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# Measuring the Attitude of Pre-Service Teachers towards the use of Computer in Mathematics at University Level

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**Abstract:** *Integration of computers in teaching-learning has been a positive development in the field of education. However, there is a dire need of knowing the use of computers in teaching. Therefore, it is necessary to study the attitude of pre-service teachers related to the use of computers in instructional practices of Mathematics. The current study aims to explore the attitudes of pre-service teachers towards the use of computer in teaching Mathematics. A quantitative approach was used within it descriptive cross-sectional survey research design was adopted. The sample of present the study consists of (n=111) pre-service teachers of teacher training colleges. The reliability of the study was found as Cronbach α=.778. The results revealed that the pre-service teachers have an encouraging attitude towards the usage of computer in Mathematics. Overall, attitudes of pre-service teachers were supporting the idea of technological integration in Mathematic.*

**Key Words:** Attitude, Pre-Service Teachers, Use of Computers in Mathematics, Universities, Pakistan

## Introduction

In today's contemporary modern society, the rapid development of science and technology requires a change in current settings and practices of all spheres of human life. This change benefits the implementation of everyday tasks, which alternatively help in social development like; production, social relation and education. For dealing with the challenges of the development of science and technology, change in the education sector is very much important as well as necessary (Lawrence & Tar, 2018). Education plays a vital role in the holistic development of society. Thus, technological developments are very hard to view as a separate field from the education system. To produce high-quality work, competent teachers and intelligent students, the education system must be updated with technology innovation. Also, the integration of technology in the classroom technology has been increased in the education sector. That is why the integration of technology in education challenges teacher for successful teaching. Information Communication Technology (ICT) in education is complex and challenging matter (Şahal & Ozdemir, 2020). It is not just limited to equipping a classroom with computers, projectors and the internet, but it must be integrated in a way that promotes quality instructional practices and create an engaging environment for quality education (Gulbahar & Guven, 2008). Consequently, the use of technology in education has moved teaching approaches from traditional to a modern one. Educational usage of computers allows teachers to design the teaching-learning process in a way that focuses on individual interest level, needs and learning capacity. Similarly, learning through a computer is attractive for students because of its interactive communication style and visualization of concepts. It maintains the curiosity of students, which make students exchange ideas quickly and

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acquire knowledge with fun (Farjon, Smits & Voogt, 2019; Rackov, 2011).

According to Şahal and Ozdemir (2020), computers play a significant and prominent role in the instructional practices of Mathematics. Computers are viewed as an influencing power for the evolution of Mathematics education concerning development (Wiest, 2001). Research suggests three ways in which technology is transforming the nature of Mathematical instructional practices. First, it is decreasing in the importance of some mathematics skills, like time-consuming paper-pencil computations. The conceptual representation of Mathematics concepts like long division and graphical representations can be enhanced by the use of a computer. Secondly, it is the educational ideology that suggests teachers use the computer for the enhancement of their pedagogical practices in Mathematics. For example, while including a computer in pedagogical strategies, the teacher can visually as well as contextually represents the abstract concept of Mathematics. For instance, the use of computer-based simulation can help teachers to give students interactive opportunities to understand the complex abstract concept. The third and most important way is the use of computer for complex topics and skills. Data analysis is the main example. Internet and some Mathematical software provide access to information that combines the usage of data-analysis tools, computerized graphs and tables. It helps teachers and students to collect, represent, analyze and interpret data. Together these three ways impact the content, curriculum and instructional practices, thinking and understanding of Mathematics (Rind & Mughal, 2020; Van de Walle, 1998). Moreover, Bos (2009) suggests the usage of technology with appropriate pedagogical content knowledge in the Mathematics classroom help teachers to improve the students' achievement. Furthermore, he claims that problem-solving strategy combined with technology in Mathematics develops deep conceptual learning. The use of computer in the classroom setting creates a print-rich environment, which is good for visual learners. It provides students with a variety of visual presentation with the opportunity to create and alter the form of representation. In addition, it develops skills of understanding the virtual environment and using that understanding in the real world. Similarly, The National Council of Teachers of Education affirms that in 21-century technology is a necessary tool for Mathematics Education. Schools must guarantee the maximum strategical usage of technology by students for the development of interest, understanding and proficiency in Mathematics (Naja, 2018)

