Journal of Educational Psychology and Pedagogical Sciences (JEPPS)
ISSN:2791-0393 (Print) eISSN: 2791-0407 (online)
Vol. 1, No. 2, (July-December 2021): 30-39
https://jepps.su.edu.pk/article/8

Role of Information Technology in the formation of academic attitude of Primary school students

Sameen Gul[1] *, Juliette Maarrawi[2], Farhat Abbas[3]

Abstract

The effectiveness of educational system and permanence of knowledge transmission has increased due to the integration of technological tools. It improved the student teacher relationship and augmented overall educational environment. The aim of this study was to find the effect of using technology tools on students' academic attitude and achievement in primary schools. The current study used stratified sampling technique to draw the sample. Total 500 male and female students of public primary schools of Sargodha district were the sample of this study. In each stratum we have taking 20% sample of primary public schools which include both Male and Female. This selected sample was specifically consisted on urban areas of these Tehsils. At third stage, primary public schools of these selected areas were selected randomly. A questionnaire was developed which comprising seven points Likert scale. The data was analyzed through descriptive, t-test, ANOVA, correlation and regression. Results showed non-significant difference between male and female with respect to academic attitude, however, a significant gender difference was found regarding the intrinsic motivation among primary school students. Hence it may be concluded that using technology tools, they got a direction to learn more effectively and improve their learning skills.

.

Keywords: IT Integration, stratified sampling, Academic attitude, technology tools.

1. Introduction

Technology provides inordinate help to mankind in managing and manipulating things. (Radder, 2008) It's a truth that technological gadgets improve the standards of education system. But on the same time, it also has some positive and negative aspects of using technology in every field of life. Education system has effectively enhanced the learning process through the digital integration. Resultantly improved the student teacher relationship and develop educational environment. Integration of technology also improves the note taking and study related material which provide by the teachers. (Hulya et al., 2016). Life style of the students has influenced by the multiple technology communication kits which changes people life style, by using laptops, tabs, TV, internet, computers and some other gadgets also included which used for different purposes. comparison between these studies is

[1] Researcher, Email: gull777@gmail.com
[2]Former faculty, Université Paul Valéry, Montpellier, France.
[3] Visiting faculty, Department of Education, University of Sargodha, Email:farhatabbas118@gmail.com

very difficult that which aspect take us to positively regarding excessive use of technology use or which led us to only negative aspects. but our focus is on the beneficial technological tools which used in the schools during lectures for developing better understanding in students. (Byun et al., 2017). Technological tools like smart phones, laptops and various other have dual effect on cognitive development among youngsters. (Shapley, 2011)

Technology spread all over the world and increase living standards of people which takes them to the upper level of facilities. It has a powerful impact on all field of life which is part of our daily doings. It became a usual thing to use technology in every work of our daily routine and especially it affects the most vulnerable group of humans who are children's. (Kalmus, 2014) The use of technology forming the student's attitude in education, using technology in education, it changes several classical teaching pedagogies and learning process. The class room learning gained the positive momentum due to the use of these technology tools. However, the side effects of excessive usage are also prevailing. To make our students better learner with sound personality is the need of time (Byun et al., 2018) A child probably does not know about these effects that's why they continue watching TV, computers, smartphones and other tools. But Parents and teachers could play a vital role to control the usage of technological tools by children in schools and home. Our children are growing up in front of TV screens, watching cartoons which affect their cognitive process. (Bener et al., 2011) Now a day's attention problem in students increased due to their diversion of interest in technology gadgets rather than their studies and home tasks. If pre-school children are spending quite a lot of hours per day in front of monitors and devices, it became a cause that how they behave and interact with their family members. Whether they just remain silent and in search of any gadget all the time or they are active child who spent his most of time in positive activities and playing with friends.

The constructivist theory refers to the transmission of learning through the use of technology tools because it enables students instantly learn about new inventions around the world. Through technology, it helps them achieve bigger goals. Our primary concern here is the student's academic attitude which changes when technology tools are used in their studies. Their positive attitude and behavior increase their academic achievement and is a good aspect of using technology in schools. Constructivism in particular enhances the learning process using technology because it enhances the education system in many aspects but the possibilities are both positive and negative. (Rockman et al, 2000).

