

Teachers' Attitudes towards the Use of Instructional Technology and its Impact on Their Self-efficacy

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Abstract

This quantitative study intended to investigate Iranian EFL Teachers' attitudes towards the use of instructional technology in their classroom and its impact on their self-efficacy. Eighty teachers were surveyed using Teacher Sense of Self-Efficacy Survey (TSES) and the Media Technology Usage and Attitudes Scale (MTUAS). The first research question was designed to examine teachers' attitudes towards the use of instructional technology within the classroom and its effects on their self-efficacy and concerning the subscales of teacher self-efficacy, the findings significantly predicted the impacts of the use of instructional technology on teachers' self-efficacy. In addition, after analyzing the data using Multiple Regression Analysis, it was further discovered that teacher self-efficacy had a significant relationship with the ability to integrate all of the sub-groups: smartphones, the internet, social media, texting, and email; The results showed that emails and smartphones, two subscales of media questionnaire, could highly predict the significant impacts of the use of integrated technology on teachers' self-efficacy. The findings suggested that training for technology-related components may not need to focus on how to use the technologies, but focusing more on how the technologies can benefit the classroom and help learners to improve their learning within the classroom.

Keywords

Attitude; instructional technology; Iranian EFL teachers; self-efficacy.

1. Introduction

Researchers and practitioners have acknowledged the importance of teacher motivation, particularly their sense of self-efficacy, as a strong predictor of their job satisfaction and intention to stay in the profession (Klassen & Chiu, 2010; Skaalvik&Skaalvik, 2010). Teacher self-efficacy beliefs determine the level to which the teacher will teach in the classroom (Garvis, 2013). Gibbs (2003) indicates that teacher self-efficacy is the belief

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that one is capable of exercising personal control over one's behavior, thinking, and emotions. Besides, teacher efficacy is defined as "the teacher's belief in his or her capability to organize and execute courses of action required to accomplish a specific teaching task in a particular context successfully" (Tschannen-Moran, Silvern, Brogdon, 1998, p. 22). Teachers with a higher sense of efficacy exhibit greater enthusiasm for teaching (Allinder, 1994), have a greater commitment to teaching (Coladarci, 1992), use more music activities in the course of instruction (Muya, 2016), and believe that it is up to them to provide a wealth of strategies to reach students. They are also more likely to stay longer in the teaching profession (Glickman & Tamashiro, 2006). Thus, we can conclude confidently that high TSE is a desirable characteristic for teachers to develop basic and essential skills (Okongo, 2007). Today's students are digital natives, and most of these students are well adept at using technology (Margaran, Littlejohn, & Vojt, 2011). Regarding technology in teaching and learning; "multiple domains of self-efficacy beliefs may play a role in a teacher's thoughts and actions regarding technology in the classroom" (Abbitt, 2011, p. 134). Teachers with positive self-efficacy and high qualifications increase their students' achievement and motivation and improve teacher commitment and retention (Ashton & Webb, 1986; Grant, 2006). According to Bingimlas (2009) many teachers still report that they lack the necessary confidence to integrate the available technology into their curriculum despite their growing dependence on technology. Additionally, many researchers (Wang, Ertmer, & Newby, 2004; Hernandez-Ramos, 2005; Doordinejad & Afshar, 2014; Giles & Kent, 2016) have concluded that teacher self-efficacy has impacted many different areas of education (Bandura, 1993), and they have also concluded that there are several barriers to technology integration in education (Kopcha, 2012). The following research questions were mentioned to present the objectives of the study:

- 1) Does Iranian EFL teachers' attitude towards the use of instructional technology in the classroom have any impact on their self-efficacy?
- 2) Which modes of Integrated Technology (smartphones, the internet, text messaging, global social media, and email) have more impacts on teachers' self-efficacy?

