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Prospective Foreign Language Teachers: Interactive Whiteboards Within the Context of Micro-Learning

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Abstract

The growth in the amount of data and access to information together with developing technology, has led to changes in the needs of individuals and society as a whole. The development of teacher knowledge is very important in educational field. Based on this necessity, the opinions of candidate foreign language teachers on the use of the interactive whiteboard within the context of micro-learning, have emerged as the hotspot of this research. This research study has a quantitative feature based on survey methods. The total participant number is 101 candidate (prospective) foreign language teachers. The participants are senior-year learners of the English Language and Literature Department at the Faculty of Letters in Karabük University- Türkiye, who undertook pedagogical training in the 2023-2024 AY, Autumn term. A 5-point Likert type questionnaire was distributed among the students and the statistical analyses of the survey were performed using the IBM-SPSS Statistics, Version 23·0 program.

Keywords: Prospective teachers, foreign language, interactive whiteboards, micro-learning

Introduction

The rapid development and diffusion of technology since the second half of the 1900s has also influenced education and caused the emergence of different thoughts, perspectives and practices related to teaching and learning. The twenty-first century in which we live is rightly called 'the information age'. This age is an era where rapid, continuous and innovative changes are experienced in the fields of economy, politics, culture and technology. The age we are in is also a period in which the third stages of human development, which can be called respectively; cognitive revolution, agricultural revolution and scientific revolution, is being experienced.

The growth in the amount of data, access to information and developing technology, has led to changes in the needs of both individuals and society as a whole. As a result of so called alterations, education has become an area that cannot be limited only to educational institutions. The developing technologies and technological products are shaping lives and have taken humanity to an advanced level. In reaching this level, the impact of the modern computer and the internet, which were invented in the last century, is an undeniable fact. The revolution provided by computer and internet technologies turns contemporary advanced societies into a new form called the informatics society (Görü-Doğan, 2013). The impact of computer and internet technologies in areas such as social life, culture, economic life, defence and education is considerable.

The computer and the internet have also significantly affected learning-teaching processes. In order to understand this effect more comfortably, it is useful to go back a little, to the emergence of modern schools and the education system. As a result of the modernisation movement that emerged in the late 1700s, schools with a standard structure were built (Gündüz, 2013).

Students have different interests, abilities and social and environmental backgrounds, and learning exists at every moment of life. So, accepting central and standard approaches in learning and teaching activities may cause some difficulties. Increasing open plan and distance learning in learning-teaching processes will solve the problems caused by standardisation, and personalisation of learning will increase the quality of learning-teaching processes. In our modern age it is important to have access to the desired information, and educational activities in educational institutions are no longer the only source of learning (Yıldırım, 2017). Learning is in every moment of life and is not just for the aim of having a profession. Illich (2017), argues that an education system should have three main objectives:

1. To be able to provide the people who want to learn something with the resources whenever they need.

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2. To bring together those who know and want to learn from them on the basis of information sharing.
3. To provide the opportunity to announce the initiatives to those who want to announce a topic.

Illich's thoughts can be interpreted as; learning thoughts should not be restricted to educational institutions only, lifelong learning should be more prominent, open plan and distance learning should be used more in learning processes.

On the other hand, learning can take place not only in educational institutions, but everywhere that people can be found. Learning is not a situation that stops when the education given at school ends and begins again, that is to say, it is realised not only by means of schools but also by adopting other means such as TV, books, internet and etc. (Yıldırım, 2017).

Education Types

Open plan and distance learning can be easily implemented in addition to formal/classical education, the target audience can be easily reached at different points, and the learner can be supported with a wide variety of visual, auditory and/or textual resources. Today, open plan distance education has an important role in learning. Open plan and distance education has significant advantages compared to formal education. Wedemeyer (1981), states that the main features that distinguish open plan and distance education from formal education are learner-centredness, freedom of time and place, and lifelong learning.

Moreover, those who learn with open plan and distance education can complete their education, develop their knowledge in different fields and have the opportunity to learn in educational institutions in different parts of the world (Yıldırım, 2017). Open plan and distance learning is a suitable option for learners in today's world because of its flexibility and ability to integrate learning effectively and efficiently with life. The reason for this is that distance education, existing technologies and changing learning approaches are blended, and learners can gain the skills required. (Görü-Doğan, 2013).

