade, “Democracy Everywhere” in the 6th grade, and “I Produce Solutions to Global Problems” in the 7th grade were the subjects most preferred by the pre-service teachers in the digital story planning task. It was observed that 3 factors played an important role in the participants' reasons for their subject selection: The fact that it is easier to convey visually, the concretization of abstract concepts, and that it has a content that allows them to develop critical perspectives were suggested by the participants as the most effective reasons for choosing the topic. Some of the participants' views are given below.

> Some of the issues are very complex. I think it provides great convenience especially in visualizing the events related to the Ottoman Empire. (S5)

> It will work in concretizing abstract concepts such as democracy, rights, and freedom. (S13)

Some issues are perceived as closed to criticism. However, with a good story, the meaning can be deepened, and students can be given a critical perspective. (S25)

Table 1. Participants' preferred topics

Topics	Participants	Frequency*(f)*
Grade 5 Subjects		
The Effects of Natural Disasters on Our Lives	S3, S7, S25	3
Effects of Climate on Human Activities	S20	1
Children's Rights	S1, S24, S26	3
Our Cultural Wealth	S17	1
Tourism and International Relations	S4	1
Total		9
Grade 6 Subjects		
Change in Science and Technology	S10	1
I Consciously Choose My Profession	S8	1
Democracy Everywhere	S13, S21	2
Turkish Women from Yesterday to Today	S6	1
Popular Culture and Us	S16	1
Total		6
Grade 7 Subjects		
Freedom of Communication	S12, S19	2
From Principality to World State	S9	1
Where Should We Settle	S18	1
Your Future is in Your Hands	S5	1
From Clay Tablets to Smart Tablets	S15	1
I Produce Solutions to Global Problems	S2, S11, S14, S22, S23	5
Total		11

Contribution of the Given Education to Teacher Candidates

Within the scope of the research, the question of what the education given to them contributed to you was asked to reveal the contributions of education regarding the features of digital stories and their integration into social studies lessons. Participants in their answers; they stated that they contributed to the use of digital tools, such as gaining different perspectives, developing imagination, making it easy to convey thoughts, understanding that technology is a useful tool when used in the right way, and learning to use digital tools in literary context in social studies. The students expressed some of these thoughts as follows:

The education we received expanded the limits of my imagination. When I saw the curriculum and subjects, many fictions came to my mind. (S7)

I have seen that the use of different tools in teaching can be beneficial and draw attention. (S19)

I can express my thoughts more clearly. (21)

Future Plans of Participants to Integrate Digital Stories into Lessons

Under this heading, students were asked about their plans to benefit from digital stories in their future professional teaching lives. When the answers given were examined, most of the students (68%) stated positive opinions that they could apply them in social studies lessons even if not in every subject, since the editing takes a lot of time. Other students (32%) stated that they would not be able to use the curriculum, especially in the first years of their teaching life, due to their concerns about not being able to develop the curriculum, difficulties in creating content, and having knowledge that can be put into practice in the first years. Some of the thoughts of some of the students who gave their opinions are as follows:

I intend to use it within the bounds of possibility. (S2)

I can already think of a lot of fiction. I want to apply all of them in my teaching life. (S11)

When we examined the program and the subjects, many ideas emerged in my mind. I also think that the lessons I will teach with digital stories can be interesting for students. I use it for this reason. (S18)

The first years I am appointed are a little difficult. When I am an experienced teacher, I can apply it easier and better. (S20)

Actually, it takes a little time. I am hesitant to apply it. (S23)

Results and Discussion

The aim of the study is to determine the topics and reasons that social studies teacher candidates prefer after receiving digital story creation, use and evaluation training; to reveal their plans to integrate digital stories into social studies lessons in their future professional lives.

In the study, it was observed that the participants mostly concentrated on the 7th grade subjects, and they chose topics in the 5th and 6th grade curriculum. "The Effects of Natural Disasters on Our Lives" and "Children's Rights" in the 5th grade, "Democracy Everywhere" in the 6th grade, and "I Produce Solutions to Global Problems" in the 7th grade were the subjects most preferred by the pre-service teachers in the digital story planning task. It was observed that 3 factors played an important role in the participants' reasons for their subject selection. These are to be able to convey visually more easily, to concretize abstract concepts and to have content that allows them to develop critical perspectives.

The contributions of education regarding the features of digital stories and their integration with social studies, to reach the use of digital tools by the participants, to gain different perspectives, to develop their imagination, to convey thoughts, to understand that technology is a useful tool when used in the right way, and digital tools in social studies in a literary context it is listed as providing learning to use. Most of the participants (68%) stated positive opinions that they can apply in social studies lessons even if not in every subject, since it takes a lot of time to edit in their future professional lives. In the studies of Omar, Ozudogru and Cırak Nese (2018), it was observed that pre-service teachers were willing to use digital stories in their future careers, in line with the results of the research. Other students (32%) stated that they would not be able to use the curriculum, especially in the first years of their teaching life, due to their concerns about not being able to develop the curriculum, difficulties in creating content, and having knowledge that can be put into practice in the first years. In summary, it was determined at the end of the study that the most preferred subjects were in the field of learning effective citizenship and global connections, the education provided contributed to the teacher candidates and they displayed a positive approach to using digital stories effectively in their future professional lives.

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Author Information

Şule Egüz
Inonu University
Inonu University, Education Faculty, Department of Social Studies Education,Turkey
Contact e-mail: *suleeguz@gmail.com*

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The Nature of Intelligence: A New Look at the Foundations of Sociology

Dinara MATRASSULOVA
Almaty University

Ibragim SULEIMENOV
National Engineering Academy of RK

Abstract: The development of artificial intelligence (AI) stimulates interdisciplinary research aimed at establishing the essence/nature of intelligence. Without an adequate answer to this question, discussions about which systems should be attributed to AI and which should not remain pointless. This paper shows that human intelligence should be considered primarily as an attribute of the Homo Sapience species as a whole. The existence of a global communication network, formed as a result of information exchange between its relatively independent fragments localized within the brain of individuals has been proved. Human intelligence is a kind of projection of information objects that appear in the global network on its local sections. These objects have their own non-trivial behavior, which is only indirectly related to the behavior of individuals. It is these objects that arise at the transpersonal level of information processing that largely determine the properties of society as a whole. The nature of these objects is analogous to the nature of individual consciousness. The consciousness of each person is the result of the exchange of information between neurons of a separate brain, the same exchange within the global network (or its relatively independent fragments - states, ethnic groups, etc.) generates transpersonal information objects, at least possessing many signs of consciousness and intelligence. The existence of these objects allows us to fully translate sociological research into the language of mathematical theories Moreover, the fact that information exchange is now largely moving to telecommunications networks makes it possible to study them quantitatively. An opportunity to provide a natural science justification for the concepts of geopolitics is justified too. These concepts initially considered states as analogs of organisms with their own non-trivial behavior. The proposed approach makes it possible to find quantitative regularities that express the concept of geopolitics.

Keywords: Artificial intelligence, Information processing, Telecommunications networks, Geopolitics

Introduction

The geopolitical map of the world is in motion again. The face of human civilization is changing dramatically, which does not require extensive evidence. Suffice it to mention that the epidemiological crisis of 2020 has caused more than serious consequences for the world economy. Some authors compare the consequences of the crisis with the consequences of the world war, which seems quite justified, at least if we talk about the degree of restructuring of logistics chains and other purely economic factors.

There is also no doubt that the rapid development of infocommunication technologies has an increasing impact on the processes of the geopolitical level and this factor has much more serious consequences for civilization as a whole than it may seem at first glance. We emphasize that the Internet factor has long been considered by various authors as a means of restructuring the social fabric.

This factor is used by political circles in various countries to achieve certain goals. E-Commerce has the most significant impact on trade flows and this factor has only increased in the context of the pandemic. Moreover, in connection with the covid-19 pandemic, we can already talk about a change in the nature of educational migration. Thus, a significant part of schoolchildren in Kazakhstan are switching to distance learning in Russian schools – education, become distance learning, ceases to depend on geography.

All these factors are on the surface, however, as shown in this paper, there is another and very serious factor related to the influence of the telecommunications industry on geopolitics, which has not yet received sufficient attention.

Specifically, this factor is related to the fact that sociology can actually become a fully mathematized discipline. In this regard, it is appropriate to recall that the founding father of sociology, Auguste Comte, originally viewed sociology as "social physics", from his point of view it should have become a mathematized" positive " discipline. Comte's aspirations were not fully realized. Mathematical methods of sociology, are in use nowadays, but this is mainly related to the processing of statistical data, data from sociological surveys and so on.

The rapid development of the telecommunications industry radically changes the position of sociology in the system of scientific knowledge. As shown in this paper, there is a basis for building mathematical models that make it possible to make the behavior of states predictable in the long term. In this sense, mathematical sociology is quite close to mathematical geopolitics, which can also now be consistently justified on the basis of the concept of intelligence proposed in (Angeli, et al., 2010; Suleimenov, et al., 2019).

The essence of the noosphere from the point of view of information theory

Let's start with from the arguments used in (Angeli, et al., 2010; Suleimenov, et al., 2019). In these works, it was shown that it is impossible to reveal the nature of human intelligence if we consider it as a purely individual trait. The conclusions made in these works suggest that intelligence is rather an attribute of the entire species of Homo sapiens as a system integrity. It is this circumstance that most significantly affects the interpretation of the basic provisions of geopolitics. The fact that intelligence is distributed to a certain extent makes it necessary, firstly to modernize the foundations of geopolitics and secondly to give them a consistent scientific justification. In this regard, it is appropriate to recall that many authors still consider geopolitics as a kind of protoscience, the subject field and tools of which are still in the process of formation.

The analysis of the essence of human intelligence carried out in the works cited above (Angeli, et al., 2010; Suleimenov, et al., 2019) is based on a generally obvious circumstance. Indeed, consider two people entering into a dialogue. It is generally assumed that in this case, two interlocutors communicate with each other, however, this is an approximation and very rough. In fact, we are talking about the exchange of signals between neurons that are part of the brain of each of the interlocutors. It should be emphasized that the nature of the functioning of a neural network does not depend on the nature of the signals exchanged between neurons, it is only important that they are able to move from one state to another. This allows us to assert that in this example of a dialogue between two interlocutors, in fact, a common neural network is formed. Continuing this logic, it is easy to conclude that there is a global neural network, which with certain reservations can be identified with the noosphere, understood in the spirit of V. I. Vernadsky (Suleimenov, et al., 2020). At the next step of reasoning, it is easy enough to demonstrate that the conclusion about the existence of a global neural network identified with the noosphere allows us to look at the basic provisions of geopolitics in a significantly different way.

Recall that one of the basic provisions of geopolitics was originally an analogy between states and organisms. The founding fathers of geopolitics believed (Oldfield & Shaw, 2006; Dittmer & Dodds, 2020) that the state is a kind of integrity that has its own pronounced reactions to certain external irritants, its own non-trivial behavior and all that allows it to be put in accordance with the body. This kind of view, as the modern literature on geopolitics shows (Bassin, 1987; Flint & Zhu, 2019), is perceived by many as a kind of metaphor, as an illustration of the fact that the state is still a kind of systemic integrity. If we use the ideas about the formation of a global neural network, it becomes clear that the consideration of states by analogy with an organism is not a metaphor. These are system wholes that knowingly have their own non-trivial behavior only because there is a transpersonal level of information processing.

Elementary considerations arising from the general theory of neural networks (Philo, 2017) clearly show that the information capabilities of the enclosing neural network far exceed the information capabilities of its individual parts taken separately. In other words, the information capabilities of a neural network depend non-additively (non-linearly) on the number of neurons included in it. Consequently, the fact that interpersonal communications generate a common neural network leads to the emergence of quite specific transpersonal information structures. The simplest (from the point of view of clarity) of such transpersonal information structures is any of the natural languages. Somewhat simplifying, we can say this. Any of the natural languages is recorded not so much in the memory of individuals as in the collective memory of the corresponding people.

You can use an elementary analogy: in the human body, some cells may die, but new ones take their place, and this does not stop the body from being a whole.

Similarly, information processing systems that are native speakers of any of the natural languages represent a kind of system integrity, regardless of how each of its individual elements behaves, that is, each of the individual people. Moreover, natural language as a means of interpersonal communication is a factor that structures the corresponding segment of the noosphere. Even at this stage of research, it can be clearly stated that the structuring of the noosphere is actually carried out by natural languages. These are its relatively independent fragments that were formed in historical time and each of which has its own non-trivial behavior. Thus, the ideas of geopolitics can really be completely reformulated in the language of information theory, if we start from the conclusion about the existence of transpersonal information structures and transpersonal information entities, the simplest example of which is any of the natural languages.

The subject of sociology from the point of view of geopolitics and information theory

The interpretation used of the basic provisions of geopolitics necessarily entails a revision of what is currently called sociology. However, we should rather say that there are all the prerequisites for a return to the original ideas of Auguste Comte, according to which sociology should be considered as social physics. For this purpose, there are not only theoretical grounds associated with a new understanding of the essence of intelligence (Angeli, et al., 2010; Suleimenov, et al., 2019), but also obvious grounds related to the role of telecommunications networks in modern society. The interpretation of sociology or rather its subject field from the point of view of information theory suggests that the main object of study of this discipline should be a consistent mathematical description of the totality of interpersonal communications as a whole.

They form both the society and everything that allows us to consider sociology as a discipline directly bordering on geopolitics. Of course, the importance of considering interpersonal communications and the importance of forming social networks has been noted by sociologists before, but at this stage of research, these factors should be given much more serious importance, primarily because these factors ensure the formation of transpersonal structures that largely determine the behavior of society as a whole.

Indeed, human consciousness as a whole, speaking somewhat exaggeratedly, commands all the actions of the individual components of this system, the movements of the limbs, the behavior of other organs, and so on. Similarly, if we recognize that transpersonal information structures exist, then we should consider such well-known factors as, for example, the dictates of the environment differently. We are talking about the fact that the transpersonal information structures can be written a kind of program that becomes executive for individuals.

In this sense, the transpersonal structures under consideration are the bearer (or embodiment) of the socio-cultural code that determines the behavior of society as a whole. Previously, the Humanities considered such phenomena through the prism of ideas about public consciousness and other not fully defined matters. Using the information theory of socio-cultural codes and a distributed neural network formed by all members of a given society, all these concepts can be given a consistent scientific interpretation.

Moreover, it can be argued that at least in part, society in this interpretation acquires subjectivity, it behaves as a kind of integrity. In any case, this is true if we talk about situations where a given society is cemented by a well-defined communication structure and/or related factors, which can include the presence of certain religious or political doctrines, and so on. We emphasize that in this regard, the role of political or religious doctrines can also be described in quantitative language, specifically, we are talking about the extent to which these doctrines are able to cement society in terms of increasing the intensity of information exchange. From the point of view of physics, it is appropriate to use the following analogy: in modern physics, the vast majority of interactions are interpreted as exchange, so the interaction between charged particles is interpreted as the exchange of photons. A similar situation can be seen in the example of what connects society, but it is not about the exchange of particles, but information.

Thus, we are talking about the fact that sociology should study (at the level of quantitative theories and mathematical models) a kind of analog of the collective brain, which has its own non-trivial behavior. Quantitative experimental study of such structures has been very difficult until very recently. It is enough to mention the fact that so far opinion polls are more than a costly event. However, due to the fact that interpersonal information exchange is now increasingly shifting to online social networks, it is possible to study the collective effects that lead to the formation of transpersonal information structures as a system integrity.

First of all, in order to carry out the study of these objects, of course, an appropriate methodology is needed. The huge amount of data that can be found in online social networks must be systematized in one way or another, and the methodology here is the base. Only with the appropriate theory can a systematization be carried out that will reveal the patterns in a huge amount of experimental data. Of course, currently there are such concepts as data mining, but, at least from our point of view, such concepts reflect the weak methodological training of their authors. These concepts are intended to be a substitute for an adequate theory, adequate methodology, to replace an adequate philosophical construct. Roughly speaking, the authors of such concepts try to replace methodology and applied philosophy with computer programs.

Of course, this approach can lead to individual results, but nevertheless, to solve large-scale problems that are associated with rethinking the position of sociology in modern society, first of all, you need a theoretical understanding, and this kind of theoretical understanding must be given in the spirit of the mid-XIX century, when philosophy was really a tool for generating new meanings. This tool, obviously, cannot replace computer programs, and even more so concepts such as data mining.

The question of the essence of intelligence from the point of view of geopolitics and sociology

The basis of this kind of methodology can only be a consistent interpretation of the essence of intelligence. Indeed, if we recognize a certain subjectivity for the state or society, in the sense that certain information entities with certain signs of independent consciousness are formed in the complementary neural network, then the question arises as to how this subject relates to the subjectivity of individuals.

Roughly speaking, we are talking about which actions of people are determined by their personal aspirations, and which are determined by the executable program that is recorded in the transpersonal information structure. At first glance, this thesis completely contradicts the ideas of free will, however, even a superficial look at history shows that very often people really obey the dictates of the environment, and the mechanisms of formation of this dictate are still not fully studied and their consistent interpretation can only be given from the point of view of the formation of transpersonal information structures.

Moreover, if we start from the idea of the formation of transpersonal information structures, it is impossible not to recognize that intelligence is a specific feature. Since childhood, a person learns certain norms, ideas, rules, this was obvious even without the idea of neural networks, but in the light of the above, well-known facts acquire a completely different sound.

Specifically, we are talking about the fact that the intelligence of an individual is a well-defined projection of those information structures that are "sewn" into an encompassing neural network, and the most obvious example here is natural language. A person who acquires a certain language automatically acquires a certain style of behavior. Intelligence is formed by language, and the language environment forms a person, moreover, intelligence finds its expression exclusively in language. It can be emphasized once again that our proposed interpretation allows us to provide a consistent scientific justification for the thesis that was once put forward by Umberto Eco: "It is not we who speak the language, it is the language that speaks us." We are all the embodiment or representation of certain transpersonal information structures, and our behavior is closely related to them. This implies the need for a dialectical analysis of the contradictions that, as it turns out, carries the very concept of society. This is not just a mechanical sum of individuals, it is something that generates a certain, perhaps very remote, analog of consciousness.

In this regard, it is appropriate to emphasize that there have already been works that discuss the problem of the emergence of" spontaneous " intelligence in telecommunications networks (Frankle, Carbin, 2018). Indeed, if the exchange of information between brain neurons (that is, from the point of view of information theory, rather simple objects) can lead to the appearance of such a non-trivial entity as consciousness, then why can't other information entities appear in online social networks?

There is absolutely no mysticism here, here we are simply talking about objective laws that follow from basic ideas about information. Let's return to the question of subjectivity. As stated above, this issue is far from trivial, subjectivity in a certain sense is redistributed between transpersonal information structures, more precisely, States and other transpersonal entities, on the one hand, and individuals, on the other.

The solution of this question is far beyond the scope of this work, but its very formulation allows us to show that the problems of sociology, and even more so its problems when translated into mathematical language, cannot develop further without revealing the essence of intelligence and its mathematical description. In order to move forward, it is necessary to understand the nature of intelligence as a kind of information processing system and the nature of its interaction with other information systems as clearly as possible. The relevance of this question can no longer be doubted, because online social networks, modern telecommunications environments, in fact form quite specific human-machine systems, their behavior is even more non-trivial than the behavior of society as such.

In fact, we are already talking about the fact that society has ceased to be what sociology studied at the end of the XX century and has become something fundamentally different. It has become a human-machine system, the characteristics of which, in a sense, become manageable, and the processes that occur in which occur in real time. In other words, the contours of the future mathematical sociology are already quite visible, we are talking about a kind of synthetic science that arises at the intersection of information theory, geopolitics, classical sociology, and Queuing theory, as well as other theories that are currently developed for the analysis of telecommunications environments.

Conclusion

Thus, this paper shows that at present there are all the prerequisites to radically revise the basic provisions of sociology. First of all, we are talking about the fact that society as a distributed neural network forms well-defined transpersonal structures that largely control its behavior. The appearance of these structures, due to the development of the theory of neural networks, can be described using specific mathematical models. Evidence for this can be given, including at the level of qualitative consideration. Specifically, as shown in this paper, it can be argued that intelligence is an attribute not so much of the individual as of the species Homo sapiens as a whole.

Therefore, the behavior of society cannot be considered without considering the fact that there is a transpersonal level of information processing, in which, among other things, Executive programs can be recorded that control the behavior of individuals to a certain extent. Moreover, there are grounds to assert that subjectivity is distributed in a certain sense, that is, it is redistributed between transpersonal information structures and the individual's consciousness in accordance with the laws of dialectics. Further work in this direction requires correct formulation of the concept of human intelligence and disclosure of its essence.

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Author Information

Dinara Matrassulova
Almaty University
Almaty University of Power Engineering and Telecommunications 126/1 Baitursynov str, Almaty, Kazakhstan
Contact e-mail: dinara.kutlimuratovna*@gmail.com*

Ibragim Suleimenov
National Engineering Academy of RK
80 Bogenbai batyr str., Almaty, Kazakhstan

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The Effect of Science and Technology on Social Change According to the Views of Social Studies Prospective Teachers

Tugba KAFADAR
Erciyes University

Abstract: This study aimed to analyze the effect of science and technology on social change according to the views of social studies prospective teachers. The research was designed in accordance with the phenomenology pattern, which is one of the qualitative research designs. The research participants were determined according to the criterion sampling, one of the purposeful sampling methods. The research participants consisted of 48 students who received the science, technology, and society course in the social studies teaching undergraduate program. The research data were collected by employing the interview method. Interviews were conducted with the participants via a semi-structured interview form. Expert opinions were obtained in creating the semi-structured interview form. As a result of the expert opinions, the interview form consisted of five questions. The data obtained in the research were analyzed by the content analysis technique. It was concluded that for the question of what science is, participants mostly responded that it is technology, experiment, observation, invention, generating ideas, finding solutions. For the question of what technology is, the research participants mostly replied that it is innovation, modernity, convenience, development, and humans being superior to nature. For the question of what the positive effects of science and technology on social change might be, the participants mostly gave the answer that it contributed to many areas such as the development of communication, facilitating life, contributing to the development of society, modernization, easier access to information, Internet, education, transportation, and medicine.

Keywords: Social studies prospective teachers, Science, Technology, Social change

Introduction

In the global age that we live in, science and technology have become important aspects of our life. According to Sjøberg (2001), achievements in science and technology will probably have an increasing impact on our life in years to come. According to Doğan, Çakıroğlu, Çavuş, Bilican, & Arslan (2011), in addition to being a whole by itself due to its functioning, science is also an alternative research field with subjects such as how it functions, the structure and features of its products. According to Kılıç, Haymana & Bozyılmaz (2010), the investigative nature of science involves doing science and encouraging scientific thinking. This dimension is the use of scientific processes and methods through observation, measurement, classification, deduction, data recording and analysis, and communication.

Technology, on the other hand, has developed from past to present and has become an indispensable part of daily life, especially with products such as telephone, radio, television, the Internet in communication, and trains, planes, and automobiles in transportation. This situation requires people to know the world of technology, to be able to benefit from this technology in a way that will make their life easier and to understand technological advancements. In this context, technology should be included in educational processes and individuals should be trained on these developments (Bacanak, Karamustafaoğlu, & Sacit, 2003). The interaction dimension of science, technology, and society includes the mutual interaction between science, technology, and society, and their understanding of science's impact on society. This dimension indicates that individuals should make educated decisions on scientific and technological issues by investigating interactions between science, technology, and society in multiple ways (Kılıç, Haymana, & Bozyılmaz, 2010). The impact of science and technology on society and therefore on social change cannot be ignored. The opinions of teachers, who are of the vital importance of raising effective individuals on the subject and who are on the teacher training process, are crucial. In this context, the opinions of students in the department of social studies

teaching regarding the impact of science and technology on social change are very important in terms of raising effective individuals. Because one of the important teaching training programs for raising effective individuals is the social studies teaching program. The problem of the present study is the question "What are the opinions of social studies teaching students regarding the impact of science and technology on social change".

Purpose of the Study

The general purpose of the present study is to examine the opinions of social studies teaching students regarding the impact of science and technology on social change.

Method

Research Model

This research was designed according to phenomenology, a qualitative research design. Phenomenology focuses on phenomena that we are aware of; however, we do not have an in-depth and detailed understanding about. Phenomena may appear in various forms such as events, experiences, perceptions, orientations, concepts, and situations. Phenomenology provides a suitable research ground for studies that aim to investigate phenomena that are not completely alien to us, but that we do not fully understand (Yıldırım and Şimşek, 2011, p.72).

Study Group

Participants were identified according to criterion sampling, which is a purposive sampling method. The study group was composed of 48 students in total who were second-year students in the social studies teaching undergraduate program, taking science, technology, and society course.

Data Collection and Analysis

The research data were collected using the interview method. Interviews were collected from participants through a semi-structured interview form. Experts were consulted while preparing the semi-structured interview form. The interview form had 5 questions after having consulted experts on the matter. The data obtained in the research were analyzed using the content analysis technique.

Findings

Table 1. Science according to prospective social studies teachers

Grade level	Science	f
2nd grade	Technology,	18
	Experiment	11
	Observation	10
	Invention	8
	Idea generation	4
	Finding solutions	2

According to Table 1, prospective social studies teachers answered the question "What is science" as follows: technology (f18), experiment (f11), observation (f10), invention (f8), idea generation (f4), and finding solutions (f2).

Table 2. Technology according to prospective social studies teachers

Grade level	Technology	f
2nd grade	Innovation	25
	Modernity	22
	Convenience	20
	Progress	18
	Human superiority over nature	12

According to Table 2, the following findings were acquired on the question "What is technology according to prospective social studies teachers": innovation (f25), modernity (f22), convenience (f20), progress (f18), and human superiority over nature (f12).

Table 3. Positive effects of science and technology on social change according to prospective social studies teachers

Grade level	Positive effects	f
2nd grade	Developing communication	12
	Facilitating life	11
	Contributing to societal development	7
	Modernization	5
	Easier access to information	2
	Internet	2
	Education	2
	Transportation	1
	Medicine	1

According to Table 3, the following findings regarding the positive effects of science and technology on social change stated by prospective social studies teachers were: developing communication (f12), facilitating life (f11), contributing to societal development (f7), modernization (f5), easier access to information (f2), Internet (f2), education (f2), transportation (f1), and medicine (f1).

Results and Discussion

In the study, in which the opinions of prospective social studies teachers regarding the impact of science and technology on social change were investigated, the following results have been obtained: Participants mostly answered the question "What is science" as technology, experiment, observation, invention, idea generation, and finding solutions. On the question "What is technology", participants stated that it was innovation, modernity, convenience, progress, and human superiority over nature. According to Bacanak, Karamustafaoğlu & Sacit (2003), new technological developments usually take place due to societal needs or the need to improve existing technology. In other words, society controls technology by evaluating its value. The first among these is the lack of awareness in teachers and administrators about the suitability of using technology in schools. The reason behind that is insufficient budget and inexperienced teachers and administrators. In addition, technology is not used much in training prospective teachers in institutions training teachers. Teachers should improve themselves in order to use technology in educational activities at the desired level. To this end, administrators should provide time and opportunity for teachers. In this context, the effective use of science and technology at all grade levels, from primary school to higher education, should be underlined and deficiencies in the infrastructure on the matter should be eliminated. Thus, during the global age, we live in, this may contribute to raising individuals who could adapt to the conditions of upcoming periods, effective for the society, and who are productive.

On the question asking what the positive effects of science and technology on social change could be, participants mostly stated that it could develop communication, facilitate life, contribute to several areas such as societal development, modernization, easier access to information, Internet, education, transportation, and medicine. According to Kılıç, Haymana & Bozyılmaz (2010), the interaction dimension of science, technology, and society involves the mutual interaction between these three aspects and their understanding of the impact of science on society. This dimension is that individuals should make educated decisions on scientific and technological issues by investigating interactions between science, technology, and society in multiple ways.
When research results are evaluated in general, concepts of science and technology for prospective social studies teachers are important and useful concepts both for societies and themselves. Therefore, science and technology could contribute to social change in many positive ways.

Recommendations

In the study, the opinions of prospective social studies teachers regarding the impact of science and technology on social change were investigated. In future studies, the opinions of other prospective teachers studying in different departments regarding the impact of science and technology on social change could be examined. Considering the fact that science and technology have an important impact on societies, science and technology

infrastructure/education could be increased at all grade levels, from primary school to higher education. In this way, this could contribute to raising modern, effective, and productive individuals.

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Author Information

Tuğba Kafadar
Erciyes University
Erciyes University, Faculty of Education, Kayseri, Turkey
Contact e-mail: tugbakafadar@gmail.com

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The Investigative Approach in Primary School: Analysis of the Place Given to This Approach in Science Teaching Textbooks

Essalih SOUKAINA
Higher Normal School Marrakech

Barzane MONCEF
Higer Normal School Marrakech

Selmaoui SABAH
Higer Normal School Marrakech

Ourahay MUSTAPHA
Higer Normal School Marrakech

Khzami SALAH-EDDINE
Higher Normal School Marrakech

Abstract: The investigative approach is increasingly demonstrating its potential in teaching. Indeed, it allows students to develop the skills, attitudes and interests necessary to live in a society increasingly dependent on the applications of science. This study is part of the research work questioning the application of the investigative approach in the teaching of science at the primary level. We carried out an analytical study of primary school science textbooks in order to identify the investigative tools that can help teachers to manage the teaching and learning process using an analysis grid. Based on this tool, comparisons were made and an analysis was carried out.

Keywords: Investigative approach, Analytical study, Textbooks, Scientific awakening, Primary school.

Introduction

Everyone is aware that science education is not producing the desired results. It is more a question of training only scientists, but also of allowing a scientific acculturation of citizens living in a world where science and technology have a primordial place. This is why, from an institutional point of view, the renewal of this education has become indispensable in recent years. The results of the International Assessment conducted in 1995 by the International Association for the Evaluation of Educational Achievement (I.E.A.), showed a deficiency in student achievement in science around the world. In the United States, the national research committee, as early as 1996, recommended that science education should be based on the development of classroom situations in which students conduct their own investigations (Coquidé et al., 2009). In Europe, the Rocard report calls for the need to renew science teaching based on students conducting their own investigations. This approach is part of a socioconstructivist perspective, favouring exchanges between students in order to build their own knowledge, as recommended in official instructions (Rocard et al. 2007).

In Morocco, the authorities have made considerable efforts to improve the quality of education and ensure its universalization. Major reform projects have been launched since 2000, particularly the National Charter for Education and Training, which aimed essentially at generalizing education, improving its quality, including that of pedagogical content, and restructuring education cycles. The launch of the emergency plan in 2009 gave new impetus to educational reform which, despite significant progress, has not been able to achieve the major objectives, especially those related to improving the quality of education and the supply of teaching materials,

and reducing disparities between the environment and gender (Special Commission on Education and Training, 1999). However, research in science didactics has shown that learning difficulties are partly responsible for the observed academic failures. Research has shown that these difficulties are not only related to the knowledge itself and to the representations that students and teachers make of science but also to teachers' pedagogical practices (Robert & Rogalski, 2002; Mathé & al 2008). In Morocco, a very limited amount of research work has been carried out on the analysis of the meaning of the investigative approach and the elements that need to be taken into account in order for students to be able to engage in scientific investigation work autonomously. In this work, we carried out an analytical study of primary school science awareness textbooks with the aim of identifying investigative tools that can help teachers manage the teaching-learning process.

Method

The study focused on the analysis of three 4th grade primary school textbooks of scientific awakening. Table 1 collects representative data on these textbooks. The choice of these three textbooks is linked to their availability in libraries in the Marrakech region. For the collection of information related to the problem under study, we used an analysis grid as an investigative tool.

Table 1. List of textbooks included in this research

Authors	Title	Year	Editor
Mohamed RACHIH Idriss DABLI Az-Eddine ETTALHAOUI Hassan MAHBOUBI Mohamed BAHOU Mohamed ELHILALI Abdelilah ABOUTAHER	ALMOUNIR FI NACHAT AL ILMI (TEXTBOOK A)	2019	SOUMAKRAM
Mohamed BELKBIR Khadija ESSAMADI Soumya ELKSSAR Bouazza SYASSI Mohamed BERCHA	FADAA ANACHAT ALILMI (TEXTBOOK B)	2019	EL MAARIF AL JADIDA
Mohamed MALLOUK Abdelkrim ELHYANI Abdelghani SLIMANI Abdelmjid ELBOUNSARI Yahia LKOTB Yahia ESSAYM	ALMORCHID FI NACHAT AL ILMI (TEXTBOOK C)	2019	GARBAOUI

Results and Discussion

These three textbooks cover four areas: life sciences, physical sciences, earth and space sciences and technologies. Thus, each field is divided into three categories. The textbooks consist of six units, and each unit consists of 8 sessions. They begin with a session of pre-requisite assessment and knowledge support, while the last session is devoted to a topic of technology, acquisition control and unit support. These 6 units are divided between two semesters, and each semester contains 3 units with end-of-semester evaluation and support. As shown in Table 2, for the ALMONIR FI NACHAT ALILMI 4th grade primary school textbook: 20.26% of the charts covered the characteristics of living beings, their biological functions and interactions with the environment, followed by 19.74% for Forms and types of energy transfer, forces and motion, 16.32% for The natural properties of the earth and its resources, 15.53% for Life cycles, reproduction and heredity in living beings, 14.74% for Human health and interaction with the environment and 13.42% for the classification of matter and its properties. For the ALMORCHID FI NACHAT ALILMI textbook of 4th grade of primary school: 24.33% of the graphs were devoted to the characteristics of living beings, their biological functions and interactions with the environment, followed by 20.25% for the natural properties of the earth and its resources, 18.20% for Life cycles, reproduction and heredity in living beings, 14.52% for Forms and types of energy transfer, forces and motion, 12.06% for the classification of matter and its properties and 10.36% for human health and interaction with the environment. While for the textbook FADAA NACHAT ALILMI of 4th grade of primary school: 21.89% of the charts covered the characteristics of living beings, their biological functions and interactions with the environment, followed by 19.73% for the natural properties of the earth and its resources,

16.49% for Human health and interaction with the environment, 15.95% for Forms and types of energy transfer, forces and motion, 14.32% for Life cycles, reproduction and heredity in living beings and 11.62% for the classification of matter and its properties. Finally, the total of frequencies for the three textbooks of the scientific awakening of the 4th grade of primary school : 22.36% of the charts covered the characteristics of living beings, their biological functions and interactions with the environment, followed by 18.88% for the natural properties of the earth and its resources, 16.55% for the Forms and types of transfer of energy, forces and motion, 16.22% for life cycles, reproduction and heredity in living beings, 13.64% for human health and interaction with the environment and 12.35% for the classification of matter and its properties.

Table 2. Frequencies of graphs in the different thematic areas for the three manuals

TEXT BOOK	Thematic area											
	Human health and interaction with the environment.		The classification of matter and its properties		Characteristics of living beings, their biological functions and interactions with the environment		Life cycles, reproduction and heredity in living beings		Forms and types of energy transfer, forces and motion		The natural properties of the land and its resources	
	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Freq	%
T.BOOK-.A	56	14,7	51	13,4	77	20,2	59	15,5	75	19,7	62	16,3
T.BOOK-C	52	10,6	59	12,0	119	24,3	89	18,2	71	14,5	99	20,2
T.BOOK-B	61	16,4	43	11,6	81	21,8	53	14,3	59	15,9	73	19,7
Total	169	13,6	153	12,3	277	22,3	201	16,2	205	16,5	234	18,8

Table 3. Teaching materials in the three textbooks

Form	Textbook names						Total	
	TEXTBOOK-A		TEXTBOOK-C		TEXTBOOK-B			
	Freq	%	Freq	%	Freq	%	Freq	%
Pictures and Drawings	349	87,6	446	85,7	333	84,9	1128	86,1
Scientific texts	6	1,5	18	3,4	8	2,0	32	2,4
Graphic representations	0	0	0	0	0	0	0	0
Tables	22	5,5	39	7,5	35	8,9	96	7,3
Experiments and Manipulations	21	5,2	17	3,2	16	4,0	54	4,1
Total	398	100	520	100	392	100	1310	100

The study of these three textbooks is composed of numerous activities, each of which includes a variety of scientific documents to be used by the learners. An analysis of these learning activities reveals that photos and drawings dominate the curriculum. On the other hand, scientific texts, experiments and tables represent a minority, and finally, graphic representations are neglected.

Table 4. Distribution of the forms of graphic representations in the three scientific awakening textbooks

Form	Name of textbooks						Total	
	TEXTBOOK-A		TEXTBOOK-C		TEXTBOOK-B			
	Freq	%	Freq	%	Freq	%	Freq	%
Photography	239	62,8	310	63,3	251	67,8	800	46,6
Drawing	108	28,4	136	27,8	82	22,1	800	46,6
Table	22	5,8	39	7,9	35	9,4	96	5,6
Organizational chart	5	1,3	1	0,2	1	0,2	7	0,4
Map	6	1,5	5	1,0	1	0,2	12	0,7
Graphic	0	0	0	0	0	0	0	0
Total	380	100	489	100	370	100	1715	100

The results showed that: in the ALMORCHID FI NACHAT ALILMI textbook, photographs were the most common form of graphs at 63.39%, while drawings came second at 27.81%, tables at 7.98%, maps at 1.02%, flow charts at 0.2% and graphs at 0%. In the ALMONIR FI NACHAT ALILMI textbook, photographs were the most common form of graphs at 62.89%, while drawings came second at 28.42%, tables at 5.80%, maps at 1.57%, flow charts at 1.32% and graphs at 0%. In the FADAA NACHAT ALILMI textbook, photographs were the most common form of graphs at 67.84%, while drawings came second at 22.16%, tables at 9.46%, maps at

0.27%, flow charts at 0.27% and graphs at 0%. Finally, the total frequencies for the three textbooks for scientific awakening in the 4th year of primary school: photographs and drawings were the most common form of graph with 46.65%, tables with 5.60%, maps with 0.70%, flow charts with 0.41% and graphs with 0%. Table 5 shows the dominance of static versus dynamic graphs in the three textbooks studied. Table 6 shows that the majority of charts were presentational in nature, followed by organizational charts followed by organizational charts in all of the textbooks in our study. Table 7 presents the data concerning the link between graphics and written text (indexing, subtitling) in the textbooks for scientific awakening in the 4th year of primary school. We can see that none of the graphs are indexed, 38.74% are subtitled and 61.26% of the graphs are not subtitled. According to Table 8, the following are present: chapter headings, summary at the end of the chapter, documents, activities at the beginning of the chapters, learning exercises, acquisition control and a conclusion.

Table 5. Distribution of quality of graphic representations in the three manuals

Quality	Name of textbooks						Total	
	TEXTBOOK-A		TEXTBOOK-B		TEXTBOOK-C			
	Freq	%	Freq	%	Freq	%	Freq	%
Static	258	74,3	227	79,3	330	73,9	815	75,5
Dynamic	89	25,6	59	20,6	116	26,0	264	24,4
Total	347	100	286	100	446	100	1079	100

Table 6. Distribution of the functions of the graphical representations in the three manuals

Function	Name of textbooks						Total	
	TEXTBOOK-A		TEXTBOOK-B		TEXTBOOK-C			
	Freq	%	Freq	%	Freq	%	Freq	%
Decorative	18	4,0	25	8,7	17	7,1	60	6,1
Representative	351	78,7	245	85,6	174	72,8	770	79,3
Organizational	77	17,2	16	5,6	48	20,0	141	14,5
Total	446	100	286	100	239	100	971	100

Table 7. Distribution of indexing and captioning of graphs in textbooks

Indexing and subtitling	Name of textbooks						Total	
	TEXTBOOK-B		TEXTBOOK-A		TEXTBOOK-C			
	Freq	%	Freq	%	Freq	%	Freq	%
Indexed	-----	-----	-----	-----	-----	-----	-----	-----
Not indexed	370	100	380	100	489	100	1239	100
Subtitled	104	28,11	225	59,21	151	30,88	480	38,74
Not subtitled	266	71,89	155	40,79	338	69,12	759	61,26

Table 8. Content stringency analysis ALMORCHID FI NACHAT AL ILMI

	Criteria	Yes	No
Chapter Titles	Clair	X	
Abstract	Presence	X	
	Clair	X	
	Précis	X	
	Is at the beginning of the chapter		X
	Is at the middle of the chapter		X
	Is at the end of the chapter	X	
Document	Presence	X	
Activity	Presence	X	
	Is at the beginning of the chapter	X	
	Is at the middle of the chapter		X
	Is at the end of the chapter		X
Learning exercise	Presence in each chapter	X	
Control d'acquisition	Presence in each chapter	X	
Conclusion	Claire	X	
	Argumented	X	
	Objective	X	
	Response to the stated objective	X	

Table 9. Content rigor analysis ALMONIR FI NACHAT AL ILMI

	Criteria	Yes	No
Chapter Titles	Clair	X	
Abstract	Presence	X	
	Clair	X	------
	Precis	X	-----
	Is at the beginning of the chapter		X
	Is at the middle of the chapte		X
	Is at the end of the chapter	X	
Activity	Presence	X	
	Is at the beginning of the chapter	X	
	Se situe au milieu du chapitre	X	
	Is at the end of the chapter	X	
Learning exercise	Presence in each chapter	X	
Control of acquisition	Presence in each chapter	X	
Conclusion	Claire		X
	Argumented		X
	Objective	X	
	Response to the stated objective	X	

According to Table 9, the following are present: chapter headings, summary at the end of the chapter, documents, activities at the beginning, middle and end of the chapters, learning exercises, acquisition control and a conclusion. Table 10 shows the presence of: chapter headings, summary at the end of the chapter, documents, activities at the end of the chapters, learning exercises, acquisition control and a conclusion.

