PHYSICAL EDUCATION TEACHERS TECHNOLOGY SELF-EFFICACY AND INTEGRATION

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INTRODUCTION

Technology in education strives to parallel the high-tech world we live in. When students' learning environment reflects the ways in which they engage the world, they will excel in their education (Christen, 2009). Physical education teachers (PETs) have reported many barriers to using and integrating educational technology (Hill & Valdez-Garcia, 2020). PETs perceived self-efficacy (SE) may play an important role in their ability to integrate technology.

OBJECTIVES

The purpose of this study was to explore in-service PETs SE to integrate technology into their teaching.

METHODS

Eighty-three in-service PETs (Male=32.3 %, Female=64.6%), from around the United States, completed an online version of the previously validated Computer Technology Integration Survey for Physical Education (CTIS-PE; Krause, 2017). CTIS-PE consisted of a 16-item Likert scale to measure participants SE (1-5 scale, strongly disagree-strongly agree). CTIS-PE included demographic items such as age, gender, race and school placement. CTIS-PE also asked participants to rate their level of individual technology training integration from a scale of 1 to 4, with 1 = untrained, 2 = trained, 3 = highly trained, and 4 = expert. Relevant technology tools to physical education was selected (i.e. Plickers) based on previous research (Krause, 2017; Woods et al., 2008). Analysis focused on relationships of participants SE and technology use.

RESULTS

No differences in mean SE was reported between groups (**Table 1).** Correlations were computed to identify the relationships between demographic factors, technology training, school placement, and technology use with self-efficacy scores. Results indicate a relationship with the level of technology training (r=.51, p <.01), technology use (r=.38, p <.01), and general college technology class enrollment (r=.31, p<.01) to participants' technology SE (m=3.75, SD= .94; 1-5 scale). **Table 2** represents results of significantly related variables. for The most widely used tools—and in fact the ones with the highest efficacy rate—were music services (66.7%), LCD projectors (57.6%), and computer applications (53.8%).

A hierarchical linear multiple regression was conducted to analyze SE and the three sources of SE (mastery experiences, vicarious experience, and social persuasion) to predict levels of teacher's SE to use technology into PE. Mastery experience explained 23% of the variation in SE. Step 2, which included vicarious experience, explained an additional 1%. Step 3, which included social persuasion experience, explained another .01%. **Table 3** shows the results of the multiple regression analysis.

Hierarchical multiple regression was used to assess the ability of mastery experience to predict levels of SE. Step 1, which included technology training, explained 28% of the variance in SE. Step 2, which included mastery experience 37% of the total variance, F(2, 91) =25.711, P<.001. Mastery experience explained an additional 9% of the variance in SE, after controlling for technology training, R2 value change = .091, F statistic change (1, 89) = 12.718, p<.01. In the final model, both the control measures were statistically significant with technology training recording a higher beta value (ß =.525, P<.01) than mastery experience (ß=.328, P<.01). **Table 4** shows the results.

Table 1

Self-efficacy Means & Standard Deviation for School Placement

School Placement	M	SD
Elementary	3.63	.87
Middle School	3.76	1.04
High School	3.51	1.20

Table 2

Means, Standard Deviations, and Intercorrelations for Self-Efficacy, Source, and Training Measures.

Measure	M	SD	1	2	3	4	5	6
1. Self-Efficacy	3.751	.940	1					
2. Mastery	4.076	.952	.485*	1				
3. Vicarious	3.794	1.245	.210**	.217**	1			
4. Social Persuasion	3.878	1.356	.298**	.519*	.268**	1		
5. Technology Training	2.450	.670	.506*	.399*	.162	.380*	1	
6. Technology Use	2.54	.694	.382*	.362*	.198	.449*	.584*	1

* p<.01 ** p<.05

Table 3

Hierarchical Regression Analysis Summary for Source Variables Predicting PETs Self Efficacy (N=80)

Step and Predictor Variable	B	SE B	β	R^2	ΔR^2
Step 1: Mastery Experience	.472	.092	.478*	.229*	
Step 2: Vicarious Experience	.083	.071	.111	.241	.012
Step 3: Social Persuasion Experience	.032	.078	.046	.242	.001

* p<.01

Table 4

Hierarchical Regression Analysis Summary for Technology Training and Mastery Experience Predicting Teachers Self-Efficacy (N=82)

Step and Predictor Variable	B	SE B	β	R^2	ΔR^2
Step 1: Technology Training	.745	.127	.525*	.276*	
Step 2: Mastery Experience	.324	.091	.328*	.366*	.091

* p<.01

CONCLUSIONS

PETs who had more training and used more technology tools had higher overall level of SE. Participant's SE was lower than physical education student teachers (Krause, 2017) but similar to PET education faculties (O'Neil & Krause, 2019). PETs may be well equipped to use educational technology after student teaching but may need more training to keep up with the ever-changing world of technology. Professional development opportunities for PETs should focus on providing mastery experiences over vicarious and social persuasion experiences. Furthermore, it is evident that PET education programs should consider integrating an instructional technology class into the curriculum.

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