Teachers' Preferences for Selecting New Media Tools for Education

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Abstract

The purpose of this paper is to present teachers' views on their choices of different media types for an effective learning environment. To achieve this goal, quantitative research method was implemented. The participants of the study were teachers at different age group and majors. The data source of this study was teachers' responses to the given questionnaire. Teachers' comments for an open-ended question were also analyzed to support the findings. The results show that the participants' ages, gender, usage of social media sites and computer skill levels have affected their media selection preferences for learning environments.

Keywords

Teachers, media selection, material development

Introduction

The history of media or materials usage in education is as old as the first time of teaching and learning. The fist cave drawings which were believed to be 30 thousand years ago are accepted as one of the first material for education. The time of Pythagoras (500 BC) is one of the first times the status of teacher in education started. Hundred years later, paper was invented and used in China for communication and education. The development of manuscript followed years later. The printing technologies in 1450 opened new gates for education to use books. And, the starting from 1910, there was new era for technology and therefore education. At this time, audio materials were produced for students. In the following years, radio, filmstrip projectors, overhead projectors, and television became part of school materials.

Use of computers, in 1990s, by schools started a totally different era in education. Connecting computers with each other globally, the Internet, change not only education systems but also communication and transportation system as well. Interactive whiteboards, tablet computers, and smart phones are the new developments in computer systems. At the same time, the Internet technologies provide users to develop new web applications such as social media sites.

The statistics show that people regardless of region, gender, race or religion easily get used to these new technologies. The estimate number of computer in the world is over two billion. The number of accounts for Facebook, a most popular social media web site, already passed one billion. The users of this site are sending hundred thousand messages to their friends making around a million comments for status or message in one minute (The Guardian, 2014).

While technology has grown over time the educators try to accommodate with the changes. There were and there are insistences to not use technology for education but the number of people with this behaviour shrinks day by day. In the last century, there were big discussions among educators whether or not technology is effective for learning. The same discussion continued for computers but ironically people started to make these discussions over the internet. Some did not recognize the internet as a new learning platform while sharing ideas and purposing their ideas over the internet.

For some researchers, from a stone to engrave a cave wall to a smart phone every item used for learning is educational material or technology. However, some researchers minimize this list and categorize in four level; print, video, people, and interactive media. These materials or technologies are called as media since it is believed that these tools transfer information like a vehicle (Clark, 2001). Some media types, mass media, used for entrainment are separated from instructional media (Dorr & Seel, 1997). Instructional media is defined as physical means by which an instructional message is communicated (Gagné, Briggs, & Wager, 1992). Some researchers divided instructional media into three sections; presentational, representational and mechanical.

The media descriptions listed above are criticized since they do not separate new computer technologies. Thus, Smith and Ragan distinguished computer technology from interactive media (1999). Similarly, Romiszowski also separate computer medium from other visual media types such as television and projectors (1988).

The more complicated questions raised accepting technology as part of education. Which technological tool is best for my classroom? This and similar questions have been asked several times at educational meetings and conferences. It was simple to make a choice when there were only textbooks and blackboards. However, in today's classrooms, teachers have accessibility to various types of technological materials such as television, computer, social networks, and old style equipments. Teachers should make a critical choice to establish a most effective learning environment.

In order to get teachers to make a right decision on media for their courses, there is no specific guidance or course for teachers to take at Turkish Universities. Media literacy course which promotes understanding about media and their effects, at teacher education institution is rare. Only few institutions offer to their student-teachers as an optional course. This course is also optional at Turkish middle schools.

The selection process has been questioned for years at different cases (Baytak, 2010). According to Bates, media selection is not an instant process; indeed, it is a complicated decision process if the users look for a best effective material (1995). In some cases selection process is easier since organizations or institutions make decision to force individuals to use these materials or technologies. In some other cases, the individuals are given options to select their own media types for their instructions (Bates, 1995).

The foundation of media selection for learning is based on few theories and some models. The theories are Social Presence Theory which argues that the degree of social presence causes media's social effects and Media Richness Theory which focus on message to be delivered and the richness of a medium (Timmerman, 2003). Since the models were found more practical, educators tend to use model rather than theories.