Table 10. Content rigour analysis FADAA NACHAT AL ILMI

	Criteria	Yes	No
Chapter Titles	Clair	X	
Abstract	Presence	X	
	Clair	X	
	Precis	X	
	Is at the beginning of the chapter		X
	Is at the middle of the chapter		X
	Is at the end of the chapter	X	
Activity	Presence	X	
	Is at the beginning of the chapter	X	
	Is at the middle of the chapter	X	
	Is at the end of the chapter	X	
Learning exercise	Control of acquisition	X	
Control of acquisition	Présence dans chaque chapitre	X	
Conclusion	Claire		X
	Argumented	X	
	Objective	X	
	Response to the stated objective	X	

Table 11 shows the presence of all the different stages of the process in the three manuals.

Table 11. Presence or not of the different stages of the investigation process in the three textbooks

	TEXTBOOK-C		TEXTBOOK-A		TEXTBOOK-B	
Presence	Yes	No	Yes	No	Yes	No
Initial data	X		X		X	
Problématisation	X		X		X	
Hypothesis	X		X		X	
Tests	X		X		X	
Results	X		X		X	
Interpretation	X		X		X	
Conclusion	X		X		X	

Conclusion

According to the analysis that we carried out for the 4th grade primary school textbooks for scientific awakening using a grid, we found that the different stages of the ID were respected, the rigor of the textbook contents is in line with the program requirements, and the distribution of photographs and drawings occupies a very important place in the textbooks. To conclude, therefore, the investigation approach adopted in the textbooks for the scientific awakening of the 4th year of primary school is investigation by observation.

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Author Information

Soukaina ESSALIH
Higher Normal School, University CADI AYYAD
Marrakech, Morocco
Contact e-mail: *soukaina.essalih@gmail.com*

Moncef BARZANE
Higher Normal School, University CADI AYYAD
Marrakech, Morocco

Sabah SELMAOUI
Higher Normal School, University CADI AYYAD
Marrakech, Morocco

Mustapha OURAHAY
Higher Normal School, University CADI AYYAD
Marrakech, Morocco

Salah-Eddine KHZAMI
Higher Normal School, University CADI AYYAD
Marrakech, Morocco

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Opinions of the Pre-service Teachers Regarding the Educational Measurement and Evaluation Course

Tugba KARADAVUT
Recep Tayyip Erdogan University

Bilgehan NACAR
Ministry of Education

Zeynep KARADAVUT
Hatay Mustafa Kemal University

Abstract: Teachers use the measurement and the evaluation in the decisions they make about students in the classroom. The measurement and evaluation courses are given in line with this need in the college of education. This study was carried out in order to determine the awareness, self-evaluation and expectations of pre-service teachers studying in the science and the social sciences departments about the educational assessment and evaluation course. For this purpose, three open-ended questions were posed to pre-service teachers using a questionnaire. The phenomenology design was used in the study. After the data were encoded in the computer environment, themes were formed by conducting the content analysis by one of the researchers. Later, a second researcher was given these themes and asked to encode the data under these themes. There was an agreement of 75% for the first question, 89% for the second and 87% for the third question between the two researchers. The themes were finalized by discussing the items for which the agreement was not achieved. The pre-service teachers mostly stated that the educational measurement and evaluation course will be beneficial for them in their professional life in "making objective and qualified exams". While 31% of the pre-service teachers considered themselves as adequate in terms of the qualifications gained in this course, 69% of the pre-service teachers considered themselves as inadequate. When the pre-service teachers were asked about how this lesson should be taught in order to be more beneficial for them in their professional life, they mostly (44%) underlined the need for “practice”. The results reveal that the most of the pre-service teachers do not consider themselves competent in the measurement and evaluation course, and they think that besides the theoretical knowledge, practice should be given more importance in the measurement and evaluation course.

Keywords: measurement and evaluation, phenomenology, science teachers, social science teachers, theory and practice

Introduction

Teachers use the processes of measurement and evaluation in the decisions they make about students and about their teaching. The fundamental concepts of the educational measurement and the evaluation should be understood by the teachers in order them to arrive decisions regarding the issues they face during their teaching. The courses provided to the pre-service teachers, in this sense, should meet the reality of the education in terms of the practical applications of these concepts (Popham, 2006). The measurement and evaluation course has been seen as a statistics course by some of the undergraduate students (Kottke, 2000) and its contributions to the teaching profession has been underseen by these students. Assessment of student performance is acritical responsibility of a teacher (Mertler, 2003). Teachers spend a high proportion of their time for assessment related activities (Plake, 1993). The concepts taught in the educational measurement and evaluation course is crucial for the teaching profession in order for teachers to successfully deal with the assessment-related issues (Popham, 2006).

The measurement and evaluation is one of the required courses in the college of education in Turkey. The students are being introduced the concepts of the educational measurement and evaluation by means of the course, however, the students' acquisition has yet to be studied from their perspective. Careful consideration is needed to be given to organize the educational measurement and evaluation course content in order to meet the teacher needs. It is responsibility of the course instructor to ensure the quality of the educational measurement and evaluation course. Reflections of the pre-service teachers are one type of the resources for providing and maintaining the quality of the acquisitions in an educational measurement course. This study was conducted in order to determine the educational measurement and evaluation course related awareness, self-evaluation and expectations of the pre-service teachers who study the science and the social sciences. Receiving this information from the pre-service teachers is important for evaluating and planning the content and the teaching of the course. The focus of the study is on pre-service teachers cognitive evaluations and differ from the studies that concentrate on the affective evaluations such as self-concept and self-confidence (e.g., Alkharusi, 2009).

This study was carried out to find answers to the following research questions:

1. How will the educational measurement and evaluation course be beneficial for pre-service teachers in their teaching career?
2. Would pre-service teachers consider themselves as being competent in the educational measurement and evaluation? What are the reasons behind their competency or incompetency?
3. How should the educational and measurement course be taught to make it more beneficial for pre-service teachers' prospective teaching career?

Method

Research design

A qualitative research design was adopted in this study. More specifically, the phenomenology design was used. The phenomenology is an attempt to gain a deeper understanding of some phenomena based on human experiences (Lauer, 1965). The focus of the study was the experiences and expectations of the pre-service teachers regarding the educational measurement and evaluation course. The content analysis was performed for analysis of the data.

Instrument

A questionnaire that consists of three open-ended questions was administered to the pre-service teachers. The questions were written to obtain answers to three research problems that are aimed to be investigated by conducting this study. These questions were: (1) How do you think the educational measurement and evaluation course will be beneficial for you in your teaching career? (2) Would you consider yourself as being competent in the educational measurement and evaluation? What are the reasons behind your competency or incompetency? (3) How should the educational and measurement course be taught to make it more beneficial for your prospective teaching career?

Sample

The questionnaire was administered to the science and the social science pre-service teachers in a university in Turkey. In total, 132 pre-service teachers responded the first question, 106 pre-service teachers responded the second question and 108 pre-service teachers responded the third question. The questionnaire was administered at the end of the semester after the students took the in-class educational and measurement course from the same instructor.

Results and Discussion

Agreement between the coders

Firstly, the data was coded for each question individually. Next, one of the researches determined the themes based on the coded data. These themes were given to another researcher and he was asked to associate each

code with a certain theme. The agreement between the two researchers (i.e., the reliability) was calculated for each question on the questionnaire. The Miles and Huberman (1994) formula was used for this purpose:

$$\frac{\text{number of agreements}}{\text{number of agreements} + \text{number of disagreements}} \times 100.$$

For a reasonable reliability, the agreement between the coders is expected to be at least 80% as a rule of thumb (Miles and Huberman, 1994). There was an agreement of 75% for the first question, 89% for the second and 87% for the third question between the two researchers. The themes were finalized based on the discussion between the researchers.

Results regarding the first research question: "How do you think the educational measurement and evaluation course will be beneficial for you in your teaching career?"

The results regarding the first research question yielded the themes given in Table 1. More than half of the pre-service teachers (i.e., 57%) mentioned that the educational measurement and evaluation course will be beneficial for them for preparing objective and high quality exams. The next majority of the pre-service teachers (i.e., 21%) also declared a statement that was related with the student assessment. Only a very small percentage of the pre-service teachers (2%) mentioned that the educational measurement and evaluation course will be beneficial for them when they need to make decisions regarding instruction.

Table 1: Themes for the first research question

Themes	Frequency
For conducting objective and high quality exams	75
For assessment of the students	28
On professional and personal development	18
In the situations when the measurement process and statistical calculations are required	8
For making decisions regarding the instruction	3
Total	132

Results regarding the first research question: "Would you consider yourself as being competent in the educational measurement and evaluation? What are the reasons behind your competency or incompetency?"

The results regarding the second research question yielded the themes given in Table 2 and in Table 3. Table 2 shows the themes for the pre-service teachers who found themselves competent in the educational measurement and evaluation course and Table 3 shows the themes for the pre-service teachers who find themselves incompetent in the course.

Table 2: Competencies

Themes	Frequency
Competent in knowledge/training gained through the course	21
Attitudes and competencies related to the course	8
Competent in the preparation and evaluation of the exams	4
Total	33

Table 3: Incompetencies

Themes	Frequency
Knowledge gaps	44
Attitudes and behaviors related to the course	13
External factors related to the lesson	12
Lack of practice	4
Total	73

The 20% of the pre-service teachers mentioned they think they are competent in the course because they are competent in the knowledge/training gained through the course. The 42% of the pre-service teachers mentioned that they are incompetent in the course because they have knowledge gaps. In total, the 31% of the pre-service teachers considered themselves to be competent in the educational measurement and the evaluation course, while 69% of them considered themselves as incompetent.

Results regarding the first research question: "How should the educational and measurement course be taught to make it more beneficial for your prospective teaching career?"

The results regarding the third research question provided the themes given in Table 4. Nearly half of the (i.e., 44%) pre-service teachers mentioned that more emphasis should be given on practice during teaching of the educational measurement and evaluation course. Only, very few (i.e., less than 1%) of the pre-service teachers stated that the course should be organized according to the KPSS exam.

Table 4: Themes for the third research question

Themes	Frequency
More emphasis should be on practice	48
Inclusion of examples	18
More enjoyable, material-rich, interactive and student-centered teaching of the course	16
Review of the verbal-numerical weight of the course	10
Adjusting the topics by level of the class	4
Increasing the class hours	4
Clear and understandable explanation of the topics	4
Elimination of information deficincies	2
Giving assisgnments	1
Designing the course according to the KPSS exam	1
Total	108

Conclusion

The purpose of this study was to evaluate the instruction of the educational measurement and evaluation course based on pre-service teachers' experiences and expectations. Three open-ended questions were posed to the pre-service teachers from the fields of social science and science education for this purpose. The results indicated that a majority (69%) of pre-service teachers did not consider themselves as competent in the educational measurement and evaluation. The pre-service teachers mostly mentioned that they have knowledge gaps. Nearly half of the (44%) pre-service teachers stated that more emphasis should be given to the practice for increasing the benefits of the course for their prospective teaching career. The results show that the instruction of the educational measurement and evaluation course should not only be theoretical and should be supported by practice.

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Author Information

Tuğba KARADAVUT
Recep Tayyip Erdogan University
College of Education, Cayeli, Rize, Turkey
Contact e-mail: *tugba-mat@hotmail.com*

Bilgehan NACAR
Ministry of Education
Afsin IMKB Teknik ve Anadolu Lisesi, Afsin, Kahramanmaras, Turkey

Zeynep KARADAVUT
Hatay Mustafa Kemal University
College of Education, Antakya, Hatay, Turkey

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Effect of Educational Programme on Television among Lower Basic Pupils in Gusau Educational Zone of Zamfara State, Nigeria

Solomon Akintola ADENIRAN
Federal College of Education (Technical)

Abstract The investigation x-rayed the Effect of Educational Programmess on Television Among Lower Basic Pupils in Gusau Educational Zone of Zamfara State, Nigeria. The population was total number of pupils in all lower basic schools in both public and private lower basic schools in the state while the sample size of 300 pupils were randomly selected from the 10 lower basic schools (210 pupils from public schools and 90 pupils from private school) in Gusau Educational Zone. Five research questions were posed to guide the conduct of the study to a logical conclusion. A structured questionnaire was designed and administered to 30 randomly selected pupils from each of the selected lower basic schools. The data generated from the research questions were analyzed using the simple percentage; this method of analysis is simple, adequate and accurate in terms of data analysis. The findings of the study affirmed a high response of pupils in boosting their intellectual ability, arousing of interest, quick remembering of the content and retaining of the content taught. It was recommended that the age range of students should be put into consideration; regular electricity should be supplied to the citizenry and that well-produced and sponsored educational programmes by government and private organizations should be encouraged.

Keywords: Audio-Visual, Educational Zone, Television, Computer and Gadgets**.**

Introduction

The traditional approach to education entailed that a teacher, commonly belief to be a reservoir of knowledge stand before a class and pour all he knows to the students, but the advent of other instructional materials has altered the image of the teacher as the sole custodian of knowledge, now considered as as a facilitator who brings closer to his pupils experience and materials beyond the scope of classroom environment. Education being an essential tool for teaching individual to communicate better; brings about awareness and enlightenment while drawing greater benefits from the exchange established between communication and itself (education). Na'Allah and Adeniran (2020) opined that communication is an inseparable aspect of human existence, and it central to all forms of human activities. Hence television, a tool of mass communication performs the functions of: informing, entertaining and educating the mass audience. It uses its unique features to enhance its power to change human behaviour.

Television was established in Nigeria in 1959, by the then western region with the aim of using it as an educational tool, passage of information and for entertaining audience, but instead, it became politician's mouthpiece, and eventually, everyday household appliances, communicating better than other medium with the capacity to motivate learning, as it's a combination of audio, visual and motion. Kumar (2009) noted that television is destined to provide greater knowledge, truer perception, more accurate, appraised broader understanding, greater appreciation and more opportunities. Educators and communicators in most developing countries (Nigeria inclusive) have resorted to exploring the useful, unique characteristics and qualities of television in spreading knowledge. Akpan (1987) emphasized the fact that educational television is the use of television as a means of providing educational information in general, this including instructional television, the learners come and go without any serious attachment to the content.

Children's attention on certain materials of learning according to their taste, interest, predisposition, and for behavioural pattern to be permanent; 'practice' and reinforcement are also important. In turn, their cognitive structure of schemes (organized patterns of behaviours) changes as they develop. Piaget's cognitive of

development theory reflects a progression of learning and the characteristics of each stage (or age) which are dependent on what is learnt from their environment i.e. the television. In this case, learners who are attentive are more likely to become more effective through visual aids that are applied in well structural and organized programmes, which will activate their mental operation and increase their desire for learning. Gabriel (2002) says idea of a responsive environment for young children based in part on the concept of effect on motivation. The young child has a need to be competent in interacting. However, the children respond to certain television programmes in relation or in contradiction to what they perceive. Adeniran and Lagbe (2018) saw perception as the process of being aware of changes through the senses; it goes beyond the message, picked by eyes, ears, nose and other sense organs. Abimbade (1999) says that; 83% of all information is absorbed by eye; 11% is absorbed by ear while the remaining 6% is distributed amomg the remaining senses i.e. touch, smell and taste. This statement is in line with old Chinese dictum as stated by Sampath, Panneerselvam and Santhanam (2002) that;

What I hear, I forget
What I see, I remember
What I do, I understand. (Pg. 32)

Agun (1988) contends that we see things in relation to our needs, our past experience and our subjective feeling and this is always the case with children. This finding will assist educators and television practitioners whose target audiences are lower basic pupils and those still in the educational learning cadre to really know what lessons, and instructional programmes are to be aired. It would look at the problems existing in the production, transmission and assimilation (on the part of the children) or educational television programmers. This finding will also aid educators, and communicators, realize the necessity to base programmes on the cognitive level of the children, giving an insight into their response to foreign and local educational television programmes. Teachers, parents, media owners, the government, educational institutions and researchers will find this study very useful in their profession.

Statement of the Problem

Television serves as child's avenue to his know what is happening in his environment and the world in general. The visual elements give its unalloyed feature for effective utilization for children's educational programmes. The program teacher can use this educational media to arouse and attract the attention of the children. However, educational television programmes in most African countries still follow the conventional classroom style and technique. Educational programmes aimed at pupils of a particular age are supposed to address the children in the language they can understand, designed to stimulate interest and hold attention. The area of investigation is to examine the Effect of Educational Programmess on Television Among Lower Basic Pupils in Gusau Educational Zone of Zamfara State, Nigeria.

Purpose of the Study

The main purpose of this study was to examine the Effect of Educational Programmes on Television Among Lower Basic Pupils in Gusau Educational Zone of Zamfara State, Nigeria.

Specifically, the study would examine;

the lower basic pupil's frequencies in watching Educational Programmes on Television;
if the Educational Programmes on Television are easily understood by the lower basic pupils;
the factors that can help the lower basic pupils to watch Educational Programmes on Television;
the benefits of Educational Programmes on Television to the lower basic pupils;
the factors hinders pupils at lower basic schools to Educational Programmes on Television?

Research Questions

The following research questions were generated to guide the conduct the study:

How frequently does lower basic pupil's watches Educational Programmes on Television?
Does the Educational Programmes watch by lower basic pupils are easily understood?
What can be done to help the lower basic pupils to be watching Educational Programmes on Television?
Does Educational Programmes on Television have any advantage on the pupil's learning?
What factors hinders pupils at lower basic schools to Educational Programmes on Television?

Scope of the Study

This research work focuses on the Effect of Educational Programmes on Television Among Lower Basic Pupils in Gusau Educational Zone of Zamfara State, Nigeria. However, eight public and two lower basic schools were used for the study.

Significance of the Study

The findings will be of immense benefits to the pupils in lower basic schools, classroom teachers, educational planners, parents and the school proprietors. The findings will help teachers to identify the reason for the use of educational programmes on television in arousing pupils interest, quick remembering of the content taught without stress from both pupils and teachers. Secondly, it will provide comprehensive information for educational planners, educators, parents and the school proprietors on how they can assist students to cope in large classes. Lastly, it will serve as a contribution to knowledge in the subject area. In the regard, it will be useful for other researchers who might want to carry out research in related areas.

Research Design

The research design for this study was descriptive survey design. Descriptive research is the study which is concerned with describing the characteristics of a particular individual or a group (Kumar, 2010). Also, it would allow the researcher to make careful collection of data in such a way that information obtained from a representative sample of the target population would be analyzed for generalization.

Population

Nachmias and Nachmias (2009) define population as the entire set of revelant units of analysis or data The target population for this study comprises of all lower basic pupils at both public and private schools in Zamfara State.

Sample and Sampling Technique

Sampling refers to selection of a given number of subjects from a target population so as to represent the entire population (Combo & Trump, 2005). The sample for the study consists of 300 pupils (210 pupils from public lower basic schools and 90 pupils from private lower basic schools) within Gusau Educational zone. The sample was selected through simple random sampling technique.

Instrumentation

The instrument used ort his study was a researcher-designed questionnaire. The instrument was given to the head-teachers of the lower basic schools selected ort his study for review, screening and evaluation. The content validity was affirmed by these experts. The pupils received some coaching from the researcher the researcher assumed that some of the respondents might not be able to fill out the questionnaires on their own. To deal with the situation, those who could not fill out the questionnaire were interviewed by the researcher using the subject's responses to complete the questionnaire. The questionnaire consisted of two sections; Section A, for respondents' demographic information and section B was meant to elicit information from the respondents. Data generated from the research questions were analyzed using the simple percentage method. This method of analysis is simply, adequate in terms of data analysis and accuracy. This simple percentage procedure was used to calculate in percentage, the number of respondent that chose one particular response against the other.

Method

The instrument was administered by researcher and the head teachers to the selected sampled pupils in lower basic schools within Gusau Educational zone. The selected public lower basic schools are Damba MPS, Damba,

Army Children School, T/Wada, Gusau, B/Ruwa MPS, Gusau, Township MPS, Gusau. U/Gwarza Estate MPS, Gusau, Samaru MPS, Gusau, UBE Low Cost T/Wada Gusau and selected private lower basic schools are FCE(T) Demonstration School, Gusau, Prince International School, Gasua and Leadsprings International School, Gusau Responses to questionnaire items meant for answering research questions were analyzed by using simple percentage.

Data Collection and Analysis

Data Presentation, Analysis and Discussion of Findings Research Question One: How frequently does lower basic pupil's watches Educational Programmes on Television?

Table 1 reveals a high response of pupils watching educational programmes on television. From the table, 66.33% of the respondents "always" watch educational programmes on television, 21.6% occasionally watch educational programmes on television, 09.00% rarely watch educational programmes on television and only 03.00 never watch educational programmes on television. Hence, it can deduced from the data gathered that higher percentage of lower basic pupils watches educational programmes on television.

Table 1. Pupil's responses to frequencies in watching educational programmes on television

S/No	Items	Respondents	Percentage%
1	Always	199	66.33
2	Occasionally	65	21.67
3	Rarely	27	09.00
4	Never	09	03.00
	Total	300	100.00

Research Question Two: Does the Educational Programmes watched by lower basic pupils are easily understood?

The analysis in table 2 reveals that 176 (58.67%) respondents strongly agreed with the statement, 78 (26.00%) respondents agreed with the statement, 24 (08.00%) of the respondents neither agreed nor disagreed on the level of understanding of Educational programmes on television, 15 (05.00%) respondents disagreed with the statement and 7 (02.33%) of the respondents with the statement. Conclusively, the higher percentage of pupils in lower basic schools (i.e. 56.67% + 26.00% = 82.67%) for strongly agreed and agreed respectively indicated from the statement that educational television programme helped them to understand the lesson delivered very well.

Table 2. Pupil's responses to level of understanding educational programmes on television

S/No	Items	Respondents	Percentage%
1	Strongly Agree	176	58.67
2	Agree	78	26.00
3	Undecided	24	08.00
4	Disagree	15	05.00
5	Strongly Disagree	07	02.33
	Total	300	100.00

Research Question Three: What can be done to help the lower basic pupils to be watching Educational Programmes on Television?

From table 3, it was observed that the 87 (29.00%) of pupils advocated for regular supply of electricity, 79 (26.33%) of the respondents demanded for convenient hours (i.e 5: 00 to 6:00 p.m week days), 65 (21.67%) pupils requested for interesting educational programmes while 69 (23.00%) of them begged for the consideration of individual difference from the presenter on the lesson to be presented on television. By mere looking at these responses from the respondents it will be deduced that all the aforementioned statement were threat to the usage of television for lesson presentation for lower basic pupils.

Table 3. Pupil's responses on what to be done for watching educational programmes on television

S/No	Items	Respondents	Percentage%
1	Regular electricity	87	29.00
2	Convenient hour (i.e 5: 00 to 6:00 p.m week days)	79	26.33
3	Interesting educational programmes	65	21.67
4	Consideration of individual differncies	69	23.00
	Total	300	100.00

Research Question Four: Does Educational Programmes on Television have any advantage on the lower basic pupil's learning?

From table 4, it was observed that the use of Educational programmes on television in lower basic schools has tremendous advantages in pupils' learning process. Responses to research question 4 reveals that 59 (19.67%) of the respondents affirmed that the use of Educational programmes on television arouses their interest on the subject matter, 54 (18.00%) agreed that Educational programmes on television helps them to retain what was taught, 49 (16,33%) noted that the use of Educational programmes on television in teaching of a subject affords them to remember they were taught, 32 (10.67%) said that Educational programmes on television increases their listening ability to the subject, 12 (04,00%) only responded that the use of Educational programmes on television in teaching of a subject cater for their differences during presentation, 49 (16.33%) said that Educational programmes on television highly motivated them during teaching, while 45 (15.00%) of the respondents affirmed that the use of Educational programmes on television have all the listed advantages in their learning processes.

Table 4. Pupil's responses on advantages of educational programmes on television

S/No	Items	Respondents	Percentage%
1	Arouse pupils' interest	59	19.67
2	Retaining what was taught	54	18.00
3	Remembering what was taught	49	16.33
4	Increases Listening Ability	32	10.67
5	Cater for Individual Differences	12	04.00
6	Highly motivated	49	16.33
7	All the above	45	15.00
	Total	300	100.00%

Research Question Five: What factors hinders pupils at lower basic schools to Educational Programmes on Television?

Data generated from research question 5 reveals factors that hindered the respondents from enjoying the Educational programmes on television. From table 5, hunger, epileptic power supply, boredom, tiredness, noise and poor timing of presentation had responses of 47 (15.67%), 63 (21.00%), 37 (12.33%), 41 (13.67%), Noise 39 (13.00%) and 73 (24.33%) respectively. From table 5 it will be deduced that all the aforementioned statement were threat to the usage of television for lesson presentation for lower basic pupils.

Table 5. Pupil's responses on hindrances to pupils' response to educational programmes on television

S/No	Items	Respondents	Percentage%
1	Hunger	47	15.67
2	Epileptic Power Supply	63	21.00
3	Boredom	37	12.33
4	Tiredness	41	13.67
5	Noise	39	13.00
6	Poor Timing for Presentation	73	24.33
	Total	300	100.00%

Discussion of Findings

Data generated from the findings of this study reveals that:

1) Lower basic pupils have passion for educational programmes on television and are watched very frequently for learning process.
2) As a result of lower basic pupils passion for educational programmes on television guaranteed them better understanding of the lesson delivered through the medium.
3) The use of educational programmes on television has varieties of advantages for lower basic pupils' learning process, such advantages include includes; arousal of interest, retention of subject topic, remembering/recalling subject topic and increasing the listening ability/attention of pupils to the subject.
4) Huger, boredom, anger, and noise are obstacles to lower basic pupils' responses and interest to educational programmes on television.

Conclusion

In conclusion, the findings of this study revealed that educational programmes on television holds lower basic pupil's attention and are complementary to school work as the children enjoy entertainment (programmes) and learn better with it. Hence, it can be deduced that a measurable relationship exists between educational programmes on television and the learning capacity of pupils in lower basic schools.

Recommendations

Based on the findings of this study, the following recommendations were proffered:
1) Designers and presenters of educational programmes on television should take into consideration the age range of the children watching television in order to communicate to them in a language they would understand.
2) Since educational programmes on television helps to improve pupils learning capability (as indicated by the findings of this study), it requires continuous support by way of sponsorship from government and private individuals for improved and well produced educational programmes on television.
3) Also, since pupils prefer entertainment programmes, more educative cartoons and animation of characters should be introduced into the production of educational programmes on television in Nigeria.

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Author Information

Solomon Akintola Adeniran
Federal College of Education (Technical)
P.M.B. 1088, Gusau, Zamfara State, Nigeria
Contact e-mail: toladeniran2013@gmail.com

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ScholarChain: The Scholarship Management Platform with Blockchain and Smart Contracts Technology

Umut TEKGUC
Bahçeşehir Cyprus University

Ahmet ADALIER
Cyprus International University

Kamil YURTKAN
Cyprus International University

Abstract: A smart contract is a set of computer code that works on a blockchain and creates set of rules that are agreed upon by all the entities involved in the contract. It means that when a milestone of a contract is reached and the payments are made, it is registered in the blockchain so that neither party can manipulate the truth or validity or registration. All of these provide additional security, transparency and efficiency. In the higher education sector, although there are blockchain studies that are focusing mainly on the originality of documents and information, studies involving smart contracts are less common. In this study, a blockchain and smart contracts-based platform is presented as scholarship management model in order to create and store contracts between students and the Credit and Hostels Institution (CHI) in Turkey. Then it is confirmed on the Higher Education Information System of Turkey that the student fulfills the continuation requirements at the end of the academic year and automatically authorizes the scholarship. The proposed scholarship management model involves many parties and processes, provides transparency and document integrity, and the most importantly, provides authorization of those who are entitled to receive a scholarship by automated rules.

Keywords: Blockchain, higher education, smart contracts, scholarship management.

Introduction

Blockchain is a technology developed to create and store distributed ledger with a high degree of security and reliability. The blockchain is built with the idea of providing a model for changing values without intermediaries or reliable third parties. The classification of the blockchain-enabled applications based on the literature are; financial applications (Casino, 2019; Haferkorn and Quintana Diaz, 2015), business and industrial applications (Tapscott and Tapscott, 2017; Kshetri, 2018; Kogure et al., 2017), healthcare management (Zhao et al., 2017; Mamoshina, 2018), education (Bedi et al., 2020; Bdiwi et al., 2017; Spearpoint, 2017), travel and tourism (Ozdemir, 2019; Calvaresi, 2019), integrity verification (Bhowmik and Feng, 2017; Dupont, 2017), governance (Reijers et al., 2016; Hou, 2017), internet of things (Adler et al., 2018; Lin et al., 2017), privacy and security (Dorri et al., 2017; Chanson et al., 2017), data management (Asharaf and Adarsh, 2017; Zhang, 2016). It provides opportunities for digitizing traditional practices in these sectors, reducing costs, increasing efficiency and security, and reducing disputes between interested parties.

A smart contract is a set of computer code that works on a blockchain and creates a set of rules that are agreed upon by all the entities involved in the contract. It means that when a milestone of a contract is reached and payments are made, it is registered in the blockchain so that neither party can manipulate the truth or validity or registration. All of these provide additional security, transparency and efficiency. Smart contracts allow "verifiable operations to be executed in blockchains", bringing new opportunities for trust establishment in trustless scenarios (Shao et al., 2020).

This paper aims to propose a scholarship management model which involves many parties and processes, provides transparency and document integrity, and most importantly, provides authorization of those who are entitled to receive a scholarship by automated rules.

Background Information

CHI Scholarship Process

Credit and Hostels Institution (CHI) is the government institution at Turkey that manage scholarship, credit and hostel services for higher education. The scholarship is given free of charge to successful and needy students pursuing the provisions of Turkey's law on "Granting Scholarships / Loans to Higher Education Students" (CHI, 2020a, CHI, 2020b).

Scholarship Application

Currently, scholarship applications are accepted from the CHI's web address. Priority certificate is required from the students who apply for a scholarship. Priority Documents are as follows (CHI, 2020a):

- Martyr / Veteran's child,
- Those who certify that they have a disability of 40% or more with a medical board report,
- Those who have completed their high school or equivalent education by staying in orphanages
- Those who graduated from Darüşşafaka High School in Turkey,
- Amateur national athletes,
- Those whose mother and father died.

Evaluation

CHI is evaluating applications based on students having priority documents and students who are in the top 100 in the score type determined based on the raw scores as a result of the Higher Education Entrance exam of Turkey. Students are ranked, and then, depending on the budget of CHI, determined numbers of students are chosen from the top of the list (CHI, 2020a.).

Scholarship Awards

Scholarship awarded students are announced on the website of the institution and can withdraw money with their ATM cards issued in their names. Payment is made between 6^{th} and 10^{th} days of the month (CHI, 2020a).

Conditions of Continuation of Scholarship

In order for an applicant to continue its scholarship, an applicant must be an active and successful student at the educational institution she is registered. Students with a diploma score of 2 and above on the 4-point system and 53.33 and above on the 100-point system are evaluated as successful. Unsuccessful students or students that left, dismissed or on leave will not be able to continue to have a scholarship (CHI, 2020a, CHI, 2020b).

Technologies

Blockchain technology was introduced as an infrastructure with bitcoin. It is distributed ledger on participating computers. Adding a new block requires consensus and cannot be altered (Nakamoto, 2008). Nick Szabo proposed smart contracts that in the 1990s (Szabo, 1997). Ethereum is created as a blockchain platform. Turing complete language of Ethereum allows the development of smart contracts (Buterin, 2020). Smart contracts can be considered as significant breakthroughs in blockchain technology. (Ream & Yang, 2016). Blockchain is a closed network, and this is the major limitation of the blockchain (Adler et al., 2019). Interacting with external

data is not possible since having a consensus on untrusted external data. Data feeds or Oracles are needed to bring external data into the blockchain. Oracles are external data providers.

Related Works

Rashid et al. (2019) proposed a platform called TEduChain that allows Fundraisers to manage the funding of college students from sponsors with blockchain. Proposed work differs from theirs in that our system has one sponsor institution instead of multiple sponsors. Their platform is keeping transparent tracks of operations with blockchain, whereas our proposed platform uses smart contracts to manage application and payment operations.

Bedi et al. (2020) proposed a system that manages scholarship applications of higher education students in India. The proposed method uses a smart contract to get student application, and the state education board verifies the applicant information. Then, the system uses blockchain to keep track of payments. Compare to that work, proposed work differs in the payment part, and the proposed platform uses smart contracts for payments. On the other hand, their system uses blockchain to keep track of payments only.

Proposed Platform

We propose a scholarChain platform (Figure 1) that transpose CHI scholarship system into a blockchain and smart contract-based transparent system. The proposed platform is based on two smart contracts. First smart contract collects applications of candidate students, then evaluates and awards the scholarship. The second smart contract continues to track and reissue in case of continuation of scholarships.

CHI needs to verify documents and information from corresponding parties. The proposed systems use Oracle services of those parties, so that, automated verifications could be done. Data flow is required from Turkey's authorities "Mernis", "Minister of Youth and Sports", "Ministry of Health", "Ministry of Family, Labor and Social Services", "ÖSYM" and "YÖK Student Information System (YÖKSİS)".

The process starts with deploying "Scholarship Application Smart Contract (SASC)" by CHI. Applicant students need to apply to SASC. SASC will get information by trigger inbound Oracle services to verify provided information of applicants. Whenever scholarship application deadline reached, SASC evaluates applications and determines the candidates to be awarded a scholarship. For each scholarship awarded student, a distinct smart contract is deployed by SASC. Those "Scholarship Payment Smart Contracts (SPSC)" are for the payment operations. Students are expected to accept the agreement to be able to get the payment.

SPSC is getting student success information from YÖKSİS oracle service at the end of each academic year to evaluate the continuation of the scholarship. If a student is not successful, SPSC is terminated. Otherwise, SPSC continues to process the applications.

Conclusion

Verifying applicants' documents and information, and then checking the success of students at the end of each academic year is a time-consuming job and open to doubt since it is not transparent. The proposed platform ensures that CHI's scholarship processes are transparent and automatic, as well as payments are made through smart contracts.

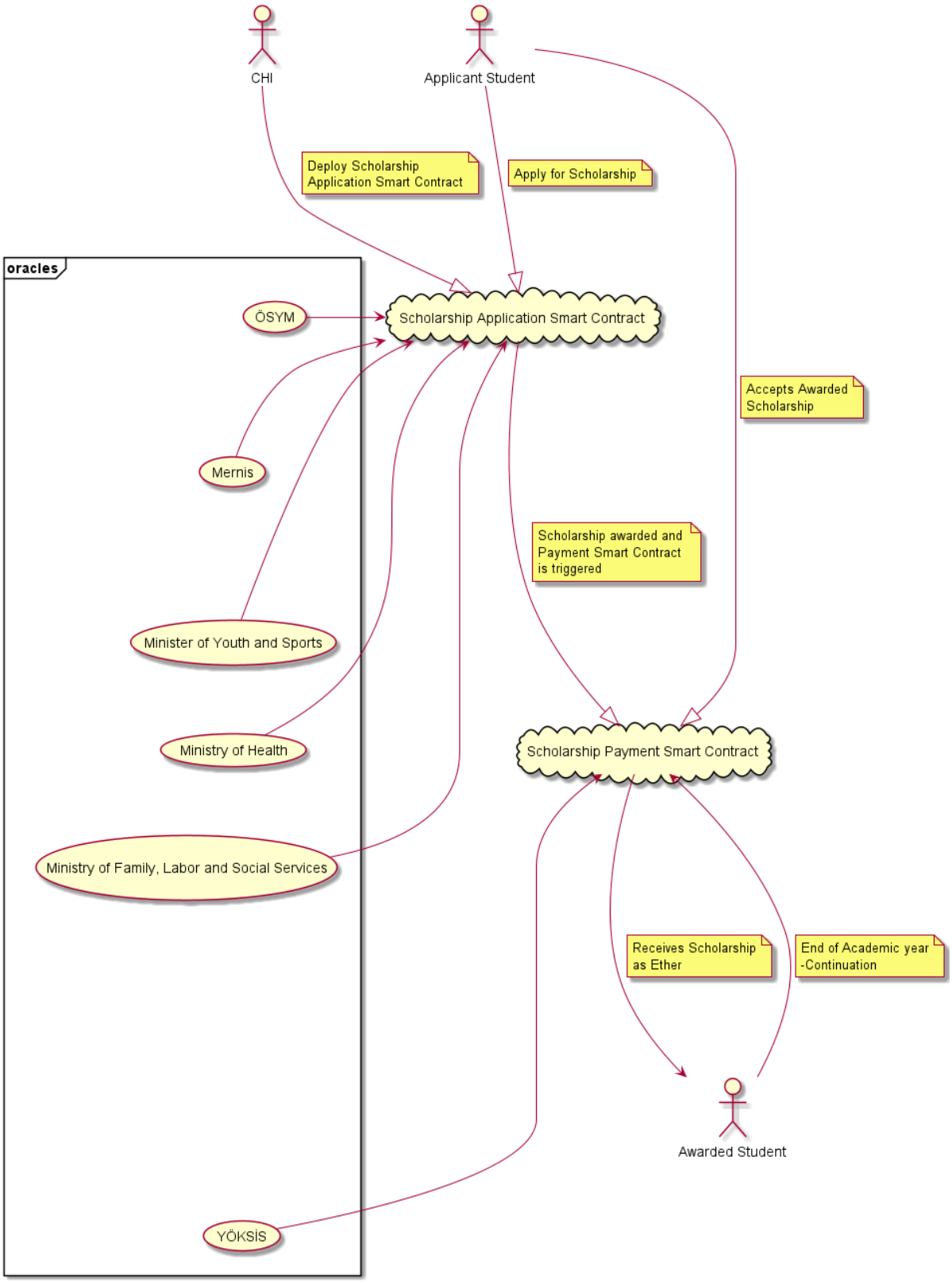

Figure 1. The Proposed ScholarChain Platform.

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Author Information

Umut TEKGÜÇ
Bahçeşehir Cyprus University
Blockchain Technologies Application and Research Center
Nicosia, Northern Cyprus
Contact e-mail: umut.tekguc@*baucyprus.edu.tr*

Ahmet ADALIER
Cyprus International University
Computer Education and Instructional Technology Department
Nicosia, Northern Cyprus

Kamil YURTKAN
Cyprus International University
Computer Engineering Department
Nicosia, Northern Cyprus

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Introducing Concept of Equilibrium in Primary School Physics Class

Ivana BOGDANOVIĆ
University of Novi Sad

Abstract: We say that an object is in equilibrium if it does not accelerate. The conditions for keeping the body in equilibrium are that both, the net force and the net torque, acting on the object are zero. Although students are very familiar with equilibrium in their everyday life, they do not have the scientific knowledge about this concept and often misconceptions are formed. It is advisable that physics teachers help students in the formation and development of the scientific concept of equilibrium with the help of examples from everyday life with additional explanations, using simple experiments and new technologies. Selected everyday life examples, simple experiments and PhET simulations, as well as idea for creating multimedia quiz, will be presented in this paper. For example, teacher can take students to the playground and they can learn about equilibrium experimenting on the seesaw. Similarly, students can use ruler and paperclips to make balance and carry out different simple experiments. Moreover, students can try to keep body in equilibrium by changing the intensity or direction of the forces acting on it. There is also available PhET simulation for inquiry Balance. Presented ideas of teaching students about equilibrium can help in detecting students' misconceptions, as well as in formation scientific concept of equilibrium.

Keywords: Concept Formation, Equilibrium, Physics, Primary School

Introduction

Students often think that physics is difficult, abstract and uninteresting and are not able to see connection between basic concepts of this science and world around them. With the use of different approaches to teaching one can impact students' physics performance, as well as their motivation for learning (Sağlam, 2010; Zouhor, Bogdanović, Skuban & Pavkov-Hrvojević, 2017). Therefore, physics teachers should find the way to help students in realizing stated connection in order to change students' opinion about physics and help them to better acquire physics contents. For instance, practical work has positive impact on students' physics performance (Lee & Sulaiman, 2018). In the Republic of Serbia, Physics is introduced as a separate school subject in sixth grade of primary school (11-12 year old students). According to the curriculum for seventh grade physics (determined by the Ministry of Education, Science and Technological Development of the Republic of Serbia), basic knowledge of equilibrium should be mastered in this grade. After learning about two forces acting on a body in the same direction, students learn about concept and types of equilibrium, lever, torque and balance and its application. Students are familiar with equilibrium in everyday life but lack of scientific knowledge and formation of misconceptions are problems that are present. One of possible solutions for these problems can be using examples from everyday life with additional explanations, using simple experiments and new technologies in teaching.