Different tools are used to enable open plan and distance education. These tools change according to the requirements of time and therefore can easily be adapted. Distance education, which started with letters and books, and then benefited from tools such as radio, audio cassettes, video cassettes, television, CDs and the telephone etc., over the years, has an important place in our life. However, there is one common point in which these tools are lacking: two-way interaction. With these tools, information is passed passively to the learner. The interaction between learner-teacher or learner-other learner is generally not available. Being able to interact with the tools with which interaction is available is not useful in terms of time and cost. For example, interaction can be achieved between the learner-teacher and/or other learners by letter, but this takes a long time.

Interacting with the phone costs much for the learner and the teacher and it is not possible for the teacher to interact with each learner (Spodick, 1995). In this context, computer and internet technologies, which are not new in ideas but have started to gain momentum in recent years, have significant advantages over distance learning tools that were used before. Today's technologies have eliminated the problem of time, significantly reduced costs and solved the previously existing interaction problem. The development of Internet technologies, which has been continuing at a significant speed since the beginning of the 2000s, has enabled us to use the tools that can be found on a desk and ultimately in a pocket. The time period we are in can be described as the era when mobile and wireless technologies are experiencing their golden years.

The advancements of internet technology with the proliferation of mobile appliances and instruments indicate salient influences on learning activities. Learners are provided with the opportunities to access the information they wish, whenever they are in need of it. Today, information is integrated with everyday life, establishing a bond between finding ways to access information that is interconnected and available from different sources, and what is learned forms the basis of the learning process.

Learning Forms & Process

The connectionist learning theory, which defends the existence of information on networks, is a theory put forward by George Siemens and Stephen Downes and arises from the requirement for a learning theory that can meet the needs of today's learners. Traditional learning theories deal with how learning takes place and do not give the necessary attention to what is learned (Siemens, 2005). The amount of recently produced information has increased tremendously, information has become free and accessible from different sources, the development of technology has made major changes in people's learning style, and as a result, it has made it compulsory for learners to keep up with the times. Connectionist learning theory, which has emerged as the learning theory of our era, is directly related to the transformation of knowledge and learners.

Classical learning theories find it difficult to adapt to this transformation and are partially insufficient to explain learning in a neoteric manner. As a result, new approaches to education have begun to be discussed. Kukulska-Hulme and Traxler (2007), state that mobile appliances are the most

relevant instruments for new teaching activities in education, institutional goals, learning-teaching procedures and research. Mobile learning, which is defined by Traxler (2005), as learning activities where the technology used is only or mostly hand-held and can fit in the palm, is expanding its place in today's world. Considering that the technology used by humans both reflects and shapes the underlying social structure, it seems inevitable that mobile learning takes place in life so widely.

According to Bozkurt (2014), learning takes place in online environments based on network technologies in the age in which we live. However Fitria (2022) denotes that E-learning are not very effective at times and some goals can not be obtained. Yıldırım (2017), states that mobile technologies provide a suitable environment for learning as they provide easy access to information, can be carried easily, have computer features, facilitate everyday life and provide instant access to entertainment and social networks.

Kukulska-Hulme et al. (2015), supports the aforementioned information in their research report by mentioning that language learners carry devices where they can communicate with people from all over the world, continue learning languages outside the classroom, analyse their own language learning products and needs and share what they learn. Based on the previous statements, it can be inferred that language teaching should be supported with current learning approaches that can keep up with our era and respond to the needs of learners. In addition, it is important to keep a strong link with language learners to language at a higher educational level. Finally, bringing together language learners and those who speak the target language as their mother tongue, will increase the effectiveness of learning. The reasons mentioned above are the rationale for this research.

In this context, it is argued that foreign language education offered in higher education in Türkiye should be supported with the appropriate teaching-learning practices and activities that are suitable for the requirements of today's world. Bozkurt (2014), states that traditional learning theories are insufficient to explain learning on networks in the digital age. In this framework, the theoretical basis of the study is micro-learning, which is one of the connectionist learning theories and mobile learning approaches. The integration of connectionism based on learning on networks and open plan and distance education applications, is a learning style that could meet the needs of learners in our age. Language teaching & learning processes in higher institutions will enable this activities to be continued outside the educational institution and in addition, enrich language learning-teaching processes. Furthermore this will align with the requirements of this century and learner needs will benefit the relevant stakeholders.

One of the mobile learning techniques, micro-learning, forms an effectual remedy for learning-teaching environments as the life of information is shortened (Siemens, 2005; Grovo, 2015). The development of computer and internet technologies has changed and reshaped the desires, perceptions , attitudes and etc., of the students in our modern age. The fact that mobile learning is learner-centred, accessing the information instantly and by using different devices gives the learners flexibility and the ability to direct their learning. Moreover, the increase in the amount of information, reduced attention span, diversification of the sources that provide access to information and easier access, have led to the learners to spend less time on learning. For these reasons, mobile learning and micro-learning appear to be concepts that can meet the needs and wishes of learners.