The productive classroom implementation of the use of computer is the responsibility of the teacher. Usually, the teacher is a significant key to transform the beliefs and values of students towards the use of a computer. Understanding teacher's views about biases and stereotypes regarding the use of a computer is very much important. Also, it is very much necessary to recognize the factors that facilitate teachers to utilize a computer in a positive way (Teo, 2008). Moreover, teachers' attitude towards the use of computer is very much important. Research provides evidence to claim that the rate of usage of computer in the setting classroom is directly related to the attitudes of teachers to use computers. For instance, if teachers view the computer as a powerful tool to improve the Mathematical thinking of students, then they will develop the interest of student towards the computer. The rate of success of student learning with a computer is reliant on the teacher's willingness, beliefs and attitude to integrate computer in teaching (Saylan, Onal & Onal, 2018; Teo, 2006). When students get appreciation from the teachers' attitude, then they will become able to accept the usage of technology in the classroom. It will also help teachers to impart education through technology, which is the need of the modern era (Teo, 2008).

## Problem Statement

As a developing country, Pakistan has designed a national educational policy that promotes technology in education. The National curriculum of Mathematics in Pakistan highlights the importance of educational technology for all grades. It promotes the use of calculator and computer for the expansion of problem-solving and analytical skills among students (Rind & Mughal, 2020; Ministry of Education, 2006). The Government of Pakistan is investing a huge amount of money in the development of computer labs in school and colleges. Mostly in urban areas of Pakistan have computers in schools. However, the data or research about the rate of effective

usage of computer in the Pakistani classroom context is still missing (Ismail, Jogezai & Baloch, 2020). Moreover, the teacher education program in Pakistan is also transforming. The aim of the new teacher education program is to enable future teachers for productive teaching with technology. The teacher education programs have included courses of technology to equip teachers with technological skills and expertise so that they can assimilate technology into their instructional practices. It proves that an updated teacher education program is providing an opportunity for pre-service teachers to advance their competencies in ICT (Bahadur et al., 2020). For the usage of ICT in lessons, the Ministry of Education in Pakistan has designed ten standards for the professional development of the teacher. The seventh standard focuses on the use of ICT in the classroom (Ministry of Education, 2009). The present situation in Pakistan requires pre-service teachers to utilize computers while delivering lesson online. In the current situation of the pandemic, the usage of computers for the purpose of teaching and learning has been increased around the world.

Research studies suggest that the change in the pedagogical practices of teachers from the traditional drill-practice method to the computer-oriented task must be introduced in a teacher education program to prepare better teachers for better education. Throughout teacher education programs, pre-service teachers are very enthusiastic about using a computer in their future teaching. Pre-service teachers also neglect the reality of barriers to technology use in teaching (Bahadur et al., 2020; Sedega, Mishiwo, Awuitor, & Nyamadi, 2018). In recent years, the developed countries, as well as developing countries, are moving have been integrating technology in the educational settings. However, developing countries like Pakistan have not progressed much due to scarcity of resources and lack of trained professional personnel. Although there are various studies conducted in the context of ICT integration in schools, yet there is no significant research study conducted to explore the pre-service teachers' perceptions, skills, competencies, ability and attitude to use a computer in teaching Mathematics (Khokhar & Javaid, 2016). Moreover, there are not many research studies conducted which measure the attitudes towards the use of ICT in Mathematics Education in Pakistan. Hence, it is very much important to know about pre-service teacher's attitude towards the use of computers in the Mathematics classroom. Therefore, recognizing the need to explore this area, the current study aims to measure the attitude of pre-service teachers towards the use of computer in Mathematics in the context of Sukkur, Sindh, Pakistan. It is also not known whether pre-service teachers are able enough to use novel technological methods or not in the mathematics classroom.

## Research Objective

Considering the current problem, the objectives of the study were:

1. To identify the overall profile of pre-service teachers towards the use of computers in Mathematics.
2. To find out the relationship between sub-attitudes and overall attitudes of pre-service teachers towards the use of computers in mathematics
3. To measure the attitude of female and male pre-service teachers towards the use of computer in Mathematics.

## Research Question

To achieve the objectives of the research, the questions mentioned below have been answered:

**RQ1:** What is the overall profile of pre-service teacher attitude towards the use of computer in Mathematics?

**RQ2:** What is the relationship among pre-service teachers' sub-attitude (Affective component, perceived usefulness, Perceived Control, Behavioral intention) and overall attitude to use a computer in Mathematics?

**RQ3:** Is there any gender difference among male and female pre-service teachers' attitude towards the use of computers in mathematics?

## Research Hypotheses

Based on the objectives and research questions, the following null hypothesis was formulated to test the variables

**$Ho_1$:** There is no significant relationship among pre-service teachers' sub attitude (affective component, perceived usefulness,

perceived control, behavioural intention) and overall attitude towards the use of computer in mathematics.

