Change in High School Students' Attitude regarding Perceived Usefulness of Online-Live-Teaching

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ABSTRACT

The objective of the study is to examine the effect of online-live-teaching on 7th grader' attitudes and difference of attitudes towards online-live-teaching before and after experiencing it. The TAM (Technology Acceptance Model) as framework was utilized. For the study a True Experimental Design, pre and post-test control group method was used. The purpose was to find out change of attitudes towards online-live-teaching. A government high school was selected in a rural setting having around 104 students in 7th grade at least as well as having electricity and internet connectivity. Three groups were formed and the participants were assigned to each group through simple random sampling using SPSS. The A & B were the Experimental groups while C was the Control group. In the experimental group A, the 7th graders received online-live-teaching for mathematics. In group B, the teacher taught online but an assistant was present in the class who assisted the students technically. The assistance included mic setting, screen setting, online class connectivity, checking the classwork and controlling the 7th graders. The control group was taught in a routine way. The school mathematics teacher was selected to teach in all three groups. The teacher used the prescribed 7th grade Balochistan textbook board mathematics. Before experiment the teacher, the assistant and 7th graders of experimental groups A & B were trained on how to operate an online class. The duration was one quarter (04 months the students of all three groups A, B & C were asked to fill the attitude rating scale regarding students' attitudes toward online-live-teaching before and after the experiment. The paired sample t-test was utilized. The 7th graders' attitudes towards online-live-teaching in group A and group B were improved while in group C the attitudes were remain same.

Background of the Study

Richardson, V. (1996) opined that attitudes are important in understanding one's thoughts and actions. The notion of attitudes got attention among researchers in the early 1950's and the early 1970's considerably. Rokeach (1966, p. 529) defined the term attitudes as it is relative continuing organization of views regarding something or condition inclining ones to respond or react in a preferable way. The learner in the present era of technology is highly motivated, capable and enthusiastic to use technology for solving problem (Prensky, 2010; Derbel, 2017). In the same way the learner learning needs and demands are genuinely entangled with emerging technologies have enhanced significantly overtime (Cameron, 2005 Lai & Hong, 2015). When it comes to online-live-teaching, it frees the teaching and learning process from the clutches of time and place and enhance the learning experiences of students by giving more freedom to express. Essentially, online-live-teaching is quite separate from the learning experiences during on-campus in a traditional way (Liaw, Huang, & Chen, 2007) Understanding students' attitudes for utilizing the online-live-teaching can help the instructor better prepare for the courses to be taught online. A number of studies have been conducted to measure the willingness of users as well as improving the systems for users. Moreover, the researchers also explored the relationship between user's attitudes and system use. According to Gong, M., Xu, Y., & Yu, Y. (2004)) that

attitudes have strong influence on users' willingness to utilize internet and technology based learning and improve academic performance.

Even though the notion of attitude is widely recognized as a critical ans important factor in the acceptance and usage of online-live-teaching. But still, according to Liaw (2002) and Smith, Caputi, & Rawstorne, (2000) no agreement on a single and universally accepted definition is available on the construct of attitude towards online-live-teaching. Though, Triandis (1971) proposes that there are three forms of attitude i.e. affective (feeling and emotions), cognitive (thinking, beliefs and perceptions), and behavioral (reactions and practices).

The studies carried out under the concept of attitude and the formation of attitude claimed that attitudes, beliefs and perceptions are interlinked and are used synonymously by the authors. Generally the attitudes are the likes and dislikes of one's towards something or object. (Siragusa & Dixon, 2008). During the last span, as the use of ICT is expanded in education, the studies about the user's attitudes have also been increased. Moreover, the studies about attitudes towards the ICT incorporation in teaching learning have also allured the attention of researchers. (Gasaymeh, 2009; Mishra & Panda, 2007; Wen & Shih, 2008). The characteristics and attitudes (dislike and dislikes of students) regarding online learning has been considered a significant element for the successful implementation of online learning in the developing countries. (Bhuasiri, Xaymoungkhoun, Zo, Rho, & Ciganek, asserted that positive attitudes regarding online learning maximize the acceptance, adoption and readiness among students which is a vital and contributing element. (Lim, Hong, & Tan, 2008; Selim, 2007). Similarly, Gong, M., Xu, Y., & Yu, Y. (2004) deliberated that this is very similar to positive assertiveness of students towards academic performance and its relationship with academic success. This is how the human beliefs and perceptions control the behavior and decisions about performance.