Mobile learning and micro-learning save learning from being a phenomenon limited to educational institutions. This can be expressed as an important step towards the integration of learning into life. Learning is not a phenomenon that can be limited by educational institutions, classrooms and class hours. On the contrary, it is a phenomenon which reaches into every moment of life and continues from birth to death. These features of learning are valid in all areas of education, but they have a vital importance in foreign language learning.

What is micro-learning?

Job & Ogalo (2012) denote that micro-learning is a concept created by rapidly developing technology and changing lifestyle. It is a learning technique which is generally realised on a single subject, limited to time, consumed quickly and usually occurs in software and tools. Badrul et al. (2021) express that microlearning has been a trend nowadays in online learning forms. Grovo (2015), describes micro-learning as some kind of learning activities which are realised by short, and well organised components. According to Söderberg(2023), Microlearning had been denoted to be an effectual way of learning as a remedy for some problems such as resource and financial limitations. Hug (2005), examined the dimensions of micro-learning under the following headings:

- Time: relatively short effort, operating cost, short time spending, subjective time, etc.
- Content: small or very small pieces, narrow subjects, fairly simple points, etc.
- Curriculum: small part curriculum, module parts, informal learning items, etc.
- Structure: pieces, parts, sections, 'information particles', skill elements, etc.
- Process: discrete, interconnected or real, situational or integrated activities, iterative method, attention management, awareness, etc.

- Environment: face to face, electronic media, multimedia versus single media, information goals or learning goals, symbolic value, etc.
- Learning Type: iterative, action-based, reflective, utilitarian, conceptual, constructivist, connectivist, behavioural, learning with examples, task or activity, goal or problem-based, operational learning, classroom learning, unified learning, conscious or unconscious, etc.

Considering the features mentioned above, micro-learning is described as iterative, action-based, connectionist, problem-based learning style by accessing small parts of data that is interconnected and suitable for the situation in a short time via face to face or via information and communication technology. The goal of micro-learning is to present a comprehensive subject, not as a whole, but by turning it into small particles. The contribution gained from the day to day development of technology continues increasingly in the planning, implementation and assessment of education and training activities. With the introduction of technology into learning environments, it has become necessary for educators to have acquired the skills, to utilize this technology and also to employ it efficiently. With this requirement, it was inevitable for candidate (prospective) foreign language teachers to become technology oriented by adding another dimension to their education. All of these paved the way for teaching courses about using the technology and the integration of technology into teaching/learning in educational faculties.

The generations that question and interpret what they question and start production, and the generations that today's education system wants to realise, are possible only with teachers who have developed themselves and have succeeded in integrating technology into education. Equipping educational institutions and classrooms with technology alone is not enough to increase the wishes of individuals regarding who can use technology. Teachers and administrators should also meet this technology and be able to utilize it effectively in the classes. In this regard, candidate foreign language teachers should be acquainted with technology, acquire knowledge about it and reach competence to use it in educational environments.

Interactive Whiteboards

As a technology that is planned to increase the quality and efficiency in education, the usage of interactive whiteboards is increasing both in the world and in our country. With the growing interest in interactive whiteboards, there is a need for teachers who can use this technology. For this reason, in education faculties, the studies for candidate teachers to gain interactive whiteboard usage skills have accelerated. The attitudes and opinions of the candidate teachers who use interactive whiteboards within their roles as teachers or learners during the faculty of education, will shed light on both organising and improving the lessons taught in faculties and make inferences about teaching with interactive whiteboards throughout their teaching professions.

Murat (2016), highlights that although the fact that some teachers consider interactive whiteboards as a facilitator, some other teachers argue that interactive whiteboards increase workloads owing to the preparation required for interactive whiteboard activities. Altın & Kalelioğlu, 2015; Çelik, 2012) denote that, in general, for the usage of interactive whiteboards in classrooms and the integration of the technology in classroom environments, in-service education is significant. For teachers who are in need of training for effectual usage of interactive whiteboards and for those without training, most of the main purposes of the interactive whiteboards are not be able to be used.

The practical usage and improvement on using interactive whiteboards is paramount for all teachers (Bidaki & Mobasheri, 2013).Interactive whiteboards are not a tool for the teacher, as opposed to a whiteboard, but a resource that the whole class can use. With interactive whiteboards, learning activities that enable creativity, critical thinking and brainstorming can be organised (Altınçelik, 2009).