**$Ho_2$:** There is no significant difference between the female and male pre-service teachers to use a computer in Mathematics.

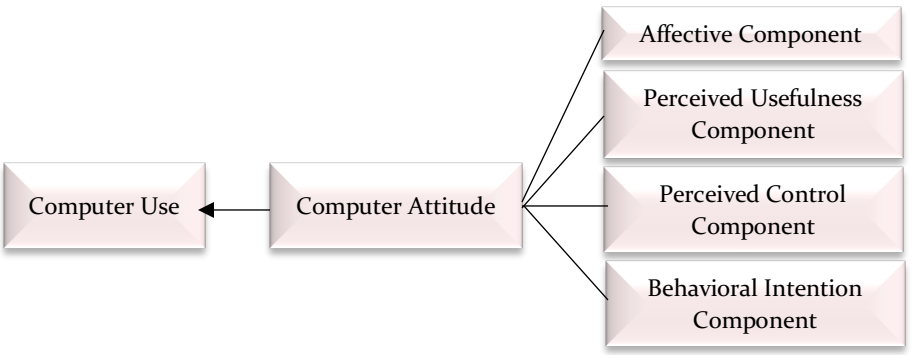
## Literature Review

Only equipping a classroom is not enough for technological development because it will not guarantee the integration of technology in the classroom without the strong inclination of teachers and students to use a computer (Ismail, Jogezai & Baloch, 2020). The attitude of pre-service teacher about the computer is fundamental; it provides the measuring outcomes of the usage of computer in the classroom. Attitude highlights the level of early acceptance of computer in the classroom and the future behaviour regarding the usage of computer (Farjon, Smits & Voogt, 2019; Sedega et al., 2018). Supporting the idea, Hunangf & Liaw (2005) claim that for the productive classroom usage of computers, attitude is a main and top of the list factor.

Attitude comprises of different dimensions, constituting different sub-attitude. The main sub-attitude is the affective component. It deals with feelings, like mood and dispositions towards the use of computer in teaching (Marbán & Mulenga, 2019; Sabricoban, 2013). The affect components measure the level of confidence, willingness, self-confidence and appeal to utilize the computer in education. The high level of anxiety and lack of confidence regarding the use of the computer, not allow educators to effectively utilize the computer. Usually, teachers use the computer only to maintain student's record. They do not take part in a paradigm shift to use the computer to develop higher-order thinking among students (Yildirim, 2000).

One example of sub-attitude is perceived usefulness (Rovai & Childress, 2002). A study by Lam (2000) proves that usually teachers do not use the computer in the classroom or fail to use the computer. The failure is misunderstood as techno-phobic, but in reality, the lack of understanding or doubts on how to use a computer in the classroom causes the failure of integration of technology in the classroom. So, the teacher should be familiar with the usage of computer concerning learning. In addition to perceived usefulness, past researches suggest that perceived control is a fundamental sub-attitude for determining the attitude of educators towards the use of a computer. Perceived control can be viewed as an ability to deal with the command of a computer as well as the capacity to solve the problem of a computer. In addition, behavioural intentions also design the overall attitude of educators to use a computer in the classroom (Sabricoban, 2013). Moreover, the gender factor also influences the attitude of educators to use a computer. Mostly in Mathematics, females show the behaviour of resistance. When Mathematics is combined with a computer, the level of resistance increases. However, the impact of gender factors varies from context to context. There is no fixed impact of gender on attitude towards computer (Sadik, 2006).

The model of Selwyn (1997) on computer attitude suggests that the rate of classroom usage of computer depends upon the educator attitude towards the use of the computer. The attitude is made up of the affective component, Perceived useful component, perceived control component and behavioural intention component. The current study has also used the Selway model (1997) to guide the findings of the study.



This study follows this model with the integration of the teaching of Mathematics. Research on Mathematics supports the idea of Selwyn. It claims that for the effective classroom usage of computer in mathematics, a teacher's readiness is the basic component. Readiness to utilize a computer is usually derived from the attitude to use the computer. In Mathematics, perceived usefulness and perceived ease of control are the main sub-attitudes. If the teacher can control the task on the computer while teaching Mathematics, it will allow teachers to use his or her pedagogical - content knowledge on the level of technological perspective (Sedega et al., 2018).

The study of Agyei and Voogt (2011) on pre-service Mathematics teachers explored the influencing factors of computer attitude. The study claims that the low level of computer usage in the classroom is the outcome of low competencies of pre-service teachers in using the computer. The level of competence of pre-service teachers is defined by their attitude. Hence, the study of pre-service teachers' attitude to make use of computer in Mathematics is very much important.