One of the most applicable models purposed for media selection in education is ACTIONS model by Bates (1995). In this model, each letter of word ACTIONS makes the criteria of media selection. Letter A stands for accessibility and how accessible is a particular technology for learners? Letter C

stands for cost and what is the unit cost per student? Letter T stands for teaching and learning and what are the best technologies for supporting this teaching and learning? Letter I stands for interaction and what kind of interaction does this technology enable? Letter O stands for organization and what changes in the organization need to be made? Letter N stands novelty and how new is this technology? Letter S stands for speed and how quickly can courses be adapted with this technology?

In addition to Bates's Model, Romiszowski has purposed some the following criteria for media selection; effective communication for content and learners, reasonable cost for the tools, practical use for time and facilities, and human factors for facilities and learners (1989). Another selection criterion is listed as quality, time, flexibility, coverage, and cost (Sarkis, 2005). Differently, Barnes, Mosgrove, and Rassouli see learning objectives, learners' behaviors, and availability of the media, government restrictions, and cost as criteria for a median type to be used in a learning environment (1982).

Teachers' Media Preferences

The literature mentioned above listed some criteria to select a type of media for the lessons. Physical materials that learners can touch and see have seen the most effective material for an effective instruction. According to Clements, physical materials make the case make learning concrete and connect ideas to the real world (1999). Thus, teachers, especially, who teach to young students prefer physical materials for their lessons since their students can touch, hold, and feel the material (Clements, 1999). Meanwhile, the development in computer technology has improved digital technologies which enable materials to be presented with interactivity. The further steps in digital technologies were to design materials that hold the feature of a physical material.

Animating materials on computers raised questions of whether or not this new form of material affects learning. There were discussions that animation should be overused interactive media environments. Toth, for example, warned educators about animated instructional materials that overuse of animations might distract learners and destroy their ability to focus on the content (2003). However, it is recommended in another study that the effectiveness of animation on students' learning was found inconsistent, even though animation with its ability to gain attention has been accepted as a powerful method to deliver instruction (Ching, et al. 2005).

A comparison study conducted with elementary and early childhood pre-service teachers shows interesting results about their preferences of material types. As it was expected the teachers see digital materials more advantageous because of re-usability, time, space and cost efficiency, and durability (Turel & Varol, 2012). However, this study also showed that elementary teachers preferred electronic materials more than early childhood teachers. In another study, however, it was found that teachers' limited use of technology resulted from inadequate access to equipment, inability to troubleshoot minor technology problems, and the absence of training in learning activities (Davidson, Richardson & Jones, 2014).

There are several studies conducted on teachers' technology use preferences (Baytak, 2012; Drent & Meelissen, 2008). In his study, Baytak outlined the characteristics of technology used for course material development by teachers (2012). In another study, Drent and Meelissen presented a framework of factors that teachers use technology for education (2008). The results of their study showed that teachers who use technology in their learning process are characterized by a specific combination of knowledge, skills, attitudes, or competencies. This study also found that teachers

who have self-motivation for improvement were more likely to integrate new technologies in their lessons.

One of the cutting edge technologies for the classroom in the last decade was interactive whiteboards. Hammond and colleagues study the reasons why some teachers use these boards but some do not (2011). They found that some teachers use the interactive whiteboards because it was already used by their mentors and was widely accessible (Hammond, Reynolds, & Ingram, 2011).

Nevertheless, there are numbers of studies focus on the barriers on technology integration in schools (Orhan & Akkoyunlu, 2003). According to the study by Sugar, Crawley, and Fine, teachers' technology adoption has such barriers; lack of training, students' interest, lack of technical support, lack of adequate equipment, and lack of administrative support (2004). In addition, they indicated that the political cliché that "technology is good" is not a clear message for teachers and they need to know how technology will affect their roles and how to effectively use technology in their classroom (Sugar, Crawley, & Fine, 2004).