Interactive whiteboards are considered to be the developing face of information and communication technologies. However, the existence of a technology does not mean that it is effective. Any vehicle that is not used effectively loses its function. In this regard, it is a paramount issue that teachers are properly trained for effective use of interactive whiteboards in class. The usage of a technology without considering pedagogical factors and its subsequent inclusion in the teaching-learning process does not mean technological integration.

The prospective teachers equipped with the necessary knowledge and skills in teacher education will be the teachers who meet the needs of each student when they embark on the profession. It is also important to present interactive whiteboards, which are increasing in use every year, to candidate teachers in teacher education. Candidate teachers who learn to use interactive whiteboards during their academic years, will be able to use this technology efficiently in their professional lives.

The Importance of Research

The most important points in the constructivist approach are that learners can make sense of the content and actively learn new information by processing old information. As a result of these fundamentals, the importance of providing an

enriched learning environment for students has increased, and therefore technology has been used more effectively in the development of materials that will appeal to more senses. In parallel with the developments in technology, the development of visual and audio materials such as animation and simulation in the computer environment has started to be used in education, and as a result, the term of computer aided education has emerged. The fact that every individual needs a quality and effective education has led people to research the aim of raising quality and standards. Answers to the question of what quality and effective education will be were sought and various arrangements and innovations were made in line with the research conducted. At this point, as a technology that is increasingly used in teaching environments nowadays, interactive whiteboards have been considered worthy of research for both students and educators and have been the subject of many studies.

In this context, it should be ensured that educators are able to use the technological tools and equipment that are intended to be used in educational environments in a functional way during the learning-teaching process. Technological products that do not carry an educational function in learning-teaching environments cannot be a product of educational technology. As one of the objectives of education is to teach individuals with consideration to the needs of society in accordance with the information age taking into account the characteristics of the information societies, it is necessary to educate students. Total development is only possible with qualified manpower.

As the competencies of teachers increase, more qualified students can be trained. It is reasonable to train teachers with a high level of competence, by eliminating the deficiencies in teacher education and improving teacher knowledge. This progress is only possible with scientific findings from systematic research. At this point, the importance of research conducted to increase the quality of teacher education is increasing. In this regard, the aim of this research was determined by considering the notions of candidate teachers using interactive whiteboards within the context of micro-learning, and to make predictions about the candidate teachers' use of interactive whiteboards in future professional environments.

Research Problem

What are the notions of English teacher candidates regarding the use of interactive whiteboards within the scope of micro-learning?

Sub Problems

1. What are the candidate teachers' opinions about interactive whiteboards?
2. Do the candidate teachers' opinions on interactive whiteboards differ by gender?
3. What are the plans of candidate teachers on the use of interactive whiteboards in their future professional environments?

Methodology

This research study has a quantitative feature based on survey method.

Participants

The total participant number is 101. The participants are senior-year students of the English Language and Literature Department in the Faculty of Letters in Karabük University, who undertook pedagogical training in 2023-24 AY, Autumn term. The number of female participants is 51 (51,51%) and male participants is 50 (48,49%) . Individuals are aged between 22-23 and 28-over. The students are from three different types of education, daytime education (37.6%), evening time education (41.6%) and distance education (20.8%).

The frequency of the distribution of age groups and education type is as the following IN Table 1.

4.2. Data collection tool

The questionnaire which was distributed among the students is a 5-point Likert type questionnaire in which the answers ranges from strongly disagree (1), disagree (2), undecided (3), agree (4), to strongly agree (5). The aim of this questionnaire

Table 1. Distribution of Age and Education Type

EDU CATION TYPE				
AGE	*Daytime*	*Evening*	*Distance*	*TOTAL*
22-23	6	9	3	18(17.8%)
24-25	2	3	1	6(5.9%)
26-27	5	10	5	20(19.8%)
28- over	25	20	12	57(56.4%)
TOTAL	38(37.6%)	42(41.6%)	21(20.8%)	101

is to determine the tendencies of the participants towards the interactive whiteboards. There are 5 sub-dimensions of the questionnaire: 1.Practicality 2.Efficiency 3.Deficiency 4.Convenience and 5. Difficulty. The students orientation towards the interactive whiteboard were defined according to these subdimensions.

