

Transforming Learning Through Digital Devices: Exploring the Role of the Digital Devices in Developing Learning for the Postgraduates

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Abstract

Digital devices are expected to help teachers and students learn and to write jobs with digital devices in particular in their teaching and evaluation practices. This study seeks to examine the teachers' and students' perceptions of the advanced uses of digital devices. This study is mixed methods research as the quantitative method and qualitative method. Therefore, in using mixed methods, a researcher using mixed tools for data collection and the mixed methods give high valid and useful data. The researcher will use a questionnaire developed by the research by looking at the literature to find the relevant themes. Moreover, 10 teachers were interviewed. Findings indicate that the majority of young students are higher in number than other age of students getting new information using digital devices. The majority of student opinions regarding digital devices are positive in getting opportunities in the learning process.

Key Words:

Gadgets,
Digital
Devices,
Communication,
Learning
Process

Introduction

Technologies in the classroom effectively engage students as “digital natives” for whom smartphones and digital devices are a way of modern life. Therefore, educators feel they must integrate digital teaching strategies. At the same time, many of the modern electronic devices that are introduced into classrooms lead to

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student's distraction and can even undermine learning. Moreover, the teaching methodology is the most important factor in the field of education, the teachers' and student's role is too important in this regard. These devices also have easy internet access. There were 14.58 million mobile cellular service subscriptions in Hong Kong, for instance, in 2011. Of the 14.68 million subscriptions, the total was 5 million (Lam & Duan, 2012). There is an interest, for example, recently in replacing textbooks with email Yuen, Cheung and Tsang, 2012).

Wang et al. (2009) also proposed that teachers and students might use mobile devices for instant communication. Cotton (2001) also examined a system that allows students to discuss teaching on mobile devices through text. On the other hand, students use the devices in the classroom for their own purposes comparatively freely for mobile devices. Salter (2010) has reported that students in many universities at the postgraduate level take out their own digital devices and use them for different purposes.

Objectives of the Study

There were the following objectives of the study:

- To explore the teachers' perceptions of the role of digital devices in developing classroom learning
- To explore the teachers' perceptions about the difficulties in using digital devices in developing learning in the classroom
- To explore the students' perceptions about digital devices in developing learning in the classroom
- To explore the students' perceptions about the difficulties in using digital devices in developing learning in the classroom

Research Questions

The study addresses the following research questions

- How do the teachers perceive the use of digital devices in transforming the learning process?
- How do the students perceive the use of digital devices in developing the learning process?
- How do the teachers perceive the difficulties in using digital devices in developing learning in the classroom?
- How do the students perceive the difficulties in using digital devices in developing learning in the classroom?

Significance of the Study

In the modern world, there is a need to get expertise in using digital devices. The

field of education has also been transformed and the ways to teach and learn have been changed and modified. Digital devices are playing a vital role in every field of education. In this electronic age, digital devices are less time consuming, effective and quick ways of interaction among students and teachers. Hence, this study may be significant for postgraduate students, teachers, supervisors, and also curriculum developers to enhance their awareness about the use of digital devices in the classroom. It is an innovative study and would contribute to students in their use of digital devices for learning and developing interaction with teachers. Moreover, it is anticipated that the also help teachers to make better use of digital devices for effective teaching.

Review of the Related Literature

Digital devices may an effective communication tool between teachers and students. The devices are used during learning in the classroom are tablet computers and handheld mobile devices smart-phones. These digital devices may have become a normal tool in tertiary education (Weaver and Nilson, 2005). Human beings in now a day are very modern and they are coming to adopt new styles of life which have the phenomenon of engaging in digital devices. The uses of digital devices are increased to the extreme line. The use of digital devices has a positive impact on the mass market. The culture of marketing is developed and enhanced by the use of digital devices and gadgets (Watkins, 2003).

Digital devices taught the students those types of skills which is much essential to grow and develop in this world. Practical digital devices such as notebook/tablet computers and handheld mobile devices such as smartphones become the norm for university education (Weaver & Nilson, 2005). The previous studies are also in favor of using digital devices in the learning procedure. The students with laptops are more interested in learning and they are more motivated to learning (Trimmel and Backmann, 2004). Moreover, classes are more satisfied with the laptops in their group projects (Driver, 2002). Student's involvements in the learning are increased and more satisfactory. Demb *et al.*, (2004) also suggested that digital devices have a positive impact on students learning habits. Students get academic success with the use of digital devices.