Similar to any other studies in human and behavioral science, variables such as gender, age or skill differences can be a factor in the media selection in education field as well. Yau and Cheng, for example, conducted a study on gender differences when using technology (2012). Their findings showed that male students were more confident in using technology for learning than female were. The researchers indicated that this gender differences is because of social construction of computing not because of innate ability (Yau and Cheng, 2012).

Whether or not the participants' ages makes differences for their technology adaptation or use is also studied. Study conducted with workers showed that the attitudes of younger workers were more influenced compared with older workers. However, older workers were interestingly more strongly affected by perceived behavioral control compared with younger workers (Morris & Venkatesh, 2000). Another study by Yau and Cheng also clear that older students were more confident in using technology for learning than younger students were (2012).

Definition of the Problem

The problem that this study addressed is teacher preferences for media types for their lessons. Considering the existing research, as well as the development of new technologies, there is a need to conduct study on teachers' views and preferences about media selection for their learning environments. The primary aim of this study was to determine teachers' views about using different media tools for learning platforms. The study sought to answer the following questions:

RQ1: What are teachers' preferable media types for their lessons?

RQ2: Is there any correlation between teachers' ages and their media selection preferences?

RQ3: Is there any correlation between teachers' computer use level and their media selection preferences?

RQ4: Is there any gender differences among teachers about their media selection for their lessons?

Method

The Participants

The Participants of this current study were teachers from a southeastern city of Turkey. The selection of the participants was based on availability of teachers who can voluntarily take the questionnaires. The participants were asked to involve the study during an in-service day when

they have free time to respond the questions. Among 150 teachers, there were 126 responses but two of them were excluded because of incomplete responses.

According to the responses there were 61 female and 63 male teachers. The participants' teaching majors were as follows; 43 classroom, 17 science and technology, 7 mathematics, 2 music, 15 early childhood education, 9 language, 4 sport, 12 social study, 10 English teachers, and 2 counselor.

The participants were at young age group; 82 of them were between 20 and 30, 39 of them were between 31 and 40, 2 of them were between 41 and 50, and 1 of them was older than 51 years old.

Based on the categorization in the previous research, media types are the key variable of this study. Participants' gender, ages, their computer skill levels, and their frequency for use of social media were also used as dependent variables.

The Data Collection and Analysis

The data were gathered through a paper–based questionnaire. The questions were prepared by the researcher but derived from the relevant literature. In order to ensure the validity of the instrument, one more educator reviewed the questionnaire. The instrument had two main sections; demographic information and media selection instrument.

The demographic questions were about gender, age, teaching major, computer skill level (Do not at all, know little, know some, know well), types of social media use, and the frequency of social media (More than 5 times a day, 1-2 times a day, 1-2 times a week, rarely, and never). There were 18 questions for media selection for learning. The responses were at 5-point Likert scale (scale from 'Disagree Strongly' (Coded 1) to 'Agree Strongly' (Coded 5)).

The analyses of the data were based on quantitative perspectives. Descriptive statistics were used to examine the demographic data using SPSS version 16.0. One-sample statics was used to give mean scores and standard deviations of teachers' responses for each question. Spearman's correlation was used to examine correlation between key variables since the variables were nonparametric values.

Results

Descriptive statistics

As it was partly presented at the method section of this paper, most of the participants are young teachers (82 of them were between 20 and 30 years old). The gender distribution is almost equal (Male 51% and female 49%). The majors of the participants are representative for such educational populations. The percentages of the participants' teaching majors were as follows; classroom teacher 36%, science and technology 14%, mathematics 6%, music 2%, early childhood education 12%, language 7%, sport 3%, social study 9%, English teaching 8%, and counselor 2%.

The participants were asked about their computer skill levels. According to the responses their computer usability levels were as follows; only 1% of the teachers indicated that they do not know how to use computers. Among the teachers 10% said they know little and 75% said they know well how to use computers. The teachers who think they are very good at the computer are 14%.