2. Literature Review

2.1. Teacher Self-efficacy

Teachers' self-efficacy—the belief that they can produce changes in student learning—is one of the most studied aspects of the classroom context (Miller, Ramirez, Murdock, 2017). Teacher efficacy is a type of self-efficacy that affects behavior by influencing goals, outcome expectations, affective states, perceptions of obstacles or threats and, opportunities (Bandura, 1997). Tschannen-Moran and Woolfolk Hoy (2001) defined teacher self-efficacy as "a teacher's judgment of his or her capabilities to bring about

desired outcomes of student engagement, and learning, even among those students who may be difficult or unmotivated" (p. 783). They have extensively researched teacher efficacy and identified teacher efficacy as "a simple idea with significant implications" (p.783). Teacher self-efficacy (TSE) beliefs determine the level to which the teacher will teach in the classroom (Garvis, 2013). Teachers with high TSE believe that intelligence is malleable; that all children can learn and that they can help them learn (Deemer, 2004). Recently, research has also found teachers' self-efficacy related to their passion for teaching, with greater amounts of harmonious passion predicting increased efficacy (Fernet, Lavigne, Vallerand, & Austin, 2014), specifically in the early years of a teachers' career (Moe, 2016). Teachers' confidence in their ability to perform the actions that lead to student learning (i.e., self-efficacy) is one of the few individual teacher characteristics that reliably predicts teacher practice and student outcomes (Pendergast, Garvis, & Keogh, 2011; Woolfolk & Hoy, 1990; Zee, de Jong, & Koomen, 2016). In sum, teachers' self-efficacy is an important motivational construct that shapes teachers' thoughts, behaviors, and emotions (e.g., Bandura, 1997; Pendergast et al, 2011; Woolfolk, Rosoff & Hoy, 1990). Teachers' efficacy beliefs are task- and context-specific (Chao, Chow, Forlin, & Ho, 2017; Dicke, Parker, Marsh, Kunter, Schmech, & Leutner 2014), and they may vary according to different types of tasks, students and circumstances in a class (Raudenbush et al., 1992; Tschannen-Moran, & Hoy, 2001).

Educators who possess positive teacher self-efficacy are more likely to perceive changes in their instructional approach that impact struggling students (Gibson & Dembo, 1984; Soodak & Podell, 1944). These teachers are consequently less likely to make individual education referrals for struggling students believing instead that they are capable of learning in the regular classroom with the appropriate supports from the teacher (Soodak & Podell, 1993). A teacher's self-efficacy has also been found to impact students' sense of efficacy (Anderson, Greene, & Loewen, 1988), as well as students' self-esteem and motivation levels (Midgley et al., 1989). While high teacher self-efficacy is essential for all teachers, Woolfolk Hoy (2000) asserted that it is particularly crucial for beginning teachers. Woolfolk Hoy (2000) noted that in many cases, beginning teachers soon become overwhelmed by the multifaceted tasks of the profession, and their positive beliefs about their capabilities are quickly extinguished by the hectic realities present in schools. Woolfolk Hoy (2000) asserted that "self-efficacy might be most malleable early in learning, thus, the first years of teaching could be critical to the long-term development of teacher self-efficacy" (p. 2).

2.2. Measuring Teacher Self-Efficacy

Bandura (1997) advised that in order to measure teacher efficacy accurately, it is mandatory to involve many different types of tasks or challenges as well as a broad range

of response options. Following Bandura, Tschannan-Moran and Hoy (2001) developed another measure of teacher self-efficacy to try to understand the meaning of teacher self-efficacy and the factors that comprise it. They proposed that beliefs regarding teacher self-efficacy come from both an analysis of the teaching task and an assessment of personal teaching competence. The scale, entitled the Teachers' Sense of Efficacy Scale, suggests that teacher self-efficacy for in-service teachers consists of three different factors, including self-efficacy for student engagement, instructional strategies, and classroom management.

2.3. Integration of Technology in Education

The success of technology in every walk of life has afforded the question for academia, “why not in education?” If technology has made other ventures so successful, shouldn't it do the same for the students who have grown up using it? After all, Students who are actively involved in the learning process remember more of what they are learning (Vannatta&Beyerbach, 2000), and technology provides students the opportunity to become more actively involved in their education.