Concept of Equilibrium

We say that an object is in equilibrium if it does not accelerate. The conditions for keeping the body in equilibrium are that both, the net force and the net torque, acting on the object are zero. Torque (moment of force) is the rotational equivalent of linear force, it is the tendency of a force to rotate the body to which it is applied. The magnitude of the torque, with respect to an axis of rotation, is equal to the force times the lever arm with respect to that axis (perpendicular distance from the axis of rotation to the line of action of the force). The direction of the torque is given by the right hand rule. There are three types of equilibrium: stable, unstable, and

neutral. The type of equilibrium depends on the position of body's center of gravity relative to the base of support. Stable equilibrium can be defined as a state of equilibrium of a body which, when subjected to a slight displacement tends to return to its original position. For example, equilibrium of a pendulum hanging directly downward from its point of support. Unstable equilibrium is a state of equilibrium of a body which, when subjected to a slight displacement departs further from the original position. For example, a pendulum standing directly upward from its point of support. Neutral equilibrium is a state of equilibrium of a body which, when subjected to a slight displacement has no tendency to return to its original position nor to depart further from its original position. The example of this type of equilibrium is pendulum supported in its center of gravity.

The educational standards (describing what students should know and be able to do) that should be met related to concept of equilibrium in primary school (seventh grade) are given for intermediate and advanced level (proposed by the Ministry of Education of the Republic of Serbia).

Intermediate level:

> -The student can recognize when the lever is in state of equilibrium and can apply the equilibrium conditions. Example: if two people are on a seesaw, the student knows to recognize the ratio of distances from the point of support if the ratio of their masses is given.
> Advanced level:
> - The student is familiar with the facts about the net force acting on a body that is at rest or moving evenly: when two collinear forces of opposite directions act on a body, the body will be in a state of equilibrium only when those forces are of the same intensity. The student knows that under this condition the body is at rest (static balance) or moves evenly in a straight line (dynamic balance). From the fact that the body is in equilibrium, the student is also able to conclude what is the ratio of the two collinear forces that act on it. (It should not be expected for student to know how a body will behave if more than two forces act on it, or if non-collinear forces act.)
> - The student understands the lever equilibrium conditions, knows that the lever is in equilibrium when the equality of the moments of force with respect to the support point is achieved, knows which force gives the highest or the lowest moment of force relative to the support point and knows how to calculate the intensity of moment of force in the case of forces that are normal to the lever arm. The student knows what is the relationship of forces acting on a body at rest (in a state of static equilibrium) or body moving evenly (in a state of dynamic equilibrium). The student independently performs experiments, asks questions and gives answers, draws conclusions.

Suggestions for Teaching Concept of Equilibrium

Every Day Life Examples

Students would be very interested in having physics class at the playground. Seesaw is very suitable for learning about equilibrium. Students can experiment and try to conclude when the seesaw is in equilibrium. The concept of torque can be introduced to students and they can discuss about the types of equilibrium. The discussion about equilibrium while standing on one leg; walking; riding a bike and similar can be interesting to students.

The teacher can prepare instructional sheets with assignments that would be very interesting for trying and can provoke constructive discussion among students. This way students can inquiry physics of balance and weight shift. (1) Each student should get instructed to fold arms across chest, try to keep feet flat on the floor and back straight while trying to get up from a chair. Can one get up from a chair without leaning forward? In order to rise from a chair one must bring his/hers center of gravity over legs. (2) While standing, one should bend and hold his/hers toes (with slightly bent knees) and try to jump backward and forward. Why can one jump only backward? (3) Can someone move his/hers left leg while his/hers right side (right foot and shoulder) is against a wall?

Simple Experiments

It is shown that students who independently perform experiments better acquire physics knowledge (Cvjetićanin, Obadović & Rančić, 2015) and simple experiments are widely available since it is possible to select experiments for which low cost materials are needed and which require simple procedures.

Students can use ruler and paperclips to make lever (and use it like balance) and carry out different simple experiments. Students can inquiry what happens when (1) changing number of paperclips at each side of balance for given distance from axis of rotation and (2) changing distance from axis of rotation for given number of paperclips at each side of balance. Besides, students can try to keep body in equilibrium by changing the intensity or direction of the forces acting on it.
With round box and marble students can inquiry types of balance. Box and marble should be placed like it is shown in Figure 1. Students can observe marble's tendency to move when it is subjected to a slight displacement.

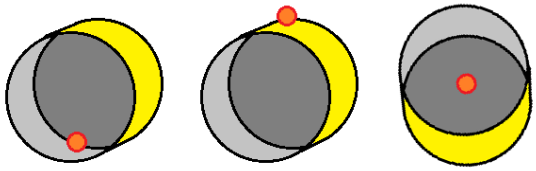

Figure 1. Examples of stable, unstable, and neutral equilibrium

Another interesting assignment for students can be to look up on the Internet and build their own Da Vinci popsicle stick bridge at class or for homework.

Toys in Physics Teaching

According to Güémez, Fiolhais and Fiolhais (2009) toys can provide amusing way to teach physics to both students and popular audiences. A long time ago balancing toys, like balancing man, were found to be useful when discussing equilibrium (Turner, 1987), another often described balancing toy is balancing bird (Fort, Llebot, Saurina & Sunol, 1998).

The teacher can use the balancing bird to get students motivated for learning and to explain center of gravity. The balancing bird can balance on finger, pencil, the edge of desk and similar, because its center of gravity is beneath the tip of its beak (Figure 2).

Figure 2. Balancing eagle

Besides, students can design their own balancing toy (bird, ballerina...) for homework.

PhET Simulations

Technology significantly effects contemporary education (Odadžić, Miljanović, Mandić, Pribićević & Županec, 2017). If computer is available for teaching and learning, PhET simulations can be used for introducing a new topic, formation of concepts, mastering skills, reinforcing ideas, and providing final review and reflection (Wieman, Adams, Loeblein & Perkins, 2010).

PhET (Physics Education Technology) Project was created by Nobel Laureate Carl Wieman, in 2002. It is realized at the University of Colorado. Within this project, free interactive math and science simulations are created. These simulations cover a wide range of topics in different sciences (STEM topics: physics, chemistry, biology, Earth science and mathematics). Free PhET simulations are available at website https://phet.colorado.edu/ and, with the help of them, students can learn by exploring (as in virtual laboratory).

When learning concept of equilibrium one can address next simulations:

- Forces and Motion – Basics (Figure 3), available at https://phet.colorado.edu/en/simulation/forces-and-motion-basics, and
- Balancing Act (Figure 3), available at https://phet.colorado.edu/en/simulation/balancing-act.

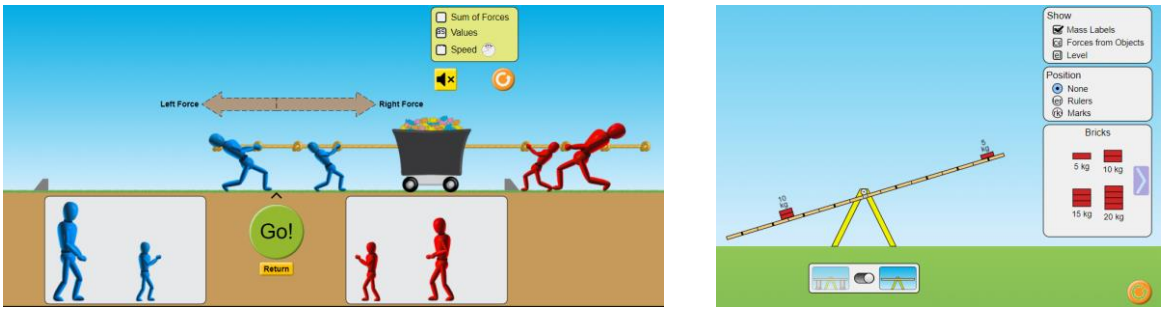

Figure 3. Examples of PhET simulations: forces and motion – basics (left) and balancing act (right)

Multimedia Quiz

Quiz can be prepared without the use of new technologies, but students are used to technology in their every day life and they can find interesting playing multimedia quiz in physics class. During participation in quiz, students develop competitive spirit, but also the cooperation of members within a team is encouraged (Tatić-Janevski & Radosavljević, 2002).

For creating multimedia quiz one can use Microsoft Office PowerPoint, as well as different online tools. For instance, free online platform Kahoot which "makes learning inclusive, fun and engaging." Kahoot is very simple to create and play (https://kahoot.com/company/). Different time limit can be set for each answer. When playing Kahoot, questions (with related images or videos) and answer options are displayed on the large screen while smartphones can be used for answering. Students can compete individually or in teams. Kahoot makes answering questions fun; after each question correct answers award quiz points, so students get feedback instantly.

Conclusion

Students are familiar with equilibrium in their everyday life but they do not have the scientific knowledge about this concept and often misconceptions are formed. The teacher should assist students in creating a full understanding of a concept. Concepts formation and development should be encouraged instead of memorizing definition of a term. It can be suggested to implement various teaching strategies in school practice in order to keep students engaged and motivated for learning. Selected everyday life examples, simple experiments and PhET simulations, as well as idea for creating multimedia quiz can be implemented in teaching about equilibrium. Besides, presented ideas of teaching students about equilibrium can help in detecting students' misconceptions, as well as in formation scientific concept of equilibrium.

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Author Information

Ivana Bogdanović
University of Novi Sad
Faculty of Sciences Trg Dositeja Obradovića 4, Novi Sad
21000, Serbia
Contact e-mail: *ivana.bogdanovic@df.uns.ac.rs*

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Teacher Training Systems in Two Countries (France and Morocco): Comparative study of Professionalization Models and Their Challenges

Barzane MONCEF
Ens Marrakesh

Essaleh SOUKAINA
Ens Marraksh

Ourahay MUSTAPHA
Ens Marrakesh

Khzami SALAHEDDINE
Ens Marrakesh

Abstract: Teacher training is still a problematic subject in projects to reform education systems. Through the quest for quality education, it has experienced major changes in different contexts in connection with the process of "professionalization". The different mechanisms of this training must allow teachers to acquire disciplinary knowledge and develop skills in order to be able to build quality teaching and learning. In addition, there seems to be a relationship between the effectiveness of the teacher and the level of quality of his training. Study results have revealed particularly poor performance levels among students whose teachers are characterized by “poor quality education and uncontrolled knowledge in the subjects they teach” (Bidjang, S. G. , 2005). In other words: the effectiveness of teaching depends at least to a significant extent on what "the teachers bring". Morocco in the last reform took up professionalization and universitarization as new approaches to teacher training. However, despite the progress recorded in terms of educational training provision, the reform has not been accompanied through strategic measures. Training in Morocco appears to suffer from a number of shortcomings. The objective of the study is to discover, thanks to the comparison of two training systems (France and Morocco) if there are characteristics which would allow us to understand the relative "advantages" of one system compared to another, and to what extent such a comparison would help us improve Morocco's. The country in question are considered to have the best performing education systems globally. This involves carrying out a comparative documentary study, that is to say analyzing existing documents on teacher training systems by comparing them in the mentioned context.

Keywords: Education, professionalization, knowledge and skills, approaches, effectiveness of teaching

Introduction

Teacher training is still a problematic subject in projects to reform education systems. Through the quest for quality education, it has experienced major changes in different contexts in connection with the process of "professionalization" (Bidjang, S. G et al., 2005). The different mechanisms of this training must allow teachers to acquire disciplinary knowledge and develop skills in order to be able to build quality teaching and learning. Morocco in the last reform took up professionalization and universitalisation as new approaches to teacher training. However, despite the progress made in the area of educational training, the reform has not been accompanied by strategic measures. Training in Morocco appears to suffer from a number of shortcomings. In this regard, we must emphasize that both learning the trade and personal growth, access to the position, the quality of the tasks assigned, acculturation to the environment, integration into the school team and social and professional recognition are major issues during professional integration (Crocker, R. & Dibbon, D., 2008).

Therefore, it can be said that there is still room for improvement in some programs to better meet the diverse needs of beginning teachers (Carlgren, I., & Klette, K., 2008).

The comparison of training programs cannot lead to a transposition of a model as a whole from one context to another, and this because of the specific contexts and issues that characterize them. Nevertheless, it is possible to identify improvements that could be made to the Moroccan teacher training program from the other models.
The objective of the study is to discover through the comparison of two training systems (France and Morocco) if there are characteristics which would allow us to understand the relative "advantages" of a system compared to another, and to what extent such a comparison would help us improve Morocco's programme.

Method

More specifically, it involves analyzing the implementation of professionalization in the two systems, the nature and organization of initial training programs, as well as the issues that characterize them.This is a qualitative type of research, which includes a descriptive aim, through which one must seek to identify specific elements and establish relationships between them. Various elements seemed to us to be of decisive importance for the understanding of the training models for secondary teachers practiced in France: the university nature of the training and the place given to practitioner expertise, the nature and organization of the partnership. training establishments / institution as well as the supervision and support system for teacher-trainees. In this reflexive model, the practice of teaching in responsibility is the central element of the training, from and around which the rest of the training actions are articulated, in particular through the preparation, the support, the exploitation and the systematic analysis of professional experiences and trainees' experiences. Morocco in the last reform took up professionalization and universityization as new approaches to teacher training. However, despite the progress made in the area of educational training, the reform has not been accompanied by strategic measures.

Results and Discussion

Although we have detected both major similarities and differences, this issue still needs to be further explored to continue improving teacher education (Carlgren, I., & Klette, K., 2008). From the information gathered on the training systems of the countries in question, we suggest more open and flexible systems which do not forget the importance of teacher training, the status of the teacher, the selection of the teacher or the role of the teacher as an active member of the system.
The different educational outcomes and models pose problems of quality, performance and relevance of the teacher at the forefront of our modern societies.

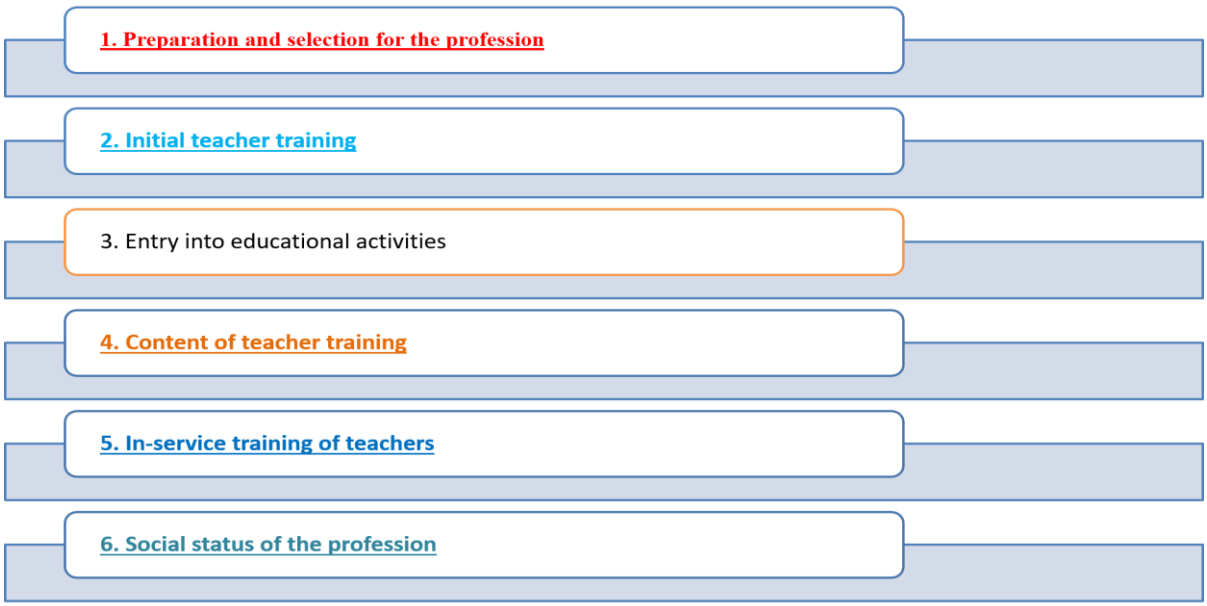

Figure 1. Criteria of analysis

Conclusion

Our political, economic and social responses should help place teachers and teacher training in a positive position, recognizing its primary role in educational outcomes and, where possible, building on the experiences of others in order to avoid making the same mistakes. The comparison of training programs cannot lead to a transposition of a model as a whole from one context to another, and this because of the specific contexts and issues that characterize them.

Recommendations

The different educational outcomes and models pose problems of quality, performance and relevance of the teacher at the forefront of our modern societies emphasizing that both learning the trade and personal growth, access to the position, the quality of the tasks assigned, acculturation to the environment, integration into the school team and social and professional recognition are major issues during professional integration. It is possible to identify improvements that could be made to the Moroccan teacher training program from the other models.

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Author Information

Moncef Barzane
Caddy Ayyad University
Caddy Ayyad University / Higher Normal School
El massira1 ibn toumert Marrakesh
Contact e-mail: barzane14@*email.com*

Soukaina Essalih
N Caddy Ayyad University
N Caddy Ayyad University/ Higher Normal School
El massira1 ibn toumert Marrakesh

Mustapha Ourahay
Caddy Ayyad University
Caddy Ayyad University/ Higher Normal School
El massira1 ibn toumert Marrakesh

Sallaheddine Khzami
Caddy Ayyad University
Caddy Ayyad University/ Higher Normal School
El massira1 ibn toumert Marrakesh

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Impact of Vocabulary Learning Strategies on Gender Based ESL Learners

Muhammad Safdar BHATTİ
The Islamia University

Rafia MUKHTAR
Workers Welfare School

Abstract: The wide spectrum of English language compels the readers to find out the exact crux of the language itself. English has won the status of international language. It has become a dire need of this age. English language is comparatively difficult due to its pronunciation, sentence structure, and vocabulary level from local languages in Pakistan. Vocabulary is the utmost aspect of learning second language. It is the essence and soul of language. Language acquisition is not possible without vocabulary. The language process depends on learning vocabulary. So the current paper investigates the impact of vocabulary learning strategies for the ESL learners. It was an experimental type of research. One hundred students of Grade-9 in the academic year 2019-20 from Govt.S.D. High School Bahawalpur and Workers Welfare High School (Girls) Bahawalpur participated in this study in both experimental and control groups. The data was collected through test and questionnaire. The study results explored that the students who were taught by the ESL learning techniques performed better as compared with the students in traditional vocabulary learning method. Female students performed better in experimental group. ESL male learners used group association learning technique at priority and ESL female learners used visual and auditory learning at their priority. Based on the findings, the researchers recommend that English language teachers should use vocabulary learning strategies for teaching English in general and for the ESL learners in particular.

Keywords: Investigation, Strategies, Vocabulary, ESL learners, Comparatively.

Introduction

Language is a weapon for man. It has to be taught and used in social groups. It is the only way to speak with each other and it is the way by which we can send our messages to others. It is not only used for routine dialogue but also used in education, research and science in spoken as well as in written form. Without it, man is like a dumb animal. Proficiency over target knowledge of vocabulary can make our students powerful speakers, handsome listeners, good readers and writers. For learning any language, both the oral and written skills are of equal importance. For this purpose, there is a dire need of interaction among the learner, educator and study material. In fact, English is being used all over the world as an international language. It has become a Lingua Franca and a language of greater opportunities. It also enjoys a supreme status in society. Its sound knowledge is a successful passport for any job. Recently, network communities made the globalization much easier than ever. The vital role is being played through English language. No part of the world is seen without understanding and speaking English language. The trade, administration, social and educational problems are easily discussed in English language. Most of the people convey their thoughts and perform variety of functions in different situations. In Pakistan, English is used as a second language. Basically, learning a second language is never easy. Learning of vocabulary is the very basic point to expertise it in the target language. Vocabulary acquisition, vocabulary retention and vocabulary transfer are some confused processes in learning vocabulary. No doubt, the role of vocabulary is very vital in order to language teaching and learning. Mastery in vocabulary will enable the students to enhance other skills well. Developing vocabulary is a confused series of actions to achieve the results. It takes a long time to master English vocabulary. It makes the learning process more meaningful.

The knowledge of words relevant to its meaning and explanations is called vocabulary (Schmitt, 2000). Vocabulary is the fundamental aspect in grasping a second language. Vocabulary learning process needs the abilities of retention, acquisition, and transfer of vocabulary (Schneider et al., 2002).According to Oxford (1990), Language learning strategies are behaviors or techniques used by the learners in facilitation and acquisition of language. Language learning aspects must be considered during teaching vocabulary which are: syntax, semantics and arranging of words. Every language has different meanings, sentence structure and arrangement of words which leads to several vocabulary learning issues. The cognitive, social and psychological factors involve in learning and retaining of vocabulary. The social indicators of students' learning process are parents, peers and teachers who help in refining the learning process of the learners through different literary events.

Mobius (1904) (as cited in Na, 2016), also presented the sex differences of human brain. He observed that women are physiologically weak-minded than men as women skull is eight percent less than men. Leonard (1998) (as cited in Na, 2016), found that the cerebral cortex related to complex thinking is thicker in women's brains than men's. The left cerebral hemisphere is dominant in females which facilitates short-term memory and language communication while right cerebral hemisphere is dominant in males and helps to enhance analytical ability and comprehensive competence. The psychological difference revealed that male learners are adventurous, confident, independent and outspoken but careless. On the other hand, females are delicate, quiet and irresolute. It means, male learners are better self-evaluators and self-recognizers. The changing role in gender in human societies supported men to speak more. Douglas and Burman (2006) summarized that boys speak later than girls. After one and half year from birth, females have twice the vocabulary than males. Boys are apt at verbal reasoning. The females are good at grammar and spelling.

Gender issue in second language acquisition has achieved the vital acceptance and attention among researchers and linguists worldwide (Brantmeier, 2003; Young& Oxford, 1997), strategies of learning (Jimenez, 2003; Young & Oxford,1997) production of errors (Jimenez, 1992).In all researches different results are achieved. Some studies supported males over females or vice versa even other revealed that gender is an irrelevant issue in foreign language acquisition. Regarding the vocabulary acquisition, the gender role occupied a projecting place among scholars. Studies which addressed gender differences mostly related to lexical acquisition. According to Boyle (1987) males are dominant over females in comprehension.

Scarcella and Zimmerman (1998) also revealed that men performed better than that of women in academic vocabulary recognition test. The studies of Lin and Wu (2003), Lynn et al. (2005), and Edelenbos and Vinje (2000), investigated the superiority of males over females in vocabulary knowledge of foreign language. On the other hand, Sunderland (2000) showed that women had better performance than men in memory test. The findings of Jimenez and Terrazas (2005-2008) revealed a non-significant gender difference in receptive vocabulary performance test. Meara and Fitzpatrick (2000) and Jimenez and Moreno (2004) showed that females performed higher than males in productive vocabulary. The empirical evidences found in favor of females in lexical availability test (Jimenez & Ojeda, 2009). Many studies had mixed results in vocabulary acquisition of foreign language (Jimenez,2010).In identifying the role of gender in vocabulary learning strategies, Jimenez (2003) found that females were superior to males in qualitative and quantitative terms by using more strategies than males. The female students learn vocabulary rapidly than that of males. However, the male students incorporate more new words into lexicons than female students (Llach& Gallego, 2012).

Vocabulary is needed in learning a second language. According to Nation (2001) vocabulary learning is the first step for achieving the goal. According to Stoller and Grabe (1993), the vocabulary development is essential for both non-native and native learners. Kaivanpanah and Zandi (2009) revealed that first and second languages cannot be learnt without sound knowledge of vocabulary. Hulatijn (2005) told that without knowing the meanings of the words understanding of the text is strictly hampered. Quin and Irvings (1997) revealed that memorizing new and unrelated words is a difficult task. According to Wei (2007), long term retention is necessary in learning new vocabulary. According to Paivo (1986), the success of second language classroom mostly depends on vocabulary.

Vocabulary learning is the major grievance of ESL students. It is difficult for them to memorize the new vocabulary structures for a long time. The words are building blocks for learning a language. Words do not exist in isolated form. They are interwoven to achieve listening and reading understanding to share the ideas in writing and speaking process. Oxford (1990) proposed six learning strategies. They are: retrieving and remembering, cognitive strategy, meta cognitive strategy, compensation, affective and social strategy. In brief the internal and external factors are responsible for learning. Internal factors are age, motivation, intelligence,

attitude, personality and aptitude. The external factors referred to learning environment, teaching methods, social background and evaluation.

Oxford and Scarcella (1994) identified many approaches for teaching of vocabulary based on learners' needs, motivation and difficulty. In the past, vocabulary was taught in the class unsystematically that learners learnt the vocabulary without the guidance of their teachers. The new and modern approach made the learners to learn vocabulary systematically with the help of words which students use frequently. Nation (2001) expressed that learning strategies of vocabulary are part of general teaching.

Word Meaning Theory

There exists a basic structure behind every word, fixed meaning and fuzzy meaning. In fixed meaning the learners acquire the core meaning of a word, the fuzzy meaning is not concerned with fixed meaning (Aitchison, 2003). They are constructed into planning information and process.

Techniques of Vocabulary Retention (TVRs)

Oxford and Crookall (1990) proposed few memory strategies to help learners in recovering and storing new information:

> Grouping Association: Grouping is an easier to remember new words. For example (nouns, verbs),semantic(statements) or themes(words about situations).New words based on old memory concepts like, "erroneous means mistaken" the students cannot associate with "error".
>
> Words Context Technique: New words are placed in long-term memory with the help of meaningful dialogues and sentences in a story.
>
> Using Imagery: The meaningful imagery is helpful for new language information.
>
> Semantic Mapping: Related words are arranged by means of arrows and lines in semantic mapping.
>
> Visual and Auditory Learning: Similar sounds help new language words incorporating mother language. The learners create auditory links with familiar and new word through visual link. They may be memorized by using rhymes.

Pickrell (2010) and Thombury (2008) also identified many other techniques of learning vocabulary. Repeating novice words are pronounced loudly in sentences to improve the retention skills. It is done by reading newspapers and magazines. It helps the students in learning sentence structures and patterns. Flashcards may be used to develop interest among learners. Other methods include matching, filling the blanks; prefixes and suffixes exercises. Current studies are insufficient to tackle the issue. Students may learn many new words but unable to retain in long term memory. The current study is anticipated to help the ESL learners in retaining and learning vocabulary through effective learning techniques used to learn new words.

Objectives of the Study

The core objectives of the study were:

> 1. To compare the achievement scores of students learning through ESL learning techniques and traditional methods.
> 2. To analyze the effective vocabulary learning strategies for ESL learners at secondary level.
> 3. To offer strategies and tools to help students in learning new vocabulary.
> 4. To analyze effective vocabulary learning strategies between male and female learners.

Research Questions

To achieve the required objectives, following research questions were formulated:

RQ.1 Is there an apparent distinction in control and experimental groups about ESL learners' performance under vocabulary learning strategies?

RQ.2 Is there an apparent distinction in male and female students' performance under ESL learning strategies?

RQ.3What is the overall mean achievement and standard deviation of ESL learning techniques?

RQ.4 What is the standard deviation and mean achievement of ESL learning techniques in male students?

RQ.5 What is the standard deviation and mean achievement of ESL learning techniques in female students?

Research Design

The current study was experimental in nature which included both groups: experimental and control group. In addition a questionnaire was also filled up by the teachers about their experience regarding ESL vocabulary learning strategies.

Population of the Study

Secondary level ESL learners of Bahawalpur City were the part of this study. The data was collected from ESL learners of secondary level in the academic year 2019-20. The study was limited to the Bahawalpur City only.

Sample of the Study

In this study, one hundred students from Govt. S. D. High School, Bahawalpur and Workers Welfare High School (Girls) participated. ESL learners from Grade-9 were selected randomly. One hundred students participated in this study. Among them fifty students belonged to control group and fifty students belonged to experimental group. Each group had equal participation of male and female students.

Research Tools

Following research tools were used to collect the data from the respondents:

1**:** Questionnaire for teachers.
2: Pre-test and Post-test for students.

Data Collection Procedure

Test was used to collect the data to find out the level of vocabulary from the respondents. There were both open-ended and close-ended questions. The instrument, Vocabulary Learning Strategies Questionnaire (VLSQ) developed by Schmitt (1997, 2000) was used for the study. The vocabulary learning strategies were memory, determination, cognitive, social, and meta-cognition. The second instrument, Vocabulary Level Test (VLT) by (Nation, 2001; Schmitt, Schmitt, & Clapham, 2001) was used by the researchers for measuring vocabulary size of students. It was easy to administer. Test and questionnaires were the research tools used for this study. Questionnaire was delivered to the teachers about their teaching experiences. Their result was also collected on the same questionnaire as their performance.

Data Analysis and Findings

RQ.1 Is there an apparent distinction in control and experimental groups about ESL students' performance under learning strategies?

Table-1 discovered an apparent distinction in students' performance between control and experimental groups under ESL learning strategies. The two groups had an apparent distinction between them. The mean achievement score of control group (M= 57.12, sd= 11.82) and experimental group (M=62.72, sd=12.12) with

(p value<0.05) shows that experimental group had better achievement score as compared with control group. So the research question, "Is there an apparent distinction in control and experimental groups about ESL students' performance under learning strategies?" answered in positive.

Table 1. Comparison of performance under control and experimental groups

Respondents	Frequency	Mean	Std. D.	t	p
Control Group	50	57.12	11.82	-2.338	.021*
Experimental Group	50	62.72	12.12		

*p<0.05

RQ.2 Is there an apparent distinction in male and female respondents' performance under ESL learning strategies?

In table 2, there was an apparent distinction in students' performance between male and female under ESL learning strategies. It is obvious that there is an apparent difference in both genders. The achievement of males (M= 56.98, sd= 11.41) and females (M=62.86, sd=12.44) with (p value<0.05) showed that female respondents performed better as compared with male respondents. So the research question, "Is there an apparent distinction in male and female students' performance under ESL learning strategies?" answered in positive.

Table 2. Student' performance under ESL learning strategies in experimental group

Students	N	Mean	Std. D.	t	p
Male	25	56.98	11.41	-2-462	.016*
Female	25	62.86	12.44		

*p<0.05

RQ.3 What is the overall mean achievement score and standard deviation of ESL learning techniques?

It is evident from the table 3 that most useful learning technique among ESL learners was visual and auditory learning technique. The second learning technique was group association for the students. The third ESL learning technique was using imagery. Word context technique was the fourth important indicator for ESL learners at school level. The last technique that was used by the students was semantic mapping.

Table 3. Mean score of overall learning strategies among ESL learners

	Semantic Mapping	Word Context Technique	Using Imagery	Group Association	Visual &Auditory Learning
Mean	3.57	3.62	3.64	3.65	3.76
Std. Deviation	1.32	.77	.85	.79	1.04

n=50

RQ.4 What is the mean achievement score and standard deviation of ESL learning techniques in male students?

The Table 4 illustrates that most useful learning technique among ESL male learners was group association learning technique. The second learning technique was word context for the students. The third ESL learning technique was visual and auditory learning. The fourth technique was using imagery. The last technique that was used by the male students was semantic mapping. It is evident from the bar graph below.

Table 4. Mean score of male students learning strategies among ESL learners

Tests	Semantic Mapping	Word Context Technique	Using Imagery	Group Association	Visual & Auditory Learning
Mean	3.093	3.343	3.272	3.400	3.325
Std. D.	1.25	.67	.82	.79	1.01

n=25

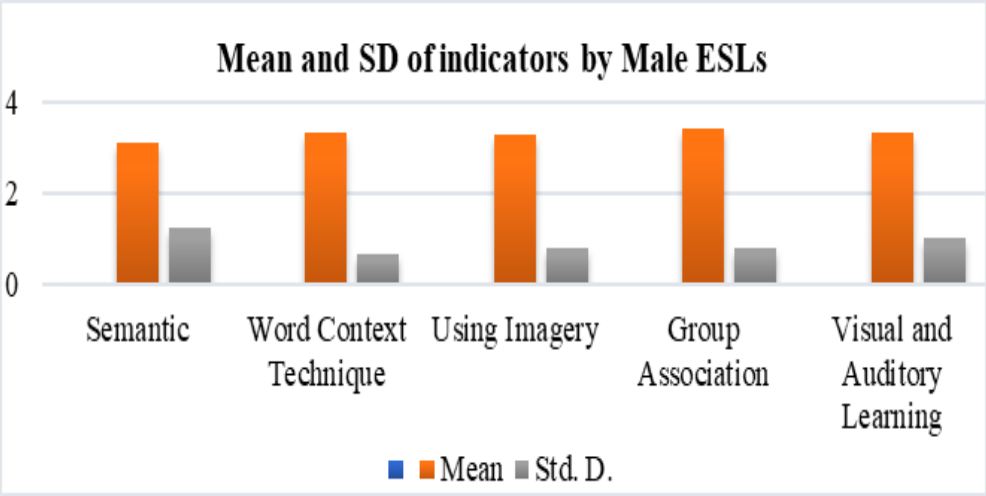

Figure 1. Mean and SD of indicators by male ESLs

RQ.5 What is the mean achievement score and standard deviation of ESL learning techniques in female students?

The table 5 demonstrates that most useful learning technique among ESL female learners was visual and auditory learning. The second technique used by the female students was semantic mapping. The third technique was using imagery. The fourth one was group association learning technique. The last technique that used by female ESL students was word context. It is evident from the bar graph below.

Table 5: *Mean Score of Female Students Learning Strategies among ESL Learners*

	Semantic Mapping	Word Context Technique	Using Imagery	Group Association	Vis. And Aud. Learning
Mean	4.053	3.910	4.015	3.913	4.195
Std. D.	1.225	.762	.726	.718	.888

N=25

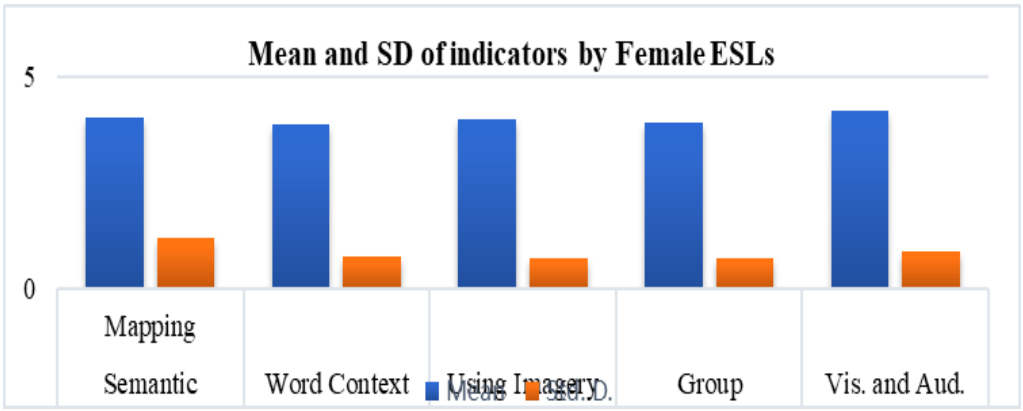

Figure 2. Mean and SD of indicators by female ESLs

Data Analysis of Teachers' Questionnaire

A questionnaire was also prepared to check the views of the teachers about the strategies to improve vocabulary of the ESL learners. Teachers told that when they provided their students proper guideline, their students took more interest in learning vocabulary items. They considered themselves part of that activity and took part fully. At the same time 80% teachers told that they found their students more confident. 89% teachers were agreed that the use of vocabulary learning strategies through different activities had a positive impact on the minds of the students. 100% teachers were strongly agreed that secondary level students' vocabulary skill was improved with the help vocabulary learning strategies.

Results and Discussion

A significant difference in students' performance between control and experimental group under ESL learning strategies was found. The mean achievement score of control and experimental group shows that experimental group had better achievement score as compared with control group. There was an apparent distinction in students' performance between male and female under ESL learning strategies. The achievement score of male students and female students shows that female students have performed better as compared with male students. The current study supported the findings of Sunderland (2000) which showed that women had better performance than men in memory test. Meara and Fitzpatrick (2000) and Jimenez and Moreno (2004) showed that females perform higher than males in productive vocabulary. The empirical evidences found in favor of females in lexical availability test (Jimenez & Ojeda, 2009).Jimenez (2003) found that females were superior to males in qualitative and quantitative terms by using more strategies than males. The female students learn vocabulary rapidly than that of males.

On the other hand, (Boyle, 1987; Scarcella & Zimmerman, 1998) showed that males are dominant over females in comprehension. Many other studies conducted by Lin and Wu (2003), Lynn et al. (2005), and Edelenbos and Vinje (2000), investigated the superiority of males over females in vocabulary knowledge of foreign language. Male students incorporate more new words into lexicons than female students (Llach & Gallego, 2012).The findings of Jimenez and Terrazas (2005-2008) revealed a non-significant gender differences in receptive vocabulary performance test. Many studies had mixed results in vocabulary acquisition of foreign language (Jimenez, 2010).

The overall most useful learning technique among ESL learners was visual and auditory learning technique. The second learning technique was group association for the students. The third ESL learning technique was using imagery. Word context technique was the fourth important indicator for ESL learners at school level. The last technique that was used by the students was semantic mapping.

ESL male learners used group association learning technique at priority. The second learning technique was word context for the students. The third ESL learning technique was visual and auditory learning. The fourth technique was using imagery. The last technique that was used by the male students was semantic mapping. ESL female learners used visual and auditory learning at their priority. The second technique used by the female students was semantic mapping. The third technique was using imagery. The fourth one was group association learning technique. The last technique used by female ESL students was word context.

Conclusions

The purpose of this study was to develop vocabulary of secondary students through different strategies. After the data analysis of the results of both groups, it was proved that various activities and strategies were fruitful and full of entertainment for the students during the experiments. On the contrary the students taught by the non-effective way of teaching made it clear that there is no meaningful difference. Therefore, it has been exposed that there is a significant difference in the results of pre-test conducted before teaching the lessons according to the plan of researchers and post-test after the favorable accomplishment of the research tasks. It is a fact that gender-based vocabulary learning strategies are perfect means for the secondary level students to improve their vocabulary. It was concluded that when a teacher creates a learning environment in the classroom by using interesting vocabulary learning strategies then naturally the students' response is positive.

Recommendations

Based on the current research findings, following recommendations were made:

- There is a dire need to develop vocabulary. So, vocabulary must be given more importance in the language teaching to get the mastery over the language being taught.
- The researchers further recommend that English language teachers should use different strategies for teaching English in general and for improving vocabulary in particular at secondary level.
- They should also motivate their students to work through pair and group in the classroom.

- Public schools should be equipped with libraries, language labs and audio-visual materials such as tape recorder, video-player, overhead projector, multi-media and such facilities may properly be used for developing vocabulary of secondary level students.
- Teachers should develop students' vocabulary by giving them an exposure for the new phrases and words they might encounter.

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Author Information

Muhammad Safdar Bhatti
The Islamia University
The Islamia University of Bahawalpur
Baghdad Campus, Hasilpur Road, Bahawalpur-Pakistan
Contact e-mail: *safdarbhatti2001@gmail.com*

Rafia Mukhtar
Workers Welfare School(Girls)
Workers Welfare School(Girls) Bahawalpur
Rehmat Colony, Near Railway Station, Bahawalpur-Pakistan

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Virtual Museum Experiences of Social Studies Prospective Teachers

Tugba KAFADAR
Erciyes University

Abstract: This study aimed to determine the views of social studies prospective teachers about virtual museums. The research was designed according to the phenomenology pattern, which is one of the qualitative research designs. The study group was determined using the criterion sampling method, which is one of the purposeful sampling methods. The study participants consisted of 30 prospective teachers who took media literacy course in the fourth year of the social studies teaching undergraduate program. The research data were collected by employing the interview method. An open-ended interview form was used to collect the data. In preparing the interview form, questions were formed in parallel with the research subject by the researcher, and the questions were finalized by receiving expert opinions. The participants visited a virtual museum for the research and were asked to answer interview questions about the visit. The data obtained from the research were analyzed with the descriptive analysis technique. It was concluded that the participants mostly answered yes to the question of whether virtual museums could be used in social studies education. The reasons they stated for their positive answers were that it attracted the attention of students, increased permanent learning, improved spatial perception skills and the perception of historical space. For the question of which historical values the virtual museums caused students to gain, the participants mostly replied as the development of national consciousness, love of homeland, nation, flag, respect, freedom, and solidarity values. For the question of what experiences the participants acquired during their virtual museum visits, they mostly stated that it contributed to the development of historical empathy skills, improved permanent learning, raised awareness, and increased sensitivity.

Keywords: Social studies, Prospective teachers, Virtual museum

Introduction

Museums are elements that reflect the identity of societies from the past to the present and are considered important for the individuals of the society. They are places where traces of the past can be seen genuinely. Along with the latest technological developments, the rapid change in everything has also affected museums and museums have opened their doors to society virtually. Virtual museums, where individuals have the opportunity to visit and explore the museum on the web, have been opened to use. According to Barlas Bozkuş (2014), virtual museums are digital treasures that share visual, audio, and text files that can be accessed electronically with people, in the fields of art, culture, and history. In these museums, whose examples are seen more and more every day in the world, artworks are produced by attributing meaning to the work in terms of post-modern exhibition practices. According to Sungur & Bülbül (2019), virtual museums, which do not need a defined period of time and real space, offer visitors the opportunity to access them via the internet and computers without limitations in time and space.

Museums are out-of-school learning areas that are frequently used in the teaching of many disciplines. For example, a historical issue can be conveyed more effectively through museums. Especially in social studies education, museums have been frequently used teaching environments. Educators use museums in teaching to provide effective and more realistic teaching on historical subjects. With the rapid developments in technology, especially virtual museums can be used as more useful and more economical teaching tools for education. When a teacher wants to bring students to a subject in the classroom, they can use virtual museums in the classroom environment and can increase students' attention. In this regard, especially the awareness and views of teachers in the teacher training process are very important. Because a teacher candidate who goes through an effective teacher training process can be more efficient in teaching. Therefore, the opinions of social studies prospective

teachers on the use of museums and especially virtual museums are very important. Hence, the problem sentence of this study is the question of how are social studies prospective teachers views on virtual museums.