## Research Methodology

### Research Design

A quantitative research method was employed for this research. The current study has used a Descriptive – cross-sectional survey research design. The survey assists the researcher to describe the characteristics of the population without considering the cause-effect relationship. Whereas the correlation study was made from the data collected information gathered at a single time. The rationale for using the research design was that it gave a comprehensive description of pre-service teachers' attitude towards the use of computer in Mathematics.

## Sample and Sampling Technique

The population of the study were consists of all pre-service teachers of Sukkur, Sindh. In the present study, a random sampling method was used. The participants were $n$ = 111 pre-service teachers enrolled in Bachelor of Education, four years teacher-education Program, from two Institute of district Sukkur Pakistan. Of these, 72 (64.86%) participants were females, and 39 (35.13%) participants were male. All participants had qualified intermediate education.

## Research Instrument

The survey questionnaire of this study consisted of two sections. The first section was constructed by the researcher about participants' demographic information; Name, Gender. Institute and Semester. Whereas the second section was restricted to Computer Attitude Scale. The scale was adapted from the work of Selwyn (1997). In computer attitude scale developed by Selwyn has 21 items with four main components. The researcher modified the scale and reduced the original 21- item scale to 16 items from general to Mathematics subject. A modified questionnaire was sent to an expert for content validity. After review, the questionnaire was piloted on 31 pre-service teachers to check the validity and reliability of the questionnaire. The overall reliability of the instrument was found as Cronbach alpha=.778 the modified CAS questionnaire was composed of 4 main subscales, see Table 1. The first Affect component subscale contains 4 items intending to measure the feelings of pre-service teacher towards the use of computer in Mathematics. The second subscale is about Perceived usefulness containing 4 items for measurement of pre-service teachers' perception about the utility of a computer in teaching Mathematics. The third subscale, Perceived control, has 4 items that measure the perceived comfort or uncomforted feelings while using the computer in teaching Mathematics. The fourth and last subscale of Behavioral Intention consists of 4 items that measure the behavioral actions to use a computer in Mathematics education. The data was collected on the five-point Likert scale ranging from strongly disagree to strongly agree. The negative items were reversed coded to make meaningful analyses of the sub-scale.

## Data Collection Procedure

Data was collected through a survey questionnaire. Participation of pre-service teachers was on a voluntary basis. The researcher collected data by visiting teacher training institutes of Sukkur.

## Data Analysis

Data were analyzed through the software SPSS 23.0. The scores of items of each subscale were

grouped to gather to show the scores of each scale. Initially, collected data were organized. Organized data were analyzed using the basic statistical tool, like mean, standard deviation. Moreover, correlation analysis was done to know the relation between subscales. To find out how gender affects the attitude of pre-service teachers, a t-test analysis was conducted. The data were normally distributed in the study.

## Results and Findings

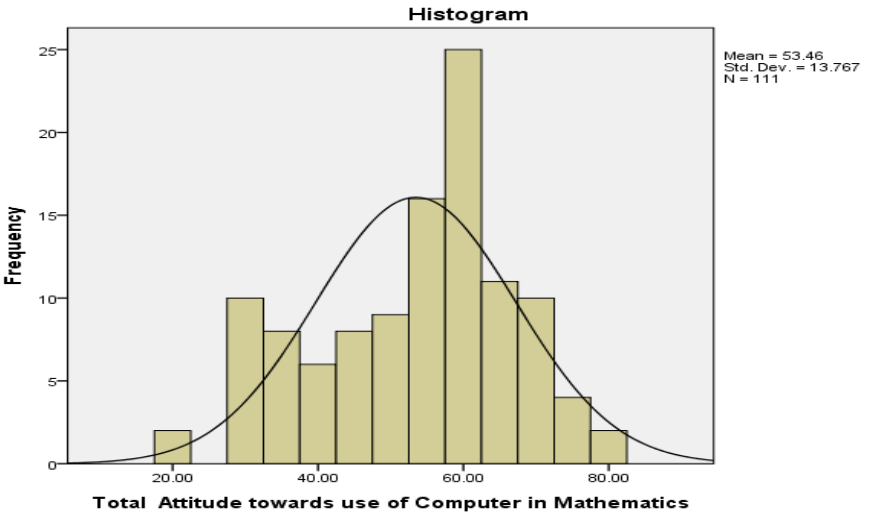
Table 1 presents the standard deviation and means a score of each item in the whole scale. Mean scores are ranging from 2.85 to 3.73, which shows the most pre-service teachers were agreed or strongly agreed with the items in the survey scale. Whereas, the standard deviation of more than 1.00 of each item suggests the widespread responses among pre-service teachers.