Digital devices develop the ability to get and apply knowledge where it is needed. Student's overall academics are good with the use of digital devices (Mackinnon and Vibert, 2002; Siegle and Foster, 2001). These devices helped to increase effective outcomes in learning. Another study of (Cabral,2011) showed that the mobiles ate effectively in learning that designed by the instructor. The mobiles helped the students to work independently or in a couple of groups to grow their listening, reading, and writing skills.

The findings of the extreme use of digital devices are no surprise in this era. It evaluates other research on human behavior and the use of digital devices. Furthermore, Ophir *et al.*, (2009) stated that “*society’s increasingly saturated media environment means more people are consuming more than one content stream at the same time*” Cobb *et al* (2010) described the system in favor of doing teaching practices through mobile devices.

Plowman and Stephen (2003) found that digital devices are used to make social relations and help to integrate with society meanwhile the child can use its potential, which is still little understood by adults. Plowman, McPake and Stephen's (2003) studies show that the disadvantages of digital devices in many categories. The first disadvantage is about socio-cultural development. The second disadvantage is the cognitive ability of the student. Students are endangering because their intellectual development is being under consideration while using digital devices.

Face to face interaction is behind the scene due to these devices, which is not beneficial for the growth and development of a student or a society (Erickson, 2012). The new generations are addicted to digital media like Facebook, Twitter, Whatsapp. The excessive usage of these devices causes psychological disorders among the students and different types of conflicts (Erickson, 2012). The higher amount of using digital devices affects the students' abilities in academia. Their presentation in academics and the overall growth of the students are affected by the excessive use of digital devices. Students are socially weak by the extra use of digital devices. This is because they are not having face to face conversations; due to this, they are weak in social behaviors (Young, 2004).

Research Methods used in this Study

The researcher conducted interviews and also gathered data from questionnaires. The purpose of the questionnaire was to discover the teachers’ and students' perceptions of digital devices in the classroom developing learning. A list of all the aspects of digital devices (particularly used in the Pakistani classroom) of the postgraduate level was pinched by reviewing the literature. The statements of the questions were constructed to developed the themes, benefits, and limitations of using digital devices in classroom learning. The questionnaire contained 4 sections, each focusing on one broad aspect related to the issues under consideration. The first section asks their opinions about think of your access to technologies in the classrooms. The second section asks their opinions about the typical use of modern technologies in the classrooms. The third section is about how modern technologies are used in regular biases. Finally, the fourth section seeks those difficulties you have experienced in using new technologies in the classrooms. The questionnaire was reviewed by the supervisor and some little changes made by her. The questionnaire was piloted with the 60 students at the

postgraduate level. The questionnaire was dispersed to the students at the postgraduate level by hand and the researcher told them the purpose and procedure of the study. The participant provided the proper time to read, understand, and answer the questions or statements given in the questionnaire. The participants showed that the language used in the questionnaire was very easy and understandable. The size of the questionnaire and length was also suitable. The return rate was also very good because it completed an adequate time. The participant took 20 minutes to complete it. Cronbach Alpha gave a value of 0.75. However, this means that the items are functioning in a fairly consistent way inside the test. The sample was taken from different departments like a business, science, education at the postgraduate level at the universities of public and private sectors. The sampling technique used for selecting the sample is convenience sampling because of the problem of time. Cohen () explains the significance of the convenience sampling in the survey-based study as: “*Captive audience such as pupils and teachers often serve as respondents in surveys based upon convenience sampling*” (p.88). Thus, convenience sampling was appropriate for choosing the 500 participants. Moreover, 10 teachers were interviewed.

A sample of 560 students participated in this study. The demographic makeup of the sample is described in the table.