Purpose of the Study

The general purpose of the present study is to determine the opinions of prospective social studies teachers in virtual museums.

Method

Research Model

The present study was designed in line with phenomenology, a qualitative research design. Phenomenology "focuses on phenomena that we are aware of; however, we do not have an in-depth and detailed understanding about. Phenomena may appear in various forms such as events, experiences, perceptions, orientations, concepts, and situations. Phenomenology provides a suitable research ground for studies that aim to investigate phenomena that are not completely alien to us, but that we do not fully understand*"* (Yıldırım and Şimşek, 2011, p.72).

Study Group

The study group is selected using the criterion sampling method, which is a purposive sampling method. According to Patton (1987), the purposive sampling method *"*enables in-depth study of situations that are thought to possess rich information*"* (cited in Yıldırım and Şimşek, 2011, p. 107). The study group was composed of 30 prospective teachers who were fourth-year students in the social studies teaching undergraduate program taking media literacy course.

Data Collection and Analysis

The research data were collected using the interview method. A standardized open-ended interview form was used in data collection. While preparing the interview form, questions were formed by the research in line with the research topic, and questions were finalized through expert opinions. In the study, the participants visited a virtual museum and they were asked to answer some interview questions on this visit. The data obtained from the research were analyzed using the descriptive analysis technique.

Findings

According to Table 1, 27 of prospective social studies teachers stated that virtual museums could be utilized in social studies education (Yes). However, 3 participants stated that virtual museums could not be utilized in social studies education (No).

Table 1 Social studies teachers' views on benefiting from virtual museums

Grade level	Yes	No
4th grade	27	3

According to Table 2, prospective social studies teacher stated the following reasons behind utilizing virtual museums in social studies education: drawing the attention of the students (f12), increasing students' permanent learning (f8), improving spatial perception skills (f7), and improving the perception of historical places (f5).

Table 2. The reasons for utilizing virtual museums in social studies education

Grade level	Reasons	f
4th grade	Drawing the attention of the students	12
	Increasing students' permanent learning	8
	Improving spatial perception skills	7
	Improving the perception of historical places	5

According to Table 3, the following findings were obtained regarding the question "What historical values does virtual museum experience provide according to prospective social studies teachers": Developing a national consciousness (f11), homeland (f9), nation (f5), love of flag (f4), respect (f4)), freedom (f3), and solidarity (f3).

Table 3. Historical values acquired through virtual museum

Grade level	Historical values	f
2nd grade	Developing a national consciousness	11
	Homeland	9
	Nation	5
	Love of the flag	4
	Respect	4
	Freedom	3
	Solidarity	3

According to Table 4, the following findings were obtained regarding the question "What experiences did museum visits provide for prospective social studies teachers: that it contributes to developing historical empathy skills (f7), that it contributes to permanent learning (f5), that it raises awareness (f4), and that it increases their sensitivity (f3).

Table 4. The experience that prospective social studies teachers gained during virtual museum visits

Grade level	Experiences	f
4th grade	That it contributes to developing historical empathy skills	7
	That it contributes to permanent learning	5
	That it raises awareness	4
	That it increases their sensitivity	3

Results and Discussion

The results obtained in the study investigating the opinions of prospective social studies teachers on virtual museums are as follows: Participants mostly answered yes to the question stating whether virtual museums could be utilized in social studies education. Underlying reasons behind that were as follows: that it drew attention from students, that it increased their permanent learning, that it improved spatial perception skills, and that it improved the perception of historical places. On the question stating which historical values virtual museums provided, participants mostly stated that it provided values such as developing national consciousness, homeland, nation, love of flag, respect, freedom, and solidarity. On the question stating which experiences virtual museum visits provided for prospective social studies teachers, they stated that it contributed to developing historical empathy skills and to permanent learning, that it raised awareness, and that it increased their sensitivity.

Sungur & Bülbül (2019) also think that virtual museum practices in primary school education are beneficial for students. According to Aladağ, Akkaya & Şensöz (2014), making museum visits is very difficult in terms of financial means, security, time, distance, travel, family refusal, accident risks, etc. In order to find a solution to this problem all over the world and to reach museums on the other side of the world in the globalizing world, the concept of virtual museology has emerged. As with museum visits, there are some preparations and precautions to be taken before, during, and after the visit. Making these preparations will increase the efficiency to be obtained from the visit and ensure that the benefits are achieved in the most accurate and effective way. In this context, it is important to make good planning before using virtual museums.

Contemporary museums are much more than places dedicated to the placement and display of collections and artworks. In fact, they are now seen as a privileged tool for communication and play a central role in making culture accessible to the mass audience (Carrozzino & Bergamasco, 2010). When evaluated generally, virtual museums can be used as useful teaching materials in education.

Recommendations

The present study attempted to identify the opinions of prospective social studies teachers on virtual museums through experiencing these museums. In line with research findings, the more widespread use of virtual

museums could make a significant contribution to education. In future studies, the opinions of students at different grade levels on virtual museums can be investigated.

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Author Information

Tuğba & Kafadar
Erciyes University
Faculty of Education, Kayseri, Turkey
Contact e-mail: tugbakafadar@gmail.com

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Experiments Strategies Applied to Science Teaching in Jerusalem Area

Tahani ALI-RWEIDE
Charles University

Abstract: This study investigates the experiments' aims and strategies followed by Jerusalem high school science teachers. The research extends the completed research concerning science East Jerusalem teachers' beliefs in using experiments. The research sample composed of 196 high school science teachers from East Jerusalem schools. A questionnaire was distributed accompanied by interviews with four science teachers. The effects of the independent variables of gender, scientific degree (including educational qualification for teaching), and experience were examined. It was found that teachers practice experiments mostly to achieve scientific knowledge in learning, applying cooperative work and scientific research. The dominant strategy used in applying experiments depends on teacher, less than student dependent learning strategy. Therefore, none of the independent variables had an effect on the teachers' strategies.

Keywords: Experiments Strategies in Science Teaching, Aims from applying Experiments, Palestinian Science Teachers, Jerusalem High Schools

Introduction

The study investigates the aims and strategies followed by Jerusalem high school science teachers. It completes the work of the author about using experiments of Palestinian high school science teachers in Jerusalem area which shows that teachers' beliefs about using experiments are positive (Ali-Rweide, 2019). Ali-Rweide mentions barriers which affect doing experiments like school circumstances and lack of labs, crowded curriculum, large students' number in classes and danger of some experiments. All of these barriers may affect the aims that science teachers try to satisfy from conducting experiments, and strategies used for that. On the other hand, strategies used in teaching varies due to teachers and subjects they teach. Consequently, this research will look for Jerusalem high school science teachers' aims from practicing experiments and strategies that they use to satisfy that through answering the following questions:

1. What are the main aims of practicing experiments according to high school science teachers?
2. What are the main strategies used by high school science teachers in practicing experiments?
3. Are there statistical significant differences in the strategies used by high school science teachers according to the independent variables, gender, experience and scientific degree?

Literature Review

Throught history, eexperiment is one of the most effective methods that many science teaching educators and philosophers emphasised. Aristo in the third century BCE argued for learning through practice (Dewey, 1916). Comenius in the 17th century emphasized, in The Great Didactic book, on using experiments in teaching science and physics. Moreover, many researchers recently call for using experiments in teaching science.

Aims from doing experiments

Nichols & Stephen (2013) indicate the importance of experiments in answering scientific questions, examining or testing hypothesis and developing creative learning activities. In addition, Wahyuni & Analita (2017) applied

guided-inquiry experiments, on 38 undergraduate biology students in the Bbiology Education Department of the Islamic Institute (SII) of Tulungagung. They noticed that students developed scientific analytical skills after they completed the courses. Similarly, Bennett (2001) studies the effectiveness of using experiments by using a sample of twelve high qualified physics and chemistry teachers, three principles and supervisors in Ireland. Using experiments for Bennett was aiming at increasing students' motivation and enjoyment through their work; giving motivation to teachers and students while they perform work; giving students the opportunity to acquire and develop many abilities as practical skills and hand techniques; encouraging observation and precise description; discovering clarifying or explaining a concept, a law or a principal; testing or experimenting a scientific phenomenon; developing some scientific trends like mental openness and objectivity; developing experimental work such as designing experiments; collecting data and explaining results, and feeling like scientists as being able to solve problems.

Lavonen, Jauhiainen, Kopnen, & Kurki-Suonio, (2004) adapted on 98 physics teachers for both control and experimental groups, in Finland, shows that science teachers agree that experiment is important in teaching; 95.4% think that students learn physical concepts through experiment, 52 teachers out of 53; think that experiments raise students' external motivation; 29.1% think that experiments allow using of manual techniques and 29.8% think that students learn about the nature of physics. Hikmat & Khalaf (2016) study the effect of using dry laboratory in chemistry for high school students in Baghdad, stressed the importance of practical work for gaining scientific methods and trends while using tools. All the above studies foster the importance of using experiments in learning scientific knowledge and developing skills and trends. The strategies used by teachers will by turn follow this general aim.

Strategies followed experiments

The strategies vary in applying experiments. Some depend basically on teacher as the dominant actor of the teaching-learning process. Others give students more opportunity to share in the process. Many studies over the globe discuss this issue.

Hofstein & Lunetta (2003) `find that most experiments in lab manuals explained in a detailed illustrative way. It does not give students a space for thinking. Adding to that, students engaged in inquiry activities is neglected. This is confirmed by the results of Angel, Guttersrud and Henriksen (2004) showing that students' suggestions are neglected in teaching, presentations are used to clarify the phenomenon or concept repeatedly; experiment steps are given to students and not designed by them. A study of Aljaabari (2005) in Jerusalem area shows that there is a lack in students' participation in doing experiments according to high school science students' beliefs.

Brown & Melear (2006) as a completion for the Salish I Project shows that student dependent teaching strategy is rarely used, even after three years of teaching experience. This merge with Kang & Wallace (2005) which shows that teachers often use experiments to confirm theories, facts and concepts, while experiments steps are descripted by teachers in advance. The result of Lee (2004) about change of beliefs and practices for six science teachers shows that teachers describe materials and methods used in experiments. They make small groups and wait for short answers from students. All the previous studies confirmed that experiments are presented in the ready forms.

Effects of gender, scientific degree (including the educational qualification for teaching) and experience on strategies used for experiments

Lee (2004) noticed a positive change of six American science teachers' practices, after involving in an educational program and applying appropriate educational methods. She stresses the teachers' need to learn new appropriate methods in order to guide scientific understanding and investigation. Another study of Bryan & Atwater (2002) criticizes the educational programs that teachers are involved in, stating that the teachers' practices are a result of educational methods. Additionally, Pérez & Furman (2016).highlights the development of science teachers from 35 high schools in Peru after being involved in a 10 months course designed by Peruvian Ministry of Education. One of its most important results is that engaging teachers in long and different forms of inquiry educational programs leads to a change in their science teaching practices.

On the other hand, Friedrichsen & Dana's (2005) study adapted on high school biology teachers shows that educational qualification programs did not affect the teachers' way of teaching or practices. Luft (2001) studied the effect of inquiry applying program for 18 months on 14 high school science teachers with different

experience betweenn 0 and 17 years. Luft found that practices differ between teachers after the training course; those with teaching experience between 3 to 17 years practices changed more than those between 0 to 2 years of experience. Alqraraa (1995) about applying experiments in chemistry for 9th grade class in Jordan shows that there is no effect of the teacher's gender on the used strategies. In general, independent variables affect the strategies used in some studies and has no effect in others, as it had been shown in the researches.

Materials and Methods

This study is quantitative-qualitative one. First, a questionnaire content and construct validity was checked. Following the feedback, Factor Analysis and VARIMAX Rotation with Kaiser Normalization were used. The final questionnaire consists of three parts, the first part about personal information. The second part consists of 29 questions to measure aims that teachers try to satisfy form using experiments. The third part consists of 17 questions to measure strategies that teachers use in doing experiments. Both second and third parts answers are 4-point on Likert Scale; (1) Nothing, < 1%, (2) little (1-35) %, (3) medium (36-70) %, (4) a lot > 70%.

The questionnaire was distributed to 196 teachers, 109 females and 87 males. They all were high school science teachers who teach the Palestinian curriculum in Jerusalem area with different scientific degrees (including the educational qualification for teaching) and experiences. The qquestionnaire was analysed statistically using SPSS. Means and standard deviations were found for factors of both aims that teachers try to satisfy from using experiments and strategies used by them. On the other side, effects of the independent variables of, gender, scientific degree (including the educational qualification for teaching) and experience, on experiments strategies were found. T-test was used to check if the experiments strategies are affected by gender, and ANOVA were used.to examine if the experiments strategies are affected by scientific degree and experience This was reinforced by interviews, using open questions, carry on with four high school science teachers from different schools, specialities and experience. Their percentage use of experiments are 60%, 70%, 80% and 90%.

Results

Main aims from practicing experiments by high school science teachers in Jerusalem area

Teachers' aims from using experiments were summed up in three factors. Table 1 summarises the mean and standard deviation of each factor.

Table 1. Means and standard deviations for science teachers' aims from doing experiments

Factor No.	Name of factor	Sample size	mean	Standard deviation
1	Achieving gaols deals with cooperative work and scientific research	196	3.28	0.58
2	Developing trends and evaluate students	196	3.11	0.60
3	Achieving scientific knowledge learning	196	3.28	0.62

* 4-point Likert Scale questions (1) Nothing <1%, (2) little(1-35) %, (3) medium (36-70) %, (4) a lot > 70%.

It is clear from Table 1 that teachers use experiments basically for satisfying scientific knowledge learning and developing scientific research and cooperative work, followed by developing trends and evaluating students. Still, Means are high for all factors; so to be more specific, items for the most and less important aims, (specific questions in the questionnaire) and not the general factors are considered in table (2).

The most important aim for applying experiments are those connected to learning, applying, teaching and explaing scientific concepts, in addition to create a collaboration between students and the teacher. On the other side, teachers do not think that experiments are so important for developing trends like humanize science or appreciating scientist, nor for taking the differences between students into account. They do not think that it is the same importancece for encouraging students to design experiments by themselves or for discovering new scientific concepts. This may affect the strategies that teachers used in applying experiments.

Table 2.. Most and less important aims that science teachers try to satisfy

Item format for more important aims	Mean	Standard Deviation	Item format for less important aims	Mean	Standard Deviation
Supporting the theoretical part	3.52	0.71	Caring about differences between students	2.85	0.87
Explaining scientific concepts	3.52	0.72	Humanize science	2.85	0.91
Differentiating teaching methods	3.48	0.75	Appreciating scientists	2.89	0.87
Creating collaborating environment between students and teacher	3.45	0.72	Encouraging students to design experiments by themselves	2.95	0.89
Applying what students learn theoretically	3.40	0.79	Discovering new scientific concepts	2.98	0.84

* 4-point Likert Scale questions were used. (1) Nothing <1%, (2) little (1-35) %, (3) medium (36-70) %, (4) a lot > 70%.

Interviews about aims from practicing experiments by high school science teachers in Jerusalem area

Throughout the interviews with four teachers, they insist on the role of experiments in discovering scientific concepts and learning scientific knowledge. Two teachers use experiment often to discover new scientific knowledge; the others apply it for both discovering and insisting on scientific knowledge. In addition to that, they all emphasized the role of the experiments in developing trends like increasing cooperation between students, teaching them how to be responsible and developing scientific thinking. This go parallel with building the scientific knowledge. It is obvious that teachers' aims from using experiments are merged in both quantitative and qualitative parts. They are also in concert with Bennet (2001), Hikmat & Khalaf (2016) and Lavonen, Jauhiainen, Kopnen, & Kurki-Suonio, (2004)

Main strategies used in practicing experiments of high school science teachers' in Jerusalem area

It is obvious from Table 3 that teachers-dependent strategy is the dominant one, rather than those depend on student. It is the least when teacher has no role, mean = 2.32. To be more precise, items (specific questions in the questionnaire and not the general factors) for most and less strategies used will be shown in Table 4.

Table 3. Means and standard deviations for science teachers' strategies in doing experiments

Factor No.	Name of factor	Sample Size	Mean	Standard Deviation
1	Strategy depends on teacher	195	3.28	0.60
2	Strategy depends on student with teacher's support	195	2.74	0.60
3	Strategy depends on student	195	2.32	0.63

* 4-point Likert Scale questions were used. (1) Nothing <1%, (2) little (1-35) %, (3) medium (36-70) %, (4) a lot > 70%.

It is noticeable that used strategies depend basically on the teacher, since means of the items are between high and moderate, more than 70%, while those depend on students are not common, they range between medium and little, less than 35%.

Interviews about science teachers' strategies in doing experiments

Teachers in interviews declared that they usually prepare and arrange experiments, of which the results are known before. One teacher noted that students help in preparing some experiments if they are safe enough. All teachers divide students into groups, giving them manuals for each steps. Sometimes, students share experiments and obtained results except for dangerous ones, students make reports which are checked and marked by the teacher for evaluation process. This is agrees with Wahyuni & Analita (2017) when they insist on giving scaffolds to students and using feedback through the reports.

Table 4. Most and less strategies that science teachers use in applying experiments

Item format for more important strategies	Mean	Standard Deviation	Item format for less important strategies	Mean	Standard Deviation
Teacher knows experiment's result before applying it	3.66	0.67	Students work separately under teacher control	2.17	0.92
Experiment's procedure designed previously by teacher or curriculum	3.48	0.73	Students know experiment's result previously	2.17	0.75
Teacher does practical exhibition in front of students	3.22	0.80	Steps of experiment determined by student	2.22	0.99
Determine the problem of study by the teacher	3.19	0.87	Practical exhibition by one or few students	2.36	0.76
Determine experiment hypothesis by teacher	3.11	0.81	Determine experiment hypothesis by student	2.41	0.87

* 4-point Likert Scale questions was used.(1) Nothing <1%, (2) little (1-35) %, (3) medium (36-70) %, (4) a lot > 70%.

It is obvious that teacher-dependent strategy is used mostly, followed by teacher-centered approach with students help, while student-depend experiments is not used usually. This result supported those found in the quantitative analysis. (Angel, Guttersrud, & Henriksen, 2004; Brown& Melear, 2006; Hofstein & Lunetta, 2003; Lee, 2004) agree on the result that students' engagement in experiment is very limited. Student self-guided experiments are rarely used all over the globe.

Multi- variables effects correlation

Teachers with different gender, different scientific degrees (including the educational qualification for teaching), and different experiences, use similar strategies. ANOVA and T-Test was applied and showed no statistical significant differences in the teachers' strategies according to any of the independent variables. This result harmonize with Alqraraa, (1995) and Friedrichsen & Dana (2005), while it contradict with Bryan & Atwater (2002); Lee (2004); Pérez & Furman (2016) and Luft, (2001)

Conclusions and Discussion

Science teachers use experiments mainly to teach scientific knowledge for explaining scientific conception and applying the theoretical parts. Developing cooperative work and scientific research come in a second position. They do not use experiments to develop trends which deal with humanity or appreciation of science or scientific researchers. On the other hand, the dominant strategy used by science teachers is the teacher-dependent one and the least is student-dependent one. Experiments aim from doing experiments and strategies used in applying them are merged. Teachers' main aim is to support the theoretical part in science and explaining scientific concepts. This concert with the teacher's dependent strategy as his knowledge of experiment's result.and the teacher's designing an experiment and controlling all its steps,

I think dominant strategies and aims by science teachers is challenged by barriers that they face when applying experiments. Some of these are crowded curriculum, lack of class time, large students' numbers, lack of equipment and the danger of some experiments (Ali-Rweide, 2019). A teacher's dependent strategy will limit student's thinking and treat him/her as a receiver. It will not create good thinkers or scientific researchers, especially when experiment directions are given to student like a cookbook (Duit & Tesch, 2010). On the other hand, this strategy will minimize the time for applying experiments, make students safe, for dangerous experiments, and make it easier for teacher to follow up with a larger students' number. There are no effects for gender, scientific degree with educational qualification for teaching, neither for the experience on the strategies used. I think this is because all teachers have similar conditions at schools by teaching the same curriculum.

In conclusion, considering the barriers, student dependent strategy is difficult to be applied completely because students need direct assistant. There are a lot of variables which determine the strategy used by teachers, like students' numbers, time, curriculum and danger. In my opinion, the most appropriate strategy is the student's dependent one conducted under teacher's guidance. Teachers should give students the opportunity to think and

try many times, if the experiment is safe enough. They must direct them, ask them storming cognitive questions and control the experiments. If the experiment is dangerous, teachers must not allow students to apply it. Hopefully this research will be a trigger to find more sufficient ways to enlarge student's engagement in using experiments.

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Author Information

Tahani Husien Ali-Rweide
Charles University
P.O. Box 66172 East Jerusalem Israel
Contact e-mail: tahaniali01@yahoo.com

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Effects of Covid-19 Process in Marine Business: An Evaluation on Marine Tourism Enterprises

Erdal ARLI
Istanbul University

Abstract: Covid-19, which was detected in a person in Wuhan, China, then spread all over the world and continues to spread, has a fatal effect on human health and continues to cause significant damage to businesses and industries in the economic sense. There have been contractions and bankruptcies in many businesses and sectors in almost every country, and unemployment has reached very high levels. Tourism is one of the leading sectors affected by this process. In this context, the pandemic has not only affected hotel and travel management within tourism, but also cruise, yacht, marina and diving tourism, which are important areas of sea tourism, and continue to affect it. In this process, cruise and yacht businesses that make daily tours have been the most affected by the marine tourism sectors. So much so that cruise companies, which have been operating and have become a brand in the world for many years, had to sell their ships. The number of tours has decreased considerably. In particular, Covid-19 was detected in passengers on a cruise ship, and the ship was quarantined with its crew and passengers for as long as a month. The purpose of this research is to evaluate and reveal the current situation of the Covid-19's effects on marine tourism businesses also to raise awareness in this sense.

Keywords: Covid-19's effects, marine, marine tourism enterprises

Introduction

Marine business is an international profession and includes many sub-fields. These professions are ship owner management, port management, ship chartering and brokering, yacht management, marina management, cruise ship and cruise port management, diving tourism management, marine museum management, ship agency management, shipchandler, forwarder, shipyard management, maritime logistics, marine insurance business can be listed. In addition, it not only earns foreign currency for countries but also contributes significantly to business employment. Today, Turkish personnel can work on foreign flagged ships, and can work in chartering and brokerage, marina, yacht and cruise companies abroad. This sector has turned into international human resources export especially in Far Eastern countries such as Philippines, China and India. There are even International Crew Management companies operating specifically on this subject. All areas of the maritime business sector have undertaken a number of duties in the realization of the short and long term goals of the countries. Countries that know how to take advantage of the seas have made significant contributions to their economies. In addition to industrialization and digitalization; Marine tourism and the economy of maritime transport have played an important role in the development of countries that play an effective and successful role in these areas (Yercan 1996). The most important advantages of maritime business in terms of both transportation and marine tourism can be stated as follows; (Pekdemir, 1991).

> 4/3 of the world is covered by seas. For this reason, many countries and regions are separated from each other by seas. In this case, transportation between countries can only be provided by sea and air"(Pekdemir, 1991).

Marine tourism holiday continues to be one of the most preferred holiday types. However, apart from sea holidays, which are perceived only as sea-sand-sun: diving, water sports, yacht charter, yacht purchasing, weekly and daily yacht trips, amateur marine and cruise ship holidays are among the most popular holiday types in marine tourism.

Sea transportation is a suitable type of transportation for large volume transportation due to its low cost (Pekdemir, 1991).

In this context, marine business has always been and continues to be one of the most popular types of business in international freight transport for many years. Passenger transportation, which was the most popular before the second world war, left its place to private and touristic cruise ships and yacht businesses with the development of airlines and the decrease in prices. However, economic crises brought the marine business to a halt from time to time, many shipowners could not find cargo and passengers for their ships and even had to sell their ships, shipyards could not find a market to build new ships. One of these crises has reappeared with the Covid-19 pandemic, and one of the most hurt areas of marine business has been marine tourism. Diving tourism, water sports, yacht and marine businesses, as well as cruise lines operating in the Mediterranean basin, were particularly affected by this situation.

Marine Tourism

Local and foreign tourists the fact that sea lovers who buy yachts instead of houses desire to spend time in areas such as the sea, rivers and lakes. They prefer to spend their lifes in marinas, bays and seas as a lifestyle have enabled marine tourism to be more demanded among other tourism types and expand its framework. In this context, the increase in interest in amateur maritime, daily and weekly commercial yacht tours and cruise ship holidays, which are included in coastal and sea-based facilities and activities, made marine tourism the main element of mass tourism movements (Orams, 1999; Jennings, 2003; Klarić, Rakitavac, & Lesić 2015; Pırnar & Özer, 2017; Sevinç, F. & Duran, E.,2018)

Marine tourism, with its many types and expanding structure, is one of the branches of tourism with the highest demand (https: // www. denizticaretodasi.org.tr, İMEAK DTO August-2019 Issue Deniz Turizmi Supplement). So much so that, there is a great increase in holidaymakers who want to spend the weekly yacht tour with their family in beautiful and quiet bays. The demand of tourists who come to the hotel holiday to spend at least 2-3 days on the boat in the holiday package is increasing every year.

In summary, Marine Tourism consists of the following two components (https://www.denizticaretodasi.org.tr, İMEAK DTO August-2019- Issue Deniz Turizmi Supplement);

1-Marine tourism facilities
- Cruise Port Operations
- (A and B Type)
- Marina Operations
- (3, 4 and 5 Anchors)
- Other Facility Operations
- (Dock, Pier and Boatyard)

2-Marina tourism vehicles
- Cruise Ship Operations
- Yacht Investments and Businesses
- Bare-boat Enterprises
- Commercial Yacht Managements
- (Crewed-Without Crew)
- Daily Boat Excursion Operations
- Blue Cruise Boat Voyages (Weekly Boat Tours) (Charter)
- Diving Tourism Businesses
- Above Water Activities Facilities

The marine tourism sector, with the above-mentioned types, has earned significant foreign currency for business and country economies for many years and played a major role in development. Economic crises, wars and terrorist movements from time to time affected these businesses regionally, but the Covid-19 pandemic affected almost all countries and businesses operating in the field of marine tourism at the world level. COVID-19, also known as corona virus disease, was first detected in a person in Wuhan, China in 2019, and it spread very rapidly and was declared as a worldwide pandemic.

"*As of Tuesday, November 3, 2020, the number of coronavirus cases (the number of patients) worldwide has increased to 47,558,575 (47 million 558 thousand 575) people. The number of people who died due to the coronavirus increased to 1 million 214 thousand 640 worldwide and the total number of people detected with the virus to 47.558.575. The number of people recovered from Covid-19 reached 34 million 170 thousand 854 around the world. Corona virus disease has spread to more than 140 countries. USA has the highest number of cases worldwide. According to the latest shared data; there are 9 million 487 thousand 88 cases in USA. Furthermore;as the latest shared data in Brazil; there are 5 million 545 thousand 705 cases which is the third country with the highest number of cases around the world*" (https://www.haberler.com/dunya-koronavirus-tablosu- 3-kasim-sali-dunyada-13711722-haberi/03.11.2020-19:40-Last Update: 03.11.2020-20:38)

Effects of Covid-19 Pandemic on Marine Tourism

Covid-19, which is detected in a person in Wuhan, China and then spread to the whole world and affects the health, daily life and social lives of people of all ages, continues to cause serious damage to businesses and industries economically. It seriously affected the economies, business sectors and businesses of all countries from America to Europe, Far East, Asia and Africa, downsizing and bankruptcies occurred, unemployment reached very high levels. Marine tourism, where social life, one-to-one relationships, cultural and recreational activities are important, is one of the leading sectors affected by this process. In this context, the pandemic has affected the sea-sand-sun holiday concept as well as underwater and surface sports, cruise, daily yacht tours and marina management, which are important areas of marine tourism.

The tourism sector affects 54 sectors directly and 185 sectors indirectly. With the pandemic, it is clear that there is a sharp decline in tourism-related consumption expenditures (Bahar and İlal, 2020).

Considering the current impact of the pandemic process on travel demand, the most important element of the sea-sand-sun concept is the hotel. business loses 1.4 billion dollars in income every week (Bahar and İlal, 2020). For this reason, the influence of the tourism sector affects the tourism economy in many ways, as well as the socio-cultural life of people, the work stress of the winter months and the emergence of psychological problems.

In this sense; "*Commercial yachts and primitive wooden ships, whose activities were suspended due to the epidemic that broke out in March 2020, were decided to resume their activities as of June 1, 2020, provided that they comply with the measures taken by the Ministries"* (https://www.turizmgunlugu.com/2020/05/28/yacht-tourism-corona-measures-starting-1-June-/ Author Tourism Diary -28 May 2020). Bakar and Rosbi (2020), in their study on the impact of COVID-19 on tourism management, stated that according to the market balance of the supply-demand theory, the price of the tourism sector will continue to decrease in parallel with the decrease in demand.

Therefore, at the end of the 3-month recession, the reservation cancellations of domestic and foreign tourists who bought package tours, including daily yacht tours, caused businesses that organize daily yacht tours to face a significant crisis and have difficulties in paying marina rents and bank loans. 50-100-120 persons capacity yacht enterprises have reduced their capacities by half, tour prices have remained stable compared to last year, or prices had to be lowered as the bargaining power towards the customer was lost. Purpose for daily tour boats; covering the cost and not losing existing customers.

The Covid-19 process has negatively affected many areas of the tourism sector, as well as businesses that turn the threat into an opportunity with the right marketing strategies.

Chang, McAleer and Ramos (2020) emphasized (in their study on sustainable tourism after Covid-19) the importance of social distance from departure to exit points of destinations and during food service and social activities, using personal protection equipment while travelling and holidays.

Gössling, Scott, and Hall (2020) emphasized that Covid-19's work on tourism and global change must be learned to challenge this global tragedy in order to accelerate the transformation of sustainable tourism.

In this respect, most companies try to find the convenient ways in order to survive and keep their businesses with the least damage from this global tragedy with the measures taken and different applied marketing strategies. Especially the blue cruise businesses found different marketing concepts. These are;

"*in a hygienic and isolated environment far from crowded cities and land with only your family, in additon corona is not transmitted in the sea* ". In this way they managed to turn the pandemic threat into an opportunity, moreover attract existing and potential customers to the blue cruise voyages.

Istanbul and Marmara, Aegean, Mediterranean, Black Sea Regions (IMEAK) Chamber of Shipping Izmir Branch Chairman of the Board of Directors Yusuf Öztürk was the guest of Maritime Talks organized by Dokuz Eylül University (DEU) Maritime Faculty Alumni Association via video conference. He believes that "*mass tourism will lose its popularity in the new period"*. Also he explained that "*the demand for yacht tourism has increased after the new type of coronavirus pandemic. We observe a serious increase in people's demands for boutique hotels, yacht tourism and blue voyage. We can turn this into an important revenue stream*" (Efsun ErbalabanYılmaz,https://www.aa.com.tr/tr/ekonomi/kovid-19-yat-turizmine-talebi-arttirdi-/1836415 11.05.2020).

Later, the demand of crowded hotel holidays decreased significantly. But "*the tourists' demand to blue cruise voyages have increased during Covid-19 pandemic because blue cruise companies offer the holiday away from the land, in an isolated and hygienic environment by boat or cabin rental. Before the voyage the yachts are cleaned and disinfected in details also technical personnel are regularly tested for Covid-19. At the same time, the temperature of the guests who will go on a yacht tour are measured before getting on the boat and they are frequently warned to wear masks on board also at least two meters social distance even during sunbathing*" (https://gercekfethiye.com/pandemi-doneminde-tekne-turlarina-talep-artiyor/28386/ 22.06.2020 14:53 Update: 22.06. 2020 14:53 913-Gerçek Fethiye)

"Turkey's online service that one boat rental platform and in 40 countries serving viravira.co founder and CEO Baran Yıldırım, AA correspondent," *He stated that the blue cruise and yacht tourism market are less affected by the pandemic compared to other types of tourism.* He also noted that "*local tourists tend to yacht tourism and blue voyage to be together with family and known friensd in a sheltered environment and gain new tourists.* He said that "*the interest in the blue cruise market has increased also blue tour has stated that the symbol of safe yachting holiday in Turkey. According to the data as a result of this trend, the market size of blue tour stated that reached $ 300 million*" (Yasemin Kalyoncuoğlu-https://www.aa.com.tr/tr /ekonomi/turkiyede-mavi-tur-pazarinin-buyuklugu-300-milyon-dolara-ulasti/2016676, 23.10.2020).

Conclusion

The marine tourism industry is sometimes faced with economic crises in some countries due to wars, natural disasters, terrorist attacks and financial problems. It loses its customers. Demand is decreasing. The economies of businesses operating in this field are seriously affected. However, the Covid-19 virus has deeply affected not only some countries, but almost every country in the world. All areas of tourism have been negatively affected by this. Cruise tourism has come to a halt, and large businesses that play an active role in the market have decided to sell their ships. Reservations and cruises have been canceled. The vast majority of cruise businesses have postponed their plans to 2021. Daily boat tours have also been adversely affected by the pandemic. For example, the boat with a capacity of 100 tourists has halved its capacity, but the price has not been competitive. One of the businesses most affected by the pandemic has been underwater and surface sports businesses, where the majority of their customers are hotel tourists. However, despite all these, blue cruise (blue voyage businesses), which developed marketing strategies with the concept of not transmitting corona at sea, isolated from land and crowd, just choose us for a holiday with your family, has been one of the least affected sectors. The blue voyage has provided a safe holiday opportunity for family members or friends and relatives. Accordingly, the demand for blue cruise businesses that take Covid-19 measures has increased day by day. The trip has been blue cruise voyage as well as the address of the safe marine vacation in Turkey.

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Author Information

Erdal ARLI
Istanbul University,
Marine Sciences and Business Institute, Marine Business
Department, Turkey
Contact e-mail: erdal.arli@istanbul.edu.tr

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Influence of Teaching and Learning Resources on Student's Performance in Senior Secondary Schools in Gusau Local Government, Zamfara State

Solomon Akintola ADENIRAN
Federal College of Education (Technical)

Abstract: Education is a fundamental human right that brings about positive development to economy of a nation. This explains why countries worldwide plan for and increases budgetary allocations to fund various educational programmes each fiscal year. This study investigated the Influence of Teaching and Learning Resources on Student's Performance in Senior Secondary Schools in Gusau, Zamfara State of Nigeria. In this study, three research questions and one hypothesis were raised to guide the conduct of the investigation. The study used descriptive design and data was collected using questionnaire for the responses from the respondents to answer the research questions and hypotheses raised. The population of the study comprised all teachers in Senior Secondary Schools in Zamfara State, Nigeria. The total number of 50 teachers was selected through stratified sampling technique from five selected Senior Secondary Schools in Gusau metropolis of Zamfara State, Nigeria. Mean deviation was used to answer the research questions. The study found out that teaching and learning materials were not adequately available and the little that were available were not adequately utilized in school by the teachers because of gross inadequacy of kills and knowledge for the resources utilization. The study therefore recommended that the government should allocate more funds for TLR provision to improve the status and condition of physical facilities and employment of skilled teachers for effective utilization of teaching and learning resources; seminars, conferences and workshops should be organized frequently for teachers to acquire necessary skills and subject teachers should be consulted before the procurement of learning materials to prevent buying of irrelevant materials.

Keywords: Teaching Leaning Resources (TLR), Physical Facilities, Teaching Materials, Resource Utilization, Students Performance

Background to the Study

Availability of teaching and learning resources (TLR) enhances the effectiveness of schools as these are basic things that can bring about good academic performance in the students. Maicibi (2003) observed that all institutions or organization are made up of human resources (workers) and other non-human resources. He further asserts that when the right quantity and quality of human resources are brought together, they can manipulate other resources towards realizing institutional goals and objectives. Consequently, every institution should strive to attract and retain the best of human resource.

In recent years, access to computers and the internet has generated interest in the provision of e-materials. Where the internet is unavailable, unreliable or unaffordable, the development of local school networks and the provision of e-materials to schools on compact disks (CDs) or flash drives can support e-learning via school servers and networks. But e-based learning in many developing countries such as Nigeria and transitional economies has proved to be very expensive. TLM are often seriously underfunded alongside physical facilities and human resources. It is not surprising; therefore, that literacy has become a major problem in many countries when students and teachers have so little to read (The World Bank, 2013). The physical materials, human materials and financial resources invested in schools influence not only the education provided to students but also aspects of teachers and students motivation and consequently the educational outcomes.

The Organization for Economic Cooperation and Development (OECD) Programme for International Student Assessment (PISA) shows that resource shortages hinder instruction and lower student's performance (OECD,

2007). In addition, inequalities in student's educational performance often reflect disparities in the resources invested in schools (OECD, 2007). Johan (2004) states that educational outcomes in schools are closely linked to utilization and adequacy of teaching and learning resources in different ways; poor utilization, underutilization, unqualified educators brings forth low educational achievement. The inadequacy of physical and material resources in schools is a major factor responsible for learning outcome of students. Schools that do not have adequate facilities such as workshops, laboratories, classrooms, teaching learning materials are unlikely to post good results.

Provision and utilization of facilities is the responsibility of stake holders in education. (National Policy on Education, 2012). The Nigerian government ensures the implementation of the National Policy on Education by providing an enabling environment. Parents are also involved in purchase of resources in schools and more so in putting up physical facilities through what is popularly referred to as Parents Teachers Association (PTA) projects. The government has experienced challenges with provision of TLR in schools. The Kamunge report (2008) recommended the establishment of public day secondary schools as a way of expanding quality day secondary education, despite all these, planning and provision for TLR has remained a challenge with low learning outcomes over the years.

Statement of the problem

Teaching and learning resources (TLR) are the most visible components of government educational provision and their absence is often noted by stakeholders. The Nigerian government has taken a number of measures in the previous years to improve and promote in secondary school, this is evident in the increased expenditure channeled to this program. One of the policy statements is that a great proportion of education expenditure should be channeled to TLR. (National Policy of Education (NPE), 2012). If this policy were properly planned for and implemented, there should be enough TLR in most if not all secondary schools.

TLR play a paramount role in the teaching and learning process and inevitably the student's academic performance. This calls for provision of adequate TLR in secondary schools. Secondary schools are faced with a mirage of problems which include inadequate provision of TLR as a result of poor planning program embarked on existing TLR in schools with increased enrolment since inception in 2008. In a world of international competition, academic performance in Gusau has been on the decline characterized by poor performance in the Nigeria Certificate of Secondary Education.

Purpose of the study

The purpose of the study is to examine the Influence of Teaching and Learning Resources on Students' Performance in Senior Secondary Education in Gusau, Zamfara State.

(i) To determine how availability of teaching and learning materials used in teaching and learning affect students' performance.
(ii) To establish how adequacy of physical facilities influence students' performance in teaching and learning
(iii) To establish how adequacy of human resource influence students' performance in teaching and learning.
(iv) To assess extent of resource utilization and its effect on students' performance in teaching and learning.

Research questions

The following research questions were raise to guide the of the study;

(i) Does availability of TLM used affect students' performance in teaching and learning?
(ii) Does adequacy of physical facilities influence students' performance in teaching and learning?
(iii) Does adequacy of human resource influence students' performance in teaching and learning?
(iv) To what extent does resource materials utilization and effect on students in the school?

Scope of the study

The study covered all senior secondary schools in Gusau metropolis. Secondly the study was only carried out in some selected public secondary schools. This was based on the fact that public secondary schools have been performing poorly in national examinations compared to private secondary schools. Though there may have been other factors that influence performance, the study concentrated only on availability of TLM, adequacy of physical facilities and human resources and the extent of utilization of all TLR.

Research design

The study was carried out using a survey design. Orodho (2009) notes that a survey design is an appropriate way of evaluating educational programmes as educational activities operate in a social context. According to Krishnaswami (2001), this design is a fact finding study which involves collecting data directly from a population at a particular time. This design is ideal for this study because the study was conducted in a setting that requires direct responses from the respondents while investigating existing phenomenon without manipulating the variables. The design also allows the participants to describe and provide their opinions regarding the variables being studied in detail.

Population

Nachmias and Nachmias (2009) define the target population as the entire set of relevant units of analysis or data. The target population of this study comprised of all teachers in secondary schools in Zamfara State, Nigeria.

Sampling techniques and sample size

Sampling refers to selecting a given number of subjects from a target population so as to represent that population (Kombo & Tromp, 2005). While simple random sampling was used in selecting the students and teachers in each school. A total number of 50 classroom teachers were randomly selected from ten secondary schools in Zamfara State. The class teachers were selected because they are the implementers of these resources hence directly utilized the available TLR and were therefore in the best position to provide reliable information on TLR availability, utilization and adequacy.

Instrumentation

The instrument used for this study was a researcher-designed checklist titled "Checklist on the Influence of Teaching and Learning Resources on Student's Performance in Senior Secondary Schools in Gusau Local Government, Zamfara State. A five-point Likert rating of Strongly Agree (5 Points), Agree (4 Points), Neutral (3 Points), Disagree (2 Points) and Strongly Disagree (1 Point) was used in weighing responses to items in the checklist. A mean response below 3.00 was considered as benchmark for Disagree while a mean response of 3.00 and above was considered as benchmark for Agree. The questionnaire consisted of two sections; Section A, for respondents' demographic information and section B was meant to elicit information from the respondents.