In the same vein, having technology in the classroom offers learners an opportunity to access their own work “in a more meaningful way, become better aware of the quality of their work, and accept feedback more willingly” (Riasati et al., 2012, p. 26). Technology in the classroom can also lower the anxiety for many learners (Riasati et al., 2012). Using technology on a day-to-day basis allows students to adopt a self-monitoring role, "which leads to a higher chance of fulfilling tasks successfully" (Riasati et al., 2012, p. 26). Therefore, Hickson (2016) claimed that the Internet and email have made it possible to communicate with anyone around the world. Despite the distance, having access to such a significant number of people provides a distinct advantage for today's teachers and students over previous generations. Today's teachers and classrooms can chat in real-time with other classrooms around the world. Parents can be contacted whether they are home or elsewhere (Hickson, 2016).

3. Theoretical Basis

Over the years, teacher self-efficacy has been the subject of debate, and there have been concerns over the validity of the scores for teacher self-efficacy (Kopocha& Alger, 2011). For several decades, teacher self-efficacy has consistently been related to many instructional variables and student and teacher outcomes (Dufin, French, & Patrick, 2012). Constructivism is a framework of education that suggests that learning is obtained by doing, and it became a prominent education philosophy in the early 1990s (Wilson, 2012). According to Gilakjani, Leong, and Ismail, (2013), the philosophy of constructivism has greatly influenced learning since its inception, and many feel that this approach is ideal for today's classroom due to readily available technology. They added

that most recent efforts to integrate technology in the classroom have been within the constructivist framework. Studies have found that the best methods used for integrating technology in the classroom require the learner to generate parts of the subject matter, and the least practical approaches involve the subject matter being presented to the students (Gilakjani et al., 2013). Considering the traditional method of instructional design, Gilakjani et al. (2013) stated that the learner is not actively involved in the learning process and he/she mainly receives the information from the instructor in the classroom. Contrary to the traditional method, constructivism requires the learner to participate, and technology offered in the classroom provides a more significant opportunity for students, to participate in their learning (Hickson, 2016). Moreover, Skaalvik and Skaalvik (2010), the central principle or premise of constructivism, is that learners construct meanings for themselves, and are not passive recipients of knowledge, which is predicated on the idea that as a species, we are constantly constructing knowledge based on our personal experiences and hypotheses about our environment. Therefore, learning should focus on providing learners opportunities and support to (re)construct or co-construct knowledge. Thus, the constructivist approach to education is potentially empowering to students because of its learner-centered emphasis. Learning experiences can be quite disengaging and disempowering if teacher's voice overwhelms the students'. The position of the teacher is inherently one of power, and that voice might represent a single dominant background or culture, which students might be inclined to interpret as the correct and only way of understanding the world (Abu-Tineh, Khasawneh, & Khalaileh, 2011).

4. Method

4.1. Design of the Study

The study used a quantitative design. Quantitative research methods provide researchers to analyze relating variables (Creswell, 2005). The quantitative approach requires quantification and statistical analysis to address the research questions and hypotheses. The present research used quantitative data to measure teacher self-efficacy as a latent variable and to explain and connect it to student learning and achievement outcomes and teacher effectiveness and practices. However, qualitative research were carried out to more fully explore teacher perceptions and uncover the specific aspects and experiences of teacher preparation in the integration of technology in the classroom.

4.2. Participants

The participants in this study were drawn from a convenience sample of some English language Institutes in Shiraz during the fall and winter semesters 2017-2018. The total number of surveys that were delivered to institutes was 80 teachers. The sample population was anonymous, so there would be no identifying measures to determine age,

institute, and gender. Teachers were informed of the goals of the study and asked to participate in the study during the semester. After receiving the information, they had the opportunity to fill out three surveys. Participants of the study were asked to complete a survey detailing their self-efficacy in their classroom, as well as a survey assessing attitudes towards technology in the classroom. Each survey took approximately 10-15 minutes to perform.

4.3. Instruments

For the purposes of this study, two scales, the Teacher Sense of Self-Efficacy Survey (TSES) and the Media Technology Usage and Attitudes Scale (MTUAS) were employed.