Table 1. The Responses are Presented in the form of Percentage

Gender		Age		Residential area		Time		Type of University	
Gender	%	Year	%	Area of Study	%	Time	%	Type	%
Male	44	20-25	91	Education	26	Morning	70	Public	55
Female	56	26-30	05	Sciences	41	Evening	30	Private	45
		More than 30	04	Social sciences	33				

Demographic data show that female students are dominated by men. 20-25 age group students are dominating other age groups of students 26-30 and more than 30 years. Students studying science dominated. The proportion of Morning students exceeded that of Evening students. Students studying in the public university are dominating.

Section 2 explores about your access to Technologies

Tick one box on each line to show the equipment you can access

Table 2. Students’ Accessibility to the Devices

	I usually have access to the below devices			
	Daily	Weekly	Occasionally	Never
	%	%	%	%

Smartphone	74	2	8	16
Tablet (like iPad)	16	10	24	50
Laptop	47	15	20	17
Desktop	25	7	26	41

The above table show data that most students have access to a smartphone on a daily bases and 47 % of students have access to the laptop on a daily basis.

Section 3 Explores about Typical use of Modern Technologies

Tick one box on each line to show the typical frequency you use the equipment

Table 3. using the Devices

	I usually use the equipment ..			
	Daily	Weekly	Occasionally	Never
	%	%	%	%
Smartphone	69	5	10	16
Tablet (like iPad)	12	11	29	48
Laptop	44	16	20	20
Desktop	23	8	27	42

The above table shows data that most students are like to use the smartphone on a daily basis. 44 % of students use the laptop daily.

Section 4 Explores someway that modern Technologies are used

Table 4. Students' way of uses Devices

No	Statements	Yes	No
		%	%
1	Calculations using spreadsheets	33	67
2	Writing essays	46	54
3	Contacting my teacher(s)	59	41
4	Emails	69	31
5	Social contacts (using software like WhatsApp)	70	30

6	Social contacts (using Facebook, Twitter....)	69	31
7	Playing games on a smartphone	74	26
8	Reading electronic books	43	57
9	Downloading academic texts	43	57
10	Searching the internet for academic study materials	68	32
11	Receiving instructions from my teacher	67	33
12	Using productivity apps	47	53
13	Making academic notes on a tablet or laptop	60	40
14	Submitting essays	37	63
15	Seeking help from my teacher	57	43
16	Contacting academics overseas	42	58
17	Sharing academic ideas with my colleagues	58	42
18	Checking on course requirements	48	52
19	Google searching	79	21
20	Obtaining diagrams	51	49
21	Teaching myself new topics	57	43
22	Using software like Google Maps	53	47
23	Using statistical software	34	66
24	Recording lectures or meetings	51	49
25	Translating text	52	48
26	Collating references	33	67

The above table shows that most students' responses are in favor of calculations using spreadsheets are no. Mostly the student's responses are positive in the favour of Social contacts (using software like WhatsApp), Playing games on a smartphone, seeking help from my teacher, Google searching, Teaching myself new topics.

Section 5 Seeks out the difficulties you have Experienced in using new technologies. Here are 20 Possible Problems that might Arise as

Table 5. Students' Perceptions of the Problems in using the Devices

No	Statements	Major problem	Frequent Problem	Occasional problem	Not a problem
		%	%	%	%
1	There are inadequate IT facilities at my university/college	54	14	12	20
2	I find searching the internet unhelpful	28	20	20	32
3	Software like Word is too complicated to use well	16	15	19	50
4	My laptop keeps breaking down	25	14	22	39
5	Viruses worry me	40	15	26	19
6	The lack of reliable electricity is a major hindrance	50	19	10	21
7	I lack software that handles graphics well	28	26	19	27
8	Quality equipment is too expensive for me	36	22	17	25
9	I cannot find the information I want easily	25	25	23	27
10	There is a lack of easy-to-use apps	25	29	19	27
11	I find electronic communication makes things too impersonal	28	25	15	33
12	I am scared that I lose my work	33	20	19	28
13	There is a lack of easy-to-use software	24	19	24	33
14	I am concerned to reveal my ignorance when contacting my teachers	26	25	21	27
15	I do not have reliable internet access at home	19	23	15	43
16	The screen of my laptop is too small	21	10	13	56
17	I am not confident in the security of social data	36	19	16	29