Social media websites such as Facebook become popular in Turkey. Thus, teachers were asked about their usage of such websites. The responses show that 85% use Facebook, 35% use Twitter, 69% use Youtube, 3% use LinkedIn, and only 1% use Google+ websites.

Teachers' Preferable Media Types for Their Lessons

Descriptive statistics for all the key variables are presented in Table 1. On average, teachers reported that they wanted to use graphics and shapes for teaching and learning as the most effective way 4.58 (out of 5) (SD= .512). Studying from the books was seen the least desired way for teaching and learning 2.35 (out of 5) (SD=1.04).

Table 1: Descriptive statistics for key variables

	N	Mean	Std. Deviation	Std. Error Mean
Studying from books	123	2.35	1.040	.094
Learning from teacher	122	3.20	1.239	.112
Writing on boards	122	3.57	1.012	.092
Using audio for teaching	124	4.31	.642	.058
Using graphics and shapes	124	4.58	.512	.046
Using video	124	4.52	.577	.052
Doing group work	124	4.25	.833	.075
Encouraging for sharing information	124	4.03	.709	.064
Prior knowledge is important	124	4.44	.589	.053
Using computer for lessons	123	4.27	.780	.070
Using interactive boards	124	4.14	.905	.081
Using Facebook	124	2.50	1.165	.105
Using animations	123	4.37	.656	.059
Doing technical visits and observations	121	4.47	.684	.062
Doing experiences	121	4.54	.708	.064
Student can study by themselves by using the Internet	121	2.60	1.201	.109
I like students to use social media for learning	121	2.79	1.219	.111

The descriptive statistics listed on Table 1 shows that teachers mainly have positive views about using most media types as part of learning and teaching. The mean scores for most of the questions were over 4 points meaning that they agree on the statements. Such traditional median of teaching as learning from teachers and writing on whiteboard has smaller means comparing with other statements.

Nevertheless, the statement that students can study by themselves over the internet has mean lower than 3 points. Similarly, the statement 'I like students to use social media for learning' also had smaller mean score. The small mean scores show that there is negative perspective against doing online education and using social media sites for learning.

RQ2: Is there any correlation between teachers' ages and their media selection preferences?

Based on the rapid changes of technology in the last decades, there is a tendency that the differences between teachers' ages could affect their technology uses. The idea that purposed by Prensky (2001) also purposed a digital divide which means that there is a gap of technology uses among

generations. Since the data was non-parametric, Spearman's correlation was used. In data table, teachers social media use frequency was 5 for the highest usage and 1 for the lowest usage. The statistical analysis of Spearman's correlation is presented on Table 2.

Table 2. Correlations between teachers' social media use frequency and their views about student studying lessons on the internet and students use social media for their learning.

			S Media Freq	Age	Studying on Internet	Social Media for learning
Spearman's rho	S Media Freq	Correlation Coefficient	1.000	-.281**	.303**	.328**
		Sig. (2-tailed)	.	.002	.001	.000
		N	124	124	121	121
	Age	Correlation Coefficient	-.281**	1.000	-.236**	-.214*
		Sig. (2-tailed)	.002	.	.009	.018
		N	124	124	121	121
	Studying on Internet	Correlation Coefficient	.303**	-.236**	1.000	.597**
		Sig. (2-tailed)	.001	.009	.	.000
		N	121	121	121	121
	Social Media for learning	Correlation Coefficient	.328**	-.214*	.597**	1.000
		Sig. (2-tailed)	.000	.018	.000	.
		N	121	121	121	121

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

*. Correlation is significant at the 0.05 level (2-tailed).

A Spearman's correlation was run to determine the relationship between teachers' ages and their social media use frequency. There was a negative correlation between teachers computer skill levels and their social media use frequency, but this correlation was not strong (r_s= -.28, n = 124, p < .01).

Teachers' social media frequencies and their preferences for studying over the internet were also analyzed (Table 2). Based on a Spearman's correlation analysis, there was a positive correlation between teachers' social media usage frequency and their views about study over the internet (r_s= .30, n = 124, p < .01).