4.3.1. Teachers' Sense of Self-Efficacy Scale (TSES)

This questionnaire was created by Tschannen-Moran and Hoy (2001) and it was used to assess a baseline measure of each participant's level of teacher self-efficacy (see Appendix A). The participants responded to the questions using a 9-point Likert scale with anchors at 1: Nothing, 3: Very Little, 5: Some Influence, 7: Quite a Bit and 9: A Great Deal. Thus, higher scores indicate a greater sense of efficacy. The norms for the scale are reported as means of 7.1 and reliability of $\alpha = .94$ for the total score. As stated, TSES measures people's evaluations of their possible success in teaching. This questionnaire is a 24-item long scale, grouped into three subscales, such as 1) Efficacy for student engagement, 2) Efficacy of instructional strategies, and 3) Efficacy for classroom management. Each subscale consists of eight items. For the version used for this study, scale items loading on Efficacy in Instructional Strategies are 8, 11, 12, 18, 19, 21, 24, and 25; items loading on Efficacy in Classroom Management are 4, 6, 9, 14, 16, 17, 20, and 22; and items loading on Efficacy in Student Engagement are 2, 3, 5, 7, 10, 13, 15, and 23.

4.3.2. Media Technology Usage Attitude Scale (MTUAS)

The Media Technology Usage Attitude Scale (MTUAS) has been created to assess the attitudes of teachers towards technology as a general tool in the classroom (McFarlane, Green, & Hoffman, 1997). This survey is a 40-item measurement tool that assesses the frequency of items involving technology. The frequencies range from 1 (Never) to 10 (all of the time). It is worth noting that some unrelated items were excluded, such as the phone calling subscale (6 & 8), TV viewing subscale (19 & 20) and video gaming subscale (29, 30, & 31) (see Appendix B).

5. Results

In this quantitative study, Linear Regression Analysis was calculated to answer the first research question to examine teachers' attitudes towards the use of instructional technology in the classroom and its effects on their self-efficacy. Based on the findings of

the present study, Table 1 shows a correlation analysis of instructional technology and teachers' self-efficacy (N = 80).

Table 1. Correlation Analysis of Instructional Technology and Teachers' Self-Efficacy (N=80)

Total Attitude	Pearson Correlation	Self-efficacy total
		.680**
	Sig. (2-tailed)	.000
	N	80

As the SPSS output showed in Table 1, Pearson Correlation (.680) displayed that the variables, the use of instructional technology and teachers' self-efficacy, were highly and positively correlated. Model summary of instructional technology and teachers' self-efficacy (N = 80) is presented in Table 2.

Table 2. Model Summary of Instructional Technology and Teachers' Self-Efficacy (N=80)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.680 ^a	.462	.455	.46103

a. Predictors: (Constant), Total Attitude

b. Dependent Variable: Self-efficacy total

Table 2 represented three sub-scales of self-efficacy questionnaire, instructional strategies, classroom management, and student engagement, together explained 45% of the use of instructional technology (R² = .46, adjusted R² = .45). The results of the ANOVA test result of instructional technology and teachers' self-efficacy (N = 80) are presented in Table 3.

Table 3. ANOVA Test Result of Instructional Technology and Teachers' Self-Efficacy (N=80)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.249	1	14.249	67.042	.000 ^b
	Residual	16.578	8	.213		
	Total	30.828	9			

a. Dependent Variable: Self-efficacy total

b. Predictors: (Constant), Total Attitude

The results depicted in Table 3 revealed that the model significantly predicted the impacts of the use of instructional technology on teachers' self-efficacy ($F 67.04, p < .05$). The results of linear regression analysis which depicts the power of three sub-scales of teachers' self-efficacy in predicting the effects of the use of instructional technology are presented in Table 4.

Table 4. Linear Regression Coefficients of Instructional Technology and Teachers' Self-Efficacy (N=80)

Model	Unstandardized Coefficients		Standardized Beta	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error				Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
(Constant)	.259	.804	.32	.74	.74	-1.341	1.859					
1 Total Attitude	.774	.095	.68	8.188	.000	.586	.963	.680	.680	.680	1.000	1.000

a. Dependent Variable: Self-efficacy total

As displayed in Table 4, the total attitude in self-efficacy questionnaire received (beta = .47) the strong weight in the model and can predict the effects of the use of instructional technology on teachers' self-efficacy in the classroom.

Multiple Regression Analysis was conducted to see whether different modes of Integrated Technology (smartphones, the internet, text messaging, general social media and email) have any impacts on teachers' self-efficacy. Table 5 shows the correlations among integrated technology (smartphones, the internet, text messaging, global social media, and email) and self-efficacy (N = 80).