Students' attitudes towards online-live-teaching can be valuable in term of evaluating the effects of online-live-teaching. It can also be good in opening a new window to improve the functionality of online-live-teaching in the context of Pakistan especially in Balochistan.

Almahasees, Z., Mohsen, K., & Amin, M. O. (2021) asserted that the students showed that online classes gave them a new skill and knowledge. According to study it is easy to use and effective to improve their communication skills and confidence by asking question. Moreover, online learning helps them to access the learning material 24 hours asynchronously.

Research Objective

The study is conducted achieve the following objective.

1. To compare the attitudes of 7th grade students as perceived usefulness towards online-live-teaching before and after experiment

Hypothesis

There is no difference of attitudes of 7th graders as perceived usefulness towards online-live-teaching before and after the experiment

Theoretical Framework
Technology Acceptance Model (TAM)

For measuring the 7th graders' attitudes, this research has utilized the technology acceptance model (TAM) for the present study. The model is used because TAM is easy in application by different research situations. Chen, S. C., Shing-Han, L., & Chien-Yi, L. (2011) and Hsieh, P. J., Lai, H. M., & Ye, Y. S. (2014) claimed TAM fitness was more advantageous TAM has established ample support from researchers (Yang, 2005. It is evident that TAM is so

popular among researchers' for citing in measuring user technology acceptance. (Lee, Kozar and Larsen, 2013).

The Technology Acceptance Model. Source: Davis (1989) Technology Acceptance Model

Reduced Online-live-teaching Technology Acceptance Model

Perceived usefulness in this model is referred to the level of user's belief of utilizing technology and how the beliefs of users may enhance the performance of user. This study excluded the perception of easiness in this model as well as the system use because the paper is intended to assess the perceived usefulness only.

Research Design

For the study a True Experimental Design, pre and post-test control group method was utilized.

Students Attitude Rating Scale

A rating scale was utilized to compare the change of attitudes 7th graders towards online-live-teaching before and after the experiment. The scale consisted of Eight (08) questions about personal information about the students and twenty two (22) statements about students' attitudes towards online-live-teaching. This attitudes rating scale was developed by Gasaymeh, et.al (2017). To utilize attitude rating scale in this study, an email to the author for permission was sent and he had granted the permission.

The statements were adapted to suit the purpose of proposed study. The 7th graders rated the five likert statements from "1" 'strongly disagree' to "5" 'strongly agree'. The results of pilot testing were tested statistically through Cronbach alpha. For the students attitudes scale, the alpha coefficient for the 22 items is 0.745.

Analysis and Results

Table 1

Responses   of   students   on   domain   Perceived   usefulness   of   attitude   scale