Similarly, teachers' social media use frequencies and their views for using social media sites for learning were also analyzed (Table 2). A Spearman's correlation was run to determine this relationship. There was a positive, but weak, correlation between teachers' social media use frequency and their views for using social media sites for learning (r_s= .32, n = 121, p < .01).

On the other hand, the relationship between teachers' ages and their views about using the internet and social media sites for their learning environments had reversed results (Table 2). According to the analysis run with a Spearman's correlation, the correlation between teachers' age and their views using the internet for lessons was negative (r_s= -.23, n = 121, p < .01) and the correlation between

teachers' age and their views using social media for their lessons was also negative (r_s= -.21, n = 121, p < .01). Both of these correlations, however, were found weak.

RQ3: Is there any correlation between teachers' computer use level and their media selection preferences?

Teachers' preferences for using the Internet and social media as a learning environment were analyzed. The results show that there is no significant correlation between teachers' computer levels and their preferences to use internet and social media sites as learning environment (Table 3).

Table 3. Correlation between teachers computer levels and their preferences for studying over the internet and social media sites

			Comp_level	Study over Internet	Social Media for learning
Spearman's rho	Comp_level	Correlation Coefficient	1.000	.143	.052
		Sig. (2-tailed)	.	.118	.569
		N	124	121	121
	Study over Internet	Correlation Coefficient	.143	1.000	.597**
		Sig. (2-tailed)	.118	.	.000
		N	121	121	121
	Social Media for learning	Correlation Coefficient	.052	.597**	1.000
		Sig. (2-tailed)	.569	.000	.
		N	121	121	121

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

Interactive boards were been widely installed in most Turkish schools to improve education quality. Teachers who have these boards in their classrooms were trained. Thus, in this study, teachers were asked if they see these boards useful for their lessons. A Spearman's correlation was run to determine the relationship between teachers' computer levels and their views on usefulness of interactive boards in for their lessons (Table 4).

Table 4. The Correlation between teachers' computer levels and their views about interactive boards.

			Comp Level	Seeing Interactive Boards useful
Spearman's rho	Comp Level	Correlation Coefficient	1.000	.285**
		Sig. (2-tailed)	.	.001
		N	124	124

	Seeing Interactive Boards useful	Correlation Coefficient	.285**	1.000
		Sig. (2-tailed)	0[b]	.
		N	124	124

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

b. Footnote

The results are presented on table 4. The results show that there is positive correlation was found between teachers' computer levels and their views on usefulness of interactive boards in for their lessons. This correlation, however, was weak (r_s= .28, n = 124, p < .01).Other than that, there was no significant correlation between teacher age and their preferences for another media tools for their learning environment.

RQ4: Is there any gender differences among teachers about their media selection for their lessons?

It is common for studies on technology usage to investigate if there is a gender difference among their media preferences for their lessons. Statistical analysis was conducted for all media types but significant results were found only with teachers' whiteboard usages.

Table 5. Group statistics for gender differences using white boards

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Using white boards	Male	62	3.81	.865	.110
	Female	58	3.34	1.101	.145

Table 6. Independent samples test for gender differences using white boards

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Using White Boards	Equal variances assumed	12.490	.001	2.562	118	.012	.462	.180	.105	.818

Table 6. Independent samples test for gender differences using white boards

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Using White Boards	Equal variances assumed	12.490	.001	2.562	118	.012	.462	.180	.105	.818
	Equal variances not assumed			2.542	108.158	.012	.462	.182	.102	.822

The results show that male teachers had statistically significantly higher usage of whiteboards when teaching (3.81 ± 0.81) at compared female teachers (3.34 ± 1.1), $t(118) = 2.562$, $p = 0.012$ (Table 5, Table 6). Among other media preferences white boards was seen as traditional style for teaching and learning.

Discussion

The purpose of this study was to examine teachers' views on their media preferences for learning environments. As part of this study, teachers' majors, age, gender, social media use and computer skills were analyzed with their preferences for different media tools. The results are presented after proper statistical analysis.