The checklist was validated by experts; (three lecturers from FCE(T), Gusau) one lecturer from the Department of Curriculum and Instruction, one lecturer from the Department of Educational Foundations and one lecturer from the Department of Psychology, Guidance and Counselling by ensuring face and content of the instrument are well valid. Test re-test was used to test the reliability of the instrument. The questionnaire was administered twice to a group of 5 teachers at Government Day Secondary School, Zurmi at Zurmi Local Government Area of Zamfara State at the interval of two weeks; the two tests were correlated while coefficient of 0.78 was obtained. This indicates that the instrument was reliable.

Method of Data Collection and Analysis

The instrument was administered by researcher to the selected samples of teachers in senior secondary schools within Gusau metropolis.The selected teachers are from Government Girls' Day Secondary School, Samaru, Government Girls' Day Secondary School, Sarki Kudu, Government Girls' Unity Secondary School,

Kotorkoshi, Government Day Secondary School, Sambo, Government Day Science Secondary School, Gada-Biyu, Government Day Secondary School, Danturai, Government Day Secondary School, Janyau,Government Day Secondary School, Millennium Quarters, Government Girls' Day Secondary School, Damba, and School of Continuing Education, Gusau. Responses to checklist items meant for answering research questions were analyzed by using mean deviation.

Research question 1:

Does the availability of TLM used affect students' performance in teaching and learning?

To establish the availability of TLM on performance in secondary schools in Zamfara State, the respondents were asked to respond to statements that sought to answer the same. For example, the teachers were asked to indicate their opinion on availability of TLM in their schools. Data is presented in Table 1.

Table 1. Teachers response on the effect of availability of TLM on teaching and learning.
Mean rating scale of the availability of TLM used affect students' performance

S/No	Statement	N	SA	A	U	D	SD	Mean	Decision
1	Availability of Reference books	50	10	22	06	08	04	3.52	Agree
2	Availability of Teachers guide	50	16	21	04	05	04	3.80	Agree
3	Availability of instructional materials	50	12	19	13	04	02	3.70	Agree
4	Usage of field trips/excursions	50	06	11	21	07	05	3.12	Agree
5	Availability of computers for teaching	50	04	06	11	20	09	2.52	Disagree
6	Availability of internet facilities	50	01	04	14	20	11	2.34	Disagree
	Grand Mean							3.78	Agree

The finding in Table 1 reveals that all the teachers agreed to all the questions that the teacher responses indicate TLM are available. The respondents agreed to all the 6 items and mean responses were above the bench mark of 3.00 with exception to items 5 and 6 that are 2.52 and 2.34 which were below the bench mark of 3.00. The grand mean of responses to all the items was 3.78 which were above the bench mark. This indicates that teachers agreed that the there are availability of Teaching Learning Materials (TLM).

Research question 2:

Does adequacy of physical facilities influence students' performance in teaching and learning?

The study investigated several factors that indicate the adequacy of physical facilities in schools. Some of these factors are: chairs and desks, laboratories, library, latrines, dining halls, departmental offices, recreational facilities, water and power, amongst others. The statements were meant to determine the extent of availability of these physical facilities in schools. The teachers' responses are shown in Table 2.

Table 2. Teachers' responses on adequacy of physical facilities - Mean rating scale of basic technology teachers on the effectiveness of PIP-

S/No	Statement	N	SA	A	U	D	SD	Mean	Decision
1	Adequate tables and chairs in the staffroom	50	10	13	07	09	11	3.04	Agree
2	Adequate desks and chairs in the classrooms	50	06	09	10	20	05	2.82	Disagree
3	Well-equipped library with recent materials	50	04	08	14	17	07	2.66	Disagree
4	Well-equipped laboratory	50	02	12	10	20	06	2.68	Disagree
5	Decent latrines/toilets	50	10	13	18	06	03	3.54	Agree
6	Well-furnished offices allocated	50	06	09	07	15	13	2.60	Disagree
7	Capacity of the dining hall	50	10	12	20	06	02	3.44	Agree
8	Play ground with adequate sport facilities	50	12	15	10	08	05	3.42	Agree
	Grand Mean							3.03	Agree

The findings from Table 2 shows that the responses from the teachers clearly indicated that the facilities for teaching are learning are not adequate. Out of 8 items, the mean responses that were below 3.00 bench mark were 4 while the mean responses that were above 3.00 bench mark were equally 4. Though the grand mean of 3.03 indicated that the facilities were fairly adequate. This result proves that the government did not give priority

to the comfort of teachers; the teachers who are supplied with inadequate facilities will not be able to carry out their duties diligently as expected of them. The research by Cash (1993) on effect of physical facilities on learning found out that the condition of classroom furniture correlated with students' achievement at a significant level hence influences their performance.

Research question 3:

Does adequacy of human resources influence students' performance in teaching and learning?

The study sought to establish the adequacy of teachers employed in the L.G.A. Factors such as employment status of teachers, and enrolment for in service training was used to determine extent of human resource availability in Gusau.

Average number of teachers employed per school in the L.G.A.

Head teachers were asked to indicate the employment status of teachers in their schools, and the averages are tabulated in Table 3

Table 3. Average number of teachers and status employed per school in Gusau

Employment status	Average No. of teachers
M.Ed	02
B.Sc, B.A (Ed)	07
B.Sc, B.A	12
HND	18
NCE	26
OND	20
Total	75

Table 3 indicates that the average number of teachers employed per school were 75. It was observed total number of unqualified teachers outnumbered the qualified teachers. From table 3 only 35 teachers were qualified while the remaining 40 teachers were not qualified as a result of certificate holding by such teachers. These findings indicated that the schools were understaffed hence the government should render assistance by employing more qualified teachers to cater for the shortage. However, there may be glaring imbalances in staffing in the various departments in schools, such that some departments may be over staffed while others were under staffed. This gross lack of qualified teachers may impact negatively on students' performance.

Research question 4:

To what extent does resource materials utilization and effect on students in the school?

The study investigated the extent of utilization of resources in schools. This included all the TLR that is; TLM, physical facilities and human resources

Teachers' responses on extent of resource utilization

The study investigated the extent of utilization of teaching learning resources in schools, by being asked whether they made use of the TLR. The teachers were provided with statements on a rating of 1 to 5. Such that 5 represented Strongly Agree, 4 Agree, 3 Undecided, 2 Disagree and 1 Strongly Disagree. The mean score of these responses were computed and are provided in Table 4

The findings of the Table 4 indicated that teachers disagreed on the use of resources available. The respondents agreed to the 6 items with mean responses were above the bench mark of 3.00 and also disagreed to the 6 items which were below the bench mark of 3.00. The grand mean of responses to all the items was 2.58 which were below the bench mark. This indicates that teachers disagreed to the utilization of Teaching Learning Materials (TLM); this may be as a result of lack of in service training, workshops and seminars for the teachers to update

their skills with the innovations such computer, audio-visual, internet and other facilities for teaching and learning. However, academic achievement cannot be attained unless there is proper and extensive use of these resources. Grant (1978) asserts that teaching and learning cannot be effective without adequate and relevant use of instructional materials. According to Abimbade (1999); instructional resources in teaching and learning make students to learn more and retain better what they have been taught and that it also promotes and sustains students' interest. It also allows the learners to discover themselves and their abilities and consequently provides them with an opportunity to realize their full potential.

Table 4. Mean rating scale resource on materials utilization and its effect on students

S/No	Statement	N	SA	A	U	D	SD	Mean	Decision
1	Utilization of facilities in the laboratory	50	10	13	10	10	07	3.18	Agree
2	Utilization of facilities in the library	50	05	07	06	25	07	2.56	Disagree
3	Utilization of facilities in the agriculture room	50	06	09	21	08	06	3.02	Agree
4	Utilization of sports facilities in the field	50	12	19	06	07	06	3.48	Agree
5	The facilities in the agriculture room	50	06	08	18	10	08	2.88	Disagree
6	Utilization of the reference books in teaching	50	20	22	00	12	02	4.04	Agree
7	Utilization of the teacher's guide in teaching	50	16	19	12	01	02	3.92	Agree
8	Utilization of the models in teaching	50	06	04	20	15	05	2.82	Disagree
9	Embarking on excursions or field trips	50	02	05	10	25	08	2.36	Disagree
10	Utilization of the audio-visual materials in teaching	50	01	03	06	30	10	2.10	Disagree
11	Utilization of the internet facilities in teaching	50	01	01	09	29	10	2.08	Disagree
12	Usage of the visual materials for teaching	50	10	34	06	07	04	3.56	Agree
	Grand Mean							2.58	

Summary of the study

The study was to assess the Influence of TLR on Students' Performance in Secondary Schools in Gusau Local Government Area, Zamfara State, Nigeria. The research objectives were: To determine how availability of teaching and learning materials used in Secondary Schools in Gusau L.G.A affect students' performance, to establish how adequacy of physical facilities influence students' performance in secondary schools in Gusau., to establish how adequacy of human resource influence students' performance in secondary schools in Gusau and to assess extent of resource utilization and its effect on students' performance in secondary schools in Gusau Local Government Area.

The study employed survey design. The target population was the classroom teachers in Gusau Local Government. The sample size consisted of a total 50 classroom teachers from 10 secondary schools within Gusau metropolis. The researcher employed self-administered questionnaires to gather data for the study. The findings revealed that; the teachers agreed that there is availability of Teaching Learning Materials (TLM) in the schools as reported by the majority of teachers. The study also established that the physical facilities for teachers in schools were fairly adequate. Majority of the respondents agreed that the number of chairs and tables were adequate. An analysis into the teaching and learning materials imply that majority of the teacher respondents agreed that TLM were adequate except for the use of field trips, audio-visual materials, internet facilities and use of computers in teaching and learning.

Findings also indicated that the schools were understaffed. However, there may be glaring imbalances in staffing in the various departments in schools, such that some departments may be over staffed while others were under staffed. This gross lack of qualified teachers may impact negatively on students' performance. Although the teachers disagreed to the utilization of Teaching Learning Materials (TLM), this may be as a result of lack of in

service training, workshops and seminars for the teachers to update their skills with the innovations such as computer, audio-visual materials, internet and other facilities for teaching and learning.

Conclusion

From the study it was clear that TLM are available, except physical facilities that were inadequate, inadequate recreational facilities and gross lack of human resources. An analysis of physical facilities shows an over stretch. Teachers further indicated that facilities had a negative influence on performance of students in senior secondary school. Teaching and learning materials tend to be fairly adequate and minimally shared especially in the compulsory subjects, human resources are also a serious concern, since enrolment in the schools increase yearly leading to inadequate curriculum supervision and implementation in schools. The study also established that the funds released by the government to finance senior secondary education were inadequate, and was also not released on time, cited by the school's teacher respondents forcing schools to procure goods on credit or shelve for projects and this resulted to charging levies on parents to meet purchase of certain school resources.

Recommendations

Based on the findings, analysis and conclusions of the study, the following recommendations were made;

The government should allocate more funds to equip physical facilities in schools which are inadequate; also more funds should be allocated for resource persons, field trips and excursions, internet facilities and recreational facilities to avert charging parents' levies for these resources.

Government should employ more teachers to cater for the enormous teacher shortage; in service training programmes should also be initiated to address manpower needs.

Where the internet is unavailable, unreliable or unaffordable, the development of local school networks and the provision of e-materials to schools on compact disks (CDs/ flash drives can support e-learning via school servers and networks.

Head teachers should involve the Parent Teachers Association (PTA) together with all other education stakeholders to aid in school development programmes and projects. The schools should also initiate income generating projects to subsidize government funding.

The researcher recommends that the government should build more classrooms to meet the rising yearly enrolment surges to avoid over-utilization of physical facilities, stretch of teaching and learning materials and overworking of available teachers which in turn would compromise the quality of schools.

Motivational programs should be put in place for school's teachers so as to encourage them and maintain their focus on their roles and contribution towards effective and efficient education programmes.

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Author Information

Solomon Akintola Adeniran
Federal College of Education (Technical)
P.M.B. 1088, Gusau, Zamfara State, Nigeria
Contact e-mail: toladeniran2013@gmail.com

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Examination of Studies on Concept Teaching in the Field of Science Education

Fatih Serdar YILDIRIM
Akdeniz University

Abstract: Concepts, as well as forming the basis of scientific knowledge, are also important in terms of their correct learning and understanding. Teaching the concepts of a subject in a way that they can understand, makes it easier for students to associate the concepts with their daily life and use them in their daily lives. This study aims to analyze the content of the studies conducted between 2010-2020 on analogies, conceptual change texts, concept cartoons, meaning analysis tables and concept maps used in teaching concepts in science education and in identifying and eliminating misconceptions in Turkey. In the study, 169 studies including 50 articles, 105 master theses and 14 doctoral dissertations on concept teaching were used. While document analysis method is utilized in the study, while the data are shown with the descriptive analysis method, analyzed results are displayed with tables and graphics using percentage and frequency values. The results of the study shows that while quantitative research are more commonly preferred, more master's theses are conducted compared to articles and doctoral dissertations, and while the research are more frequently conducted on the subject of "determination and elimination of misconceptions", secondary school students are more commonly preferred as sample groups and "conceptual comprehension test" is the most frequently used measurement tool. This study may suggest future researchers to conduct studies on concept teaching of teachers.

Keywords: Science education, Concept teaching, Studies about concept teaching.

Introduction

In science education, we aim to raise our students as scientifically literate individuals who can solve problems, question, have a critical perspective, adapt to their environment in change and development, and associate the knowledge they learn at school with daily life (Ministry of National Education, 2005). Raising such individuals can only be achieved by structuring the information about science in a meaningful way at the level of concepts and learning in accordance with the scientific definition. It is very important to learn the basic concepts correctly in the teaching of a subject. Teaching the concepts in the subject in an understandable way makes it easier for students to associate these concepts with and use them in their daily lives. According to Özmen (2005), with the acceleration of the developments in science and technology, knowledge accumulation also increases rapidly. It becomes increasingly difficult to convey all of this information to students and thus, concept teaching becomes more important. Therefore, while trying to teach a subject basic concepts should be emphasized effectively and in depth. Thus, the necessary basis is formed for the students to easily access information themselves (Akdeniz, Yıldız, & Yiğit, 2001). While the correct learning of the concepts has gained such importance, the wrong concepts that students bring to the classroom before entering the class make it difficult to carry out science education effectively. Concepts that are passed without being learned correctly cause students to develop alternative concepts in their ongoing education life and have difficulties in learning the other subjects. According to Bodner (1986), students may have alternative ideas different from the ones advocated by scientists in case of lack of basic knowledge. If the concepts formed in students' minds differ from the concept that the educator aims to give, students cannot associate these concepts with scientific explanations in their daily lives, and students face misconceptions (Aydoğan et al., 2003, Coştu et al., 2007). According to Piaget, misconceptions are like structures that add up on top of each other and create more and more gaps in learning. Learning activities carried out without paying attention to the concepts and misconceptions of students will increase their misconceptions (Büyükkasap et al., 2001). Science concepts are mostly abstract concepts, and the concepts that students acquire from their own lives are mostly unscientific concepts formed by their prejudices,

wrong beliefs and environmental influence. Misconceptions are deep and permanent, so the reasons for misconceptions should be investigated thoroughly. Studies have revealed that it is extremely difficult to reverse and correct a student's misconceptions.

The effects of learning the concepts incorrectly can last throughout an individual's life (Svandova, 2014). In fact, some misconceptions are deeply rooted in students' psyche, and simply asking students to reject them may fail (National Research Council [NRC], 1996). For this reason teaching of the concepts and elimination of misconceptions has gained importance in recent years. Concepts should be concrete, logical and understandable by the student in order to learn the concepts correctly and to eliminate misconceptions. In concept teaching, many methods are used to identify and eliminate misconceptions. One of these methods is the analogy method. Studies on analogy-based teaching method show that analogies concretize abstract concepts as a result of associating them with real life events, facilitate understanding of concepts and provide permanence in learning (Sağırlı, 2002; Wong, 1993). Analogies form a bridge between concepts that students already know well and concepts they do not know and are going to learn. Meaning analysis tables are frequently used in concept teaching during and after the process for evaluation. While the objects or concepts whose properties are to be determined are written in one of the columns or rows of the table, the properties of these concepts are listed in another. During the preparation of these tools, the student develops new concepts by combining the meanings of the words being learned with concepts previously known (Çepni, 2006). Many studies have shown that meaning analysis tables are effective in teaching the descriptive and distinctive features of concepts (Aydın & Balım, 2005; Caner, 2008). According to Asubel (1968), the most important factor affecting learning is the knowledge of students. In order for meaningful learning to take place, new concepts to be learned should be associated with previous concepts. Concept maps serve as a bridge between new concepts to be learned and previous concepts, and are based on Ausubel's meaningful learning theory (Broggy & McClelland, 2008). Concept maps are defined as visualized, concrete graphs showing the relationship between concepts (Kaptan, 1998; Martin, Sexton, Wagner & Gerlovich, 1994). In our country, a lot of studies have been done in teaching concepts in science education and determining and eliminating misconceptions. This has led to the need to determine a general framework for the methods used in concept teaching. In order for meaningful learning to take place, new concepts to be learned should be associated with previous concepts. Concept maps serve as a bridge between new concepts to be learned and previous concepts, and are based on Ausubel's meaningful learning theory (Broggy & McClelland, 2008). Concept maps are defined as visualized, concrete graphs showing the relationship between concepts (Kaptan, 1998; Martin, Sexton, Wagner & Gerlovich, 1994). In our country, many studies have been done in teaching concepts in science education and determining and eliminating misconceptions, and this has led to the need to determine a general framework for the methods used in concept teaching.

In this context, the aim of the study is to create a content analysis, aiming to find answers for sub problems determined within the scope of the research, on master's theses and doctoral dissertations conducted and registered between the years 2010-2020 in the National Thesis Center of Institution of Higher Education and research papers in the database of ULAKBİM and obtained through the database of Google Scholar on analogies, conceptual change texts, concept cartoons, meaning analysis tables and concept maps used in concept teaching, which holds an important place in science education in our country, and in detection and elimination of misconceptions.

For this reason, studies conducted on analogies, conceptual change texts, concept cartoons, meaning analysis tables and concept maps used in teaching of concepts and detection and elimination of misconceptions are reviewed ad thought to be useful for the future studies in the discipline of science education. With the information obtained as a result of the investigations made, it was aimed to determine the deficiencies in this field and to present a research that will constitute a source for future studies with the idea that it can give preliminary information to researchers.

Within this aim, following are the research questions concerning the teaching of concepts in the field of physics, chemistry, biology and science education between the years 2010-2020:

1. What is the distribution of the studies in terms of the type of publication?
2. What is the distribution of the studies according to the publication type and years?
3. What is the distribution of studies according to the type of tool and publication used in teaching concepts?
4. What is the distribution of studies according to the type of publication and research method?
5. What is the distribution of the research methods of the studies by years?
6. What is the distribution of the studies according to the type of publication and sample group?

7. What is the distribution of studies according to the type of publication and data collection tool?
8. How is the distribution of studies according to the type of publication, sample group and subject studied?

Methodology

Research pattern

The "Document Analysis" method was used in order to find answers to the research questions determined in this study. Document Analysis covers the examination of written materials containing data about the phenomena determined within the scope of the research (Yıldırım and Şimşek 2006). Document review is an effective method to obtain data in a short time and is highly efficient (Koyuncu et al., 2018).

Data collection process

The universe of the study consists of articles, master's theses and doctoral dissertations published between 2010-2020 on analogies, conceptual change texts, concept cartoons, meaning analysis tables and concept maps used in teaching concepts in science education and detecting and eliminating misconceptions in our country. The literature review was made on Thesis database of the Institution of Higher Learning for master's and doctoral theses and ULAKBİM Database and Google Scholar databases for national articles. During the search, the keywords "concept teaching", "concept map", "concept cartoons", "conceptual change texts", "analogy", "meaning analysis table" were used. With these criteria, 169 publications including 50 articles, 105 master theses, 14 doctoral dissertations were included in the study.

Analysis of data

The analysis of the data obtained in this study was made by the descriptive analysis method, where the data are shown as they are. In content analysis, it is important to organize and interpret similar data by gathering them around certain criteria and in a clear way for readers. The researcher can make predictions by interpreting the findings obtained (Yıldırım & Şimşek, 2006). In the research, master's and doctoral dissertations were analyzed in terms of the criteria given in the problems. The data obtained as a result of the investigations were organized and grouped according to the criteria created and the data were shown with appropriate tables and graphics.

Results

In this section, articles, master's and doctoral theses published in Turkey between the years 2010-2020 on teaching of concepts in the field of science education are analyzed by publication type, publication year, methods used in teaching of concepts, research methodology, sample group, sample number, subject studied and data collection tool and the results are shown with tables and graphs.

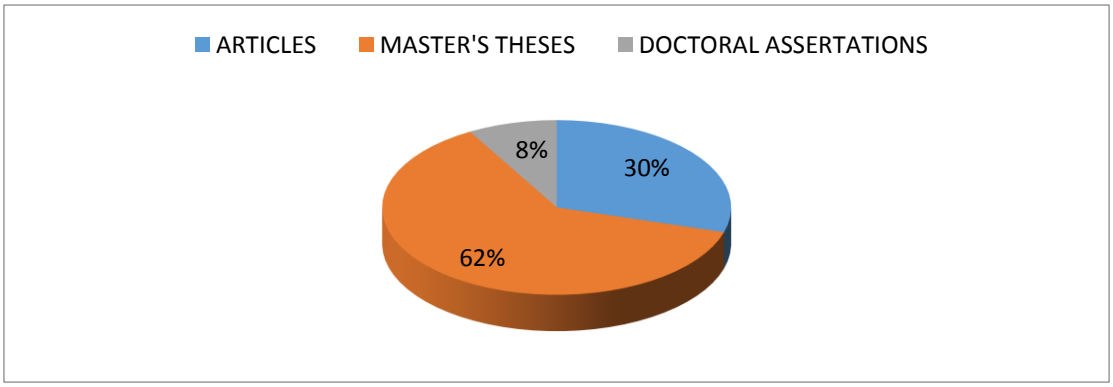

Figure 1. Distribution of studies on concept teaching between 2010 and 2020 by type of publication

Distribution of studies by type of publication

In Figure 1, the distribution of the publication type of the studies on concept teaching is given. In Figure 1, it is seen that the most studies in science education related to concept teaching are master's theses (67%), then the article type (32%) and the least number of publication is made as doctoral theses (1%).

Distribution of studies by publication type and years

Figure 2 shows the distribution of the studies on concept teaching according to the publication type and years.

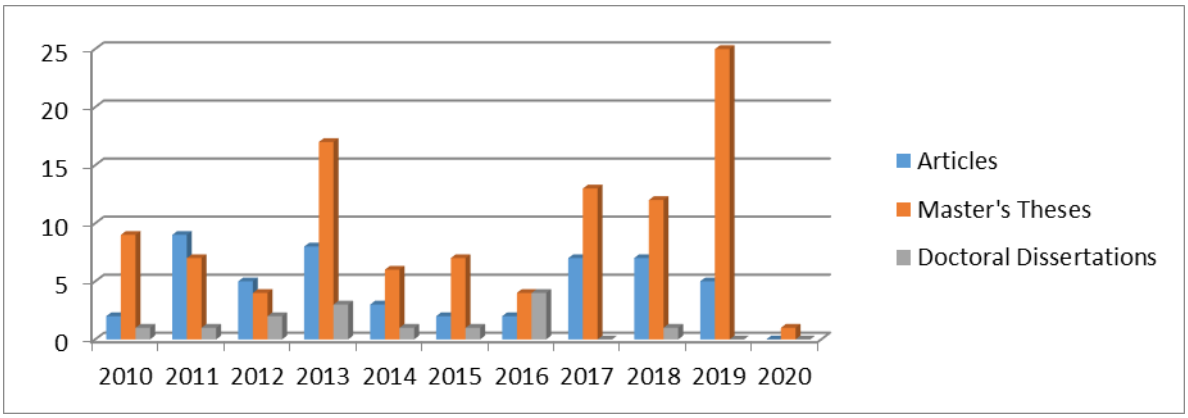

Figure 2. Distribution of studies on concept teaching by publication type and years

When Figure 2 is examined, it is seen that the most studies on concept teaching between 2010 and 2020 are in 2019 (f: 30). In addition, it is seen that there is a significant increase in the studies carried out in 2013 (f: 28), 2017 (f: 20) and 2018 (f: 20). When the years in which the broadcasting types were made according to the years are examined; It is seen that the article type was made in 2011 (f: 9), the master type in 2019 (f: 25) and 2013 (f: 17), and the doctoral type in 2016 (f: 4).

Distribution of techniques and studies used in studies by type of publication

Figure 3 shows the distribution of the studies conducted between 2010-2020 according to the technique used in concept teaching and the type of publication.

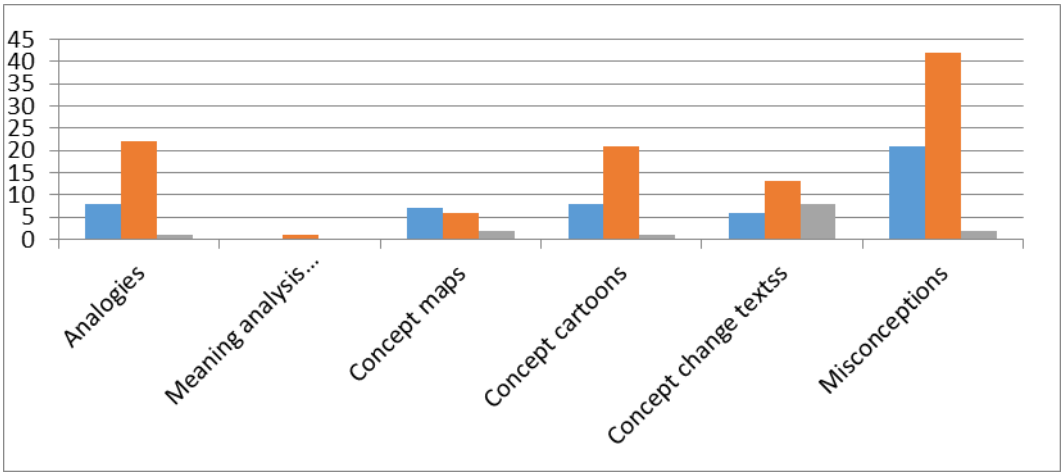

Figure 3. Distribution of the techniques and studies used in the studies by type of publication

When Figure 3 is examined, it is seen that the most studies were made on misconceptions (f = 65) in concept teaching between 2010-2020. In addition, it is seen that the most studies are done by using analogies, determining misconceptions and concept cartoons techniques in concept teaching. When the studies conducted are examined, it is seen that the most conceptual change texts are used in doctoral dissertations according to the

type of publication (f = 8), while studies on the detection and elimination of misconceptions are the most in master's theses and articles. It is seen that concept cartoons technique is mostly studied in master's theses. Doctoral dissertations have not been found in studies conducted solely on the detection and elimination of misconceptions. The semantic analysis tables technique used in concept teaching has been studied very little in master's theses, and these techniques have not been found in articles and doctoral dissertations.

Distribution of studies by type of publication and research method

Figure 4 shows the distribution of the studies according to the type of publication and research method.

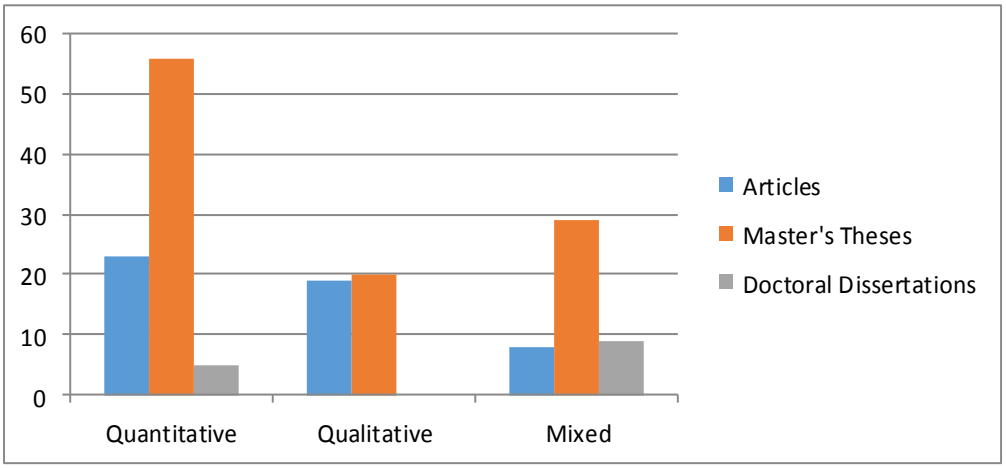

Figure 4: Distribution of studies by type of publication and research method

Between 2010 and 2020, 49.7% of the studies on concept teaching were done by quantitative research, 23% by qualitative research and 27.3% by mixed research methods.

Distribution of the publication type and research method of the studies by years

Table 1 includes the distribution of the type of publication and research method by years.

Table 1 shows that quantitative research methods (f = 84) are preferred more frequently. In addition, it is seen that the quantitative research method is mostly preferred for articles and master theses. However, the most preferred year is 2019 (f = 18), most of which are master theses (f = 15). The most preferred method afterwards was the mixed search method (f = 46). In 2013, it is seen that the mixed method is preferred more (f = 11). In doctoral dissertations, especially the mixed method (f = 9) was preferred more.

Table 1: Distribution of publication type and research method by years

		Quantitative research			Qualitative research			Mixed research		
Years		A	M	D	A	M	D	A	M	D
2010		-	5	-	2	1	-	-	3	1
2011		3	2	1	4	2	-	2	3	-
2012		3	2	1	2	2	-	-	-	1
2013		5	8	1	3	2	-	-	8	3
2014		1	3	1	2	1	-	-	2	-
2015		1	3	1	-	1	-	1	2	-
2016		2	3	-	-	1	-	-	-	3
2017		1	12	-	3	-	-	3	1	-
2018		4	3	-	2	5	-	1	4	1
2019		3	15	-	1	3	-	1	6	-
2020		-	-	-	-	1	-	-	-	-
TOTAL	f	23	56	5	19	19	-	8	29	9
	%	50			22,62			27,38		

(A: Articles, M: Master's Theses, D: Doctoral Dissertations)

The change of the research methods of the studies by years is given in Figure

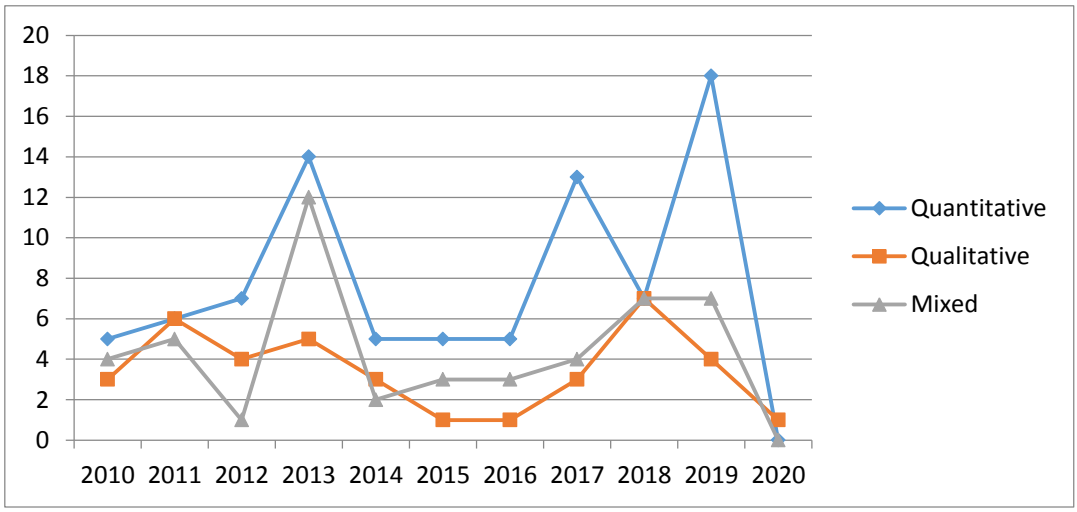

Figure 5. Distribution of publication type and research methods by years

When Figure 5 is examined, it is seen that the studies using the quantitative research method were carried out most in 2019. Qualitative research methods are seen to be the most in 2018. Studies using the mixed method were the most in 2013, and no increase was observed afterwards.

Distribution of studies by type of publication and sample group

Figure 6 shows the distribution of the studies conducted according to the type of publication and sample group.

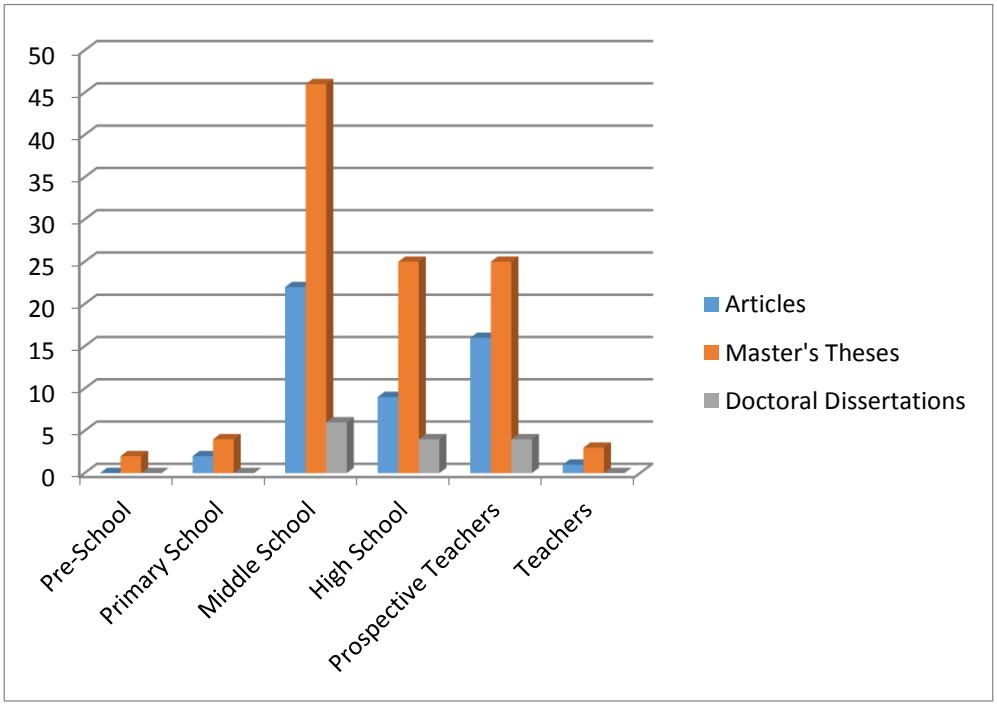

Figure 6: Distribution of studies by type of publication and sample group

When Figure 6 is examined, it can be seen that, in the total of types of publications, mostly secondary school students are worked with (43.7%). Then comes the studies conducted with prospective teachers (26.6%). When the studies are examined, it is seen that studies are carried out mostly with secondary school students in the type of master's, doctorate and article publication.

Distribution of studies by type of publication and data collection tools

Table 2 includes the distribution according to the type of publication and data collection tools.

Table 2. Distribution of studies by type of publication and data collection tools

Data collection tool	Articles f	Master's theses f	Doctoral dissertations f	Total F	%
Conceptual comprehension tests	12	36	11	59	19,87
Conceptual diagnistoc tests	7	14	-	21	7,07
Academic achievement tests	14	28	5	47	15,82
Attitude scales	4	21	9	34	11,45
Interviews	11	26	7	44	14,81
Polls	9	20	-	29	9,76
Document analysis	4	6	1	11	3,70
Logical thinking skill tests	4	4	2	10	3,37
Motivation scales	3	3	-	6	2,02
Observations	1	2	-	3	1,01
Scientific process skill tests	1	4	3	8	2,69
Word association tests	-	3	-	3	1,01
Concept map technique	3	4	1	8	2,69
Analogical thinking tests	1	1	-	2	0,67
Material evaluation forms	-	1	-	1	0,34
Concept cartoons technique	2	3	-	5	1,68
Worksheets	1	1	-	2	0,67
Kolb learning style inventory	-	1	-	1	0,34
Student diaries	1	1	-	2	0,67
Video recording	-	1	-	1	0,34

When Table 2 is examined, it is seen that the most preferred data collection tool in studies conducted between 2010 and 2020 for concept teaching is conceptual comprehension tests (19.87%). Afterwards, the most preferred data collection tool was academic achievement tests (15.82%). In the third row, interview forms were used and an interview (14.81%) was conducted. In the fourth place, attitude scales (11.45%) were used. When we look at the types of publications, the most preferred data collection tool in the article type is academic achievement tests (f = 14), conceptual understanding tests in master theses (f = 36), and the most preferred data collection tool in doctoral dissertations is conceptual understanding tests (f = 11).

Distribution of studies by type of publication, sample group and subject studied

Table 3 includes the topics that researchers frequently work on regarding concept teaching. Table 3 contains the topics that researchers frequently worked on between the years of 2010-2020. When the table is examined, it is seen that the most studies were carried out with secondary school students at the primary education level (43.7%) and within the unit of "Structure and Properties of Matter" (f = 17). After the Structure and Properties of Matter, the most preferred subject is the "Systems in Our Body" unit. Following the students from the second stage of the primary education, prospective teachers are the group which the studies are most frequently carried out with (26.6%). Most of the studies were conducted with the prospective teachers within the unit of Structure and Properties of Matter (f = 6). In the third row, a study was conducted within the scope of the "Force and Motion" unit (f = 11). When the table is examined, it is seen that in doctoral dissertations, most of the studies are worked with primary school students within the scope of the Structure and Properties of Matter unit (f = 3).

Conclusion, Discussion

In this section, general research criteria are presented and the hypothesis results for each variable are discussed, and recommendations are made for future research to be conducted with concept teaching. The following results have been reached with the content analysis of the studies on concept teaching, which has a large place in the researches in the field of science education between 2010 and 2020.

Table 3: Distribution of studies by type of publication, sample group and subject studied

Sample Group	Subject	A	M	D	Total	
		f	f	f	F	%
Pre-School	Simple Electric Circuit	-	1	-	1	0,65
	Science and Nature Activities	-	1	-	1	0,65
	Electric Tools	-	1	-	1	0,65
	Light and Sound	-	1	-	1	0,65
Primary School	Scientific Concepts	1	-	-	1	0,65
	Let's Solve The Puzzle of our Body	1	-	-	1	0,65
	Introduction to Matter	1	1	-	2	1,29
	Force and Motion	1	1	-	2	1,29
	Classification of Living Things	-	1	-	1	0,65
Secondary School	Force and Motion	-	4	2	6	2,58
	Electric and Electrostatic	-	1	1	2	1,29
	Classification of Living Things and Biodiversity	3	1	-	4	2,58
	Light and Sound	1	3	-	4	2,58
	Nutrients	-	2	-	2	1,29
	Biodiversity	1	-	-	1	0,65
	Systems in Our Body	3	7	-	10	6,45
	Cell	1	-	-	1	0,65
	Structure and Properties of Matter	2	12	3	17	10,97
	Reproduction, Growth and Development in Plants and Animals	1	2	-	3	1,94
	Human and Environment	1	1	-	2	1,29
	Solar System and Beyond	-	3	-	3	1,94
	Cell Division and Inheritance	3	1	-	4	2,58
	Nature of Science	-	1	-	1	0,65
	Earthquakes	-	1	-	1	0,65
	Structure and Properties of Matter	2	3	1	6	3,87
	Nature of Science	-	1	-	1	0,65
	Systems	1	3	-	4	2,58
	Force and Motion	1	2	1	3	1,94
	Classification of Living Things and Biodiversity	1	2		3	1,94
	Osmosis- Diffusion	-	2	-	2	1,29
	Water and Its Properties	-	1	-	1	0,65
	Organic and Inorganic Substances	-	2	-	2	1,29
High School	Electrical Current	1	1	1	3	1,94
	Environment	-	2	-	2	1,29
	Photosynthesis	-	1	-	1	0,65
	Solutions	-	1	1	2	1,29
	Electrochemistry	-	-	1	1	0,65
	Modern Atomic Theory	-	1	-	1	0,65
	Heat and Temperature	-	1	-	1	0,65
	Evolution	1	-	-	1	0,65
	Radioactivity	-	-	1	1	0,65
	Structure and Properties of Matter	2	2	2	6	3,87
	General Chemistry	1	2	-	3	1,94
	Electric Current and Electrification	3	1	-	4	2,58
Prospective Teachers	Heat and Temperature	2	3	-	5	3,23
	Living Things and Life	1	1	-	2	1,29
	Work	1	1	-	2	1,29
	Electrochemistry	1	-	-	1	0,65
	Photosynthesis and Respiration	1	1	-	2	1,29
	Science Concepts	1	3	-	4	2,58
	Pressure	-	4	-	4	2,58
	General Chemistry	1	2	-	3	1,94
	Osmosis - Diffusion	-	1	-	1	0,65
	General Biology	-	1	-	1	0,65
	Solutions	-	2	-	2	1,29
	Density	-	1	-	1	0,65
	DNA Replication	-	1	-	1	0,65
	Mechanical Waves	1	-	-	1	0,65
Teachers	Science Concepts	1	3	-	4	2,58

(A: Articles, M: Master's Theses, D: Doctoral Dissertations)

It has been observed that the studies on concept teaching in science education are mostly conducted as master's theses and at least as doctoral dissertations. When the types of studies conducted by years are examined; It has been determined that the least number of studies on concept teaching were carried out in 2014, 2015 and 2016, and the maximum number of studies was conducted in 2019, with a significant increase between 2013 and 2019. It was also stated in previous studies that most of the students used the correct concepts presented by their teachers during the lesson, but they insisted on their own misconceptions when asked about the subject after the instruction (Mcdermott & Shafer, 1992; Küçüközer, 2003; Akgün, 2005). The fact that the studies conducted with concept teaching frequently gain momentum shows that concepts are the basic building blocks of teaching. The investigated studies reveal that most of the studies have been done to identify and eliminate misconceptions. Conceptual change texts were used most frequently for elimination of misconceptions. In addition to the fact that misconceptions in the field of science education is a frequently studied topic (Tatar & Tatar, 2008), this study also supports the finding that misconceptions in learning are studied too much. In addition, analogies and concept cartoons, which are effective in concept teaching, have been used quite a lot. There are very few studies on meaning analysis tables in concept teaching.

