

Special Education Teachers' Competence, Self-Efficacy, and Autonomy in Using ICT amid the Covid19 Pandemic

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Abstract

The outbreak of Covid-19 has forced teachers of special education in Saudi Arabia to keep to themselves to live in a technology-infused society throughout the virtual teaching and learning process. This study set out to explore the competence, self-efficacy, and autonomy in using information communication technology (ICT) of special education teachers in Saudi Arabia. A total of 244 special education teachers in Saudi Arabia participated in this study. This study adopted the New General Self-Efficacy Scale developed and validated by Chen, Gully, and Eden (2001), as well as the Basic Psychological Needs in Exercise Scale (BPNES) developed and validated by Vlachopoulos and Michailidou (2006). Confirmatory factor analysis (CFA) and multivariate analysis of variance (MANOVA) were used as the main data analysis in this study. The findings showed that special education teachers in Saudi Arabia possessed competence, self-efficacy, and autonomy in using ICT in their teaching and learning process. All the factor loadings in each factor were .75 or higher, indicating good factor loadings. The results of the MANOVA indicated that special education teachers in Saudi Arabia do not report different perceptions of their competence, self-efficacy, and autonomy despite their different gender, age group, academic background, and teaching experiences.

Keywords:

competence, self-efficacy, autonomy, special education, ICT

1. Introduction

The last two years have seen a growing trend toward the urgent need for information communication technology (ICT) in education settings. The outbreak of Covid-19 required schools to prepare their students to live in a technology-infused society throughout the virtual teaching and learning process. This situation has forced teachers to be well equipped with both knowledge and skills in ICT to support students' learning through the use of technology. Yet, it is undeniable that many teachers have varying degrees of ability and comfort with different technological tools at their disposal. Their ability to facilitate students with ICT and to improve their students' skills in using the technology depends, in part, on their

competence, personal comfort with, and use of ICT in their outside-of-the-class lives (Al Khateeb, 2017). Having autonomy in the use of ICT also helps teachers to become more active in facing technology-related changes in schools and to possess a more positive attitude to adapt to technological-related instruction (Wu & Wu, 2018). In addition to this, their willingness to infuse ICT in their instruction is also influenced by their self-efficacy beliefs regarding ICT instruction (Hatlevik & Hatlevik, 2018). These variables may interact and help teachers shape their ICT practice either within the classroom or outside of the classroom and face challenges in the use of ICT, such as in online learning or virtual classrooms.

Despite the extensive research carried out on teachers' autonomy, competence, and self-efficacy in using ICT for instructional purposes (Ogirima, Emilia, & Juliana, 2017), little is known about special education teachers' autonomy, competence, and self-efficacy in using ICT. This group of teachers may find extra difficulties and challenges in using ICT, especially online learning (Alsawalem, 2019), since they have to provide their students with extra support in using ICT throughout their learning (Rana, Fakrudeen, Miraz, Yousef, & Torqi, 2011), especially in times of a pandemic like this, remembering that even with pre-pandemic learning, their students need special attention and extra facilitation from the teacher. This definitely becomes an extra load for special education teachers to cope with their autonomy, competence, and self-efficacy in using ICT and supporting special needs students with ICT at the same time. Thus, there is a need to gather new knowledge about how teachers of special education autonomy, competence, and self-efficacy interact during this pandemic. This research specifically explores the associations between the dimensions of teachers of special education autonomy, competence, and self-efficacy during this pandemic.

2. Literature Review

There is a large volume of published studies describing the role of teachers' autonomy, competence, and self-efficacy in using ICT for instructional purposes. Previous studies have explored the relationships between teachers' autonomy in using ICT and their students' motivation in the teaching and learning processes (Canrinus, Helms-Lorenz, Beijaard, Buitink, & Hofman, 2012). Some have considered the effects of teachers' self-efficacy in promoting students' learning, while others have highlighted how teachers' competence in using ICT promotes learners' learning processes (Peralta & Costata, 2007).