Table 5. Correlations among Integrated Technology (Smartphones, The Internet, Text Messaging, Global Social Media, and Email) and Self-efficacy (N=80)

	Self- efficacy total	Email	Text messagin	Smartph one	The Internet	Global Social Media
Pearson Correlation	Self- efficacy total	1.000	.686	.678	.477	.394
	Email	.686	1.000	.652	.295	.398
	Text messaging	.678	.652	1.000	.309	.241
	Smartphone	.477	.295	.309	1.000	.644
	The Internet	.592	.691	.698	.374	1.000
	Global Social Media	.394	.398	.241	.644	.326
						1.000

As displayed in Table 5, email (.652), text messaging (.698), smartphone (.644), Internet (.698) and global social media (.644) had a critical value less than .07 ($< .07$) and the variables were highly correlated. Model summary of integrated technology (smartphones, the internet, text messaging, global social media, and email) and teacher's self-efficacy (N = 80) is presented in Table 6.

Table 6. Model Summary of Integrated Technology (Smartphones, The Internet, Text Messaging, Global Social Media, and Email) and Teacher's Self-efficacy (N=80)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.760a	.577	.549	.41969

a. Predictors: (Constant), Media, Text messaging, Smartphone, Internet, Email

b. Dependent Variable: Self-efficacy total

Table 6 represented three subscales of the teacher's self-efficacy questionnaire explained 54% of the use of integrated technology ($R^2 = .577$, adjusted $R^2 = .549$). ANOVA test results of integrated technology (smartphones, the Internet, text messaging, global social media, and email) and teacher's self-efficacy (N = 80) are presented in Table 7.

Table 7. ANOVA Test Result of Integrated Technology (Smartphones, The Internet, Text Messaging, Global Social Media, and Email) and Teacher's Self-efficacy (N=80)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	17.793	5	3.559	20.203	.000b
	Residual	13.035	74	.176		
	Total	30.828	79			

a. Dependent Variable: Self-efficacy total

b. Predictors: (Constant), Media, Text messaging, Smartphone, Internet, Email

Table 7 revealed that the model highly predicted the impacts of the use of integrated technology on teachers' self-efficacy ($F = 20.203, p < .05$). The results of multiple regression coefficients of integrated technology (smartphones, the internet, text messaging, global social media, and email) and teacher's self-efficacy ($N = 80$) are shown in Table 8.

Table 8. Multiple Regression Coefficients of Integrated Technology (Smartphones, The Internet, Text Messaging, Global Social Media, and Email) and Teacher's Self-efficacy (N=80)

Model		Unstandardized Coefficients		Standardized	t	Sig.	95.0% Confidence Interval for B		Correlations		Collinearity Statistics		
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	1.213	.794		1.527	.131	-.370	2.796					
	Email	.237	.095	.413	2.496	.015	.048	.426	.686	.279	.189	.208	4.798
	Text messaging	.142	.128	.210	1.109	.271	-.113	.398	.678	.128	.084	.160	6.259

Smartphone	.348	.126	.339	2.763	.007	.097	.600	.477	.306	.209	.379	2.635
The Internet	.033	.105	.041	.314	.755	-.176	.242	.592	.036	.024	.342	2.924
Global Social Media	-.091	.138	-.086	-.663	.510	-.366	.183	.394	.077	.050	.338	2.960

a. Dependent Variable: Self-efficacy total

As shown in Table 8, beta values of the use of emails and smartphones were $\beta=.413$, and $\beta=.339$, respectively. Thus, these two subscales of media questionnaire could highly predict the significant impacts of the use of integrated technology on teacher’s self-efficacy.