|	Statements	A		B		C	
		Pre M(SD)	Post M(SD)	Pre M(SD)	Post M(SD)	Pre M(SD)	Post M(SD)
1	I believe that the use of online-live-teaching in my formal education is a good idea	3.09 (1.42)	3.74 (1.04)*	2.88 (1.47)	3.74 (0.96)*	2.85 (1.40)	2.91 (1.29)
2	I like to use online-live-teaching in my formal education	2.51 (1.56)	3.80 (1.02)*	1.76 (1.07)	3.76 (0.89)*	2.41 (1.13)	2.29 (1.14)
3	The use of online-live-teaching in my formal education will provide me with a lot of enjoyment	3.03 (1.46)	3.66 (1.16)*	2.47 (1.50)	3.74 (0.93)*	3.15 (1.40)	2.79 (1.49)
4	If it becomes available I would like to use online -live-teaching in my formal education	2.71 (1.54)	3.77 (1.14)*	2.62 (1.44)	3.85 (0.89)*	2.68 (1.20)	3.03 (1.27)
5	The use of online-live-teaching in my formal education helps me organize my learning better(	2.77 (1.50)	3.43 (1.27)	2.68 (1.09)	3.41 (1.13)*	2.71 (1.19)	2.85 (1.11)
9	The use of online-live-teaching in my education would increase my productivity in my coursework	3.37 (1.17)	3.66 (1.14)*	2.74 (0.71)	3.91 (0.90)*	2.79 (1.30)	2.79 (1.27)
10	Overall, I would like to use online-live- teaching education	3.06 (1.51)	3.66 (1.03)*	2.97 (1.53)	3.41 (1.40)	3.35 (1.15)	3.00 (1.35)
14	I believe that online learning gives me the opportunity to acquire new knowledge	3.74 (1.42)	3.43 (1.17)	3.21 (1.51)	3.44 (1.05)	2.88 (1.49)	2.44 (1.42)
15	I believe that online-live-learning enhances my learning experience	3.86 (1.52)	3.43 (1.09)	3.24 (1.42)	3.59 (0.89)	3.09 (1.16)	2.85 (1.31)
17	Online-live-teaching increases the quality of learning because it integrates all forms of media	3.54 (1.67)	3.29 (1.27)	3.03 (1.47)	3.88 (0.95)*	3.18 (1.38)	3.00 (1.44)
19	I can keep myself on track and on time during online-live- teaching	3.29(1.74)	3.74(1.17)	2.32(1.65)	3.79(1.15)*	2.76(1.46)	2.44(1.33)
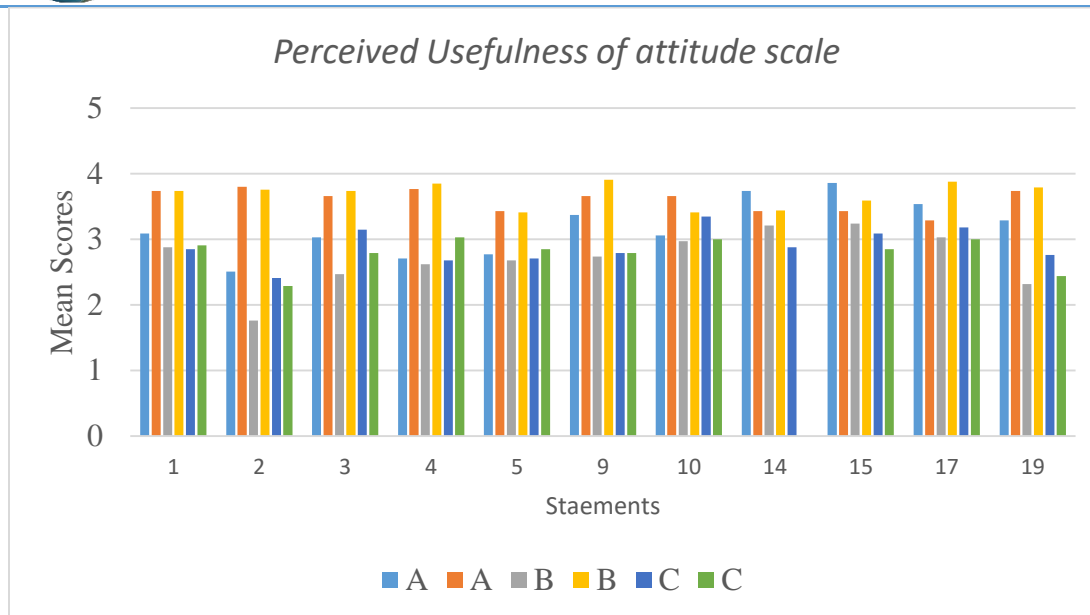
Table shows comparison of students' Perceived usefulness of attitude of Groups A, B, C. Analysis of Variance (ANOVA) was conducted to compare students' Perceived usefulness of attitude of Groups A, B, C. Results reflect that there was statistically significant difference on statement "I believe that the use of online-live-teaching in my formal education is a good idea" in pre-test and post test scores of group A, B.   The mean score of pre-test (Mean=3.09, SD=1.42) was less than mean scores of post-test (Mean=3.74, SD=1.04) of Group A. Similarly, The mean score of pre-test (Mean=2.88, SD=1.47) was less than mean scores of post-test (Mean=3.74, SD=0.96) of Group B. Results reflect that there was no statistically significant difference on statement "I believe that the use of online-live-teaching in my formal education is a good idea" in pre-test and post test scores of group C.