Bandura's concept of self-efficacy (1997) seems to be one of the most widely accepted definitions of self-efficacy. He defined it as a person's assessment of one's ability to organize and take the actions needed to handle various types of work. This psychological construct is believed to be more powerful than individuals' actual abilities, which may affect individuals' levels of persistence, how people feel and think, degrees of motivation, and affective states regarding tasks within the same area, thereby influencing their performances. This construct is not only about an array of skills that an individual has, but it is also related to their belief in what they can accomplish with these skills in a given situation. It is also believed that enhancing individuals' self-efficacy beliefs in a specific set of tasks may help them increase their performance. In the teaching and learning concept, it may refer to teachers' judgment of their capabilities to run the teaching-learning process as planned, which involves student engagement and learning, even among those students who may be difficult or unmotivated (Tschannen-Moran & Hoy, 2001). In other words, it can also be defined as teachers' belief that they possess the ability to carry out good teaching in the classroom (Christophersen, Elstad, Turmo, & Solhaug, 2016).

In relation to the use of ICT in the teaching and learning process, there is a growing body of literature that recognizes how teachers' levels of self-efficacy in using ICT in the classroom help teachers to achieve higher levels of self-confidence in being effective and efficient teachers with ICT (Fanni, Rega, & Cantoni, 2013; Hatlevik & Hatlevik, 2018; Scherer & Siddiq, 2015; Hatlevik, 2017). Numerous studies also highlight that teachers' self-efficacy in using ICT for instructional purposes is strongly connected with their own ICT self-efficacy and to their use of ICT in their instruction (Fanni,

Rega, & Cantoni, 2013; Hatlevik & Hatlevik, 2018; Scherer & Siddiq, 2015; Hatlevik, 2017). This association makes sense, since teachers' common perception of their skills in using ICT is an essential, though not sufficient, factor for self-efficacy in making use of ICT for instructional purposes (Almeida, Jameson, Riesen, & McDonnell, 2016; Elstad & Christophersen, 2017). In other words, teachers need to be competent in using ICT before they can incorporate it for instructional purposes.

In addition to teachers self-efficacy in using ICT, the academic literature on teachers' competence has revealed the need for teachers' competence in using ICT, how teachers need to keep up with the advances of technologies and information and the contribution of teachers' competence on successful implementation of ICT curriculum (Badau & Sakiyo, 2013; Chapman & Malilick, 2004). That is one of the reasons why UNESCO launched the ICT competency framework for teachers (ICT-CFT) in 2008 to help educational policy-makers and curriculum developers identify the skills teachers need to make use of technology in the service of education. The standards of competency were developed in cooperation with Cisco, Intel, and Microsoft, as well as with the International Society for Technology in Education. In addition, the European Parliament and the Council (2006) identify key competencies in using ICT which include: (1) communication in the mother tongue, (2) communication in foreign languages, (3) mathematical competence and basic competences in science and technology, (4) digital competence, (5) learning to learn, (6) social and civic competences, (7) a sense of initiative and entrepreneurship, and (8) cultural awareness and expression.

With respect to teachers' competence in using ICT, there has been growing interest among researchers across the globe in the areas of digital competence and ICT. One of the reasons for this is that the concept of ICT interconnects with digital competence (Kotsanis, 2018). Both require teachers to have the ability to retrieve, evaluate, store, present, and exchange information and communication, as well as collaborate through the Internet and social networking tools (Alsawalem, 2020). To do so, teachers need to possess the ability to make use of the new potentials associated with ICT and digital technologies and to overcome the challenges they may face (Alsawalem, 2019). Thus, the wide range of technologies is likely to be beneficial for the learning and teaching process, as they may increase access to more education resources and reveal wider opportunities for collaboration and problem-solving for both teachers and students (Alsawalem, 2019). Teachers' competence in using ICT for the teaching and learning process has been a very trendy theme, and the implementation of curriculum needs core competences that are mandatory

for teachers to keep abreast with the advances of technologies. In other words, one of the principal reasons for adopting digital skills and ICT competence is because “competency in the use of information and communication technologies has recently become an integral part of teachers’ professional competency.” Consequently, competence in using ICT is an inseparable aspect of the teaching and learning process. However, previous studies in the field of special education also revealed the great need for ICT support in the forms of training and facilities for schools where these special education teachers work (Yeni & Gecu-Parmaksiz, 2016; Brodin & Lindstrand, 2003), especially during this pandemic time, when teachers do not have choices but to use ICT in the teaching and learning process (Iivari, Sharma, & Ventä-Olkkonen, 2020).