6. Discussion

First, the present study tried to examine Iranian EFL teachers' attitude towards the use of instructional technology within the classroom and its impact on their self-efficacy. To show the impacts of the mentioned variables, linear regression analysis was calculated and was shown in different Tables in the previous parts. As the SPSS output showed, Pearson Correlation (.680) displayed that the variables, the use of instructional technology and teachers’ self-efficacy, were highly and positively correlated. The results depicted that the model significantly predicted the impacts of the use of instructional technology on teachers’ self-efficacy ($F 67.04, p < .05$) and also three sub-scales of self-efficacy questionnaire, instructional strategies, classroom management, and student engagement, together explained 45% of the use of instructional technology ($R^2 = .46$, adjusted $R^2 = .45$). Multiple regression analysis was conducted to see whether different modes of Integrated Technology (smartphones, the Internet, text messaging, general social media and emails) have any impacts on teachers’ self-efficacy. Model summary of integrated technology (smartphones, the internet, text messaging, global social media, and email) and teacher’s self-efficacy ($N=80$) showed that three subscales of teacher’s self-efficacy questionnaire explained 54% of the use of integrated technology ($R^2 = .577$, adjusted $R^2 = .549$). The results of multiple regression coefficients of integrated technology showed that emails and smartphones, two subscales of media questionnaire, could highly predict the significant impacts of the use of integrated technology on teacher’s self-efficacy. Thus, Regression analysis in the present study was all about

determining how changes in the independent variables, different modes of Integrated Technology, were associated with changes in teacher's self-efficacy in the classroom.

The findings of the present study were converging with some previous studies. Giles and Kent (2016) conducted a study to investigate preservice teachers' self-efficacy for teaching with technology. They mentioned that self-efficacy had been persistently cited as a significant component in understanding how frequently and successfully, individuals use technology. The results showed that 89% of the participants felt they could integrate technology across the curriculum, with 80% indicating they could determine the why, when, and how to do so most of the time. Khan (2011) investigates the correlation between teachers' efficacy and secondary students' achievement. He examined the impact of high/low teacher-efficacy on students' performance and teachers' ability to reach unmotivated and low achieving students. After collecting and analyzing the data, Khan (2011) found that there is a positive relationship between teachers' sense of efficacy and students' performance. Lee, Cawthon, and Dawson (2013) compared, as a part of a more extensive study, teachers' sense of efficacy among elementary and secondary teachers. They reported that elementary teachers' sense of efficacy was significantly higher than secondary teachers' sense of efficacy. Doordinejad and Afshar (2014) investigated the relationship between self-efficacy and English achievement among third-grade high school students and revealed a statistically significant positive relationship between foreign language learners' self-efficacy and English achievement among the study participants.

7. Conclusion

The present study examined the impacts of technology integration on teachers' self-efficacy such as smartphones, the Internet, text messaging, global social media, and email. The findings revealed that there were significant effects of technology integration on teachers' self-efficacy. It was further discovered that teacher self-efficacy had a significant relationship with the ability to integrate all of the sub-groups: smartphones, the Internet, social media, texting, and email. Smartphones and emails could highly predict the positive effects of integrated technology on teacher's self-efficacy. The current study suggested that many teachers had integrated the technologies that were available to them in the classroom within their daily life. The findings of the present study suggested that training for technology-related components may not need to focus on how to use the technologies, but focusing more on how the technologies can benefit the classroom and help learners to improve their learning within the classroom. As a result, the proper use of technology within the classrooms would increase, and students' achievement would increase. Therefore, teachers with higher perceived self-efficacy are more confident in fostering a constructivist approach to learning and using

technology. The results of the present study would help educators understand how to prepare and equip teachers to better integrate technology into the classroom. Since the present study found a statistically significant effect of technology integration on teacher self-efficacy and, the implication supported previous studies that suggested self-efficacy may be a predictor of behavior and technology integration (Anderson & Maninger, 2007; Anderson, Groulx, & Maninger, 2011; Neiderhauser & Perkmen, 2008; and Teo, 2009). The present study determined teachers' ability to integrate technology significantly impacted teachers' self-efficacy. However, the study also determined that the majority of the teachers had a working knowledge of the technologies within the classroom, and most of them used these technologies on a regular basis in their daily lives. Additionally, technology integration had a statistically significant relationship with the teacher-self-efficacy; the study provided some meaningful information relevant to the successful integration of technology. Results of the study indicated that teachers do integrate these technologies within their daily lives regularly. Finally, these findings add to the growing body of literature and can be used for future research in an effort to more fully understand the integration of technology and teacher self-efficacy.

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