Table shows comparison of students' Perceived usefulness of attitude of Groups A, B, C. Analysis of Variance (ANOVA) was conducted to compare students' Perceived usefulness of attitude of Groups A, B, C. Results reflect that there was statistically significant difference on statement "I like to use online-live- teaching in my formal education" in pre-test and post test scores of group A, B. The mean score of pre-test (Mean=2.51, SD=1.56) was less than mean scores of post-test (Mean=3.80, SD=1.02) of Group A. Similarly, The mean score of pre-test (Mean=1.76, SD=1.07) was less than mean scores of post-test (Mean=3.76, SD=0.89) of Group B. Results reflect that there was no statistically significant difference on statement "I like to use online-live- teaching in my formal education" in pre-test and post test scores of group C.

Table shows comparison of students' Perceived usefulness of attitude of Groups A, B, C. Analysis of Variance (ANOVA) was conducted to compare students' Perceived usefulness of attitude of Groups A, B, C. Results reflect that there was statistically significant difference on statement "The use of online - live-teaching in my formal education will provide me with a lot of enjoyment" in pre-test and post test scores of group A, B. The mean score of pre-test (Mean=3.03, SD=1.46) was less than mean scores of post-test (Mean=3.66, SD=1.16) of Group A. Similarly, The mean score of pre-test (Mean=2.47, SD=1.50) was less than mean scores of post-test (Mean=3.74, SD=0.93) of Group B. Results reflect that there was no statistically significant difference on statement "The use of online -live-teaching in my formal education will provide me with a lot of enjoyment" in pre-test and post test scores of group C.

Table shows comparison of students' Perceived usefulness of attitude of Groups A, B, C. Analysis of Variance (ANOVA) was conducted to compare students' Perceived usefulness of attitude of Groups A, B, C. Results reflect that there was statistically significant difference on statement "If it becomes available I would like to use online -live-teaching in my formal education" in pre-test and post test

scores of group A, B. The mean score of pre-test (Mean=2.71, SD=1.54) was less than mean scores of post-test (Mean=3.77, SD=1.14) of Group A. Similarly, The mean score of pre-test (Mean=2.62, SD=1.44) was less than mean scores of post-test (Mean=3.85, SD=0.89) of Group B. Results reflect that there was no statistically significant difference on statement "If it becomes available I would like to use online -live-teaching in my formal education" in pre-test and post test scores of group C.

Table shows comparison of students' Perceived usefulness of attitude of Groups A, B, C. Analysis of Variance (ANOVA) was conducted to compare students' Perceived usefulness of attitude of Groups A, B, C. Results reflect that there was no statistically significant difference on statement "The use of online-live- teaching in my formal education helps me organize my learning better" in pre-test and post test scores of group A. Results reflect that there was statistically significant difference on statement "The use of online-live- teaching in my formal education helps me organize my learning better" in pre-test and post test scores of group B. The mean score of pre-test (Mean=2.68, SD=1.09) was less than mean scores of post-test (Mean=3.41, SD=1.13) of Group B. Results reflect that there was no statistically significant difference on statement "The use of online-live- teaching in my formal education helps me organize my learning better" in pre-test and post test scores of group C.