Kline (2015), in his book, claims that for the normality of data, the Skew and the Kurtosis indices must not surpass (3) and (10). Table 1 shows the normality of the data.

**Table 1.** Descriptive of Computer Attitude Scale's items. (n=111)

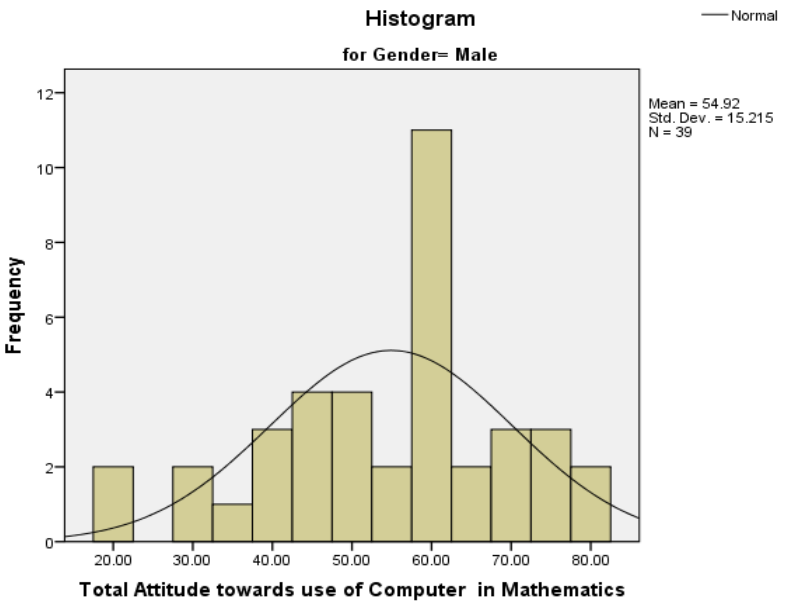
| | Item | Mean | Std. Deviation | Skewness | Kurtosis |
|---|---|---|---|---|---|
| 1. | *If given the opportunity to use a computer while teaching Mathematics, I am afraid that I might damage it in some way. ** | 3 62 | 1.362 | -.470 | -1.298 |
| 2. | *I hesitate to use a computer in teaching Mathematics, for fear of making mistakes I can't correct ** | 3 46 | 1.347 | -.481 | -1.105 |
| 3. | *I don't feel apprehensive about using a computer for teaching Mathematics.* | 3.17 | 1.320 | -.177 | -1.190 |
| 4. | *Computers in Mathematics make me feel uncomfortable ** | 3 34 | 1.318 | -.367 | -1.172 |
| 5. | *Computers help me improve my performance for teaching Mathematics.* | 3 44 | 1.226 | -.480 | -.883 |
| 6. | *Computers make it possible to teach Mathematics more productively.* | 3 57 | 1.188 | -.627 | -.686 |
| 7. | *Computers can allow me to do more interesting and imaginative work* | 3.73 | 1.394 | -.875 | -.629 |
| 8. | *Computers can enhance the Mathematical presentation of my work to a degree which justifies the extra effort.* | 3 66 | 1.325 | -.850 | -.449 |
| 9. | *I can command the computer do what I want it to do.* | 3 40 | 1.330 | -.623 | -.761 |
| 10. | *I am not in complete control when I use a computer. ** | 341 | 1.337 | -.618 | -.848 |
| 11. | *I need an experienced person nearby when 1 use a computer. ** | 2 85 | 1.409 | .059 | -1.396 |
| 12. | *I do not need someone to tell me the best way to use a computer.* | 2 94 | 1.350 | .071 | -1.255 |
| 13. | *I would avoid taking a Mathematical task, if I knew it involved working with computers. ** | 341 | 1.283 | -.451 | -.994 |
| 14. | *I avoid coming into contact with computers in Ivlathematics Class. ** | 3 27 | 1.341 | -.256 | -1.272 |
| 15. | *I only use computers in Mathematics classroom when I am told to. ** | 2 93 | 1.312 | -.012 | -1.325 |
| 16. | *I will use computers regularly throughout teaching Ivlathematics* | 327 | 1.272 | - 254 | -1.144 |