While the research management quantitative research design based on the studied studies is mostly preferred for articles and master theses, it is followed by qualitative research designs. The most widely used research methods in science have been "quantitative research methods" (Yıldırım, 1999). In the findings, it was seen that the most preferred method was quantitative research method. This finding is similar to previous studies (Çalık et al., 2008; Göktaş et al., 2012; Sözbilir and Kutu, 2008). It can be said that quantitative research methods have been frequently preferred in science education for years. The reason for this situation can be attributed to factors such as the ease of analysis of numerical data, the ability to generalize the results obtained from the studies, the large sample group reached and the low expenses (Göktaş et al., 2012). It was determined that the number of studies in which mixed research design was preferred is quite low. However, it is seen that while mixed research design is preferred in doctoral dissertations, qualitative research design is not preferred. In line with this finding, orientation towards mixed research in science education is among the recommendations of this study. While the sample group of the studies conducted with concept teaching in science education between the years of 2010-2020 was mostly composed of secondary school students; It was determined that there are very few studies in which primary school students were selected in sample groups.

In the researches, it was determined that conceptual understanding tests, followed by academic achievement tests and interviews were the most preferred data collection tools in master's theses and doctoral dissertations. In article publication types, mostly academic achievement tests and then conceptual comprehension tests were preferred. In addition, the abundance of studies examining the affective dimension (motivation, attitude, opinion, etc.) in concept teaching shows that the affective dimension has gained importance in science education in recent years according to the studies examining the effect of concept teaching on success. This finding is similar to previous studies (Sözbilir & Kutu, 2008). In summary, in order to determine the status and development of concept teaching in Turkey, we recommend similar studies to be conducted regularly in the coming years.

Suggestions

In this respect, in the light of the results of the study, some suggestions for researchers who will carry out future studies in this field are listed as follows;

Studies on the teaching concept in Turkey and abroad can be examined in comparative manner.
Studies on teaching concepts, especially at doctorate level, should be increased.
Studies can be carried out on the effectiveness of meaning analysis tables in the field of teaching science concepts.
Studies in which quantitative and qualitative data collection methods are used together and mixed research method should be increased in order to make in-depth analysis.

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Author Information

Fatih Serdar Yıldırım
Akdeniz University
Education Faculty, Antalya/Turkey
Contact e-mail: *fatihserdaryildirim@gmail.com*

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Improving Vocabulary through Word Formation at Secondary Level: A Survey

Muhammad Safdar BHATTI
The Islamia University

Rafia MUKHTAR
Workers Welfare School

Abstract: English is being used all over the world as an international language. It has become a Lingua Franca and a language of greater opportunities. It also enjoys a supreme status in society. Its sound knowledge is a successful passport for any job. For learning any language, both the oral and written skills are of equal importance. In fact, learning a second language is never easy. Learners have to wrestle with new vocabulary, rules of grammar, pronunciation and more. In learning a second language, vocabulary is the most paramount part. It is the soul and essence of a language. It is also first and leading stair in a language acquisition. Its knowledge plays an important role in almost all areas of language. So, the whole process of learning a language depends on learning its vocabulary. The current study evaluated the ways to improve vocabulary through word formation at secondary level. It was a survey type of research based on quantitative research approach. Two hundred students and fifty teachers from Bahawalpur region participated in this study. The data was assembled through a close-ended questionnaire. The collected data was analyzed in SPSS. The findings of the study revealed a significant improvement in vocabulary. It is recommended that quizzes, exercises and tests for affixes should be used to enhance the vocabulary among students. The recommendations and findings of this study should be taken into careful consideration and steps should be taken to implement those in our classrooms. If implemented intentionally, it is expected that the state of the teaching and learning of vocabulary skills at secondary level will be improved remarkably.

Key Words: Improving, Word formation, Vocabulary, Survey, Soul.

Introduction

Pakistan is a developing country. Its literacy rate is not praiseworthy and is at the low level in the ranking list of literate countries. The situation is even worse in rural areas (Bhatti, 2016). The students even after twelve years of educations are unable to get command over English Language (Kannan, 2009; Bhatti, 2016). Students just study to pass their exams and most of them prepare specific areas of syllabus (Warsi, 2004) which directly affects their learning. Language is a weapon for man. It has to be taught and used in social groups. It is the only way to speak with each other and it is the way by which we can send our messages to others. It is not only used for routine dialogue but also used in education, research and science in spoken as well as in written form. Without it, man is like a dumb animal. Proficiency over target knowledge of vocabulary can make our students powerful speakers, handsome listeners, good readers and writers. For learning any language, both the oral and written skills are of equal importance. For this purpose, there is a dire need of interaction among the learner, educator and the study material.

In fact, English is being used all over the world as an international language and has become a Lingua Franca and a language of greater opportunities. It also enjoys a supreme status in society. Its sound knowledge is a successful passport for any job. Basically, learning a second language is never easy. Learning of vocabulary is the very basic point to expertise it in the target language. Vocabulary acquisition, vocabulary retention and vocabulary transfer are some confused processes in learning vocabulary. No doubt, the role of vocabulary is

very vital in order to language teaching and learning. Mastery in vocabulary will enable the students to enhance other skills well.

Developing vocabulary is a confused series of actions to achieve the results. It takes a long time to master English vocabulary. It makes the learning process more meaningful. Lack of vocabulary seems one of the major causes of failure of our students. It is the major hindrance in learning process especially English. Academic English is essential for the success of ESL learners in school settings. Knowledge of morphemes and affixes (prefixes, suffixes) are one part of academic English that may increase student's achievement. It has been observed that in most of our public and private schools, the teachers teach the students only by the so-called traditional ways of teaching English vocabulary. Learners have to wrestle with new vocabulary, rules of grammar, pronunciation and more. Word formation is an appropriate strategy for the ESL learners to develop their vocabulary widely and polish their skill.

In learning a second language, vocabulary is the most paramount part. It is the soul and essence of a language. It is also first and leading stair in language acquisition. Its knowledge plays an important role in almost all areas of language. So, the whole process of learning a language depends on learning its vocabulary. The study of prefixes, roots and suffixes is the most utilized word parts that make fifty percent of the English language (Pitman, 2003). English vocabulary is marvelous and becomes the part and parcel of technology and social interaction. Gradual practice of prefixes, roots and suffixes can improve vocabulary of the students (Pitman, 2003). The cognitive, social, and psychological factors involve in learning and retaining of vocabulary. The social indicators of students learning process are parents, peers and teachers who help in refining the learning process of the learners through different literary events.

The current study is about the importance of the role that the processes of word-formation, especially affixes, play in the acquisition of English as a second language in the classroom at secondary level. It intends to investigate the problems, difficulties, needs and interests of the students of elementary level in the area of affixes, and their importance in acquiring vocabulary.

Statement of the Problem

The researcher has observed that the ESL learners of Bahawalpur city face problems and difficulties in the area of affixes involved in building and forming words in learning English. Affixes are problematic for students and one of their major difficulties is the recognition and the production of them. The students encounter difficulty in perceiving and recognizing them in their learning of English. They cannot attain mastery and command of them in daily life interaction, communication, the academic subjects and requirements. So imparting English vocabulary to the ESL learners through affixes is a new idea. Most of the English teachers are unaware of this innovative technique. That's why it seems them difficult to switch over to this new technique of teaching. The students also remain dull in learning vocabulary in traditional classrooms. In our government schools, the majority of the students cannot comprehend the words they have been taught. With this scenario, the researchers decided to conduct a research on *"Improving Vocabulary through Word Formation at Secondary Level: A Survey"*. This study will draw the attention of the teachers to use affixes to make their teaching effective, easy and interesting. It will also investigate how the use of word formation helps the learners to overcome their short comings of vocabulary skills in the target language.

Objectives of the Study

This particular study is an attempt to search for the most appropriate, fruitful and inspirational way to teach vocabulary in secondary schools. So the objectives of the current study were:

1. To find out the impact of using word formation for enriching vocabulary
2. To find out the perceptions of the teachers regarding the use of word formation.

Research Questions

To achieve the required objectives, following research questions were formulated:

Q1: What is the impact of word formation upon vocabulary enrichment of secondary level learners?
Q2: What are the perceptions of teachers about the use of word formation in the classrooms?
Q3: How can word formation be important in acquiring English vocabulary at secondary level?

Significance of the Study

Words are building blocks of language. So affixes are helpful for improving vocabulary. The study is an attempt to provide a detailed analysis and description of the affixes in order to emphasize the important role they play in the acquisition of vocabulary. The positive results of this research will support the English teachers to use affixes for developing vocabulary of their students and even they can change their methods to make the students motivated and relaxed in teaching learning process. It will enable the teachers of English of secondary level to be in a better position to diagnose the causes and to offer appropriate treatment. Thus, the teachers, scholars, syllabus designers and educationists can use the present study for various pedagogical purposes including assisting ESL learners to attain better mastery and command of vocabulary.

Literature Review

Importance of English Language

According to Wilkins (1874), a nation is recognized by language. There are many languages used all over the world. In which the most commonly and internationally spoken language is English. Most of the books are written in English while some are translated into English for better comprehension. It is considered to be world language. It is an international currency. Half of the world scientific literature is written in English. The Cairo Egyptian Gazette said. " English is not the property of capitalist Americans, but of the entire world". i.e British, American, Caribbean, West African, East African, Indian, South-east, Asian etc are the world varieties of English.

We cannot make our influence without command on English language (Mathews, 1989).

English is an international language. It is used in the most parts of the world and also such locality, where the land is wide, like India where various cultures are running together and each culture differs from the other and so is their language, people coming from abroad will not be able to understand the various language. So those who are known to English will deal the situation better. To be able to use English in communication, young learners need to acquire necessary vocabulary items and structures. While doing so, at the beginning stages of language learning, new vocabulary should be presented orally with related pictures, drawing, video etc.

Vocabulary teaching and learning is a constant challenge for teachers as well as students because historically there has been minimal focus on vocabulary instruction in the ESL classroom. Due to this, an increased emphasis on vocabulary development is crucial for the English language learner in the process of language learning. We cannot convey a single idea without vocabulary. The importance of vocabulary can be shown with the help of this quote, as the British linguist David .A. Wilkins (1972) puts it “Without grammar, very little can be conveyed; without vocabulary nothing can be conveyed”.

According to Moeen (1992), the child uses noise and loudness with a rudimentary system of information before he learns specific words, uses utterances for a period and develops intonation akin to the intonation of his parents. Development of his intonation may go for ahead of other elements and units of the language. The components of language are as under:

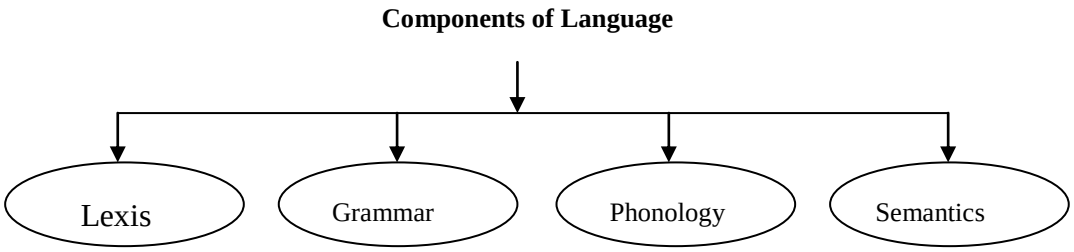

Figure 1. Components of language

(a) Lexis: Lexis carries great significance in a language. It is just like the flesh of a living organism, and it gives richness and extensiveness to a language.

(b) Grammar: According to Michael (2005), Grammar gives structure and form to a language. It is just like a network of bones within the body of an organism. Combining together Lexis and Grammar, they give birth to a language and almost all the languages have the following systems:

a. Grammatical system b. Phonological system c. Lexical system

(c) Phonology: It is the system of sounds in a language. Any message conveyed by a language has to be first converted into words put together according to the grammatical rules and these words are then conveyed by sounds. It is a broader study of the major speech sounds and their organization in a particular language. Moreover, it deals with how English organizes elements of speech into an integrated system. Accuracy, fluency, and intonation are the main purposes of phonology. Intonation is concerned with the pitch of the voice, the musical feature of the voice (Michael, 2005).

(d) Semantics: Semantics is the study of meanings in a language. And a language in itself is very sensitive to the situation. So it is rather difficult to reach at the exact meanings of words in a sentence. The aim of semantics is to explain and clarify the nature of meaning (Shams, 2003).

The Nature of Vocabulary

English language has become a key to interaction among global community. Today it is spoken and understood almost everywhere in the world. All the administrative issues regarding business, political and academic are discussed in English. In Pakistan, English is being used and understood as second language. It is an essential part from KG to university level. Unfortunately in Pakistan, English is considered a difficult language due to different structure of vocabulary and pronunciation from local languages. According to Schmitt (2000) the knowledge of words related to its meaning and clarifications is called vocabulary. Vocabulary learning is the fundamental element in mastering a second language. Vocabulary learning is a confused process. They are vocabulary acquisition, vocabulary retention, and vocabulary transfer (Schneider et al. 2002).Lado (1955) reported that three aspects (semantics, syntax, and arrangement of words) are focused during vocabulary teaching.

Different languages have different sentence structures, meanings and arrangement of words which lead to multiple vocabulary learning issues. There are social, psychological and neurological factors involved in learning and retaining of vocabulary. A child is socialized under the influence of parents, school and peers. They play vital role in learner's literary events. Shen (2003) states that interaction between adults and a child is the primary source of child's education. According to Stoller and Grabe (1993), the development of vocabulary is necessary for both native and nonnative learners. Kaivanpanah and Zandi (2009) explore that first and second language cannot be comprehended without vocabulary knowledge. Hulatijn (2005) believed, "If one does not know the meaning of the words occurring in a text, understanding is severely hampered" (p.54). Quin (1996) analyzed, "The hardest way to learn new words is a try to memorize a list of unrelated words and their meanings". According to Ellis (1995), long term retention is one of the greatest problems in learning new vocabulary**.**

The issue of vocabulary learning strategies was studied by different experts. According to Paivo (1986), the basic unit of success in the second language classroom is vocabulary. It has an important role in the success of second language learners. Vocabulary is one of the major complaints of learners. They are unable to retain the vocabulary items for a long period. Current studies are not sufficient to solve this issue. The learners forget vocabulary words. Students learn a large number of words but they cannot retain those words in their long term memories. Consequently, this study is expected to help learners in learning and retaining vocabulary through affixes.

In a language, words are building blocks. Learners begin to develop knowledge of second language by learning the words. In a language, words do not exist as isolated items. They are interwoven in a system in order to achieve understanding for producing ideas. Richard (1976) stated that word association; register and semantic structure are included in lexical items. Vocabulary is essential for successful second language use because without an extensive vocabulary, we will be unable to use the structure and function we may have learnt for comprehensible communicative. It can be said that one key the success in communicative, which is the power of words.

Vocabulary means the appropriate diction or the most important thing in a language especially in speaking; furthermore, knowing many vocabularies we will be easier to express our ideas, feeling and thoughts both in oral or written form. In spoken language, the vocabulary tends to be familiar and everyday (Ur, 2003:87). It means that in spoken language or speaking, the vocabulary used must be very familiar and it is used in everyday conversation in order to understand the spoken discourse. Vocabulary is a basic building block of language learning. Students need to know words, their meanings, how they are spelt and how they are pronounced. Thus,

when teaching vocabulary, the teachers have to make sure that they explain the meaning as well as the spelling and pronunciation. Vocabulary is the knowledge of meanings of words. What complicates this definition is the fact that words come in at least two forms: oral and written. Oral vocabulary is the set of words for which we know the meanings when we speak or read orally. Written vocabulary consists of those words for which the meaning is known when we write or read silently. These are important distinctions because the set of words that beginning readers know are mainly oral representations. As they learn to read, written vocabulary comes to play an increasingly larger role in literacy than does the oral vocabulary (Hiebert and Kamil, 2005:3). Moreover, Vocabulary is a set of lexemes including single words, compound words and idioms (Richards & Schmidt, 2002:580).

Word Formation

In order for Pakistani students to communicate in English language, vocabulary learning has a highly paramount role. One of the essential strategies for learning vocabularies is Word Building Strategy or so called Word Formation Strategy. Armbruster et al. (2001) defined word formation strategy as "Teaching students to use word parts to figure out the meanings of words in text." This strategy can be beneficial to the students' vocabulary development. "Knowing some common prefixes and suffixes (affixes), base words, and root words can help students learn the meanings of many new words." The sense of curiosity of students toward the words parts and segments is very important. However, how to activate this sense of curiosity is more challenging. The study investigated whether the learning vocabulary through word formation strategy could affect on vocabulary learning of Pakistani students or not.

Despite their importance to the foreign learners, processes of word formation are often neglected in ESL classrooms and teaching materials. This is a result of negligence of vocabulary as a teaching item in the curriculum and priority given to the rules of sentence construction or language form and structure. Linguistics theories, in general, have not focused on the aspect of the processes of word-formation and their importance in acquiring English. Moreover, very little research has been done on the pedagogic state of the processes of word-formation. However, a growing number of scholars have realized the importance of the processes of word-formation in the acquisition of English language. The educationists, in general, have come to the conclusion that vocabulary is very important in effective social interaction and communication and the academic subjects and requirements.

Mastery of vocabulary is essential for good communication and when it is L2, the requirement of the command of language is most needed. Hence teaching of vocabulary is important. Vocabulary learning begins from the very first day of one's learning and it continues throughout one's life career. We do vocabulary learning whenever we come in contact with a new language. We start using these new words as soon as we get them. We are considered good users of language when we are capable of using words effectively and productively. Consequently, no one can deny that the processes of word-formation are very important in learning and teaching process. They are important in acquiring L2. Word-formation is becoming a matter of great interest for linguists because of the light it throws on other aspects of language. The significance of the study of word-formation is increasing day by day. There are many ways (processes) of word formations. The most important among them are: affixes (prefixes and suffixes), compounds, blends, reduplications, conversions, clippings, acronyms and back-formation.

The present study focused on the area of Affixes for teaching and learning of vocabulary. A very little work is available today which investigates the importance of affixes in TEFL. Sinclair et al (1986) in the introduction, comment on the importance of vocabulary and affixes in learning English as follows: Once you have built up a basic vocabulary of English, you can begin to say what you want to. As you add more and more words to your vocabulary, you are able to express a greater range of ideas or talk about a wider range of topics, and one of the ways of increasing your vocabulary is by describing the patterns involved in building words, i.e. affixes.
There are many important reasons for teaching English affixes and vocabulary:

1. English is an international language and it is used as the medium of communication almost throughout the whole world. It is the language of science, technology, internet and computer. So, the students have to be exposed to English vocabulary and affixes in order to be able to use words effectively and productively to attain mastery and command of the language for interaction, communication and academic requirements.
2. Affixes are problematic for students in recognizing and producing. So, students have to be trained to practice and drill to recognize, perceive, produce and use affixes properly and appropriately to improve their vocabulary.

3. The competence and proficiency of the students of the tertiary level are less than required. They have poor background and knowledge of the language. They have inadequate and insufficient acquisition of English vocabulary and affixes. So, students' vocabulary and acquisition of affixes have to be reinforced in learning L2 to have competence, proficiency and knowledge of the language.
4. The secondary level learners in Bahawalpur now have perceived the importance and necessity of English language. It is studied by a large number of students in private schools, institutes and colleges there. They want to improve their English language competence, proficiency and knowledge in order to meet the massive need in the present life. They are looking forward to getting jobs as English teachers in public and private institutions. They want jobs in the companies and in different fields such as medicine faculties, technology faculties, science faculties and so on which use English as the medium of instruction.

Research Methodology

Research Design

The researchers are going to apply quantitative approach. For that the researchers gauged the level of students in the form of close-ended questionnaires. The quantitative approach helped the researchers to assess the success of different activity tools and teaching techniques to the class. For this, questionnaires were distributed among the teachers and students of Govt. S.D. High School, Bahawalpur and Workers Welfare School (Girls) Bahawalpur.

Population of the Study

Population of the study was the teachers and the students of 9^{th} class in the academic year 2018-19 at Govt. S.D. High School, Bahawalpur and Workers Welfare School (Girls), Bahawalpur.

Sample of the Study

For this study, 50 teachers and 200 students of 9^{th} class in the academic year 2018-19 at Govt. S.D. High School, Bahawalpur and Workers Welfare School (Girls), Bahawalpur participated.

Research Tools

A self-developed Questionnaire was used by the researchers to collect the data from the respondents.

Data Analysis

The data were analyzed with the help of using SPSS version 23. The mean distribution was calculated by using frequency table and standard deviation. The following table showed the different sources that were used by the participants for improving vocabulary skills through word formation.

Table 1. Enhancement of motivation in learning vocabulary is due to use of word formation.

	Frequency	Percent Valid	Percent	Cumulative Percent
Valid				
Neutral	8	4.0	4.0	4.0
Agree	72	36.0	36.0	40.0
Strongly Agree	120	60.0	60.0	100.0
Total	200	100.0	100.0	

Table 1 represents answers related to the question; Enhancement of motivation in learning vocabulary is due to use of word formation. The above data represents frequency, percent, valid percent and cumulative percentage of the values thus giving clear picture of data distribution. From 200 responses, no one was on the option of

strongly disagree and disagree whether only 4% neutral, 36% agree and 60% strongly agree. Thus illustrating the complete data range from strongly disagree to strongly agree with the majority being agree at 36% and strongly agree at 60% which is the highest range from other all scales.

Table 2. Vocabulary has absolutely affected my English reading proficiency.

	Frequency	Percent Valid	Percent	Cumulative Percent
Valid				
Disagree	4	2.0	2.0	4.0
Neutral	8	4.0	4.0	8.0
Agree	88	44.0	44.0	52.0
Strongly Agree	100	50.0	50.0	100.0
Total	200	100.0	100.0	

Table 2 defines answer related to the question; vocabulary has absolutely affected my English reading proficiency. Here in the table data illustrates frequency, percent, valid percent and cumulative percentage which is providing vivid picture of data distribution. From the 200 responses, only 2% disagree, 4% neutral, 44% agree, 50% strongly agree and no one strongly disagree. Thus illustrating the complete data range from being strongly disagree to strongly agree with the majority being agreed at 44% and strongly agree at 50%. The highest range favored the objectives of study.

Table 3. Learners can improve their vocabulary by using word formation technique.

	Frequency	Percent Valid	Percent	Cumulative Percent
Valid				
Neutral	12	6.0	6.0	6.0
Agree	80	40.0	40.0	46.0
Strongly Agree	108	54.0	54.0	100.0
Total	200	100.0	100.0	

Table 3 illustrates responses of the respondents regarding the question. It not only presents frequency but also contains percent, valid percent and cumulative percentage of the values thus providing vivid picture of data distribution. Of the 200 responses, only 6% neutral, 40% agree, 54% strongly agree and no one response was found about strongly disagrees, disagree. The values in the given table covering the data range from strongly disagree to strongly agree with the majority being agreed at 40% and strongly agree at 54%.

Table 4. Student-centered environment is highly recommended to learn English vocabulary.

	Frequency	Percent Valid	Percent	Cumulative Percent
Valid				
Strongly Disagree	8	4.0	4.0	4.0
Disagree	4	2.0	2.0	6.0
Neutral	16	8.0	8.0	14.0
Agree	68	34.0	34.0	48.0
Strongly Agree	104	52.0	52.0	100.0
Total	200	100.0	100.0	

Table 4 exemplifies the responses of the respondents regarding the question; Student-centered environment is highly recommended to learn English vocabulary. It characterizes the frequency, percent, valid percent and cumulative percentage respectively of the values thus providing vivid picture of data distribution. From 200 responses, 4% strongly disagree, 2% disagree, 4% neutral, 34% agree and 52% strongly agree. The values given in the above table is covering the data range from strongly agree to strongly disagree with the majority being agree at 34% and strongly agree at 52%.

Table 5 illustrates the responses of respondents regarding question. It is providing the vivid picture of data distribution by showing frequency, percent, valid percent and cumulative percentage respectively of the values. From 200 responses, 0% strongly disagrees, only 2% disagree, 0% neutral, 44% agree and 54% strongly agree. The table is covering the data range of the values from strongly disagrees to strongly agree with the majority of being agreed at 44% and strongly agrees 54%.

Table 5. Word formation can help to understand affixes in English content.

	Frequency	Percent Valid	Percent	Cumulative Percent
Valid Strongly Disagree	0	0.0	0.0	0.0
Disagree	4	2.0	2.0	2.0
Agree	88	44.0	44.0	46.0
Strongly Agree	108	54.0	54.0	100.0
Total	200	100.0	100.0	

Conclusions

After completing the analysis of data, the researchers found the following information:

- Affixes played a very prominent and important role in teaching vocabulary to ESL learners.
- Teachers were not equipped with sufficient language proficiency and were unable to use Word formation technique.
- Students were eager to learn English words but they were hindered because of fluency, accuracy and shyness.
- Teachers were not professionally trained to teach language skills.
- Without the use of affixes in teaching vocabulary of English language, children's creativity and curiosity is curbed and rote learning is encouraged.
- Their concept of teaching is teacher centered not pupil centered.
- The teaching learning atmosphere was discouraging instead of encouraging.
- Students needed repetition of the words at various points to become more accurate.

The researchers conclude that word formation is effective in reinforcing vocabulary acquisition and picture reading. So it is evident that:

- Word formation played an important role to enable the students to grasp vocabulary.
- It created interest in the students and they were eager to learn new words.
- It helped in maintaining the interest and active participation of students.
- It improved students' fluency, accuracy and vocabulary as well.
- The students remained motivated during the activities inside the classroom.
- Majority of the secondary level teachers do not use affixes during their lessons.
- The use of learning resources in the teaching of vocabulary is a vital component in enhancing capability and understanding in a lesson.
- As revealed by the data, the lessons in which affixes were provided, the learners showed not only interest but also increased performance in learning vocabulary.

Recommendations and Suggestions

Based on the investigation and findings of this study, the researchers make following suggestions and recommendations for better retention of vocabulary:

- The teachers should have grasp over their subject. They should be qualified & well-trained. They should be able to organize different activities inside the classroom.
- They should be able to write, design and choose such activities which are more useful and give ample practice to the students to cope with the daily life vocabulary.
- Teaching about prefixes and suffixes should be included for all students with special emphasis on the mostly commonly occurring to assure that all students learn about this important piece of academic English.
- Teachers should also be encouraged to enhance their teaching skills as well.
- The students should be allowed to practice in pairs to incorporate new words and phrases with interactive conversation.
- Teachers can develop students' vocabulary through affixes by giving them an exposure for the new phrases and vocabulary they might encounter.
- Secondary level teachers should make their lessons child-centered rather than teacher centered. This will result in more interaction between the children to reinforce acquisition of vocabulary skills.
- The lessons should be based on functional language.

- There must be a systematic progression in lessons e. g. from easy to difficult..

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Author Information

Muhammad Safdar Bhatti
The Islamia University of Bahawalpur
Baghdad Campus, Hasilpur Road, Bahawalpur-Pakistan
Contact e-mail: *safdarbhatti2001@gmail.com*

Rafia Mukhtar
Workers Welfare School(Girls) Bahawalpur
Rehmat Colony, Near Railway Station, Bahawalpur-Pakistan

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District Technology Coordinator and Information Technologies Teachers' Vıews and Roles on Technology Integratıon: A Case Study

Berran PATAN OZTURK
National Defence University

Cansu SAHIN KOLEMEN
Beykoz University

Abstract: The purpose of this research is to determine the duties and responsibilities of teachers working as district technology coordinator (DTC) and information technology guidance teacher (ITGT), according to the opinions of DTC and ITG teachers, to determine the studies on technology integration in education and to reveal how communication inside and outside the integration process between district technology coordinator and information technology guide teacher. In this research, case study, one of the qualitative research patterns, was used. The study group of the research consists of two district technology coordinators working in the National Education Directorates in different districts of Istanbul and two information technology guidance teachers working in different districts. The data was collected with a full and semi-structured interview form and content analysis was performed with the data obtained. At the end of the research, the duties and responsibilities of the district technology coordinator and information technology counselors were gathered under two themes: integration and non-integration. These themes are (1) studies on technology integration in education, and (2) communication between the district technology coordinator and information technology consultant teacher both inside and outside the classroom during the integration process. At the end of the study, the non-integration duties and responsibilities of ITG and district technology coordinators and the interaction between ITGT and district technology coordinators were defined. At the end of the study, the following suggestions were presented; Expectations other than their duties and responsibilities should be minimized in order for teachers of DTC and ITG to be more efficient in the process. A checklist can be prepared for the work of DTC and ITG teachers in the integration process. The number of official meetings can be increased so that DTC and ITG teachers can successfully carry out the integration process.

Keywords: Education, Technology, Technology Integration

Introduction

The rapid development of technology has required the combination of education and technology in the field of education, and expectations in education have begun to change with the introduction of technology in the world of education. With the presence of new technologies, every school has begun to reshape its own mission and to train students who learn and question knowledge on their own instead of memorization-based education that has been ongoing since the past started to form school missions. The use of technology in education is gradually increasing. The first thing that comes to mind with technology is computers. With the integration of computers into learning teaching processes, the effectiveness of teaching is tried to be increased (Bozkuş and Karacabey, 2019). With the introduction of technology into schools, what is expected from schools is to raise individuals who research, question, critically think, and use technology to access information whenever they need it (Seferoğlu, 2015). With the integration of technology into educational environments, the definition of integration has emerged and various definitions have been made regarding technology integration in education. According to Wang and Woo (2007; Gürfidan and Koç, 2016, technology integration is the use of technology to support learning and teaching processes in education, while technology integration is the use of technology to increase the academic success of the student, according to Hew and Brush (2007; Gürfidan and Koç, 2016). In this context, it is possible to categorize the integration of technology under three categories. These; Teachers'

use of technology for teaching purposes is the use of technology in the classroom and the use of technology as a cognitive tool (Inan and Lowther, 2010; Gürfidan and Koç, 2016). With the increasing technology in schools, the quality of education and how technology can be integrated into learning and teaching processes has become an important issue

Nowadays, the number of studies to successfully integrate technology into education has increased. Considering that technology plays an important role in helping students acquire 21st Century skills in our country, the Ministry of National Education wanted to integrate technology into learning-teaching processes with the FATİH (Increasing Opportunities and Technology Improvement Movement) project. The main purpose of the FATİH project is to successfully integrate technology into education, to increase the quality of education and to achieve continuous success (Kale and Yılayaz, 2013; Eren and Yurtseven Avcı, 2016). The problems faced by technology integration in education can directly affect the development of technology integration models (Kabakçı and Yurdakul, 2011; Eren and Yurtseven Avcı, 2016).

In order to ensure technology integration in learning-teaching processes, technology-savvy teachers are required. Because, looking at the studies, it can be observed that teachers have a great role in the success of technology integration (Ryan and Bagley, 2015; Howard, Ma, and Yang, 2016). The firstly in our country in 1985, 225 teachers were trained in the use of computers in education, and in the following years the Ministry of Education started to train information technology teachers in cooperation with universities (Varol, 2002). Since the day information technology (IT) teachers were first trained, teachers have been assigned different roles. With the emergence of the FATİH project, "counseling" was included among the roles given to ICT teachers (Aslan and Duruhan, 2018). Used in other countries like America "technology coach" role is done by ICT teachers in Turkey (Gökbulut and Çoklar, 2017). Another definition that came into our lives with the FATİH project is the district technology coordinator. District technology coordinators are responsible for the integration environments realized in the schools in their region during the integration process and assist the IT counselors in the problems in the process.

In this context, the purpose of the study is to determine the duties and responsibilities of the district technology coordinator and the information technology consultant working in primary or secondary schools. In addition, to determine the studies for technology integration in education and to learn the interaction between the people here. For this purpose, answers to the following questions were sought.

> What are the duties and responsibilities of the district technology coordinator (DTC) and information technologies guidance teacher (ITGT)?
>
> What are the studies on technology integration in education according to the opinions of DTC and ITGT?
>
> How is the communication between DTC and ITGT in and outside the technology integration process?

Method

Research Design

The purpose of this study is to describe in depth the characteristics, fields of work, duties and responsibilities of the experts working as District Technology Coordinator and Information Technologies Guide Teacher (ITGT) working in a district. The research design that will best answer the research problem determined within the scope of the study is a case study. Because the case study is based on the investigation of real life or the current situation. The purpose of such studies is to understand the determined situation in order to understand a certain problem very well (Creswell, 2015). The internal case study aims to collect in-depth information about a subject from a person or a group (Creswell, 2015). In this study, the internal case study will be chosen as a type for the experiences of the district coordinator and information technology counselors selected as a certain group.

Working Group

When it comes to case studies, it can be defined as examining the situation experienced in real life. Important points of case studies are the in-depth analysis or description of the situation identified. The case should be limited in terms of place and time. (Creswell, 2015). If we set out here, the case study to be selected in this study

is limited by time and space. While the 2019-2020 Fall term was chosen as the time, it was limited to two different districts in the context of the public schools in Istanbul. While determining the sample for the study, the accessible method was chosen. Because in this method, the researcher chooses a situation that is close and easy to access. This method accelerates the research (Kılıç, 2013). Demographic data of the participants are presented in Table 1.

Table 1. Demographic data regarding DTC and ITGT working in Istanbul

Code	Task	Term of Office (Year)	Provincial	Educational Status	Branch	Teaching Experience	Gender
DTC	District Technology Coordinator	2	İstanbul	Undergraduate	CEIT	Yes	Male
ITGT	Information Technologies	5	İstanbul	Undergraduate	CEIT	Yes	Male
DTC	District Technology Coordinator	4	İstanbul	Master	CEIT	Yes	Male
ITGT	Information Technologies	1	İstanbul	Undergraduate	CEIT	Yes	Male

All four of the participants are graduates of computer education and instructional technologies (CEIT). The seniority period of the participants in their current positions is 5, 4, 2 and 1 years. In total, the working periods are 10 years for the DTC and 13 and 4 years for the ITGT.

Data Collection Tool

In this study, research data were obtained using structured and semi-structured interview forms, which are among the data collection resources. Interview is one of the most frequently used data collection tools in qualitative research. According to Patton (1987) the researcher who uses the interview method tries to understand and comprehend the events through the eyes of the interviewee. The purpose of the interview, which is used as a data collection tool in the research, is not to find out what characteristics the person has, but to categorize the events from the perspective of the interviewee. The interview examines the research subject in depth (McCracker, 1988: 17; Türnüklü, 2000). In this study, before the questions used in the interview were prepared, studies were conducted on the field and the questions were prepared as a result of the research. The questions asked in the interview were categorized as duties and responsibilities, technology integration process, and communication between the district technology coordinator and the information technology counselor.

Data Collection Process and Analysis

The data collection process progresses chronologically, which is also among the features of the case study. Data collection is the activities carried out to collect information that can respond to the identified research problem (Creswell, 2015). Within the scope of the researcher study, steps such as determining the place / person, ensuring access, having all participants signed an interview protocol, data collection, data recording and data storage were followed in the data collection process. After the interviews with the sample, data analysis was made. The situation that should not be ignored is that analysis and process are always intertwined in qualitative studies. Because qualitative research is a constantly changing process, the data collection process and data analysis must progress in a co-ordinated way (Merriam, 2013).

In the data analysis part, the data were presented in tables by preparing the data, that is, transcribing them in transcripts, extracting codes from them and creating themes by the codes (Creswell, 2013). This process should proceed in coordination with the data collection process. In this process, in the first step of data analysis, the transcribed data should be read several times and noted next to the article, these notes should be revised or underlined each time they are read. It is very important to file and organize data at this stage. All data are filed and organized on the computer.

Data analysis spiral stages were used while analyzing data (Creswell, 2013). The data are interpreted as a whole by reading the transcripts several times before breaking them down. After this process, the processes of

defining, classifying and interpreting the data were made. The stages of creating codes or categories, which are the center of qualitative data analysis, collecting text and visual data into small information categories, searching for evidence for code coming from different databases used in the study, and giving a label to the code were carried out. Unnecessary data that did not respond to research problems were removed. In the data analysis, participant names were kept confidential while sharing their opinions. Finally, it is presented as data as the last step of the helix.

Results

In this section, findings are presented and interpreted under themes. Enriched with sample opinion quotations selected where necessary.

Research Findings Regarding the First Sub-Question

The first sub-research question of the study is "What are the duties and responsibilities of the district technology coordinator (İTK) and information technologies guidance teacher (ITGT)? is the question. As a result of the interviews, the following themes and codes have emerged.

Table 2. Duties and responsibilities of DTC and ITGT

	Themes	Codes
Duties and Responsibilities of DTC and ITGT	Duties and Responsibilities Including	Interactive boards
		EBA
		FATİH Project
		Giving Seminars and Courses for Teachers
	Non-Integration Duties and Responsibilities	Technical Maintenance, Repair
		Administrative Affairs

Looking at Table 1, it is seen that the duties and responsibilities of the district technology coordinator and the information technologies counselor are grouped under two different themes, namely, duties and responsibilities including integration and duties and responsibilities excluding integration. The non-integration duties of teachers, which are among their duties and responsibilities, also confirm the work done in the field. According to Eren and Uluuysal (2012), the duties of ITG teachers such as technical maintenance, repair and administrative works are at the top of the expectations of school administrators from them. The opinion of the district technology coordinator and information technologies counselor regarding this situation is as follows:

> When they try to design content, they are posters in Web 2.0 tools, I don't know, a lot of educational presentations are interactive presentations they will make with Web 2.0 tools. (DTC, K1)

> We provide interactive board usage course and materials development courses (DTC, K2)

> In our time left over from technology integration, we deal with technical malfunctions in teachers' computers at school. Since we are IT teachers, I think we create a general technical service perception among the teachers at school. We try to keep up with all these tasks by using time effectively, but sometimes there are situations where we fail. (ITGT, K3)

> We teach coding to students with the robotics coding course. (ITGT, K4)

The opinions of DTC and ITGT regarding their duties and responsibilities included in the integration are as follows:

> .. The most troublesome and most hesitant aspect of the FATİH project is that teachers are resistant to technology. Many did not want to use it or did not use it or deemed it necessary. What is happening to them changes every day, especially in EBA. When the EBA first came out, it was very limited. Those who tried to enter a few times and saw that there was nothing in their field are still approaching with prejudice that there is nothing in EBA even now. Open it up and show it to them. After that, what is there about current educational technologies? I'm trying to show teachers

> something about artificial intelligence, augmented reality, internet of things, at least at the promotional level. Look, you can use them in education. (DTC, K1)
> We have duties such as infrastructure and teacher training. We provide technical support for interactive boards in the process. Training of teachers in order to expand the use of the training portal. (DTC, K2)
>
> To ensure the effective and correct use of FATİH project and EBA system by teachers in the school. To guide and support teachers on how to use them, and to find solutions if a problem occurs with the interactive boards. We constantly check that interactive boards are usable so that the integration does not occur while the teacher is teaching the lesson. However, at the beginning of the semester, with the guidance of the district technology coordinators, teachers were asked "How to use? How to develop material for EBA? " We support in the form of. (ITGT, K3)
>
> Updating the web page, fixing the malfunctions of the computers in the school, contacting the technical service and contributing to the Fatih project, which is about information technologies. It is among our recent tasks to keep the interactive boards ready for use and to tell teachers how to use them early in the semester. (ITGT, K4)

These results obtained within the scope of the study confirm that teachers are expected to control integration tools as well as educational works such as "technology guidance" within the scope of FATİH project.

Research Findings Regarding the Second Sub-Question of the Study

The second sub-research question of the research is "What are the studies on technology integration in education according to the opinions of DTC and ITGT?" is the question. As a result of the interviews, the following themes and codes have emerged.