2. Methodology

A descriptive study was conducted to evaluate the intensity of this problem in all public primary schools of Sargodha district of Punjab. In this study, mainly two variables were investigated, in which, one was the use of technology tools as independent variable and academic attitude of students as the dependent variable. The major objective of the study was to investigate the current situation that how information technology tools effecting the students in a way which forming their academic attitude in primary schools of public sector. The study was done in a planned and ordered way. For this purpose, a research tool was developed to find the role of information technology in the formation of academic attitude of primary school students. The study was delimited to the public schools of Sargodha district.

Sample

The current study used stratified sampling technique to draw the sample. Total 500 male and female students of public primary schools of Sargodha district were the sample of this study.

At first stage, three *tehsils* of Sargodha district were randomly selected as the sample through stratified sampling technique. These Tehsils were Sargodha, Kotmomin and Sahiwal. At the second stage, 20% sample of primary public schools as the homogenous strata from each selected tehsil, included both boys and girls schools situated in urban areas, were selected. From these schools, total 500 students were from these schools.

3. Research Instrument

A quantitative research tool was developed after the detailed literature review and that is used for the collection of data. A questionnaire was developed based on measurement scales comprising seven points Likert scale. The possible responses for statement were assigned coded as strongly agree=1, Agree=2, somewhat agree=3, Neutral=4, somewhat disagree=5, Disagree=6, and strongly disagree=7. This scale was used to measure the role of information technology in the formation of academic attitude of primary school students. This tool was divided into three main sections, which are; demographics, use of technology and academic attitude. In each section different indicators present the effect of using technology on academic attitude. At the end of this process, for triangulation, construct validity was ensured of developed scales which measures the role of information technology in the formation of academic attitude of primary school students.

4. Results

For data analysis, descriptive and inferential statistics were used. In descriptive statistics, frequencies and percentages of different variables were computed. In inferential statistics, the data were analyzed through t-tests, ANOVA and Regression analysis. The researcher collected various demographic information like, Grade, Gender, Age, School name, area from where respondent belong to, use of tools, internet use, using tools for subjects.

Following is given in the table 1, the bifurcation of the demographics of the respondents.

Table 1

Demographic information of respondents

Variables	Frequency	Percentage
Gender		
Male	310	62.0
Female	190	38.0
Age		
10-11	314	62.8
11-12	84	16.8
More than 12	102	20.4
Where do you live?		
City	230	46.0
Village	132	26.4
Town	138	27.6

In this table 1, frequencies and percentages for the variables grade; schools, gender, age, place, were calculated. Gender consists of two groups male and female students. Male student's frequency was 310 and female was 190. The percentage of male students were 62.0 and female students 38.0. And the fourth variable was consisted on age which distributed in

three groups 10-11, 11-12 and more than 12. The frequency of first age group 10-11 was 314 and second age group frequency 11-12 was 84 and third group of students of the age more than 12 years were 102. The next demographic variable was the place where they lived. This variable was distributed in to three groups; city, village and town. The total 230 students were belonged to city (46.0%), from village, there were 132 students (26.4%) and from town, there were total 138 students (27.6%).

Table 2

Gender differences in use of technology tools and attitude indicators

Variable	Male	Female	t-value
	Mean (SD)	Mean (SD)	
Use IT Devices	32.79 (7.99)	32.65 (8.85)	.190**
Student Engagement	6.96 (.395)	5.87 (.426)	1.39*
Active Learner	31.92 (11.1)	28.03 (9.61)	4.12*
Use Time	35.60 (8.16)	34.28 (7.84)	1.78**
Attitude	41.26 (10.87)	38.56 (10.86)	2.69**
Intrinsic Motivation	21.63 (5.95)	20.92 (6.29)	1.27**
Psychological Aspect	34.24 (5.97)	32.65 (5.35)	3.09*

In table 2, the gender differences between male and female students of use of IT devices in primary schools was computed, where mean score of male students was (M=32.79, SD=7.997) and female students was (M=32.65, SD=8.855), which showed non-significant difference between the boys and girls with respect to use of IT devices ($t = 0.190$, $p > 0.05$. Regarding the variable students' engagement, the table 3 showed mean score of male students was (M=6.963, SD=0.395) and female students was (M=5.874, SD=0.426) which was not found significant ($t = 1.392$), which shows both boys and girls were having same level of students' engagement. The mean score of 'being active learner', the descriptive statistics of male students (M=31.92, SD=11.1) and female students (M=28.03, SD=9.61) were found different. To check the significant difference between the mean scores of male students and female students as active learner, the t-value was found significant at 5% level of significance ($t = 4.121$, $p < 0.05$), which showed there was significant difference between male and female with respect to the variable active learner. The mean score of "time use", male students (M=35.60, SD=8.160) were found to spend more time on IT use as compare to the female students (M=34.28, SD=7.832), however t-value showed no significant difference between the mean scores of male students and female students in time used for IT devices. The P value ($t = 1.788$), which showed there was no significant difference between male and female with respect to use of time of IT devices at 5% level of significance.

