TECHNOLOGY, GENDER ATTITUDE, AND SOFTWARE, AMONG MIDDLE SCHOOL MATH INSTRUCTORS

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ABSTRACT

Technology has gained a firm stronghold in society as well as modern classroom. Students are assumed to have a natural aptitude for computers. Over the past decades, educational websites have appeared to be "interactive" and "to make learning fun". This study employed quantitative method of research using 8th grade instructors from South East Dallas Texas school district. Data was collected via Microsoft Excel and SPSS computation. The survey instrument tested for internal consistency and reliability. The seven Likert scale items tested nine variables for Pearson correlation. A t-test detected non-significance at the $p > .05$ level of probability indicating that male teachers seldom use technology to teach math than their female colleagues. A second t-test showed a significant difference at $p < .05$ level for difference between younger math teachers (male and female) versus their older counterparts.

KEYWORDS

Technology Attitudes, Teacher Attitude, Teacher Technology Use, Technology Integration

1. INTRODUCTION

The pervasiveness of technology in society has highlighted the need for schools to prepare students to take advantage of emergent technology tools (Keane, J. (2002). For this to occur, (Otero & Peressini, 2005) opined that "today's classroom teachers must be prepared to provide technology-supported learning opportunities for their students" They also add that "being prepared to use technology and knowing how that technology can support student learning must be integral skills in every teachers' professional repertoire".

Technology has changed the role of teachers from "masters" to "facilitators" for students in the learning process. As facilitators, teachers introduce tasks, answer questions, prompt discussions, and summarize/present outcomes (Yank, 2004).

Middle school teachers have differing views on the use of technology in their classrooms. For instance, 54% of teachers see technology tool as a communication tool; 40% say technology is for productivity; 34% posits that technology is for research purpose while only 23% say it is for problem solving (ISTE, 2007).

Jaradat & Hoagland, (2009) notice three important advantages of using technology in mathematics. First, dynamic media (video, audio and multimedia) offers better learning and knowledge opportunities than static media by giving learners opportunities for dynamic interactions and inquiries with different components of the product. Second, new representational infrastructure offers opportunities to reintegrate previously achieved knowledge. Third, new systems of knowledge might be designed by employing infrastructure based on technology.

2. GENDER ATTITUDE

Attitude is everything. Teachers' attitude (male or female) towards technology makes the difference. This assumption confirms the commonly accepted belief that attitudes affect behavior (Albirini, 2004). Existing variables such as access to equipment, administrative support, and time to mention just a few have strong effect on the use of technology (Demetriadis, et al., (2003), in a longitudinal study, (5 years) reported that teachers' use of laptop, confidence level and skills improved remarkably but computer use with students in the classroom remained relatively low. Thus knowledge and skill acquisition depends on teachers' attitude and their readiness to use technology (Koszalka, 2001).

3. GENDER AND TECHNOLOGY

Many studies have been carried out to investigate the question of gender and technology Bame, Dugger & Sharp, (2005). A commonly cited reason for many teachers limited use of technology is lack of skills. Batane, (2004), posits that both new and veteran teachers feel inadequately prepared to use computers in their classrooms. Most researchers in the early studies found that attitude towards technology differed significantly between males and females, with males indicating greater knowledge and interests (Liao, 1999; Meelissen, 2008; and Young, 1999).

Other researchers like Boxer, Palmer & Daudgerty, 1998; Krendi & Broihier, (1990) found that females perceived technology as more difficult and less interesting than males did. According to Linn, (2002), this could be as a result of dominant culture of males in technological fields. Other possible reasons, for gender differences could be violence in computer games that appeal to the male population (Sharp, 2005).

Recent studies however show that gender differences are no longer different. According to the American Association of University Women /educational Foundation, females perform as much as males if not better except that they just see them differently than males (Bain & Rice, 2006).