Table 3. Studies on technology integration in education according to the opinions of DTC and ITGT

	Themes	Codes
Studies on Technology Integration in Education According to the Opinions of DTC and ITGT	School	Changes and Studies in Schools
		Studies on Applications Used in Integration

When Table 2 is looked at, it is seen that, according to the opinions of the district technology coordinator and information technology guidance teacher, the studies on technology integration in education are gathered under a single theme called "in-school". Participants in the studies for integration stated that schools improved in terms of equipment, and the introduction of smart boards, multifunctional printers and tablets to the educational environments increased the effectiveness of the lesson. As Şaşan (2002; p: 44) stated, the use of technological tools such as interactive whiteboards in learning and teaching environments not only facilitates learning but also activates students' participation in the course. The use of interactive boards in learning and teaching processes enables the student to understand the subject more easily during the teacher's lecture and saves time for the teacher and the student since there is no need to take notes (Ekici, 2008). It is possible to say that the changes made in the schools vary from region to region. The opinion of the district technology coordinator and information technologies counselor regarding this situation is as follows:

> .. Now, in all of our schools with interactive boards, there are also primary and secondary schools in the same building. In the morning, it is noon and it uses a period of primary school and a period of middle school. We have neighborhoods like Alemdağ where there is less population, primary school and secondary school are in the same building at the same time. If there is a secondary school in a building, we tried to install an interactive board (DTC, P1)
>
> First of all, they say that before integration, all schools first improve in terms of equipment. The school I work in is a village school. There is also an interactive whiteboard here, but not in every classroom. However, as I mentioned at the beginning of the speech, I think this situation may be regional. Because the school I worked in Eskişehir had at every grade level. (ITGT)

Among the studies on technology integration, the effectiveness of the applications used in integration is also included. Participants think that they are happy to be able to prepare content due to the fact that the applications on the interactive boards and tablets are free for their students, but that the effects of the programs on the interactive boards and tablets will increase by concretizing the content. The opinions of DTC and ITGT regarding this situation are as follows:

> ... let me put it this way, I think it is much more effective in concretizing in experimenting and I see this in friends who use it. Now you can have a child do a lot of experiments as simulations and they have software. Something comes into play here; contents related to it. Teachers who have access to content related to this or teachers who have somehow received content development training and have developed themselves use it very well. (DTC, K1)

> We encourage and encourage teachers to integrate technology into the process. (DTC, K2)

> The environments in which course contents are prepared are very useful for the effectiveness of the course. For example, the teacher will explain the solar eclipse. If he explains this verbally, the student has difficulty in putting it on his head, but when he shows the student the supporting videos in EBA, the whole subject becomes clear in the student's mind. (ITGT, K3)

> We use Z books for our lesson. In addition, we follow the process by attending the lessons of other teachers and give ideas about what and how integration will be achieved (ITGT, P4)

These results obtained within the scope of the study show that the studies for integration start with the infrastructure of the schools where the integration plan will be applied. After the schools with technological infrastructure support, studies were carried out on applications to be used in integration.

Research Findings Regarding the Third Sub-Question of the Study

The third sub-research question of the research is "How is the communication between DTC and ITGT in and outside of the technology integration process?" is the question. As a result of the interviews, the following themes and codes have emerged.

Table 3.Communication between DTC and ITGT

	Themes	Codes
Communication between DTC and ITGT	In-Process	Solidarity Planning and Working Together Technical support
	Out of-Process	File Sharing Announcement

Looking at Table 3, it is seen that the communication between the district technology coordinator and the information technologies counselor is gathered under two different themes as in-process and out-of-process. It is seen that the communication between the district technology coordinator and the information technologies counselor includes planning and working together, cooperation, technical support, and file sharing and announcement outside the process. Teamwork is important for the success of technology integration. The process of planning and working together can increase the speed of success. Because more than one person does the job of a single person and problems are solved quickly. The opinion of the district technology coordinator and information technologies counselor regarding this situation is as follows:

> They transmit instantly. They often have hardware problems. (DTC, K1)

> We are constantly working with ITG teachers. We create monthly work plans together. (DTC, K2)

> .. First they attend their classes. There is of course something like this in the teachers' room at the end of the lessons after the breaks. It changes from the ITG teacher to the ITG teacher. When the devoted person, who tries to train the teachers, finds himself vacant during the recess, "Sir, come and tell you this." There are also those who say. (DTC, K2)

Opinions of DTC and ITGT's communication outside the process are as follows:

> ... I see each of them at least 5 times in a period, although not simultaneously. I'm trying to see it by going to their school. I always communicate every month. This is not only what we are communicating with but also about other technological structures of the school. We have a group, we have a group through an instant messaging program that also works on the map line we call telegram. We make file sharing and necessary announcements from there. (DTC, K1)

> I have never had a meeting with the district technology coordinator outside of the process, but he states that our motivation is low and he is with us even when we have difficulties. Even knowing this feels good. (ITGT, K3)

These results obtained within the scope of the study underline the need for continuous communication between DTC and ITG teacher.

Discussion and Conclusion

The support given in the integration process, in which investments such as FATİH project are made by the Ministry of National Education, and the use of technology in educational environments is planned multi-faceted such as students, teachers, administrators and parents (Roblyer & Doering, 2013). In this respect, individuals who will create this culture and ensure integration are technology coaches. In Turkey, these tasks are carried out by ITGT and district technology coordinators.

At the end of the study, the opinions of the district technology coordinator and information technology counselors about their duties and responsibilities, the contribution of technology integration to education and the communication between them were consulted. Thus, his thoughts on his professional roles and the contribution of technology integration to education were revealed. At the same time, the communication between DTC and ITG teachers was explained accordingly. The task responsibilities of the district technology coordinator and information technology guidance teachers are listed as including and excluding integration. It is also concluded that technical support and repair, which are among their duties and responsibilities, are within the expectations of administrators from teachers according to the studies in the field. It is seen that the duties and responsibilities included in the integration are listed as providing teachers with technology integration, EBA, interactive boards and FATİH project. It is seen that duties and responsibilities other than integration are listed as giving seminars and courses to teachers, technical maintenance and repair, and administrative works. According to the opinions of the district technology coordinator and information technology counselors, studies on technology integration in education are listed as a single theme within the school. The communication between the district technology coordinator and information technology counselors is listed as in-process and out-of-process regarding how the communication is in and out of the technology integration process. It is seen that the communication taking place in the process is listed as cooperation, planning together and working, technical support. It is seen that communication outside the process is in the form of announcement and file sharing.

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Author Information

Berran Patan Öztürk
National Defence University
Balikesir/ Turkey
Contact e-mail: berranpatan@gmail.com

Cansu Şahin Kölemen
Beykoz University
Istanbul/ Turkey

APPENDIX 1

Information Technology Guide Teacher Interview Questions

1. Gender: F () / M ()
2. Demographic features;
- a. Your seniority year in this post: 0-3 () / 4-7 () / 8-11 () / 12+ ()
- b. Education status (graduation): Undergraduate – Master Degree – Doctoral Degree
  - i. Undergraduate Section:
  - ii. Master Degree Section:
  - iii. Doctoral Degree:
- c. Do you have teaching experience? Yes () / No ()
  - i. If so, how many years? 0-3 () / 4-7 () / 8-11 () / 12+ ()

3. Could you tell us about your duties and responsibilities as an information technology counselor?
- a. Did you choose this task voluntarily?
- b. How many hours do you teach per week?
- c. Do you think it contributes to you professionally?

4. What are the other teachers' expectations from you regarding integration?
- a. How do you support teachers in this process?
- b. Do you encounter situations that challenge you in the process?

5. Do you think that the technological tools used in the integration process contribute to the learning and teaching processes?
- a. Do you think the contents of the EBA system are used beneficially in the course?
- b. Do you think the contents in the EBA system are sufficient?

6. How often do you meet with the district technology coordinator?
- a. When you encounter a problem, do you tell the district technology coordinator?
- b. How is the district technology coordinator responding to the problem?

APPENDIX 2

District Technology Coordinator Interview Questions

1. Gender: F () M ()
2. Demographic features:
- a. Your seniority year in this post: 0-3 () 4-7 () 8-11 () 12 + ()
- b. Education status (graduation):
  - i. Undergraduate Section:
  - ii. Master Degree Section:
  - iii. Doctoral Section:
- c. Do you have teaching experience? Yes () No ()
  - i. If so, how many years? 0-3 () 4-7 () 8-11 () 12 + ()
  - ii. If so, do you think it contributes to your current work? If yes, in what ways?
  - iii. Do you like having a district coordinator's teaching experience?

3. What is the number of responsible main in the district?
4. Could you tell us about your duties and responsibilities as the District Technology Coordinator?
5. What skills do you think a District Technology Coordinator should have in order to be successful?
6. What kind of work do you do for technology integration in school education? Can you talk about these?
7. What are the expectations from you, with whom you worked in the process?
8. What is the relationship and interaction between you and ITG teachers?

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Evaluation of Distance Education in Social Studies Lesson in Turkey

Erol KOCOGLU
Inonu University

Abstract: It can be said that technology-based developments affect the life of human beings in the field of education as in many other areas. Its effects in the field of education, increasing the variety of technology based materials used in the learning environment, contributing to improving teacher competencies (such as the ability to use smart boards), implementing technology based package applications for meaningful, concrete and permanent learning, accessing many resources related to the course in a technological environment and distance education. It can be glazed. Covid-19 outbreak of the fore distance education in Turkey, as in many other areas of social information it has become remarkable position in the education field. Distance education, which is based on simultaneous and live transmission, can also be given from the recording. It is also used in the transfer of content of work areas that include many disciplines such as distance education and social studies, which bring together teachers, students and instructional technologies in different places through web technology. In this study, which was carried out by İnönü University BAP unit with the project ID number SBA-2019-1755, it was aimed to evaluate the transfer of social studies education study field through distance education in line with the perceptions of social studies teachers. The study to achieve this goal was carried out with a case study model. As a result of the study, field experts made remarkable evaluations on the subject.

Keywords: Distance education, social studies education, evaluation, teacher.

Introduction

Regarding the concept of social studies as a field of study, it can be said that definitions regarding social studies are at the top of the ongoing discussions. This situation has led to different definitions of social studies. Edgar Bruce Wesley (1891-1980), one of the pioneers of the social studies (lesson) movement, defined social sciences as "a lesson that fuses social sciences by simplifying them for pedagogical purposes" at the very beginning of the 20th century (İnan, 2019). The executive team of the National Council for the Social Studies (NCSS) of the USA, which has an important place in social studies education, also said in 1992 that social studies "unite social and human sciences to support competent citizens. It can be said that they define it as a field (İnan, 2019). The absence of an objective definition of social studies may be due to the fact that this field of study covers many disciplines and the different perspectives these disciplines add to the field of study. The information contained in the scope of social diversity due to take place based on the outcomes of events for different disciplines work area in Turkey 4th grade elementary school, middle school 5th, 6th and 7th grades in social studies are taught in the course. It can be said that planning and realizing technology-supported activities in the transfer of these lectures contributed to the increase of the qualification level in the learning-teaching process of the lesson. Because, concretization is very important for meaningful learning in this lesson with more abstract based content. While the concretization process of this lesson requires some preliminary preparations even when the teacher and the student are in the same learning environment, it is a question mark how this lesson is carried out in the remote delivery process due to the covid-19 epidemic. World and Turkey impact area Covidien-19 outbreak, as education is effective on other areas has also affected social information. This influence has made some changes and transformations necessary. At the beginning of these changes, social studies course is given in the form of distance education.

Distance education can be defined as a system where teachers and students in different physical spaces interact and perform teaching-learning activities with the help of various communication technologies in order to provide educational services to wider masses and to ensure equal opportunities in education (Yalın, 2001;

Arrivals, 2015; Koçoğlu, 2020.). Since distance education is based on information and communication technologies, there are examples showing that it is applied in different ways depending on the technology that develops in time (Saba, 2001; Turco, 2001; Aydın, 2001; Koçoğlu, 2020). Distance education includes activities such as multimedia based teaching, interactive learning teaching and guidance, keyboard control, time and place independent e-learning, interactive interactive classroom management, digital transfer and exams (Guo, 2010; Guohong, Ning, Wenxian & Wenlong, 2012). On the basis of these activities, it can be said that giving the social studies course through distance education makes it compulsory for the teachers, who are the transmitters of the course, to make technology based transfer. In this study, it is aimed to evaluate the social studies lessons delivered through distance education in line with the perceptions of the teachers who are the teachers of the course.

Method

Research Model

In the process of distance learning social studies in Turkey, including an evaluation was carried out in line with perceptions of teachers working with this case study model. Case study is a methodological approach that involves an in depth examination of a limited system by using multiple data collection to gather systematic information about how and how it works (Chmiliar, 2010 cited in Subaşı & Okumuş, 2017). Merriam (2013) defines the case study as an in depth description and examination of a limited system. On the other hand, according to Creswell (2007) case study; It is a qualitative research approach in which the researcher examines one or a few situations limited in time with data collection tools (observations, interviews, audio-visuals, documents, reports) that include multiple sources, and defines situations and themes depending on the situation. Case study; it is a model in which a single situation or event is examined in depth, longitudinally, data is collected systematically and what is happening in the real environment (Subaşı & Okumuş, 2017).

Participant

In the distance education process, this study is evaluated in accordance with perceptions of social studies teachers in Turkey, was carried out by 42 social studies teachers serving in various public schools in Turkey.

Data Collection Tool

A semi structured interview form prepared by the researcher was used to obtain the findings of the study. While preparing the interview form, attention was paid to the principles of preparation, such as clarity and clarity of questions, from easy to difficult. The questions in this prepared form;

> What do you think are the most important problems you encounter in social studies lessons in the distance education process?
> What are the effects of the distance education of social studies lessons on students?
> What are the effects of transferring social studies course through distance education on teachers?

Analysis of Data

In this study, in which social studies lessons were evaluated in the distance education process, content analysis technique was used to analyze the data obtained in the virtual environment (mail) with semi structured interview form. The responses given by the teachers in the study group were classified as themes around common views and given in the findings with figures.

Findings

Problems Encountered in Social Studies in Distance Education

"What do you think are the most important problems you encounter in social studies lessons in the distance education process?" The answers they gave to the question in the form of themes are given in figure 1 by

analyzing them with content analysis technique. Looking at figure 1, it can be said that the members of the working group faced many problems in this process. It can be said that the solution of these problems is quite difficult compared to the members of the study group, which is a striking point in the study finding. In addition, based on the answers given by social studies teachers to the relevant question, it can be seen in figure 1 that these problems are formed around 3 different themes.

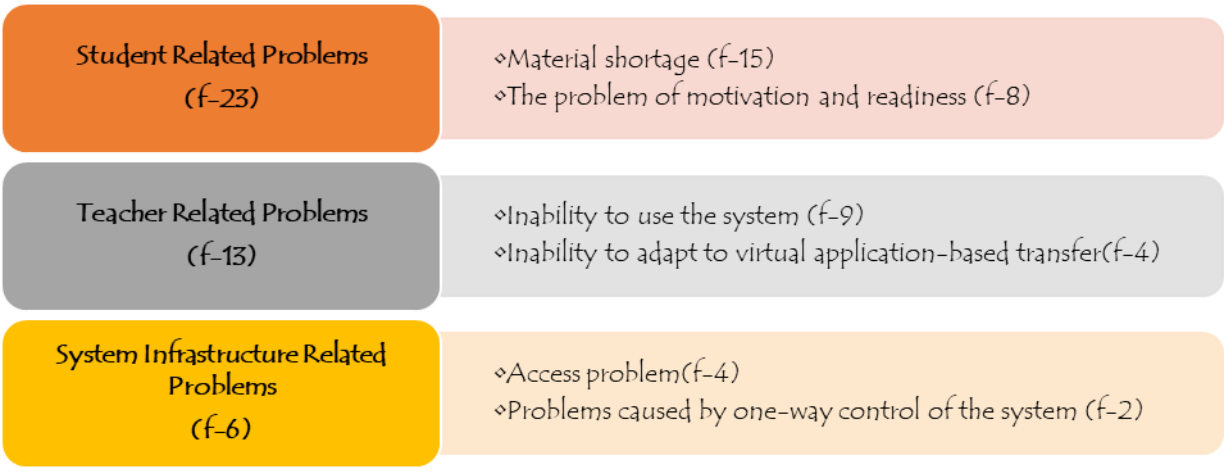

Figure 1. Perceptions of the working group members regarding the problems encountered in the distance education process

The Situation Regarding the Effects of Distance Education on Students of Social Information

"What do you think are the effects of social studies lessons being given through distance education on students?" The answers they gave to the question in the form of themes are given in figure 2 by analyzing them with content analysis technique. Looking at figure 2, it can be said that the members of the study group stated that the teaching of social studies lessons through distance education has positive and negative effects on the student. These opinions are given in figure 2 after being subjected to content analysis

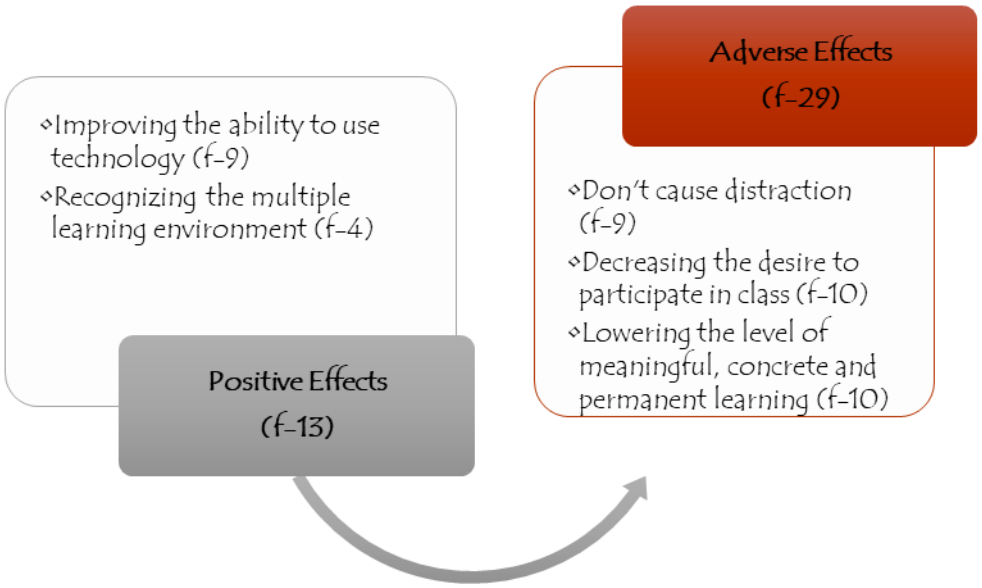

Figure 2. Perceptions of study group members regarding the effects of distance education on students

The Situation Regarding the Effects of Distance Education of Social Studies Courses on Teachers

"What are the effects of transferring social studies course through distance education on teachers?" The answers given by the teachers to this question, which is included in the semi-structured interview form and directed to

the social studies teachers who constitute the working group, are subjected to content analysis and given in the form of striking themes in figure 3. Looking at figure 3, it is observed that the teaching of social studies lessons in the form of distance education has striking effects on teachers.

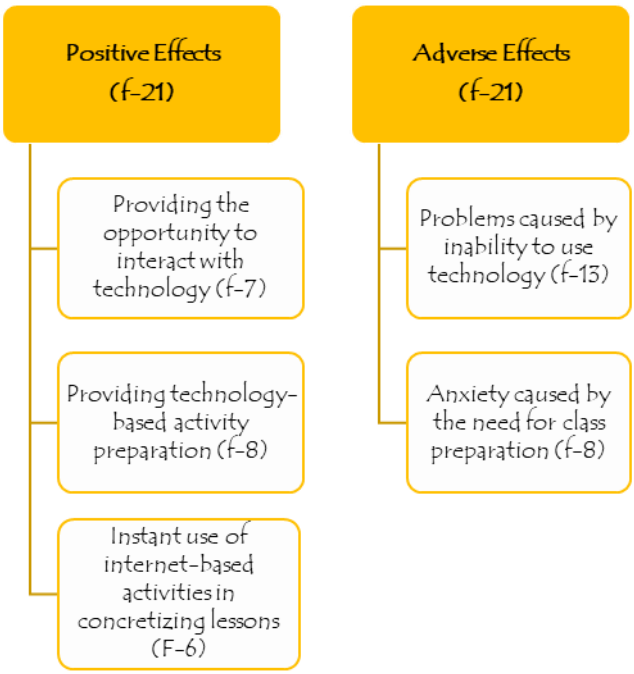

Figure 3. Perceptions of the study group members regarding the effects of distance education on teachers

Conclusion and Recommendations

In the distance education process, in this study, which evaluated according to teachers' perceptions of social studies in Turkey by analyzing the teachers about the content analysis technique available through semi-structured interview form, the findings obtained so into thematic categories 1, 2, and 3. Looking at the figures in which the findings are given in the study;

- That the diversity of the perceptual processes related to distance education in Turkey.
- Teaching social studies courses through distance education creates various problems.
- Teaching social studies courses through distance education has both positive and negative effects on students.
- It has been concluded that the teaching of social studies lessons through distance education has both positive and negative effects on teachers.

Based on these results obtained in the study;

- Activities to improve the proficiency levels of teachers and students regarding the distance education system should be carried out,
- These activities should be diversified in terms of lessons,
- Measures should be taken to eliminate the problems related to internet access encountered in the course of students' participation in the course,
- The advantages offered by distance education to teachers and students should be explained in detail to concrete activities by the representatives of the relevant institutions and units, suggestions such as.

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Author Information

Erol Koçoğlu
İnönü University
Faculty of Education, Malatya/Turkey
Contact e-mail: erolakademi@gmail.com

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Pedagogical Technology in the Higher Medical Education of Ukraine

Volodymyr SULYMA
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine

Abstract: In the course of the higher medical education of the phrase "study method" it is expedient to understand as set of organizational methods of study to something or receptions of performance something whereas in didactics of preparation of future doctors of attitude "the study method" is interpreted as a way of the ordered mutual activity between the teacher and the student directed on the solution of concrete educational tasks including in the higher medical education of Ukraine. All this together convincingly testifies that "the study method", is rather difficult, high-quality and multidimensional pedagogical technology in which objective educational regularities, the principles, the purposes, the contents and forms find reflection. Communication of any pedagogical technology with other didactic categories is always shown by the interacting and interconnected characteristics as the principles, the purposes, the contents and forms of education define a concrete method, and they can't be realized without it at all, and without opportunities of practical realization.

Keywords: Pedagogical, Technology, Higher, Medical, Education

Introduction

Taking into account that the level of qualification of the doctor is in the first place in various gradational system of educational societies it's understood the necessity to improve the quality of the doctor in institutes of higher education, in which directed implementation of the credit-module system to the educational process. (The European higher education area. 1999; Magna Charta Universitatum, 1988; The European higher education area, 1999).

Preparation of doctor's of the general practice is the principal task of the medical institution of higher education, and therefore the proper teaching of surgery in the whole complex of other disciplines will create conditions for quality medical practice doctor in the future, especially for those professionals who plan to work as surgeons in around world of countries.

The doctors of the general medical practice tasks determinates basic requirements of scope of knowledge and practical skills for graduating of student of institute of higher education of IV level of accreditation: goal-directed methodic algorithm of questioning of the patient (getting anamnesis), physical examination, substantiation of provisional diagnosis, determinate algorithm of additional methods of investigations with analysis of received results, differential diagnosis, forming clinical diagnosis, substantiation of treatment program and its implementation.

To implement the system of planning, monitoring and evaluation of the education quality for a real degree of assimilation of foreign students with specific components of the program during the academic year of surgery training and discipline for module "Abdominal surgery and Proctology" in general based on the cumulative number of ranking points for the European Credit Transfer System (ECTS). This will improve the quality of learning discipline among the four-year of students, and develop common indicators for professionally-oriented exam after 6 year of study to get a general level of theoretical and practical knowledge and skills of physicians interns of surgery.

Method

Qualitative research method was used in this study. The research data were collected through the interview and observation form.

Results and Discussion

The Department of Surgery № 1 (in 2012 – 90 years founded) of the State Organization "Dnipropetrovs'k Medical Academy of Ministry Health of Ukraine" (in 2016 – 100 years founded) was conduct structured, multiple planning of the study process and the use of different forms of the staging control. Taking into account the Standard program of the discipline, curriculum, working program for the department was create the specific actions by teachers, of foreign students to achieve theoretical and practical knowledge, necessary resources and sequence of technological operations with the use of credit-modular system. (Sulyma V., et al., 2018). Thus, there were additionally created classes for training with medical mannequin and simulators to master the practical skills of foreign students in educational time and time for self-preparation on products firm "3B Scientific".

In 2011 on Department of Surgery № 1 of the State Organization "Dnipropetrovs'k Medical Academy Ministry Health of Ukraine" was founded Ukraine's first training center "Endoscopic technologies in medicine", bases on which of interns learn to use mini invasive operating technologies in surgery. This center was open thanks to involving special training and instruments of the company "Karl Storz-Endoscope" and "Ethicon Endosurgery" (subsection "Ethicon a Johnson and Johnson Company").

Nosological principle of training that exists in most clinical departments, unfortunately, does not meet the practical work of a doctor, so we came to forming the curriculum by the syndrome principle: a practical training combines several pathological conditions, with oriental features, such as the module "Abdominal surgery and Proctology", consists of two modules of content (substantial modules): "Urgent abdominal surgery" and "Proctology".

Thus, the substantial module "Proctology" includes "Syndrome of an acute pain in perianal area", "Syndrome of rectal prolepses" and "Diarrheic-inflammatory syndrome", combining similar diseases or their complications in the form of so-called educational elements, where, for example, a practice training for "Syndrome acute pain in perianal region" contains "Acute hemorrhoids", "Acute anal fissures", "Acute paraproctitis" and "Inflammation of the epithelial coccygeal passage". (Bereznytskyy Ya., et al., 2018).

This approach is appropriate to expediently use the time of practical training, examine patients according to pathological syndrome, mastering the skills in classes with medical simulators, and perform differential diagnosis with the definition of a rational treatment program. To support the learning process developed by the principles of credit-modular system using multimedia lectures, the textbook "Surgery" in 3 volumes (5 books + CD variant), in this time –process translated this books on English finished, methodological guide of development for students and of interns, methodological guide of development for teachers, hand book and individual plans for students, journal of the teacher. (Bereznytskyy Ya., et al., 2016; Molchanov R., et all., 2017; Sulyma V., et al., 2017; Bereznytskyy Ya., et al., 2017).

For the practical training used division's computer class (10 computers) - for computer testing of students, two classes of medical mannequins and simulators (products firm "3B Scientific") - for acquiring and mastering practical skills, supervision of patients in the surgical department, supervised and theoretical survey in training rooms.

Experience of using credit-modular system in teaching and measuring knowledge of surgery since 2005 suggests that this approach is effective. Received results underscore the increased objectivity in the control of knowledge on the part of teachers' interest and increasing of students interest to master a subject, that allowed to prepare a general practitioner in surgery and surgeons, and integrate in the future in practical public health in worldwide.

Conclusion

It is necessary the cooperation of the educational institution, clinical department and companies - manufacturers of medical and educational equipment, as in our case, working with "3B Scientific" and "Karl Storz-Endoscope", "Ethicon Endosurgery" (subsection "Ethicon a Johnson and Johnson Company"). Use of medical simulators and training mannequins for acquiring practical skills and new technologies of operative interventions using modern endoscopic equipment, tools, and simulators allows imitating the real clinical situation during operative interventions and learning steps to resolve it. We recommend using the proposed technologies in the training of Medical Students and young Resident-Surgeons.

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Author Information

Volodymyr Sulyma
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine
Dnipro, Ukraine
Contact e-mail: *Volodyasulyma2@gmail.com*

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Unification of Surgical and Related Disciplines for Effective Specialist Training

Alexander OLEYNIK
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine

Andrij ZAJTSEV
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine

Nikolay MOISEENKO
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine

Abstract: Improving the quality in any sphere of life – this is main goal of any innovation. Training of general practitioners is a major task of medical higher educational institution, and therefore the proper teaching of surgery in a whole range of other disciplines will create conditions for quality medical practice doctor in the future, and should meet the requirements of the integration process of the educational systems of other countries. This will improve the quality of learning disciplines among the students of enrolled this year, and develop common indicators for professionally-oriented exam after 6 (six) year of study to get a general level of theoretical and practical knowledge and skills. Based on the standard curriculum and learning plan was created the working program that regulates specific activities by teachers and students to achieve as a theoretical and practical knowledge required for this sequence of technological resources and action items using the credit-module system. The calculated threshold standards levels of education (sum of estimates after the module translates the 200-point scale ECTS) and communicated to students to stimulate their enthusiasm for learning to the maximum level and effective specialist training. The results indicate increase objectivity in the control of knowledge from teachers and students to increase interest in teach a subject that is allowed to integrate in medical education and, in future, in practical public health of Ukraine and other world.

Keywords: Unification, Surgical and Related Disciplines, Training

Introduction

The main goal of any implementation is to improve the quality in one or another sphere of life. The training of a general practitioner is the main task of a higher educational medical institution, and the proper teaching of surgery in a range of other disciplines (otolaryngology, urology and other) will create the conditions for quality medical practice that must meet the requirements of society. The level of qualification of the specialist is in the first place in the gradation systems of education of different countries, so it is necessary to improve the quality of medical training in the school, which is aimed at the implementation of the credit-module system. (Communiqué of the Conference of European Ministers Responsible for Higher Education, 2005).

The tasks of professional practice of general practitioners in Ukraine, Europe and America in general almost equally determine the basic requirements of knowledge and practical skills for a graduate of higher education: interviewing the patient, performing a physical examination, substantiation of preliminary diagnosis, determining the algorithm results, differential diagnosis, formation of clinical diagnosis, construction of treatment program and its implementation.

Therefore, in the form of an experiment, we restructure the educational process and the teaching of faculty surgery to achieve a positive effect in the training of physicians and their integration into the medical community.

We have implemented a system of planning, control and evaluation of the quality of education to determine the degree of mastering by students of certain components of the surgery, otolaryngology and urology program during the academic year and the disciplines "Surgery", “Otolaryngology” and “Urology” as a whole based on the cumulative number of points ranked by European credit transfer system (ECTS).The educational and methodical support of the organization of educational process is carried out:

- creation and updating of a bank of computer tests and clinical situational tasks;
- preparation and dissemination among students of methodological developments with a description of -theoretical knowledge and practical skills assigned to the educational element, content module and module, questions for self-examination;
- preparation of methodological developments for teachers with a lesson plan, a list of issues to be discussed, criteria for assessing theoretical knowledge and practical skills, a specially designed journal of scores and a list of topics and practical skills; (Bakr, et al., 2014; 2015).
- preparation and distribution among students of a manual for the medical card of a patient with a directory of symptoms and syndromes for each educational element;
- preparation and distribution of a directory of clinical and statistical classifications with examples of clinical diagnosis;
- preparation and distribution of the algorithmic textbooks "Surgery", “Otolaryngology” and “Urology” , which corresponds to the curriculum.

This allowed to improve the quality of education and to compare the mastering of the discipline among 4th year students who studied this year and students of 5-6 years who studied in the past, as well as to develop common indicators for conducting a professional-oriented exam on the 6th course and obtaining common with other levels of theoretical and practical knowledge and skills.

The structured, multifactor planning of educational process and application of various forms of stage control is carried out. Based on the standard program and curriculum, an experimental work programs on Surgery, Otolaryngology and Urology was created, which regulates specific measures by teachers and students to achieve the quality of theoretical and practical knowledge, resources and sequence of technological actions using elements of credit-module system.

The limit standards of levels of knowledge acquisition (sum of points) are calculated and brought to students in order to stimulate their aspirations in the learning process to the maximum level. Unfortunately, the existing nosological principle of training does not correspond to the practical work of the doctor, so we approached the formation of the curriculum on the syndrome principle: the module combines several pathological conditions with similar indicators, and the content module is determined by the syndrome and combines similar diseases or complications.

This approach allows you to use the time of practical training, to examine thematic patients according to the syndrome, to practice skills, to make a differential and form a clinical diagnosis with the definition of rational treatment tactics. Modern training of doctors is unthinkable without the use of innovative technologies, which, together with traditional education, make it possible to form their high competence that meets the requirements of practice, to ensure the quality of their future activities.

The most promising ways of training students in medical universities, combining the principles of problematicity and modeling of professional activity, and, accordingly, new pedagogical technologies: problem-oriented learning, command-oriented learning, learning based on a clinical case, integrated learning, information and communication and computer technologies , training based on simulation technologies, project-oriented training. (Renegar, 1997).

Over the past decade, there has been a significant modernization of medical education, new approaches have been formed in the preparation of students of medical universities, new curricula have been developed, in which great attention is paid to simulation training of students.

In connection with the transition to credit technology of teaching, some topics of independent work of students with a teacher demanded the improvement and application of innovative teaching technologies. Since in credit technology of teaching a lot of time is devoted to the independent study of the subject by students, the innovative teaching technology based on a clinical case (Case Based Learning - CBL) is one of the most suitable.

CBL technology is widely used in clinical departments to develop a competency-based approach in diagnostics and treatment in future doctors. With the CBL method, students learn to solve specific clinical situations, problems, learn to find signs and combine them into clinical syndromes, and identify the leading syndrome. For this training technology, the staff of the department developed clinical situations in many modules. As one of the active teaching methods, CBL promotes student involvement in the learning process, requires students to take meaningful actions and reflect on the problem. This teaching technology contributes to the generation of new ideas, creativity of students, and collective solution of complex problems.

The advantages of the CBL method over the traditional ones are: an increase in student performance, the emergence of a positive attitude to the learning process, the strengthening of long-term memory, the emergence of conceptual thinking, motivation in learning, and improved problem solving skills. CBL refers to non-play, simulation-based, active learning methods for students. When solving the clinical situation proposed by the teacher, students learn to jointly analyze the clinical situation, find the patient's problems, assess the clinical and laboratory methods of examination and establish the leading syndrome in the patient.

This learning technology originates from 19th century law and business schools. Currently, this teaching method is widely and successfully used in teaching medical students and teachers. The meaning of the method is that the student is not presented with ready-made knowledge, but he himself must work out ways to solve the problem, he himself looks for the knowledge necessary to solve the problem. CBL differs from previously used teaching methods in that the student in the process of discussing the problem is equal with other students and the teacher.

When studying using CBL technology, students receive not only knowledge, but also acquire professional skills, communication skills. The CBL technology is as follows: the teacher develops several clinical cases, which should reflect the real clinical situation on a specific topic of the lesson. At the same time, the teacher plays the role of a leading colleague who asks questions, supports the discussion, if necessary, guides students, i.e. serves as a manager of student co-creation.

The experience of using our proposed experimental credit-module system in teaching and monitoring knowledge of surgery, otolaryngology and urology during from 2005 to 2020 every academic year shows that approximately 10% of students reach the level of 90-100% ("excellent"), 50% - to the level of "good", 35% - to the level of "satisfactory", and 5% need to rearrange one or two modules. (Sulyma., 2019).

The results show an increase in objectivity in the control of knowledge by teachers and increase the interest of so-called "average" students to master the subject, which allows you to master the theoretical and practical skills to solve problems facing general practitioners in the health care system. Ukraine, as well as, in the future, to integrate into the medical community of Europe, America and other countries.

Conclusion

The characteristics of case-study technology: develop decision-making and problem solving skills; help to connect theory and practice, increase the level of critical thinking, stimulate teamwork skills, help to understand the complexity of real situations, help develop different points of view. Thus, the introduction of modern teaching methods for students of a medical university on Surgery, Otolaryngology and Urology contributes to the improvement of students' mastering of clinical skills, teamwork skills, and research skills.

Recommendations

We recommend using the proposed technologies in the training of Medical Students and young Resident-Surgeons on disciplines Surgery, Otolaryngology and Urology.

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Author Information

Alexander Oleynik
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine
Dnipro, Ukraine
Contact e-mail: *bereznytskyjy2@gmail.com*

Andrij Zajtsev
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine
Dnipro, Ukraine

Nikolay Moiseenko
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine
Dnipro, Ukraine

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The Effects of Using Blended Learning in Teaching and Learning English: A Review of Literature

Aminuddin HASHEMI
Takhar University

Kew SI NA
Universiti Teknologi Malaysia

Abstract: Blended learning has recently been considered a hot topic in education, especially for teachers and students to employ for the enhancement of the English language throughout the world. Therefore, the current paper yields to the related literature of the blended learning effects in teaching and learning the English language. Various related literature has been reviewed to find out the effects of blended learning on the four integrated skills of the English language such as reading, writing, speaking, and listening skills. Hence, the outcome of the reviewed literature present that there are effects of using blended learning in teaching and learning the English language. Blended learning affects each of the integrated skill of the English language positively and it is suggested that using blended learning as one of the 21st-century skills need to be taken into consideration for the teaching and learning the English language in the future..

Keywords: Blended Learning, Effects of using blended learning, English language teaching.

Introduction

Over the past few years, the term blended learning in teaching and learning the English language in various studies have given remarkable attention to the question of how blended learning affects the domains of the language teaching and learning. However, all these questions remained controversial in terms of how and which approaches are most effective in the enhancement of which skills of the language particularly. But, various studies have investigated the effects of using blended learning in teaching and learning the English language generally. Based on the available literature concerning the use of blended learning in teaching and learning the English language, it is indicated that blended learning can enhance the students' ability to learn the language. Hence, it is not indicated which skills of the language has been improved and how effective is blended learning in teaching the English language. To answer this question, the researcher aimed to review some of the literature concerning the effects of using blended learning in teaching and learning the English language.

Literature Review

Blended Learning

Initially, the concept of blended learning was established at the beginning of the 21st century since this terminology was a substantially long time ago in the early 20th century (Banditvilai 2016). Blended learning is considered as the combination of face-to-face instruction with technology-mediated instruction or online learning that reached the most popular among the 21st-century skills in today's higher education (Bolandifar 2017). The term blended learning, then appeared in the domains of English language teaching and learning lastly to take its commonplace in teaching and learning the English language (Whittaker 1976). In other words, blended learning is viewed as facilitating collaboration, abridging the assessment process as well as providing the reference and expanding the engagement among the students to improve their skills in language learning.

Hence, considering the aforementioned views on the use of blended learning for the improvement of language skills, there is a need to figure out whether which skills are affected through the use of blended learning.

On the other hand, blended learning is increasingly becoming a viewpoint for students in higher education. It enables the use of the internet or computer-based techniques to enhance the face-to-face interaction between teachers and learners (Morris 2010). Furthermore, Bock. et al., (2018) indicate that blended learning courses are becoming very popular in every academic sphere today. They referred to those courses where a significant amount of seat time, i.e. time spent in the classroom, is replaced by online activities that involve learners in achieving the goals of the course. The blended learning courses are ranged from 30 to 79 percent of the learning materials are considered as online activities including face-to-face courses account for 29 percent (Allen, Seaman & Garrett 2007). According to AlKhaleel, (2019) blended learning is the careful combination of face-to-face and the experiences of online learning that the attributes of each approach are combined into a single learning experience. It is a basic and essential transformation that changes the teaching and learning approaches as structures of education.

Moreover, Halil Ibrahim Akyüza, (2009) blended learning has been called distance education networks "third generation." The first generation was mail, radio, and television correspondence education, which was used as a one-way instructional delivery system. Single-tech distance education was considered as the second generation which is a computer-based or web-based learning and teaching process. In this study, blended learning has been categorized as the third generation describing the combination of face-to-face learning with online learning where technologies are acting as the basis of online learning. In general, blended learning usually implies any variation of the teaching and learning approaches delivery, which often involves face-to-face teaching with asynchronous and or synchronous technological applications and instruments. Hybrid learning is yet another term used synonymously with blended learning (Halil Ibrahim Akyüza, 2009). Hence, the aforementioned definitions concerning the use of blended learning in teaching and learning seem to be effective and sound logical in terms of the description from different points of view of the scholars other skills well.

Developing vocabulary is a confused series of actions to achieve the results. It takes a long time to master English vocabulary. It makes the learning process more meaningful. Lack of vocabulary seems one of the major causes of failure of our students. It is the major hindrance in learning process especially English. Academic English very vital in order to language teaching and learning. Mastery in vocabulary will enable the students to enhance is essential for the success of ESL learners in school settings. Knowledge of morphemes and affixes (prefixes, suffixes) are one part of academic English that may increase student's achievement. It has been observed that in most of our public and private schools, the teachers teach the students only by the so-called traditional ways of teaching English vocabulary. Learners have to wrestle with new vocabulary, rules of grammar, pronunciation and more. Word formation is an appropriate strategy for the ESL learners to develop their vocabulary widely and polish their skill.

In learning a second language, vocabulary is the most paramount part. It is the soul and essence of a language. It is also first and leading stair in language acquisition. Its knowledge plays an important role in almost all areas of language. So, the whole process of learning a language depends on learning its vocabulary. The study of prefixes, roots and suffixes is the most utilized word parts that make fifty percent of the English language (Pitman, 2003). English vocabulary is marvelous and becomes the part and parcel of technology and social interaction. Gradual practice of prefixes, roots and suffixes can improve vocabulary of the students (Pitman, 2003). The cognitive, social, and psychological factors involve in learning and retaining of vocabulary. The social indicators of students learning process are parents, peers and teachers who help in refining the learning process of the learners through different literary events.

The current study is about the importance of the role that the processes of word-formation, especially affixes, play in the acquisition of English as a second language in the classroom at secondary level. It intends to investigate the problems, difficulties, needs and interests of the students of elementary level in the area of affixes, and their importance in acquiring vocabulary.