The statistical analyses of the survey are performed using the IBM-SPSS Statistics, Version 23·0 program (Armonk, New York). The significance level is set to 0.05. The medians, standard deviations, and mean values of measurements are calculated with descriptive analysis. The efficacy of gender, age and education type on using interactive whiteboards is analysed by comparing mean levels of different groups. The normality of scores is analysed by the Kolmogorov-Smirnov test. Due to violation of normality assumptions, non-parametric statistical comparison methods are used. The divergence between females and males are analysed using the Mann-Whitney U test. Additionally, the efficacy of gender and educational type on the attendance level are analysed via Kruskal Wallis tests.

Findings

The comparisons of females and males are performed by non-parametric Mann-Whitney U tests separately for five sub-dimensions. The test results (Table 2) denote that the differences between mean participation levels of females and males are not statistically significant for any of five the sub-dimensions (p>0.05). For example, for sub-dimension 'Practicality', the mean level is '"agree' for both females and males (p=0.262).

By means of analyses it was found that there was no paramount difference between males and females. For the four sub-dimensions 'Practicality', 'Efficiency', 'Convenience' and 'Difficulty' the mean level is 'agree'. However, for the 'Deficiency' sub-dimension, the mean level is 'undecided' and is lower than the main level of the other scales, of strongly disagree, disagree, agree, strongly agree.

The influence of age on the attendance level is denoted by non-parametric Kruskal-Wallis tests separately for five sub-dimensions. According to the test results (Table 3), for sub-dimensions 'Practicality', 'Efficiency' and 'Difficulty', the differences between the main attendance levels of the four age groups are not statistically significant (p>0.05). For instance, for the sub-dimension 'Efficiency', the main level is 'agree' for all of the age groups (p=0.149).

On the other hand, for the'Deficiency' sub-dimension, a statistically significant difference is found between the four age groups (p=0.043<0.05). In the age group 26-27, the main agreement level of 'Deficiency' sub-dimension is higher than the other three age groups.

Similarly, for the'Convenience' sub-dimension, there is a statistically paramount difference between the four age groups (p=0.013<0.05). In the age group 26-27, the main attendance level of the'Convenience' sub-dimension is higher than the other three age groups.

The comparison of the three different educational types is performed by non-parametric Kruskal-Wallis tests separately for five sub-dimensions. Consistent with the test results (Table 4), the differences between main agreement levels of the three

Table 2. Descriptive Statistics and Comparison of Genders

	GENDER	*N*	*Mean*	*Median*	*Std. Deviation*	*p-value*
Practicality	Female	51	4.0576	4.0000	0.3879	0.262
	Male	50	4.1038	4.1875	0.5441	
	Total	101	4.0804	4.1250	0.4699	
Efficiency	Female	51	3.7353	3.6875	0.3811	0.327
	Male	50	3.7950	3.7813	0.4507	
	Total	101	3.7649	3.7500	0.4160	
Deficiency	Female	51	2.7402	2.7500	0.5936	0.259
	Male	50	2.9250	2.7500	0.7130	
	Total	101	2.8317	2.7500	0.6587	
Convenience	Female	51	3.8301	3.8333	0.4732	0.369
	Male	50	3.8600	4.0000	0.6166	
	Total	101	3.8449	4.0000	0.5463	
Difficulty	Female	51	3.8784	3.8000	0.4272	0.133
	Male	50	3.9800	4.0000	0.5529	
	Total	101	3.9287	4.0000	0.4936	

Table 3. Descriptive Statistics and Comparison of Age Groups

	AGE	*N*	*Main*	*Median*	*Std. Deviation*	*p-value*
Practicality	22-23	18	4.2118	4.2813	0.3658	0.082
	24-25	6	3.6250	3.7500	0.5449	
	26-27	20	4.1469	4.1875	0.5927	
	28- over	57	4.0636	4.1250	0.4223	
	Total	101	4.0804	4.1250	0.4699	
Efficiency	22-23	18	3.8472	3.9063	0.3884	0.149
	24-25	6	3.4271	3.5000	0.4750	
	26-27	20	3.8438	3.9688	0.4753	
	28- over	57	3.7467	3.7500	0.3866	
	Total	101	3.7649	3.7500	0.4160	
Deficiency	22-23	18	2.5972	2.7500	0.4549	0.043*
	24-25	6	2.5000	2.2500	0.8660	
	26-27	20	3.1750	3.0000	0.7613	
	28- over	57	2.8202	2.7500	0.6138	
	Total	101	2.8317	2.7500	0.6587	
Convenience	22-23	18	3.7870	3.8333	0.3994	0.013*
	24-25	6	3.3889	3.4167	0.6722	
	26-27	20	4.0917	4.2500	0.6977	
	28- over	57	3.8246	3.8333	0.4833	
	Total	101	3.8449	4.0000	0.5463	
Difficulty	22-23	18	4.0778	4.1000	0.3703	0.093
	24-25	6	3.4333	3.4000	0.6861	
	26-27	20	4.0100	4.0000	0.5170	
	28- over	57	3.9053	3.8000	0.4738	
	Total	101	3.9287	4.0000	0.4936	

*: significant at 0.05.