* *indicates the item that was reversed coded.*



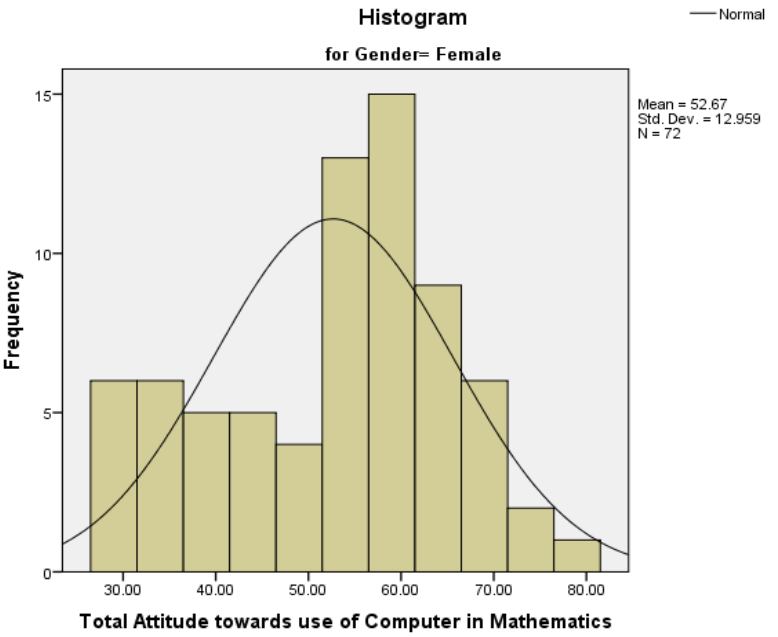

**Graph 1:** shows the Overall Distribution of Score

Graph 1 shows the distribution of score is reasonably normal. Bell-shaped curve proves that the high level of frequency of scores is at the middle, with very little frequencies towards the extremes side of left and right. It proves the further correlation analysis is quite possible to be done for this study. Whereas, Graph 2 and Graph 3 show that the scores of male and female appear to be reasonably normally distributed. It gives the evidence to use t-test analysis for finding the impact of gender on attitude towards the use of computer in Mathematics.




**Graph 2:** Distribution of Score of Male.

Graph 2 indicates the distribution of scores of male pre-service teachers (n=39)




**Graph 3:** Distribution of Score of Female.

Graph 3 shows the scores of female pre-service teachers towards the use of computers in mathematics

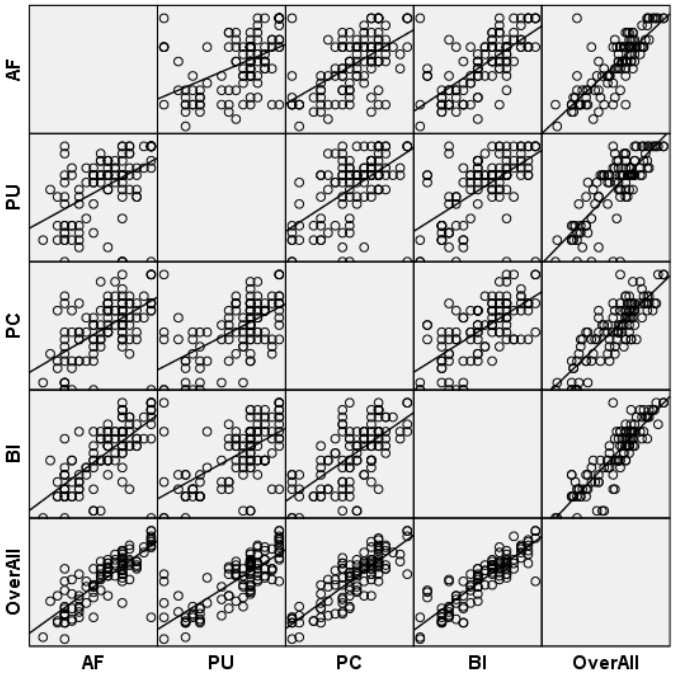
**Table 2.** Descriptive Statistics and reliability coefficient for each subscale (n=111)

| Subscales | No. of Items | Mean | Std. Deviation | Cronbach Alpha |
|---|---|---|---|---|
| Affective Component (AC) | 4 | 13.59 | 3.92 | .713 |
| Perceived Usefulness (PU) | 4 | 14.40 | 4.44 | .887 |
| Perceived Control (PC) | 4 | 12.59 | 3.95 | .705 |
| Behavioral Intention (BI) | 4 | 12.88 | 4.15 | .808 |
| Overall Scale | 16 | 13.36 | 4.11 | .778 |

Descriptive statistics and reliability tests were calculated to find the participants' mean score with standard deviations and reliability of each computer attitude subscales, with no missing data.