4. THE PURPOSE OF THIS STUDY

1. To explore the effectiveness of technology as perceived by male and female math teachers compared to the traditional approach that most teachers favor in South-East Dallas Texas.
2. To explore teachers' attitude (young versus old) towards the use of math technology (software)

4.1 Two Research Hypotheses Were Formulated

1. Male math teachers are less satisfied in the use of math technology (software) than female teachers.
2. Younger math teachers are more open to the use of math technology (software)

4.2 Scope

This study was targeted to a select section of a school district located in South East Dallas Texas. A sample from ten middle schools, drawn across the district was used.

4.3 Methodology

Only a select section of schools located in South East Dallas Texas district was used for this study. This includes a population sample of 21 Math teachers drawn from the 10 sampled middle schools. All of the teachers took part in the survey and that represented 100% participation.

Out of this number, (21), the males teachers were nine (9) and their female counterparts twelve (12) representing 43% and 57% respectively. The participants' age are in two groups. 39 and under was considered "young" while 40 plus was taken as "old". The decision to have two main groups became imperative after the response showed the age bracket (18-22) isolated leaving two age brackets (30-39) and (40 and above) standing strong.

4.4 Scales

The survey instrument held fifteen questions; including demographics, multiple choice, and Likert scale items. SPSS 18.0 was used to analyze the data. The seven Likert scale items tested for Pearson correlation (table 1).

Table 1. Pearson correlations on seven variables using the Likert scale items.

		evaluation	accessibility	recommendation	assessment	mastery	integration	performance
Evaluation	Pearson Correlation	1	.102	.203	.581**	.234	.384	-.084
	Sig. (2-tailed)		.661	.379	.006	.308	.085	.717
	N	21	21	21	21	21	21	21
accessibility	Pearson Correlation	.102	1	.110	.142	.412	.452*	-.253
	Sig. (2-tailed)	.661		.635	.540	.064	.040	.268
	N	21	21	21	21	21	21	21
recommendation	Pearson Correlation	.203	.110	1	.188	.161	.316	.042
	Sig. (2-tailed)	.379	.635		.414	.487	.163	.857
	N	21	21	21	21	21	21	21
assessment	Pearson Correlation	.581**	.142	.188	1	.257	.476*	.199
	Sig. (2-tailed)	.006	.540	.414		.261	.029	.387
	N	21	21	21	21	21	21	21
Mastery	Pearson Correlation	.234	.412	.161	.257	1	.377	-.088
	Sig. (2-tailed)	.308	.064	.487	.261		.092	.704
	N	21	21	21	21	21	21	21
integration	Pearson Correlation	.384	.452*	.316	.476*	.377	1	.319
	Sig. (2-tailed)	.085	.040	.163	.029	.092		.159
	N	21	21	21	21	21	21	21
performance	Pearson Correlation	-.084	-.253	.042	.199	-.088	.319	1
	Sig. (2-tailed)	.717	.268	.857	.387	.704	.159	
	N	21	21	21	21	21	21	21

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

The strongest correlations were evaluation and assessment at 0.58; integration and assessment at 0.48 and integration and accessibility at 0.45.

Male (gender code 1) math teachers are less satisfied than female (gender code 2) math teachers with the use of math technology – a t-test was run. There was no significant difference between male and female teachers in this population. The achieved value for equal variance assumed -1.682 – does not reach up to the table look-up value given for rejection of the null hypothesis (1.729). Therefore the null hypothesis cannot be rejected. The hypothesis that male teachers are less satisfied in their use of technology to teach math does not hold in this sample.

5. CONCLUSION

In this study, there is a distinct difference between math teachers that are young (39 and under) versus math teachers that are old (40 and above). Male (gender code 1) are less satisfied than female (gender code 2), but there was no significant difference between gender. Secondly, a 2.637 exceeded the value where the null hypothesis significant tests (NHSTs) can be rejected. Further, there is no significant difference between male and female math teachers in the use of technology software. The achieved value for equal variance assumed -1.682 does not meet the table look up value given for rejection of the null hypothesis (1.729). Therefore the null hypothesis was not rejected.

A follow-up study may perhaps be a comparative study on the effectiveness of technology in teaching math among male and female students.

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