Table 4. Descriptive Statistics and Comparison of Educational Type

	TYPE	N	Main	Median	Std. Deviation	p-value
Practicality	Daytime	38	4.0954	4.1563	0.4951	0.364
	Evening	42	4.1161	4.1250	0.4627	
	Distance	21	3.9821	3.9375	0.4455	
	Total	101	4.0804	4.1250	0.4699	
Efficiency	Daytime	38	3.7714	3.8750	0.4394	0.787
	Evening	42	3.7783	3.7188	0.4237	
	Distance	21	3.7262	3.7500	0.3716	
	Total	101	3.7649	3.7500	0.4160	

	TYPE	N	Main	Median	Std. Deviation	p-value
Deficiency	Daytime	38	2.8487	2.7500	0.6915	0.356
	Evening	42	2.7381	2.7500	0.6246	
	Distance	21	2.9881	2.7500	0.6637	
	Total	101	2.8317	2.7500	0.6587	
Convenience	Daytime	38	3.8289	3.8333	0.4674	0.721
	Evening	42	3.8373	4.0000	0.5872	
	Distance	21	3.8889	4.0000	0.6154	
	Total	101	3.8449	4.0000	0.5463	
Difficulty	Daytime	38	3.9263	4.0000	0.5331	0.633
	Evening	42	3.9714	4.0000	0.4790	
	Distance	21	3.8476	3.8000	0.4600	
	Total	101	3.9287	4.0000	0.4936	

different educational types are not statistically significant for any of the five sub-dimensions (p>0.05). For example, for the sub-dimension 'Difficulty', the main level is approximately 'agree' for the three different educational types.

Conclusion

In this study, which aims to ascertain the ideas of candidate teachers regarding the usage of interactive whiteboards within the context of micro-learning;'the ideas of prospective teachers about interactive whiteboards and whether the opinions differ according to gender, and the effects and contributions of the micro-teaching methods for teacher education, together with the candidates' plans to use the interactive whiteboards in their future professional life were examined. In this part of the study, some suggestions developed in line with the links of the findings obtained as a conclusion of the research with the relevant literature and the results.

In the research, according to results of the analyses it was found that there is no difference according to education type and gender. On the other hand it was found that there are some differences in regard to the age groups. There were four age groups, 22-23, 24-25, 26-27, 28+over.

For the 'Deficiency' sub-dimension, a statistically paramount divergence is determined between the four age groups. In the age group 26-27, the main agreement level of the 'Deficiency' sub-dimension is higher than the other three age groups. Similarly, for the 'Convenience' sub-dimension, there is a statistically significant difference between the four age groups. In age group 26-27, the main attendance level of the 'Convenience' sub-dimension is higher than the other three age groups.

There are some other studies concerning this issue. Similar to the results of the current research, related literature points to many benefits such as interactive whiteboards allow multiple tools to be used, facilitate teaching, save time for the teacher, provide material diversity, process the lesson more efficiently, are student-centered, enable learners to actively participate in the lesson, increase motivation and provide enjoyable courses (Polat & Özcan, 2014). For example, Altınçelik (2009), concluded that the use of interactive whiteboards positively influences student activeness and motivation. This result is consistent with the findings of the current study. In the research conducted with prospective teachers denote that technology provides more efficient use of the teaching process and time savings (Baydaş et al., 2011). Akgün and Koru Yücekaya (2015), indicate that as a result of the interview with mathematics teachers, that teachers use interactive whiteboards effectively, interactive whiteboards affect student motivation towards the lesson, make learning permanent and positively affect student perspectives towards the lesson. This research show that interactive whiteboards positively affect the educational process.

In line with these results in this literature, the plan of the candidate teachers participating in the research to use interactive whiteboards in their future professional environments shows that they approach this idea very positively. It is very important for teachers to develop a positive attitude towards interactive whiteboards during their undergraduate education, in order to be able to do job with high professional satisfaction, low anxiety and qualified work.

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