Table 2 shows the participants' mean score of the Perceived Usefulness subscale is M= 14.40, which is more than the mean scores of other subscales. The mean score of the Perceived Control subscale is lowest M=12.59, followed by Behavioral Intention subscale M= 12.88 and Affective Component subscale M= 13.59. The mean scores of subscales suggest that the participants have a positive perception of the usefulness of the computer, feelings towards computers and intention to make use of the computer in future. However, results show that participants perceived to be in control of the computer are less. Overall, the mean score of participants on the overall Computer Attitude Scale is 13.36, which proves that participants have highly positive feelings and attitude towards the usage of computer (Selwyn, 1997).

Cronbach's coefficient alpha was calculated for each subscale and overall scale. Table 2 shows the reliability Cronbach's alpha coefficient of each subscale ranges from (.705) to high (.887). Furthermore, the analysis revealed that the internal consistency of Perceived usefulness subscales was high, and the overall reliability of the overall scale is high (.778). As the minimal level of Cronbach's alpha coefficient for scale is .70 (Pallant, 2007), the overall reliability score confirms the reliability of each item in scale.




**Graph 4:** Matrix Scatter-plot of Sub-Attitude and Over All Attitude towards the use of Computer in Mathematics.

Graph 4 revealed that the relationship among sub-attitude is linear. Each sub-attitude is positively related to other sub-attitude, as the line is point upwards in the right direction. Whereas, each sub-scale with an overall scale is highly positively related. There is a strong relationship between each sub-scale with the overall scale, as there are definite clumping points or score around an imaginary straight line. As suggested by Pallant (2007), for correlation analysis, the linear relationship among variables is very much necessary. So, as a result of the matric scatter-plot in Graph 4, the linear relationship among sub-attitude and with overall attitude is suitable for correlation analyses.

**Table 3.** Pearson Correlation Test for the Relationship between Subscales and Overall scale of Attitude towards Use of Computer in Teaching Mathematics.

| | | AF | PU | PC | SI | Over All |
|---|---|---|---|---|---|---|
| **AF** | Pearson Correlation | 1 | .433" | .532 | .704 | .320" |
| | Sig. (2-tailed) | | .000 | .000 | .000 | 000 |
| | N | 1 11 | 11 1 | 111 | 111 | 111 |
| **PU** | Pearson Correlation | .463' | 1 | .578 | .590" | 305" |
| | Sig. (2-tailed) | 000 | | .000 | .000 | 000 |
| | N | 1 11 | 111 | 111 | 1 11 | 111 |
| **PC** | Pearson Correlation | .582" | .578" | 1 | .653 | .333" |
| | Sig. (2-tailed) | 000 | .000 | | .000 | 000 |
| | N | 1 11 | 111 | 111 | 1 11 | 111 |
| **Bl** | Pearson Correlation | .704" | .590" | .658 | 1 | 382" |
| | Sig. (2-tailed) | 000 | .000 | .000 | | 000 |
| | N | 111 | 11 1 | 111 | 111 | 111 |
| **Over AII** | Pearson Correlation | .320" | .805" | .838 | .382" | 1 |

| | AF | PU | PC | SI | Over All |
|---|---|---|---|---|---|
| Sig. (2-tailed) | 000 | .000 | .000 | .000 | |
| N | 111 | 111 | 111 | 111 | 111 |

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

The investigation of computed Pearson correlation shows the relationship among four sub-attitude of pre-service teachers' computer attitude towards the use of Mathematics. The result of correlation represented in Table 3 reveals the strong relationship between subscales. Overall, all subscales were positively correlated to the whole attitude towards the use of computer in Mathematics. Table 3 shows positive correlation of Overall scale with subscales range from Perceived Usefulness - PU (r = .805) to Affect factor - AF (r =.820) to Perceived Control -PC (r = .838) to Behavioral Intention - BI (r = .882). This pattern shows the increase in the intensity of correlation between subscales and the overall scale. Affective component perceived useful attitude and Perceived control attitude are highly correlated to behavioural intention. Whereas, Behavioral Intention is highly correlated to the Affective component (r = .704). The correlation analysis rejected the null hypothesis 1 – Ho1, and it proves that there is a strong linear relationship among sub-attitude and overall attitude of pre-service teachers towards the use of computer in Mathematics.