Table shows comparison of students' Perceived usefulness of attitude of Groups A, B, C. Analysis of Variance (ANOVA) was conducted to compare students' Perceived usefulness of attitude of Groups A, B, C. Results reflect that there was statistically significant difference on statement "The use of online-live- teaching in my education would increase my productivity in my coursework" in pre-test and post test scores of group A, B. The mean score of pre-test (Mean=3.37, SD=1.17) was less than mean scores of post-test (Mean=3.66, SD=1.14) of Group A. Similarly, The mean score of pre-test (Mean=2.74, SD=0.71) was less than mean scores of post-test (Mean=3.91, SD=0.90) of Group B. Results reflect that there was no statistically significant difference on statement "The use of online-live- teaching in my education would increase my productivity in my coursework" in pre-test and post test scores of group C.

Table shows comparison of students' Perceived usefulness of attitude of Groups A, B, C. Analysis of Variance (ANOVA) was conducted to compare students' Perceived usefulness of attitude of Groups A, B, C. Results reflect that there was statistically significant difference on statement "Overall, I would like to use online-live- teaching education" in pre-test and post test scores of group A. The mean score of pre-test (Mean=3.66, SD=1.51) was less than mean scores of post-test (Mean=3.66, SD=1.03) of Group A. Results reflect that there was no statistically significant difference on statement "Overall, I would like to use online-live- teaching education" in pre-test and post test scores of group B, C.

Table shows comparison of students' Perceived usefulness of attitude of Groups A, B, C. Analysis of Variance (ANOVA) was conducted to compare students' Perceived usefulness of attitude of Groups A, B, C. Results reflect that there was statistically significant difference on statement "I believe that online learning gives me the opportunity to acquire new knowledge" in pre-test and post test scores of group A, B, C.

Table shows comparison of students' Perceived usefulness of attitude of Groups A, B, C. Analysis of Variance (ANOVA) was conducted to compare students' Perceived usefulness of attitude of Groups A, B, C. Results reflect that there was statistically significant difference on statement "I believe that online-live- learning enhances my learning experience" in pre-test and post test scores of group A, B, C.

Table shows comparison of students' Perceived usefulness of attitude of Groups A, B, C. Analysis of Variance (ANOVA) was conducted to compare students' Perceived usefulness of attitude of Groups A, B, C. Results reflect that there was statistically significant difference on statement "Online-live-teaching increases the quality of learning because it integrates all forms of media" in pre-test and post test scores of group B. The mean score of pre-test (Mean=3.03, SD=1.47) was less than mean scores of post-test (Mean=3.88, SD=0.95) of Group B. Results reflect that there was no statistically significant difference on statement "Online-live-teaching increases the quality of learning because it integrates all forms of media" in pre-test and post test scores of group A, C.

Table shows comparison of students' Perceived usefulness of attitude of Groups A, B, C. Analysis of Variance (ANOVA) was conducted to compare students' Perceived usefulness of attitude of Groups A, B, C. Results reflect that there was statistically significant difference on statement "I can keep myself on track and on time during online-live- teaching" in pre-test and post test scores of group B. The mean score of pre-test (Mean=2.32, SD=1.65) was less than mean scores of post-test (Mean=3.79, SD=1.15) of Group B. Results reflect that there was no statistically significant difference on statement "I can keep myself on track and on time during online-live- teaching" in pre-test and post test scores of group A, C.

Table 2

Comparison of Perceived Usefulness Pre-test Score and Perceived Usefulness Post-test Scores of Study groups

	Perceived Usefulness Pre-test		Perceived Usefulness Post-test			
Group	Mean	SD	Mean	SD	t	P
A	3.18	0.87	3.48	0.55	-2.35	0.024
B	2.72	0.63	3.50	0.51	-5.79	0.000
C	2.90	0.56	2.78	0.53	1.11	0.273