18	There are too many fake emails and false information sources	48	14	13	25
19	Downloading is frustratingly unreliable	33	25	15	27
20	I do not have reliable internet access at college/university	47	16	13	24

The above table shows data that most students agree in the favor of inadequate IT facilities in university/college. Mostly students are in favor of major problems and are viruses. Most of the students are in favor of a lack of reliable electricity is a major hindrance. Most of the students are in favor of that they cannot find the information they want easily. Most students are in favor of there is a lack of easy-to-use apps. Most of the students are in the favor of Software like Word is too complicated to use well. Most students are in favor of that they find electronic communication makes things too impersonal. Mostly students are in favor of there are too many fake emails and false information sources.

Chi-square Tables

Table 1. Gender difference about I usually have access

Table 6. Students perceptions on the differences in the uses to the Devices

Items	Gender	Daily	Weekly	Occasionally	Never	χ^2	df	P
I usually have access	Male	48	18	67	109	9.45	3	P<0.02
	Female	41	35	68	165			
I usually have access	Male	130	29	52	31	10.98	3	P<0.02
	Female	132	55	60	62			
I usually have access	Male	72	9	75	86	18.20	3	P<0.00
	Female	67	30	71	139			
I usually use the equipment	Male	57	16	80	89	8.41	3	P<0.03
	Female	70	27	71	141			

Above table show that Female proportion is higher than male in the favor of usually have to access the technologies. P-value is less than 0.05 so the null hypothesis is not be accepted.

Table 2. Gender difference about

TABLE 7. GENDER DIFFERENCES IN THE USES TO THE DEVICES

Items	Gender	Yes	No	χ^2	df	P
Contacting my teachers	Male	163	79	13.57	1	P<0.00
	Female	160	149			
Emails	Male	178	64	3.93	1	P<0.05
	Female	203	106			
Social contact using software	Male	183	57	9.53	1	P<0.00
	Female	204	105			
Downloading academic text	Male	116	124	6.85	2	P<0.03
	Female	122	187			
Receiving instructions	Male	164	72	8.62	2	P<0.01
	Female	203	106			
Submitting essay	Male	77	165	5.01	1	P<0.02
	Female	127	182			
Contacting overseas	Male	117	125	6.49	1	P<0.01
	Female	116	193			
Google maps	Male	142	100	6.71	1	P<0.01
	Female	147	162			
Translating text	Male	136	106	9.02	3	P<0.02
	Female	148	153			
Collating references	Male	94	148	13.20	3	P<0.00
	Female	85	216			

The above table show data that the majority of the Female scores are higher than Male scores P-value show that the null hypothesis is not be accepted.

Table 3. Gender difference using

Table 8. Gender differences in the access to the Devices

items	Gender	NP	OP	FP	MP	χ^2	df	p
There are inadequate IT facilities at my university/college	Male	59	15	38	130	12.81	3	P<0.00
	Female	53	45	41	170			
My laptop keeps breaking down	Male	95	68	28	51	13.01	3	P<0.00
	Female	119	52	52	86			
Viruses worry me	Male	49	63	52	75	24.08	4	P<0.00
	Female	64	78	32	145			
The lack of reliable electricity is a major hindrance	Male	52	38	41	111	13.86	3	P<0.03
	Female	60	20	65	154			
I lack software that handles graphics well	Male	81	38	83	40	42.90	3	P<0.00
	Female	67	67	59	116			
Quality equipment is too expensive for me	Male	71	49	43	79	10.64	3	P<0.01
	Female	67	45	79	118			
I cannot find the information I want easily	Male	77	57	40	67	17.84	4	P<0.00
	Female	73	71	96	69			
I find electronic communication makes things too impersonal	Male	92	36	47	67	8.66	3	P<0.03
	Female	89	45	90	85			
I am scared that I lose my work	Male	85	42	44	70	11.52	4	P<0.02
	Female	71	62	64	112			
There are too many fake emails and false information sources	Male	72	36	20	114	8.50	3	P<0.03
	Female	63	36	42	145			

Above table show data that mostly the Male scores are higher than the Females. P-value is less than .05 so the null hypothesis is not be accepted. Male students perceive more difficulties than female students in using digital devices. Above table show data that younger age group students' ratio is higher than other age 26-30 years and more than 30 age group students. 20-25 group is higher in reporting the problems than the other groups. Also, the data that mostly the science students' ratio is higher than the Education and Social science students. The students in science perceive the role more positively than the other students in different departments. The majority of students perceive that downloading and internet

access is not easy for social science students.