The mean score of "academic attitude" of male students was (M=41.26, SD=10.87) and female students was (M=38.56 SD=10.86) which showed significant difference between the mean scores of male students and female students with positive attitude. The t-value (t =2.69) showed that there was significant difference between male and female with respect to academic attitude at 5% level of significance. The mean score of intrinsic motivation of male students was (M=21.63, SD=5.947) and female students was (M=20.92, SD=6.291) which showed non-significant difference between the mean scores of male students and female students with intrinsic motivation (t =1.267, p>0.05). The mean score psychological aspect of male students was (M=34.24, SD=5.970) and female students was (M=32.65, SD=5.354) which showed significant difference between the mean scores of male students and female students in psychological aspect (t =3.093) at 5% level of significance, which shows male and female were significantly different with respect to the variable psychological aspect.

Table 3

Group differences results with respect to age of academic attitude

		Sum of Squares	**df**	**Mean Square**	**F**
Attitude	Between Groups	1351.645	2	675.822	5.754**
	Within Groups	58377.97	497	117.461	
	Total	59729.62	499		
Intrinsic Motivation	Between Groups	228.035	2	114.018	3.107*
	Within Groups	18240.59	497	36.701	
	Total	18468.63	499		
Psychological Aspect	Between Groups	72.109	2	36.055	1.076
	Within Groups	16657.64	497	33.516	
	Total	16729.75	499		

Results in table 3 reflect that the analysis of various reveals significant differences in terms of results of groups of students with respect of age groups. In this table we use three main indicators of academic attitude. As table shows result of all variables, in first indicator it shows attitude differences between groups and within groups with respect to age group, Where (F=5.754*) is significant at p < .003. Hence, we concluded that there was statistically significant difference among students with respect to age group who develop a positive attitude with use of technology tools. The second indicator intrinsic motivation differences between groups and within groups with respect to age group, Where (F=3.107**) is significant at p < 0.046. Hence, we concluded that there was statistically significant difference with respect to age group among students who motivated and enjoy their work related to school or non-school with the use of different technology tools. The third variable psychological aspect differences between groups and within the groups with respect to age group, Where (F=1.076***) is not significant at P .342>.05. Hence we concluded that there was statistically not significant difference with respect to age group among students who faces different psychological problems at minor level with the use of technology tools. Regression analysis is more effectively define the relationship of variables so here we used the linear regression model to predict the relationship between the use of technology and how it formatted the students' academic attitude in schools. Here regression results shown below where it predicts the significance of use of technology on academic attitude.

Table 4

Model summary of Regression Analysis

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.628[a]	.394	.393	10.743

a. Predictors: use of technology

This table 4 provides the R and R^2 values. The R value represents the simple correlation and is 0.628 which indicates the high degree of correlation. The R^2 value indicates how much of the total variation in the dependent variable academic attitude, can be explained by the independent variable use of technology. In this case, 0.394% can be explained which is appropriate.

Table 5

Regression analysis of use of technology tool as the predictor

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	**(Constant)**	51.124	2.497		20.475	.000	46.218	56.029
	Use of Technology	.349	.019	.628	17.999	.000	.311	.387

Dependent Variable: Academic attitude

The table 5 describes if change in use of technology, then 0.349-unit change will be appeared in academic attitude. It means that student technology usage bring change in students' behavior and attitude which is positive as explored by the researcher in this study. Positive attitude towards their education affects them psychologically and also motivate them for further achievements in life. With using technology tools, they got a direction to learn more effectively and improve their learning skills.