Table 2 shows summary of results of the Paired Samples T-Test. T-test was conducted to find statistical significant difference in the 7th graders' perceptions of Usefulness Pre-test and Post-test Scores of the Experimental groups A, B and control group C. Results reflect that there was statistically significant difference in Perceived Usefulness Pre-test mean score and Post-test mean Scores of Experimental group A (t=-2.35, p=.024).   The mean score of Perceived Usefulness pre-test (Mean=3.18, SD=0.87) was less than mean scores of post-test scores (Mean=3.48, SD=0.55) of Group A. There was statistical significant difference in the 7th graders perceptions of Usefulness Pre-test and Post-test Scores of Experimental group B (t=-5.79, p<.001). The mean score of Perceived Usefulness pre-test (Mean=2.72, SD=0.63) was less than mean scores of post-test scores (Mean=3.50, SD=0.51) of Group B. No statistical difference was found significant in Perceived Usefulness Pre-test mean score and Post-test Scores mean score of the Control group C (t=-1.11, p=0.273).

Findings

1. Results reflect that a statistical significant difference was found in Perceived Usefulness Pre-test and Post-test Scores of the Experimental group A (t=-2.35, p=.024). The mean score of Perceived Usefulness pre-test (Mean=3.18, SD=0.87) was less than mean scores of post-test scores (Mean=3.48, SD=0.55) of Group A. The mean score of Perceived Usefulness pre-test (Mean=2.72, SD=0.63) was less than mean scores of post-test scores (Mean=3.50, SD=0.51) of Group B.
2. There was no statistically significant difference in Perceived Usefulness Pre-test and Post-test Scores of study group C (t=-1.11, p=0.273).

Conclusion

The 7th graders indicated that use of online-live-teaching is good and beneficial in their formal education. It was also pointed out by the students that use of online-live-teaching is easy to use. They feel more confident using online-live-teaching for their learning purpose. Similarly, they showed their interest if they are provided to study other courses via online-live-teaching. Together these reactions after experiment create positive attitudes as perceived use of ease towards online-live-teaching. Improving attitudes towards online-live-teaching for enhancing their knowledge and skills constitute their perceived usefulness in this study. Therefore, it may be concluded that the students' attitudes got improved and are positive as perceived usefulness reactions support the use of online-live-teaching in educational setting in Balochistan.

After experiencing online-live-teaching the students attitudes were also improved and they were very positive to adopt. This notion indicate the students of Baluchistan are also ready to adopt online-live-teaching.

Discussions

As Cakar (2018) stated that intents of users are influenced by the users' positive attitudes. Therefore the intents of the users are key to develop attitudes. Pazvant (2017) established in his study that there is a relationship between intention and attitude and this relation is influenced by the perceived usefulness. Davis (1993) the founder of TAM asserted that the attitudes of user towards technology turned into behavior when the perceptions of usefulness and ease of use is improved and motivate the user to accept and adopt the technology. Here in this study, the point of perceived usefulness and use of ease are pivotal to attract the attention by improving their knowledge and skills. In this study a conducive setting was created for accepting and adopting online-live-teaching with the students' assertiveness that it is useful and easy to use. So it can be concluded that students will be enabled to use online-live-teaching by developing positive attitudes in their formal education.

An extensive literature body indicated that students perceived usefulness is important features for accepting technology in the educational setting. Usluel, Y. K., & Mazman, S. G. (2010) also confirmed that usefulness and ease of use are the important factors that contribute in forming the acceptance of online-live-teaching in the context of formal education. Moreover, these factors are significant in developing attitude towards technology. Further Lee, C., & Coughlin, J. F. (2015) also identified the features of adopting and accepting technology for learning purpose in a survey and concluded that usability, accessibility and productivity are determinants for acceptance and adoption of technology. The results reflect that the score of attitudes was increased in the post-test of both experimental group A and B but no improvement in the attitudes of group C was not observed in post-test.

Recommendations

Therefore following recommendations are made as;

1. In schools where the infrastructure and facilities are available in schools of Balochistan there is need to activate the exiting mechanism to avail online-live-teaching without any cost.
2. Accessibility to education in Baluchistan in the far flung areas can be possible with online-live-teaching.
3. The schools where the subject teachers are not available can benefit from online-live-teaching by connecting with subject specialists.
4. More than one school or class may be connected via online-live-teaching to save time, cost and energy of teacher.

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