Characteristics of Sample

The teachers were interviewed selected from different departments at university. The table represents that there are 5 male teachers and 5 female teachers. There is a different age group of teachers. In this table, the highest age group of teachers is 55-60 years and the lowest age group is 20-25 years. The majority of the teachers belong to 25-30 age groups. Further, the table shows that the highest qualification of the teachers is MPhil and Ph.D. Moreover, the table represents that the highest group of teachers teaching experience belongs to 20-25 years and the lowest is 1-5 years. The majority of the teachers belong to 1-5 years of teaching experience group. Further, there, the majority of teachers belong to public sector universities. There are the following themes from the interview responses are:

- Transforming learning through digital devices
- Advantages of digital devices
- Limitations of digital devices

There is a detail of each theme

Transforming learning through Digital Devices

The participants were asked about their perception of digital devices. It was noticed from the data the majority of the participants were fairly positive about the digital devices. Students and teachers use digital devices to share information. It was noticed from the data the majority of the participants used many digital devices for example Google.com, Academia.com. Teach Republic. They use different digital devices for preparing the lecture. Teachers use web-based technology's requirements. For example, T1 said about the perception of digital devices: The participants were asked about the uses of digital devices. Mostly teachers viewed that they use a digital device for a different purpose. They use a digital device for preparing their lecture and different assignment. They also use for sharing new knowledge about education. It is also helpful for getting information about research. They get new knowledge through gadgets about research and different subject. we can share easily information education from each other. The gadgets facilitate their learner process. T7 said about the use of digital devices as Modern technologies like digital devices provide identifiable educational advantages, such as greater access to information and more compelling presentations of that information. The participants' views show that the uses of these devices save time for both the students and the teachers. T9 articulated the use of gadgets as the use of digital devices and gadgets in class makes students like what they learn. These students are familiar with these digital devices because they use them in their daily life for educational purposes. The teachers' views show that the uses of these

devices make the study process easy and students know about the proper use of gadgets as T10 opinion is about the use of digital devices and gadgets. Through digital devices and gadgets are easy for students to learn new subjects. It can also support a rich learning environment and unlimited information. The views of participants show that digital devices very important for students because through these digital devices students learn new subjects and unlimited information.

Advantages of Using Digital Devices

These gadgets are very useful and also enhance the learning interest. These digital devices provide facilities for teachers to communicate with students and colleagues. Mostly teachers use digital devices for preparing lectures. Teachers were able to share their ideas by using them. For example, T2 mentioned the views of using digital devices. *These gadgets are very useful and also enhance the learning interest.* Teacher views show that gadgets have two perspectives one is positive and the other is negative but it depends on us that how we use. They share easily ideas about the study. Hence, the participants agreed that digital devices are very useful for study and research. We can say it is a study tool for sharing and getting information about the different subjects of science and arts it creates educational skills in both the teachers and students. Similarly, T5 said about the use of the digital device as *Use of electronic gadgets is not only helpful but also a Drive need for educational betterment.* The teacher viewed shows that digital devices and gadgets not helpful for teachers it also helpful for students and are also very helpful for educational betterment. We can share information and new researchable knowledge about any subject from each other easily.

Limitation in using Digital Devices

The participants were asked about the limitation of gadgets. Mostly teachers viewed the limitation of gadgets. They are two perspectives of gadgets one is positive and the other is negative. The participants were asked about their views of the digital device. This data shows that the majority of the participant has a positive attitude about the digital device. Teachers and students both use digital devices and gadgets to share information and communication. *The teachers' views show the digital device has limitations. if electricity is issued then we cannot use the device .in this situation all devices are helpless.* T4 said about the limitation of gadgets as I don't things there is any limitation. The participants were asked about the limitation of gadgets. The teacher viewed shows wi-fi and electricity must be smooth otherwise only relying on these gadgets some time realizes difficulties.