5. Discussion

The results of different tests explained in different tables, along with every table comprehensive description and interpretation of results are given in order to explain the findings. The data was analyzed through descriptive, t-test, ANOVA, correlation and regression. The aim of this study was to find the effect of using technology tools on students' academic attitude and achievement in primary schools. Student's attitude and achievement affected with using tools in both positive and negative aspects. In data analysis these tests

will help us to find the significance of our decisions about the study objectives. On the basis of data analysis findings were drawn. The demographic information assists in the results and findings. Regarding gender of respondents the table indicates that 62% male and 38% female participants in the study. Three age levels of respondents are included in this study for comparisons, 10-11 year students were 62.8%, 11-12 year students were 16.8% and more than 12 year students were 20.4%. Also involve area for better understanding about the respondent's access to the technology tools that form where they belong, 46% students lived in city area, 26.4% lived in village and 27.6% were from Town.

The mean score of Attitude was 40.23(10.941) which showed that the maximum no. of respondent's responses agreed scale that there was developed a change in their attitude; it was true representative of our data. Next variable intrinsic motivation means score was 21.36(6.084) which showed that the maximum no. of respondent's responses agreed scale; it was true representative of our data. The mean score of psychological aspect was 33.64(5.790) which showed that the maximum no. of respondent's responses agreed scale; it was true representative of our data. The result had shown the gender differences between male and female students of academic attitude in primary schools. The results showed that Male students had more positive attitude in using these devices for different purposes that's why their attitude is more positive towards it than female students in school or home. The P value of two-tail significance was greater than >0.05 and the value of; (t =2.69), which shows there is insignificant difference between male and female with respect to academic attitude The result had shown the gender differences between male and female students regarding the intrinsic motivation in primary schools.

The results showed that Male students were more used these devices for different purposes in school or home which provide them intrinsic motivation as the enjoyment level during using the tools for study or non-study material. It basically increases the motivation level of students to continue study on IT devices. The P value of two-tail significance was greater than >0.05 and the value of; (t =1.267), which shows there is no significant difference between male and female with respect to intrinsic motivation. The result had shown the gender differences between male and female students regarding the psychological aspect in primary schools. The results showed that Male students were more used these devices during study in school or at home so IT tools, the male students were more affected psychologically. The P value of two-tail significance was greater than >0.05 and the value of; (t =3.093), which shows there is insignificant difference between male and female with respect to the variable psychological aspect. So this analysis of our main variable academic attitude shown that in various results of groups of students with respect to age group had significant relation with its variables.

6. Conclusion

Using technology was affecting the students' lifestyle in different ways, it engages student for study and also for other purposes. Children use many IT devices and spend a lot of their time on it, normally which devices they had easy access was T.V, computer, mobile phone, laptop and internet. Sometimes excessive use of these devices was harmful but at the same time these IT devices could be beneficial in many ways. (Kelly Shapley (2011) these technology tools engage the student in school and they become active learner which effect their academic attitude and achievement level. In academic attitude these technology tools had great impact on student attitude towards their study and it became a source of student intrinsic motivation which means it provide a level of enjoyment for student in education. It develops the student interest in subjects and they perform well in class and got high grades. But as far its negative impact it badly affects the student psychologically and children's face many problems. The

most vulnerable group of humans who are facing mostly these problems was children's, they had cognitive and personality issues due to over usage of technology tools which develop attitudinal problems. It develops the student interest in subjects and they perform well in class and got high grades. But as far its negative impact it badly affects the student psychologically and children's face many problems. The most vulnerable group of humans who facing mostly these problems was children's, they had cognitive and personality issues due to over usage of technology tools which develop attitudinal problems. (Ismail Kenar, (2013) IT tools had both aspects, positively it increases student performance level and they perform well in class. Academic outcomes of students were improved with the access of technology tools in schools and home. They became active learner with personalized learning experience through these technology-based environments. But it also gave academic failure to student due to excessive usage of these tools, they spend more time on watching videos on internet and playing online games which takes them towards the over usage of these devices. (Laura Pagani, 2016)

So, basically these information technology tools could be used for betterment of students in education which gave us a new direction towards the progressive life. It's our duty to develop a sense of responsibility in students that they shouldn't use these technologies for waste of time; they can develop a healthy environment of learning through these IT devices. From the investigation it was seen that manner of the understudies were certain as for technology. In any case, the habit of web is hurtful. The convoying proposals have to be considered over. It is sensible that guardians should set the timetable for their understudies for utilizing distinctive technology devices to keep away from negative factor among understudies. It is necessary that students should be provided healthy environment in schools which include different activities to develop their interest in education and also parents should be aware about their children's habits in using IT devices. It also needed those guardians to create feeling of inspirational mentality among their youngsters so their correspondence and collaboration level must be expanded.