The descriptive statistics showed that the participants were from various background and majors. Their genders and major areas were almost equally represented. Teachers' computer levels and social media use were also representative since the findings are parallel with statistics of Turkey (TUIK, 2013).

The findings showed that teachers' were open to most media types for their lessons. New media types such as interactive white boards were more preferable compared with white boards. However, using online systems and social media sites were also less preferable by the teachers for their lessons. This could be negative representation of social website could lead teachers to not used such tools for education. In addition, online education and distance education are still seen as a secondary option for getting education.

Prensky's proposal that there is a gap between generations for using technology has upraised in this study as well. The study examined if teachers' age has any correlation with other variables. The findings showed that the use frequency of social media sites decrease when teachers' age increases. Similarly, there was also a negative correlation between teachers' ages and their preference for using internet and social media sites for learning environments. This finding supports the study by Morris and Venkatesh (2000).

At the other hand, teachers' social media use was also analyzed as new trend in education. The incredible grow of social media usage is similar among the participant of this study as well. The study showed that teachers who use more social media sites are more likely to prefer internet based education and learning over social media websites. These findings gives us clue that teachers who get involve in social media networks are more likely to see educational benefits of this platforms as learning environment.

Nevertheless, as it was found in this study, teachers' computer levels were not seen as an effect of preferences of new media type for learning environments. Teachers who have think that they are good at computer are more likely to use interactive whiteboards compared to other teachers. These same teachers, however, did not favor for using internet or social media sites for learning platforms. There could be several causes of this findings but possible reason is that teachers who get a well training on interactive white broads could feel better on computer skill but these same participants may not see other media types as useful as interactive white boards because of training.

Gender differences for teachers' preferences did not widely appear in this study. The differences found were not significant for any media type except white board. In other words, both males and females have similar preferences for media types but males were more like to use white boards for their lessons. The preferences of this traditional media equipment could because of the teachers' traditional teaching strategies. As Turel and Varol suggested in their studies what teachers teach also lead them to select a media types for their lessons, therefore, female teachers who are dominant at elementary schools may prefer more technological media types to present animated graphics and images (2012).

Even though it was not the main goal of this paper, it is worth to note that teachers who wrote comments for the open-ended question mainly stated that they need more training on the use of the technology materials for their lessons. These findings are parallel to what Hammond, Reynolds, and Ingram (2011), suggest training, mentoring and support as key factors to use technology for education. However, as it was suggested above, the training should be out of formal lesson where instructions do not more from abstract information to concrete knowledge.

No research study is without limitations. The following are the limitations of the study which could not be prevailed over. First of all, the sample of the study was small. An upcoming study with more participants could project better results. Secondly, ages of teachers were not equally representing the teacher population of Turkey since mainly young teachers are appointed to this school area. In addition, observation and checklist that count what actually teachers use at their lessons could improve the validity of this study.

Conclusion

Teachers want to use new media types of for their lessons but social media sites and online education are still seen as less preferable. The study shows that teachers are at the bridge level where they do not want to use traditional teaching methods and media types for their teaching but have fear of using new media types over the internet. The findings of this study also guide educators on the perspective that teachers who interact with new media types are more likely to explore educational benefits of these tools as a learning environment. Other teachers should be trained but not as formal boring training but a free time and activity based training that teachers can explore the benefits of these new media platforms.

Similar findings were observed the computer skill variable that teachers with higher computer skill were more favor of using interactive white boards for their lessons. These teachers may found the benefit of these media types after their technology trainings. It is also possible to make a conclusion from this finding that teachers who started to use such new media types have confidence to indicate that they are good at computer skills.

As a conclusion of this study, it is important to suggest that teachers need hands on training to be able to overcome troubles of actual classroom cases. In addition, As Bai and Ertmer suggest teachers should be trained when they are at university and therefore university faculty need these trainings first (2008). These trainings should not be limited to basic technology instruction but should be about using technology and other media types as tool or platform to enhance learning and improve interaction based the characteristics of learners, content and pedagogy method .

Disclosure Statement

No competing financial interests exist.

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