The Effects of Blended Learning on English Language Teaching and Learning

Blended learning allows the students to adopt various learning styles and skills level, at the same time, blended learning uses visual, additive, and interactive tools for the enhancement of offline activities. It also supplements in-person lectures with a secondary resource of online modules and overcomes time and geographical constraints. Despite that, blended learning is considered to one of the providing approaches that can bring real

self-styled learning methods to the teaching and learning processes (Sejdiu 2014). In short, Blended learning is more versatile, engaging, and adaptable for learners, thus allowing the teachers to better address their learners' unique needs and requirements while integrating blended learning for their teaching process. Further, the effectiveness of blended learning in teaching and learning are a) the use of classroom time is more successful, b) the students are more engaged and feel confident of being involved in a different task, c) the students feel more innovative, d) the students are more prepared, and they are more likelihood of providing educational opportunities in its greater sense (Alsalhi, Eltahir, & Al-Qatawneh, 2019).

The implications of promoting integrated learning in English language teaching and learning have been discussed by numerous scholars (Hong & Samimy, 2010; Neumeier, 2005; Stracke, 2007). Hong and Samimy (2010) confirm that, based on the rise in the number of studies focusing on second-language teaching since 2000, this debate has gained prominence. Most of these research discussed blended learning pedagogy and its application, while others observed the learning consequences achieved after blended learning was introduced. Therefore, the following section discusses a range of research findings concerning both the introduction and effects of blended learning in language teaching. Osgerby emphasizes that learners are more successful and effective if they can communicate with their teachers and peers to explain, share ideas, and learn from each other. Face-to-face sessions can be strengthened by other factors such as humor, the quest for various views, non-verbal words, movements, and even realistic examples in class (Osgerby 2013). The most important and significant way is that teachers should not hide behind the "technology curtain" and resume the lecturer's conventional role or trust too seriously on one-way technology, on the other. Blended learning calls for the simultaneous and systematic use of all methods of delivery, to make the most out of both elements and to achieve the goals outlined (Shraim, 2012).

The Effects of Using Blended Learning on Reading and Writing Skills

As one of the language skills, knowing written texts, or comprehension skills, a learner's education forms the stepping-stone. The Dictionary concept of 'reading understanding' is the capacity to interpret a written text to comprehend its contents. The central element of the ability to learn is 'understanding.' It is highly respected by both students and teachers, as it improves the language learning process and lets students learn for different purposes. The most effective readers are those who use cognitive techniques to better understand the text (Behjat, 2012). Poorahmadi's (2010) research on understanding reading found that teachers should concentrate on the type of assignment and activities that help students work cooperatively on completing the task. Salimzadeh and Mohammedi (2009) did empirical work on the utility of tasks and practices used for reading comprehension and found that cooperative reading behaviors such as group paraphrasing, the interpretation of a text contribute to the reading comprehension of Iranian intermediate EFL students. In her work on the role of collaborating, Behjat (2011) claimed that if they participate in activities that allow them to read together, language learners will promote their comprehension.

New technology shifted rapidly drastically and had a profound impact on all facets of language use. Computer and Internet technology enables the use of hypertext and hypermedia in understanding foreign languages. Although it can often be difficult to understand hypertexts, the use of reading skills and techniques can help one solve this issue. A benefit of reading hypertexts on the net is that learners can access authentic content, as one of several language learners' key objectives is to be able to read what is widely referred to as authentic texts. Verezub and Wang (2008) revealed in their study that how applying the net hypertexts could enable language learners with an enhanced understanding of the texts. Rahimi and Behjat (2011) conducted longitudinal research on online and offline reading comprehension for Iranian EFL learners and concluded that students' reading is promoted to a higher degree when exposed to online texts that have links to other websites that have more reading content. Szymańska and Kaczmare (2011) argued that for learners to become professional readers in a foreign language, they need access to online texts that can help them respond to what they've read authentically. Asadzadeh Maleki and Ahangari (2010) researched the role that computer-assisted instruction plays in writing and reading. The results of their study showed that most EFL learners had a positive attitude in using multimedia tools for the enhancement of their language skills, and enjoyed saving their writing and using multimedia to improve their reading skills. Ehrlich, Radde, Polleti, and Freitag (2011) discussed in their paper the architecture and properties of an e-learning framework that can be used in reading comprehension training. They use authentic texts and a variety of activities on a website. They concluded that this framework was introduced encouraging the learner to consciously apply a wide range of different reading skills and strategies. Reading on the net will also help learners evaluate the text on their own, focus on it and seek to grasp it independently of a teacher requesting help. Szymańska and Kaczmarek (2011) concluded that learners benefited

by using both printed and online texts as regards both recall and interpretation of the texts in a blended learning lecture course.

Blended learning, Technology has implemented new exercises, and learners may use the activities to understand their reading. Various studies have revealed that Wi-Fi access allows students to read widely (Liaw, Chen, & Huang, 2008; Yang, 2009). Izquierdo and Reyes (2009) found out that the Internet soon became a simple tool not just for information and communication, but also for reading understanding in the 21st century. A standard internet-based reading experience allows students to switch to a higher level of reading comprehension tasks such as summing up and paraphrasing, drawing inferences, and interacting with online communication resources such as an email message or blog post. The Internet offers learners the ability to get acquainted with search engines and blogs, in addition to using traditional vocabulary awareness and text structure in information (Coiro & Dobler 2007). On the other hand, Neumeier (2005) studied the parameters for designing a blended learning environment for English language teaching and learning and emphasized that the application of blended learning enables the students to improve their writing skills. This shows that the use of blended learning affects the writing skill and allow both the teachers to teach writing skill through the use of blended learning and for the students to apply blended learning for the enhancement of the writing skill. Therefore, one can observe that the use of blended learning in teaching and learning English language skill are remarkable especially, for the writing skill.

Sharma & Barrett (2009) studied using technology in and beyond the language classroom and believed that using blended learning enables the students to enhance collaboratively their writing skills. Similar work is conducted in different language competencies (Isti'anah, 2018). The research also hires the students for pre-assessment and post-assessment. After a six-week-learning cycle, post-assessment is given. Although the language skills practiced are writing, the grammar skills of the students are also important for exercising the accuracy of the students in writing. It is noted that the writing of the students in the post-assessment is better than before. According to the students' reflection, the student often appreciates blended learning in teaching and learning writing skills. Moreover, Kintu, Zhu & Kagambe (2017) noted the process of giving and receiving among the learners by writing with each other. This can be considered as the accomplishment in the knowledge of the building process from our perspective. Their research further indicates that learners create sense from assignments individually and this stage is referred to as pre-construction, which is a pre-construction for our analysis that helps the learners to practice the writing skills through the use of blended learning.

The Effects of Using Blended Learning on Speaking and Listening Skills

Despite the fact, face-to-face interaction supports the role of technology in blended learning by infusing other features of teaching and learning such as social networking, group collaboration, and daily conversation that would not be spoken if only digital learning and teaching approaches. Online learning often covers a few learning skills, and may not familiarize students with all the language skills required in everyday life. Similarly, Tawil (2018) Observes interaction in the classroom as essential for effective public speaking. Exclusively, the acceptance of online learning can avoid students from emergent special skills such as public speaking. Siew-Enga & Muuk, (2015) states that the experiences of Face-to-face interaction can improve online learning by developing an atmosphere that fosters engagement and improves target language speaking skills. According to Aborisade (2013), the fundamental goal of English language teaching and learning is to be equipped with the required language skills that will help the students handle real-life situations. Hence, speaking is one of the simplest ways to express oneself, which is best developed in the classroom's face-to-face interaction.

In addition to that, Ibrahim & Yusoff (2013) indicates that the blended learning style used for the speaking course offered further opportunities for the students to exercise speaking outside of the classroom. It also enables the students to be encouraged, to develop and publish for real audiences. They also found that the use of a wiki in a blended learning atmosphere is beneficial for the Public Speaking course. Similarly, Miyazoe et al., (2018) believed that blended learning is appropriate for implementing language skills, particularly in courses related to speaking and grammar. In this regard, the students are required to be accountable for the classes they take, including speaking and writing and to exercise their language competency. Yang, Chuang, Li, & Tseng (2013) examined the efficacy of integrating Communication Technology into individualized English listening and speaking instruction through the use of Moodle, a computer-generated learning atmosphere. The study results showed that students contributing to the treatment improved significantly in terms of English speaking and listening. Hence, the use of blended learning can simply enhance the speaking skill as proved in the aforementioned literature.

In the field of English language teaching and learning, few studies have discussed how a blended learning approach can be used to improve speaking skills. Brett (1996) conducted an inquiry into multimedia's affective listening skills domain and found that most students assumed that multimedia could enhance their listening skills. Brett compared students' language recall skills in 2000 using either multimedia, traditional audio, or video accompanied by written tasks. Brett (2000) initiate that, by using multimedia, students had greater memory in recalling the listening tasks. Guangying (2014) investigated a blended learning approach to see if it plays a positive role in improving the speaking and listening skills of college students. The findings are very clear after analyzing the language test scores in HUST. During the study, the experimental group showed much greater progress in both listening and speaking abilities based on their pre-tests. The results for the experimental group were much more evident compared with the control group. The blended approach to learning enhanced the academic performance of the students in listening and speaking skills of the language. Thus, considering the indicated evidence in the literature, blended learning can be considered as the beneficial approaches to the enhancement of the English language skills. which allows both the teachers and students to teach using blended learning and for the students to learn employing. Banditvilai (2016) conducted a study focusing on the enhancement of students' language skills by using blended learning. The result of his study revealed that there are direct effects of blended learning on the listening skills of the language while he believes that blended learning allows the students to be autonomous learners and motivates them to enhance their listening skills. Similarly, Al Zumor, Al Refaai, Bader Eddin, & Aziz Al-Rahman (2013) investigated the perceptions of the EFL students towards the use of blended learning and found out that blended learning can enhance the listening skill along with other skills of the English language. Their findings also suggest that the use of blended learning in terms of the effective application, some supportive learning opportunities are required to create a better environment of using blended learning for the enhancement of the English language teaching and learning. Therefore, based on the evidence indicated earlier concerning the effects of using blended learning on the listening skill of the English language, one can understand that using blended learning improves the listening skill and provide more learning opportunities to the students in enhancing the language skills. Sejdiu (2014) believes that the blended learning approach is the most likely used approach by the teachers and students around the globe that can enable the students to develop their language skills and to overcome their challenges in English language teaching and learning.

Conclusion

Blended Learning remains a properly new concept at many educational organizations; though, recent research seems to suggest that blended learning can substantially enhance the student experience if it is implemented "appropriately". The purpose of the current study was to explore the effects of using blended learning on teaching and learning the English language. Therefore, the researcher reviewed the related literature to figure out the effects of employing blended learning on the four integrated skills of the English language. Hence, the present review of the literature has helped to prove the effects of blended learning on English language teaching and learning. Based on the literature indicated earlier, it is found out that blended learning can be effective in enhancing the four skills of the English language such as reading, writing, speaking, and listening. In conclusion, as one can consider the literature of the present study, the use of blended learning in teaching and learning the English language cannot be neglected. Therefore, this approach can be suggested to the stakeholders and practitioners to consider it for the enhancement of the language learning and teaching process.

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Author Information

Aminuddin Hashemi
Takhar University
Taloqan, Takhar, Afghanistan
Contact e-mail: aminuddin.hashemi@gmail.com

Kew Si Na
University Teknologi Malaysia
Language Academy, Faculty of Social Science and Humanity,
Johor Bahru, Johor, Malaysia

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Analysis of Course Transfer Systems Used in Distance Education

Erol KOCOGLU
Inonu University

Abstract: Each discipline has its own methods, systems and goals. The communication discipline has some features unlike the others. In this way, people express themselves, receive and transmit news and interact with their environment through their sense organs. Distance education can be defined as a system in which teachers and students in different physical spaces interact and perform teaching-learning activities with the help of various communication technologies in order to provide educational services to wider audiences and to ensure equal opportunities in education. Course transfer systems are used to achieve the main purpose in distance education. Lesson delivery systems enable people to communicate interactively. These systems, which enable the realization of data transfer over the Internet, emphasize synchronous and asynchronous motion picture transmission to very large masses, one-to-one, with small and large groups. In the meantime, however, features such as speaker focus, screen and file sharing, scratch and drawing board are offered to create interaction between users. In this study carried out with the scanning model, these transmission systems have been examined and evaluated in detail.

Keywords: Distance education, analysis, lesson, transfer.

Introduction

Distance education can be defined as a system where teachers and students in different physical spaces interact and perform teaching-learning activities with the help of various communication technologies in order to provide educational services to wider masses and to ensure equal opportunities in education (Yalın, 2001; Arrivals, 2015; Koçoğlu, 2020.). Since distance education is based on information and communication technologies, there are examples showing that it is applied in different ways depending on the technology that develops in time (Saba, 2001; Turco, 2001; Aydın, 2001; Koçoğlu, 2020). That is to say, distance education, which was based on printed materials from its first appearance until the 1970s, has been used in radio, audio cassette, fax, film, telephone, television, computer etc. It can be said that it is given through information and communication technologies (Koçoğlu, 2020).

The term "distance education" (Distance Education-DE), which was first mentioned in the 1892 catalog of the University of Wisconsin, was first expressed in an article written in 1906 by William Lighty, the director of the same university (Kaya, 2002). In the following process, this term (Fernunterricht) was introduced by German educator Otto Peters in the 1960s and 1970s in Germany and applied as a name (Teleenseignement) to distance education institutions in France (Verduin & Clark, 1994; Kaya, 2002; Koçoğlu, 2020).

It can be said that the transfer takes place in the process of distance education based on different time and place, through technology-based systems. It can be stated that experts in the field who want to increase the quality of distance education through these systems create different products related to the systems and contribute to system diversity. These systems can be used for health, socio-cultural, economic and political purposes, together with only education. In this study, the systems used in the course transfer process in the distance education process were evaluated.

Method

Document analysis, one of the qualitative research models, was used in this study, in which the detailing of the course transfer systems used in distance education was taken as the basis. Qualitative research allows the researcher to directly access the data source. It provides detailed descriptions that will provide a deep understanding of the context and facts, and convincing generalizations based on the information obtained by synthesizing (Büyüköztürk, 2011; Güzel Candan & Ergen, 2014). When it comes to document review, only written materials should not be considered. When it comes to documents, sources such as photographs, videos and pictures also constitute visual documents. Document analysis enables the analysis of documents produced in a specific time period about a research problem or documents produced by more than one source and at different intervals on the subject (Yıldırım & Şimşek, 2008). The data obtained regarding the research subject in the study were evaluated by giving figures.

Findings

As the world class transport system used in distance education process implemented due to the outbreak in Turkey there Covid-19 is shown in figure 1. While some of these systems are used in education in many countries of the world, it can be said that many of them are used in different dimensions of the life process rather than education.

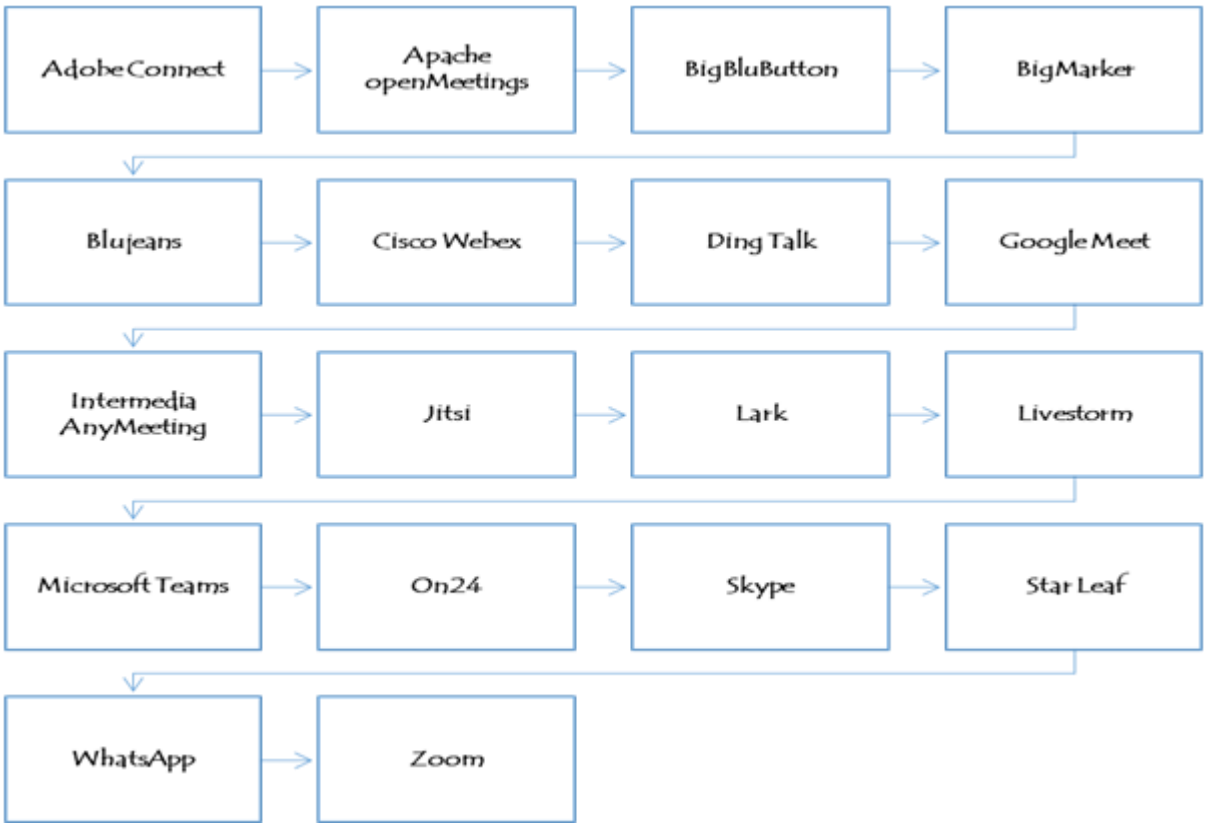

Figure 1. Course transfer systems used in distance education

Looking at figure 1, it can be said that although course transfer systems used in education vary, only a few of them are used in the distance education process. This situation can be shown as the most important proof that the distance education process based on internet technology has system diversity. However, some of these transmission system in distance education process in Turkey has come to the fore. It can be said that the prominence of these transfer systems, their use in educational institutions outside of the distance education process, and the high number of qualified personnel who are qualified to use these systems contribute. The prominent course transfer systems are given in Figure 2.

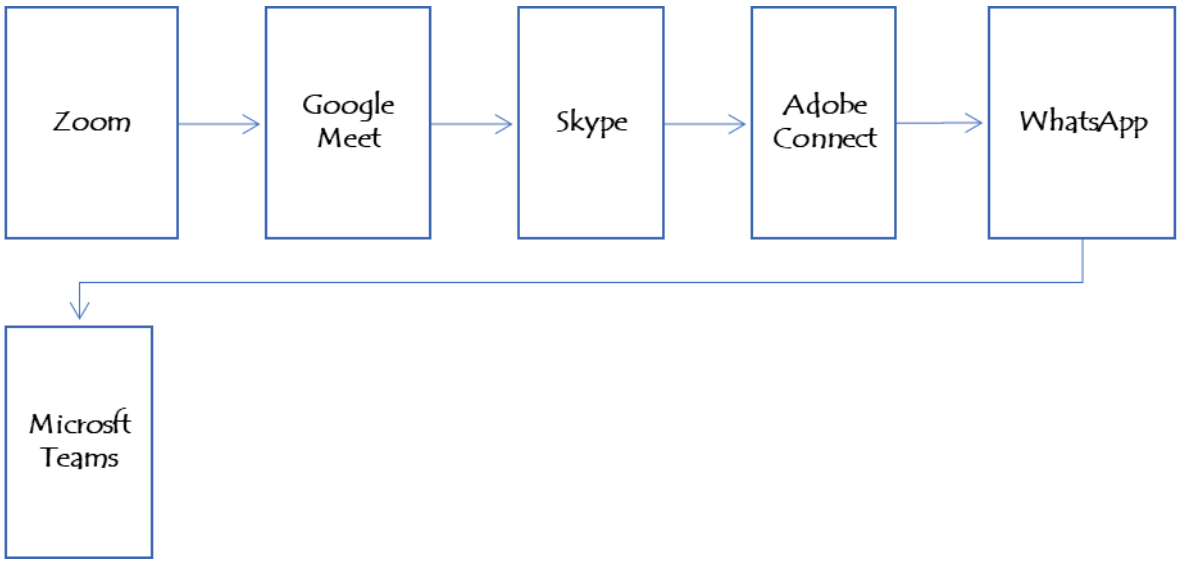

Figure 2. The transmission systems used in distance education process in Turkey

Zoom transmission system is a cloud-based communication program that stands out with its video conferencing feature. It works on portable devices, desktop computers, smartphones and room systems (Zoom About, 2020). The company is based in America and its founder is Chinese born Eric Yuan. Zoom is preferred by global companies and well-established universities, serving the world's largest technology companies and universities that drive technology. However, it ranks first in the world in customer satisfaction (Zoom About, 2020; İneç, 2020).

Google Meet, there are various communication platforms developed by Google. There are paid and free versions of Google Meet. Up to 100 users can participate in the meetings created in the free version for 60 minutes. A Google account is required to use this service. Google Meet protects the data of its users with the Google Clouds infrastructure (Google Meet, 2020; İneç, 2020). Google Meet is committed to maintaining both interaction and communication through its features. Thanks to its file sharing feature, it enables the presentation of slides, files and various documents to other users in meetings. In addition, it is possible for hundreds of people to participate in these meetings and to show them live to hundreds of thousands of people. Moreover, no special device is required to reach Google Meet. It is possible to reach Google Meet from any device. Within this framework, there are large global companies that prefer Google Meet (Google Meet, 2020).

Skype, is a Microsoft company's video communication platform that works in browsers. However, it differs from other applications due to some features. This aspect of Skype makes it look like mobile phones. Because users have a phone number on Skype. These numbers are temporary numbers provided by Skype, not the users' own mobile phones. However, Skype is not a phone. Some features of Skype are paid and some are free. For example, a meeting with 50 people can be held free of charge, while obtaining a temporary phone number is paid (İneç, 2020). These operations are performed through browsers or desktop applications down loaded to computers. Skype also has mobile and Xbox applications. Voice and high quality video calls on Skype can be made between two people as well as between groups. Thanks to its smart messaging feature, people reflect their gestures and gestures to their communications. Screen and file sharing facilitates information transfer between people. Skype, which stores the call history on its phone-like interface, enables international calls, sending text messages and transferring text to simultaneous videos. Skype encrypts these transactions end-to-end (Skype Features, 2020; İneç, 2020).

Adobe Connect, the Connect application developed by Adobe company, is a communication platform that allows meetings, conferences and virtual classrooms to be created. Expressed as the most secure software in its field, Connect has multi layer security. Connect is designed to be fully customized by users in terms of communication possibilities. In addition, multi dimensional communication facilities, various measurement and evaluation tools and more are included in Connect so that Connect attracts attention and makes it different from other platforms. In addition to these features, Connect ensures cooperation during communication and makes them permanent (İneç, 2020). Adobe Connect is a paid interaction platform and has a 90 day trial period. At Adobe Connect, which reaches more than 15 thousand customers and cooperates with 2.5 million people, 7

billion minutes of communication is established every year. Adobe Connect, which has various great awards, is preferred by very large institutions and organizations (İneç, 2020).

WhatsApp was founded by Brian Acton and Jan Koum. WhatsApp, which enables users to communicate by eliminating the operating system and network differences of smartphones over the Internet, went into operation in 2010 and was sold to Facebook for 19 billion dollars in 2014. By 2020, 2 billion people prefer WhatsApp. This includes WhatsApp's safe and easy calling service by working on any phone in more than 180 countries. WhatsApp provides voice and video calling, video, document and location sharing services. By encrypting these processes from end to end, it prevents the data of users from being captured by third parties (WhatsApp About, 2020). WhatsApp ensures that communication between individuals or groups (up to 256 people) is made via message, photo and video within the framework of its "easy, secure and reliable messaging" policy. It also performs simultaneous video transfer for free. It is possible to reach WhatsApp, which has a mobile interface, from browsers and desktop applications (WhatsApp Features, 2020).

Microsoft Teams, Teams is an advanced communication platform developed by Microsoft company. The free version offers features such as unlimited text based communication, video search, file sharing and storage. In addition, Teams provides simultaneous meetings and video conferences, cloud technology support for storing files collectively or individually, and the integration of Microsoft Office applications simultaneously (İneç, 2020). In addition to being a communication platform, Teams also creates a collaboration environment. In this context, it enables 500 thousand users to communicate and collaborate, and facilitates guest access along with screen and file sharing. Especially, thanks to office integration, it provides the opportunity to organize and share office files simultaneously. The security of more than 250 integrated applications and services is also provided by Microsoft (İneç, 2020).

Conclusion and Recommendations

Very striking results were obtained in this study, which was conducted to evaluate the course transfer systems used in the distance education process. These distance education process technology that is included based on different systems, this training is not the problem as a course delivery system realization, the problems in the system, but may be due to staff does not have the ability to use these systems, Zoom course as transmission systems in Turkey, WhatsApp, Skype, Microsoft Teams, It can be said that there are results showing that Google Meet and Adobe Connect come to the fore. Based on these results:

- Trainings should be given by relevant institutions and organizations regarding the course transfer systems used in the distance education process.
- Practice-oriented trial shots should be made regarding the use of course transfer systems.
- The interaction of the lecturers or teachers with internet technology should be facilitated by explaining the lesson delivery systems in a simple and plain way.
- It may be suggested that orientation training should be given in order to facilitate the integration of students and teachers regarding the transfer systems used in the distance education process.

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Author Information

Erol Koçoğlu
İnönü University
Faculty of Education, Turkey
Contact e-mail: erolakademi@gmail.com

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Methodology of Modern Training Surgery and Traumatology in Ukraine

Alexander OLEYNIK
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine

Kateryna YAROSHENKO
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine

Iryna POLULYAH-CHORNOVOL
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine

Abstract: The structured, multifactor planning of the educational process and implementation of various forms of staging control were conducted. Main objective of this passive method of training – lectures, is formation of an orientation basis for further assimilation by students of a training material, then when a source in this method of training is the word of the teacher that directly reflects its language of culture pedagogical professionalism. Besides, today lecture - as the passive method of study strengthened by such methods of presentation as an illustration (tables, schemes, presentations and so forth) and demonstration (slides, video movies). The organization of educational process according to Bologna Convention giving to us to reorient this form of a passive method of training of students, actually from the lecture - informative to individually - the differentiated personal form, where ideology of lections transition from the educational technology "to drive in of knowledge" to technology "the self-education organizations" medical students.active techniques in the course of training of students on clinical departments, in particularly are used by teachers on a practical training on such subject matters, as: "Emergency Abdominal Surgery and Proctology" (Module No.1) and “Traumatology”, where future doctors used creative situational tasks, enter dialogue with the teacher on occupations through system of questions as teacher to the student, and the student to the teacher that allows to turn the one who studies in "subject" of process of training.quality of preparation of students to practical occupation and their participation as in assimilation of a theoretical material, and acquisition of practical skills and abilities on concrete subject of a subject matter is estimated by the teacher also on the corresponding algorithm in a context of credit and modular system of study with the accepted standardized methods to exposure total converted balls for concrete result.

Keywords: Methodology, Modern, Training, Surgery and Traumatology

Introduction

Proper teaching of the disciplines “Traumatology” and "Surgery" in a range of other disciplines creates the conditions for quality medical practice in the future. The main results of quality training: the availability of trained professionals, optimal use of resources, risk minimization for patients with the use of medical technology and patient satisfaction with contact with the medical community. (Bologna, 1999; Universitatum, 1988).

When teaching medicine to foreign students, it is important to take into account ethno-social problems related to the adaptation of students in another national environment, as well as the language barrier in communication with patients, arising at the stage of practical training in modern conditions. In order to adequately master the required amount of knowledge and skills in teaching the disciplines to students, it is necessary to organize the structure of the practical stage of the lesson according to certain levels of training or levels of mastery and take into account the above. (Bereznytskyy Ya., et al., 2016).

Thus, in order to facilitate the education of students, clinical situational tasks should be introduced that are closest to real cases of medical practice. This will improve the quality of mastering the disciplines by students of 4 and 5 year and get the necessary general levels of theoretical knowledge, practical skills and abilities. (Surgery. Practical trainings. Manual for students. Ya.S. Bereznyts`kyy et all., 2007). During classes, students study the most common traumas and surgical diseases of the digestive tract and abdominal organs with the peculiarities of their clinical course on the basis of mastering the method of objective examination of the patient and the formation of a preliminary diagnosis, development of a diagnostic program, differential diagnosis, clinical diagnosis and treatment program.

A general practitioner's professional duties include taking into account clinical and statistical classifications. Conduct supervision of patients on the topic of the lesson according to survey methods, physical examination methods, appointment of additional research methods and their analysis, conduct differential diagnosis, formation of clinical diagnosis based on clinical and statistical classifications and justification of treatment tactics. This approach allows you to use the time of practical training. (Textbook "Surgery": Principles of Making the Preliminary Diagnosis. Sulyma et al., 2017).

To conduct the practical stage of the lesson, we offer students situational clinical tasks according to the studied topic, where the preliminary diagnosis is indicated, as well as the minimum amount of laboratory and / or instrumental research with data. During the examination we pay special attention to the full description of the patient's condition, the appointment of the necessary diagnostic and therapeutic methods, modern pharmacological agents and knowledge of modern guidelines and protocols for medical care. The experience of using a credit-module system in teaching and controlling knowledge of traumatology and of surgery in accordance with the levels of training shows that this approach is optimal and allows you to effectively form the necessary level of knowledge and skills of students for the next general practice.

Method

Qualitative research method was used in this study. The research data were collected through the interview form. Both the staff of the department and external part-time workers took part in this work. The analysis of the results was carried out at the level of the leadership of the department - head and associate professors. To answer the questions posed about the essence and significance of interactive and information technologies of teaching in traumatology and surgery, one of the department employees turned to data from the Internet and showed theoretical knowledge of the problem under discussion. (Dzyak et al., 2011).

The staffs of the Departments of Traumatology and Surgery #1 were asked to outline the essence and significance of interactive and innovative teaching technologies in surgery, to outline the problems and their vision of their solutions, and also to summarize their own experience in this area of activity. In order to prevent the presence of written responses deviating from the designated topic, the following definitions were presented to employees.

Interactive learning technologies include: specific techniques and methods that involve modeling life situations, using game methods, solving issues based on an analysis of circumstances and situations, allowing students to actively interact with each other with the participation of a teacher who plays the role of an assistant, regulating and evaluating the flows of analytical and creative information of students.

Information technologies of teaching - a learning process organized using various means and methods of data processing, representing the purposeful creation, transfer, storage and display of information products (data, knowledge, ideas) in accordance with the patterns of cognitive activities of students (should not be confused with the term "information technology in teaching", which means the created technical learning environment based on various information technologies).

Results and Discussion

He shares the opinion of these authors that interaction teaching methods involve co-education (collective, collaborative learning), and both the student and the teacher are subjects of the educational process. The teacher often acts only as an organizer of the learning process, a group leader, the creator of conditions for the initiative (the employee made an important addition - controlled) of students.

Learning with the use of interactive educational technologies presupposes a logic of the educational process different from the usual one: not from theory to practice, but from the formation of new experience to its theoretical understanding through application. In the opinion of an employee of the department, this determines the intensification of the process of understanding, assimilating and creatively applying knowledge in solving practical problems, if we are talking about teaching a traumatological and surgical specialty.

During training with the use of interactive technologies, "productive approaches to mastering information are formed, the fear of making a wrong assumption disappears (since an error does not entail a negative assessment) and a trusting relationship with the teacher is established", it also "gives an emotional impetus to the subsequent search activity of the participants, encourages them to take concrete actions "in the learning process, allows" to see a problem situation, ways out of it; justify their positions, their values in life; develops such traits as the ability to listen to a different point of view, the ability to cooperate, to enter into partnership, while showing tolerance and benevolence towards their opponents. Information technologies of teaching are referred by the employee not entirely legitimately to interactive teaching methods, since they are defined as "learning based on the interaction of the student with the learning environment, the learning environment, which serves as an area of mastered experience".

The main part of the department's staff sees the essence of the learning process using information technologies differently. Information technologies of teaching, which have already been used in the educational process of the Department of Traumatology and Department of Surgery, include thematic crosswords, which allow to determine the depth of theoretical knowledge and imagery of thinking, and the use of an electronic textbook, in particular: an electronic textbook "Traumatology" and "Abdominal Surgery and Proctology". (Sulyma et al, 2018).

Some of the staff indicated that not only practical exercises, but also lectures can be conducted in an interactive form. At the same time, it was emphasized that there is more than one form of interactive lectures, since they include lecture-conversation, lecture-discussion, lecture-visualization, problem lecture, lecture for two, lecture-consultation, since they carry the elements of a training game.

It is noteworthy that one of the employees, who indicated the lectures in an interactive form, was not involved in the lecture course, is an external part-time worker; meanwhile, he has knowledge that is not limited to the requirements for conducting a practical lesson. Interesting are his judgments about combining lectures and information technologies of teaching, in particular: attracting leading experts on topical issues of traumatology and surgery using remote computer technologies and the Internet, as well as demonstrating interesting thematic patients with an analysis of clinical situations in an interactive mode, with the audience. It should be noted that non-traditional and interactive also include a lecture with planned errors (lecture-provocation), a lecture "press conference" and a lecture-dialogue.

Conclusion

The use of clinical situational tasks for practical training of students promotes better mastering of the studied material, study of modern methods of diagnosis and treatment of traumas and of acute surgical pathology, as well as standards (protocols) of medical care for patients with traumas and urgent surgical pathology and brings students closer to real clinical conditions.

Recommendations

We recommend using the proposed technologies in the training of Medical Students and young Resident-Surgeons on disciplines Surgery and Traumatology.

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Author Information

Alexander Oleynik
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine
Dnipro, Ukraine
Contact e-mail: *bereznytskyjy2@gmail.com*

Kateryna Yaroshenko
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine
Dnipro, Ukraine

Iryna Polulyah-Chornovol
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine
Dnipro, Ukraine

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Quality Assessment of Criteria for Training Residents–Surgeons

Volodymyr SULYMA
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine

Yakiv BEREZNYTSKYJ
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine

Volodymyr GAPONOV
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine

Sergij MALINOVSKY
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine

Abstract: The experience of preparing residents-surgeons on the basis of the credit-modular system is given. A point evaluation of the knowledge and skills of each module and discipline as a whole is developed, the results of use are given. The restructuring of postgraduate education in Ukraine on the basis of the Bologna Declaration envisages the development and implementation of a unified system of credit units - the European Credit Transfer System ECTS, which is a conditional unit for measuring the learning load and assessing its learning by the learner. The experience of conducting the educational process on new technologies during higher education studies dictates the necessity of applying similar approaches to the postgraduate education of doctors, including during their internship in different specialties. The 15-years' experience of conducting an internship in surgery was analyzed on the basis of the applied credit-module system of training. Many years of previous experience of internship at the Department of Surgery # 1 of the SI "Dnepropetrovsk Medical Academy of Ministry Health of Ukraine" allowed in the experiment procedure to apply credit-modular system of training of residents-surgeons since the 2005/2006 academic year. The introduction of the innovation was preceded by extensive methodological work, including the creation of accounting records of teachers and residents, writing methodological manuals for residents, the development of criteria for assessing the quality of training of young professionals, which is based on a daily multilateral evaluation of distributed modules.

Keywords: Residents-Surgeons, Training, Criteria, Quality

Introduction

For of the young intern-surgeons it's important to mastering of surgical manipulation and stages of surgical interventions in treating the most common surgical diseases or providing an emergency assistance in case of emergency conditions. (Sulyma, et al., 2018). Development of modern surgery is impossible without modern techniques, including laparoscopic technology, so it's necessary to prepare medical interns to work on equipment that meets the time. Therefore it is necessary to restructure the educational process and teaching of surgery to achieve a positive effect in preparing the doctor and the medical community integration in the world.

To implement the system of planning, monitoring and evaluation of the education quality for a real degree of assimilation of students with specific components of the program during the academic year of surgery training and discipline for Module 1"Abdominal surgery" in general based on the cumulative number of ranking points for the European Credit Transfer System (ECTS). (Bologna, 1999). This will improve the quality of learning discipline among the four-year students of enrolled this year, and develop common indicators for professionally-oriented exam after 6 year of study to get a general level of theoretical and practical knowledge and skills.

For the interns-surgeons besides the basic work in the surgical department with patients it's necessary to mastery of the operational equipment in operation and manipulation rooms, as well as mastering of mini invasive surgery technology in the learning center "Endoscopic technologies in medicine". First experience of our proposed pilot credit module system in teaching knowledge and control of surgery (2005-2020) based on the outcomes of several modules indicates that approximately 10% of students are on level sum score 90-100% "excellent", 50% of students - the level of "good", 35% of students - the level of "satisfactory" and 5% of students need to re-sit modules.

The results indicate increase objectivity in the control of knowledge from teachers and students to increase interest in teach a subject that is allowed to integrate in medical education and, in future, in practical public health of Ukraine and other countries. In consideration of the importance of preparing qualified specialists, it's natural to increase quality of education in medical institution, so it's necessary to embody the credit transfer system in training course of surgery in Ukraine by preparation physician – general practitioners.

To implement the system of planning, monitoring and evaluation of the education quality for a real degree of assimilation of foreign students with specific components of the program during the academic year of surgery training and discipline for modül abdominal surgery in general based on the cumulative number of ranking points for the European Credit Transfer System (ECTS). (Dzyak et al., 2011). This will improve the quality of learning discipline among the four-year of foreign students of enrolled, and develop common indicators for professionally-oriented exam after 6 year of study to get a general level of theoretical and practical knowledge and skills of foreign physicians interns of surgery.

The structured, multifactor planning of the educational process and implementation of various forms of staging control were conducted. Based on the standard curriculum and learning plan was created the Working program that regulates specific activities by teachers and students to achieve as a theoretical and practical knowledge required for this sequence of technological resources and action items using the credit-module system. The calculated threshold standards levels of education (sum of estimates after the module translates the 200-point scale ECTS) and communicated to students to stimulate their enthusiasm for learning to the maximum level. (Bereznyts`kyy, & Sulyma., 2012).

Main objective of this passive method of training – lectures, is formation of an orientation basis for further assimilation by students of a training material, then when a source in this method of training is the word of the teacher that directly reflects its language of culture pedagogical professionalism. Besides, today lecture - as the passive method of study strengthened by such methods of presentation as an illustration (tables, schemes, presentations and so forth) and demonstration (slides, video movies).

It is important to note that in the course of application of a lecture method in the course of training students act as "object" of study - as passive listeners who have to acquire and recreate a lecture material which moves them the teacher - a source of knowledge. For the interns besides the basic work in the surgical department with patients it's necessary to mastery of the operational equipment in operation and manipulation rooms, as well as mastering of mini invasive surgery technology in the learning center "Endoscopic technologies in medicine". (Sulyma, et. al., 2018).

The Algorithm of Training and Preparation on Surgery of Surgeons-Interns on Practical Studies:

1. Muster, the announcement of a theme and the purpose of practical studies - 5 minutes;
2. Work in surgical division on inspection of patients, participation in medical and diagnostic manipulations, on operations - 4 hours;
3. Theoretical analysis of a theme of study – 50 minutes;
4. Development of practical skills of performance of medical and diagnostic manipulations on firm "3B Scientific" productions - 1 hour;
5. Development of practical skills of performance surgical, including, laparoscopy operations in a special class of firms "Karl Storz-Endoscope" and "Ethicon Endosurgery" (subsection "Ethicon a Johnson and Johnson Company") - 1 hour;
6. The information on the task on preparation for following practical studies - 5 minutes. (Bereznyts`kyy, et al., 2007).

Experience of using credit-modular system in teaching and measuring knowledge of surgery since 2005 suggests that this approach is effective. Received results underscore the increased objectivity in the control of

knowledge on the part of teachers' interest and increasing of foreign students and of foreign medical interns' interest to master a subject, that allowed to prepare a general practitioner in surgery and surgeons, and integrate in the future in practical public health in worldwide.

Conclusion

It is necessary the cooperation of the educational institution, clinical department and companies - manufacturers of medical and educational equipment, as in our case, working with "3B Scientific" and "Karl Storz-Endoscope", "Ethicon Endosurgery" (subsection "Ethicon a Johnson and Johnson Company"). Use of medical simulators and training mannequins for acquiring practical skills and new technologies of operative interventions using modern endoscopic equipment, tools, and simulators allows imitating the real clinical situation during operative interventions and learning steps to resolve it. As illustrated by the medical literature, the main errors in the operative interventions fall on the first 30-40 operations. That's why the working out of these first surgical interventions should be conducted on medical simulators for the purpose of reduce the risk of mistakes in the future. We recommend using the proposed technologies in the training of young Resident-Surgeons.

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Author Information

Volodymyr Sulyma
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine
Dnipro, Ukraine
Contact e-mail: *Volodyasulyma2@gmail.com*

Yakiv Bereznytskyj
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine
Dnipro, Ukraine

Volodymyr Gaponov
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine
Dnipro, Ukraine

Sergij Malinovsky
Dnipropetrovsk Medical Academy of Ministry Health of Ukraine
Dnipro, Ukraine