## Findings from the T-test for the impact of gender on overall attitude towards the use of computers in mathematics

The descriptive statistics for the use of computers in mathematics among pre-service teachers revealed that the male student-teachers have a slightly higher positive attitude towards the use of computers in mathematics because the mean value of female (M=13.73) is higher than the mean value of male (M=13.13). Therefore, it was found that prospective female teachers have a slightly high attitude towards the use of computers in mathematics. As shown below (Table 4)

**Table 4.** Descriptive Statistics for attitude towards the use of computers in mathematics

| | Gender | N | Mean | Std. Deviation |
|---|---|---|---|---|
| Attitude towards use of computers in mathematics | Female | 72 | 13.73 | 3.23 |
| | Male | 39 | 13.13 | 3.80 |

## Results of Independent sample T-Test for Pre-service teacher's attitude towards the use of Computers in Mathematics

An independent sample t-test was computed for testing the null hypothesis "**Ho2:** There is no any significant difference between the female and male pre-service teachers to use the computer in Mathematics "at the significant value (P≤0.05) because the obtained value of significant difference was less than the P-value. The findings showed that there was a significant difference in the mean level of female (M=13.73, SD=3.23) and male (M=13.13, SD=.56699), t (109) =-.823, p= .000 pre-service teachers attitude towards the use of computers in mathematics. This indicates that the variances for male and female are not equal. When equal variances are not assumed, the Sig. (2-tailed) column is not equal to .05; there is a significant difference in the mean scores of female and male. The result of the t-test rejects the Null Hypothesis Ho2. There was a significant difference in mean scores of (*t*= -.823). Therefore, the null hypothesis was rejected, and the alternative was accepted. In other words, gender has a significant effect on the attitudes of pre-service teachers regarding the use of computers in mathematics. Thus, it can be concluded that gender differences influence the attitude of teachers towards the use of computers in mathematics. As shown below (Table 5).

**Table 5.** Results of Independent Sample T-Test for an attitude of male and female pre-service teachers towards the use of computers in mathematics

| | Gender | N | M | SD | Df | T | P |
|---|---|---|---|---|---|---|---|
| Attitude towards use of computers in mathematics | Female | 72 | 13.73 | 3.23 | 109 | -.823 | .000 |
| | Male | 39 | 13.13 | 3.80 | | | |

## Discussion

The result of this study reveals that the pre-service teachers have an encouraging attitude towards the usage of computer in Mathematics. Pre-service teachers' score for each subscale ranged from M = 12.59 perceived control, 12.88 behavioural intention, 13.59 affective component and 14.40 perceived usefulness. Whereas the overall mean score of attitudes was 53.46. It shows the high level of positive attitude of pre-service teachers to use the computer in Mathematics. The significant mean score of PC and AC disclose that pre-service teachers have strong feelings towards the usage of computer, and their perceived usefulness of using the computer is very high. Pre-service teachers were enthusiastic about using a computer in future teaching. The overall attitudes of pre-service teachers will support the idea of technological integration in Mathematics. The results of correlation analysis revealed that the behavioural intentions of using the computer in the Mathematics classroom has a positive correlation with the affective component, perceived usefulness and perceived control. The more the pre-service teachers' feelings towards usage of computer increased, the more intensively their behavioural perception about the usefulness of computer in teaching Mathematics increase. As suggested by past researches, the knowledge of usage of computer is a key element for classroom integration (Teo, 2008). As a result, Pre-service teachers showed knowledge about the usage of computer in Mathematics on the scale of perceived usefulness. Furthermore, it shows that pre-service teachers are aware of the usage of computer to facilities the Mathematical understanding of students. In addition, the result shows the significant relationship between pre-service teachers' gender and attitude towards the use of the computer. It supports the findings of previous researches which state the significant difference between male and female attitude to use the computer in Mathematics (Fisher & Margolis, 2002). Overall, pre-service teachers considered computer as a powerful tool for classroom teaching. The reason behind the positive attitude towards the use of a computer can be the high level of exposure to the computer during the teacher education program. Pre-service teachers must have experience of conducive averment in their past education or B.Ed. The program which nurtured their attitude towards the use of computer in Mathematics.

## Conclusion

The teacher plays the main role in the school. Mostly, students try to imitate the attitudes and actions of the teacher. Hence, it is very much important that teacher must have a positive attitude towards technology for the technological development of society. The teacher must get training on how to use a computer in Mathematics to facilitate their teaching and save the classroom timing for long computation. Similarity, there is a need for an educational program for the pre-service teacher which supports the development of a positive attitude of usage of computer. This study states that pre-service teachers are very much interested in using a computer in Mathematics with the belief that the computer is a powerful educational tool for their job. However, there are few limitations of this study. First, this research is conducted on a small size. Second, the subject domain of the current study is limited to Mathematics. Third, the data of this study was collected by cross-sectional design, with one administration design. So, it was difficult to find the stability of the attitude of pre-service teachers. Last, the variables of attitude or sub-attitude of the computer of this study are limited. Hence, the other important variable that influences computer attitude is not involved in this study. Future research could investigate the level of motivation of pre-service teachers to use the computer in Mathematics.

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