Not yet any limitation becomes these gadgets helpful not only students than teachers. Yes, there is a limitation of knowledge only, you can use it for specified organization policies.

Hence, the participant agreed that the limitation of gadgets is so low as T9 said *the excessive use of such devices can hamper a child's development. This can also lead to students forgetting the basics of studying.* Teacher views show that the overuse of digital devices is harmer for children. Students forget the book reading habits; *thus, it becomes very difficult to use an educational digital device.* Hence, the participants' views show that the use of gadgets is very expensive. Sometimes the internet has not available due to some software problems in this situation it becomes difficult to use a digital device.

Discussions

Female students in daily routine access more than males students. This finding is similar to (Samson, 2010) females are excessive use of digital devices than males. Mostly girls use Twitter and Facebook at a younger age. The majority of students agree with many digital devices are quick means to update knowledge. This finding is similar to Samson. (2011) students can get knowledge and share ideas by using digital devices. Hence, girls are more interested to use digital devices. The majority of the students were agreed to use digital devices to complete the assignments. These findings are similar Lenhart *et al* (2011) described that now a day's student uses digital devices frequently. Students use different digital devices to complete the assignment assigned by teachers and search the topics related to their studies. Students use it mostly to informed of the homework assigned by teachers. This finding is also similar to the findings from Lenhart *et al* (2011)) described that to enhance learning both students and teachers used different digital devices. Hence, digital devices facilitate students to complete assignments and formative assessment methods and searching using search engines.

With the use of digital devices, students get related information to complete the task assigned by teachers. The majority of students have positive views regarding the use of different digital devices like digital devices to increase and update their knowledge. Research findings contribute to previous research through Google site in education, statistical learning, and also computing environment enhances the ability of learning (Fitch, 2004; Stephens, 2005). Hence, digital devices facilitate students to update their knowledge. The majority of students have positive views regarding sharing information for an entire class. This finding is contributing to previous research Rainie (2012) and Taratino (2014) noticed that digital devices facilitate students to apply and work as teamwork with their peers. The students with laptops are more efficient in their work and they are more motivated to learn this finding is similar (Trimmel and Backmann, 2004). Hence, digital devices develop collaborative learning among students.

The majority of students were agreeing to the use of digital devices is helpful to contribute their educational research. Research findings contribute to previous research Hurlburt (2008) can be able the students to develop the class discussion

and developed motivation in learning. Hence, digital devices facilitate students in their educational research and developed different abilities in students that are beneficial for them. The majority of students have positive opinions about the use of digital devices that are supportive of students. This finding similar to Demb *et al.*, (2004) indicates that digital devices are supported for students to express themselves and take an active part in learning. The use of digital devices enhances creative learning among students. These devices helped to increase effective outcomes in teaching (Barak *et al.*, 2006). Hence, digital devices facilitate students to express themselves. The majority of students have positive responses regarding students feel nervous in the face to face communication and is similar to (Walsh, 2012; Cabral, 2011). Due to the extra usage of digital devices students lost their eating habits. These devices have negative impacts on youth. The bad impacts are shown from the last few years when their access is exceeded to the range. Students should know about these realities of drawbacks and they should cover all these by minimizing the use of digital devices similar to (Walsh, 2012).

Conclusions and Recommendations

Conclusions derived from the findings after discussions, from the data of students and teachers, digital devices provide better opportunities for learning outcomes and teachers convey responses to student academic activities. The majority of young students are higher in number than other age of students getting new information using digital devices. The majority of students' opinions regarding digital devices are there are opportunities in the learning process. The students learning level increases with regular responses from teachers. The majority of the students have positive opinions regarding digital devices plays a vital role in the educational area. The results of the analysis show that digital devices provide opportunities to share information for an entire class. By using digital devices develop different skills like communication, work within groups, inspiration, and socialist in students. On the other side, expensive devices generate hurdles for students, and lack of power, security issues, and extreme usage of devices generates complications of fitness for students. This study recommended the use of digital devices at the postgraduate level. This study also recommended that senior teachers should use digital devices. It is fruitful for them to adopt new techniques in teaching methodology. This study recommended that students need to learn more by using digital devices.

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