7. References

Calvo, I., Cabanes, I., Quesada, J., and Barambones, O. (2018). A multidisciplinary PBL approach for teaching industrial informatics and robotics in engineering. IEEE Trans. Educ. 61, 21–28. doi: 10.1109/TE.2017.2721907

Darling-Hammond, L., Cook-Harvey, C., Flook, L., Gardner, M., & Melnick, H. (2018). With the Whole Child in Mind: Insights from the Comer School Development Program. Alexandria, VA: ASCD.

Darabi, A., Arrington, T. L., Sayilir, E. (2018). Learning from failure: A meta-analysis of the empirical studies. Educational Technology Research and Development, 66(5), 1101–1118.

Eviyanti, CY. Surya,.E. & Syahputra, E. (2017). Improving the Students' Mathematical Problem Solving Ability by Applying Problem Based Learning Model in VII Grade at SMPN 1 Banda Aceh Indonesia. International Journal of Novel Research in Education and Learning Vol. 4, Issue 2, pp: (138-144).

Gershenson, S., C.M.D, H., Lindsay, C. A., & Papageorge, N. W. (2017). The long-run impacts of same-race teachers. IZA Institute of Labor Economics. Retrieved from http://ftp.iza.org/dp10630.

Jeynes, W. H. (2017). A meta-analysis: The relationship between parental involvement and Latino student outcomes. Education and Urban Society, 49(1), 4–28.

LaForce, M., Noble, E., and Blackwell, C. K. (2017). Problem-based learning (PBL) and student interest in STEM careers: the roles of motivation and ability beliefs. Educ. Sci. 7:92. doi: 10.3390/educsci7040092

Lee, C. D. (2017). Integrating research on how people learn and learning across settings as a window of opportunity to address inequality in educational processes and outcomes. Review of Research in Education, 41(1), 88–111

Major, B., & Schmader, T. (2018). Stigma, social identity threat, and health. In The Oxford Handbook of Stigma, Discrimination, and Health. Oxford, UK: Oxford University Press.

Newhouse, C. (2017). STEM the boredom: engage students in the Australian curriculum using ICT with problem-based learning and assessment. J. Sci. Educ. Technol. 26, 44–57. doi: 10.1007/s10956-016-9650-4

Osher, D., Cantor, P., Berg, J., Steyer, L., & Rose, T. (2018). Drivers of human development: How relationships and context shape learning and development. Applied Developmental Science, 1. DOI: 10.1080/10888691.2017.1398650.

Pahor, A., Stavropoulos, T., Jaeggi, S. M., & Seitz, A. R. (2019). Validation of a matrix reasoning task for mobile devices. Behavior Research Methods, 51(5),2256-2267.teachers to understand a pupil's capability at various levels of education (Richmond, et al.,2006). Following is Sternberg's classification of patterns of thinking.

Sternberg, R. J. (Ed.) (2020). Cambridge handbook of intelligence (2nd ed.). New York: Cambridge University Press. A two-volume, extremely comprehensive review of intelligence.

Sternberg, R. J. (Ed.) (2020). My biggest research mistake. Thousand Oaks, CA: Sage. A text on the kinds of mistakes psychologists have made in their careers.

Sternberg, R. J., & Glueck, J. (Eds.) (2019). Cambridge handbook of wisdom. New York: Cambridge University Press. A comprehensive handbook of wisdom.

Sternberg, R. J. (Ed.) (2020). Human intelligence: An introduction. New York: Cambridge University Press. An edited textbook on intelligence.

Sternberg, R. J. (Ed.) (2020). Perspectives on hate: How it originates, develops, manifests, and spreads. Washington, DC: American Psychological Association. A timely book on hate and how it spreads.

Sintema, E.J., (2020). Effect of COVID-19 on the performance of grade 12 students: Implications for STEM education. *Eurasia Journal of Mathematics, Science and Technology Education, 16*(7), 1851.

Sternberg, R. J. (2020). COVID-19 has taught us what intelligence really is. Inside higher ed, https://insidehighered.com/views/2020/08/31/pandemic-has-proven-standardized-tests-dont-measure-whats-important-opinion. In this article, I argue that COVID-19 has taught us what intelligence really is, and it's not IQ.

Sternberg, R. J. (2020). Rethinking what we mean by intelligence. Phi Delta Kappan.https://kappanonline.org/rethinking-what-we-mean-by-intelligence-sternberg/In this article, I explain for educators the theory of adaptive intelligence.