Although there has been numerous autonomy literature, the majority of existing studies have focused on learners’ autonomy (Cakir & Balcikanli, 2012). Very few studies were found to highlight teachers’ autonomy. Most of the literature has highlighted how successful teachers have always been autonomous in the sense of having a strong sense of personal responsibility for their teaching, exercising via continuous reflection and analysis the highest possible degree of affective and cognitive control of the teaching process, and exploiting the freedom that this confers (Little, 1995: 179). It was probably Street and Licata (1989) who first termed teacher autonomy as the teacher’s feelings of independence from the institution when instructional decisions are taken in matters such as choosing the textbook to follow, teaching strategies to employ, and classroom rules to obey. Another definition of teacher autonomy was given by Pearson and Hall (1993, p. 172) as “...the right of teachers to manage themselves and their job environment”. Further early attempts by Smith (2000) and McGrath (2000) conceptualize teacher autonomy as the degree to which teachers have the capability to advance their instruction through their individual efforts (either reflective or research-oriented approaches). In addition to this, teachers’ autonomy has also been defined as the sense of being capable of self-direction/self-development, or in the sense of being free of constraints (Webb, 2002).

In contrast to both teachers’ self-efficacy and competence in using ICT, there is much less information about teacher autonomy in using technology for the instructional purposes. The majority of the literature on teacher autonomy has focused on teacher education practices (Lamb, 2000; McGrath, 2000; Smith, 2000; Aoki, 2002). Some other studies highlighted teachers’ readiness in using ICT (Hu & McGrath, 2011), how important teachers’ autonomy in using ICT to support the teaching and learning process

(Lee & Nie, 2020; Reeve, 2006), and how teachers’ autonomy in using ICT is related to their students’ performance (Comi, Argentin, Gui, Origo, & Pagani, 2017).

Numerous studies have examined the relationship between teachers’ competence, self-efficacy, and autonomy. Among these studies, some have highlighted the positive relationships between teachers’ self-efficacy and their perceived autonomy (Slaalvik & Slaalvik, 2014; Lu, Jiang, Yu, & Li, 2015; Noughabi & Amirian, 2020), the positive relationships between teacher competence and self-efficacy (Hatlevik, 2017; Mannila, Nordén, & Pears, 2018; Miller, Ramirez, & Murdock, 2017), and how teachers’ autonomy is related to their competence (Kierner, Gröschner, Kunter, & Seidel, 2018; Kajfez, Matusovich, 2017; Averill & Major, 2020). The majority of these studies found positive relationships among teachers’ competence, self-efficacy, and autonomy.

Despite the extensive research carried out on teachers’ self-efficacy, competence, and autonomy in using ICT for instructional purposes, no single study exists that investigates teachers of special education self-efficacy in using ICT for instructional purposes. This group of teachers has a real challenge in the use of ICT in the classroom in this pandemic since they have to provide extra support with ICT to special needs students. This study set out to explore teachers of special education’s perception of autonomy, competence, and self-efficacy in using ICT during this pandemic and how the dimensions of teachers of special education autonomy, competence, and self-efficacy interact.

3. Methods: *Participants*

2.

A total of 244 special education teachers in Saudi Arabia participated in this study. This group of teachers was randomly selected to participate in this study. An electronic invitation was sent to the prospective participants via email and WhatsApp, and the volunteer participants were asked to complete an online survey. The sample in this study comprised 78.3% male and 21.7% female in-service special education teachers in Saudi Arabia. Most of the participants were 30–34 years old (23.4%), 20–24 years old (17.6%), 35–39 years old (17.6%), and 40–44 years old (17.6%). They had diverse academic backgrounds ranging from bachelor’s degree (73.0%) to graduate diploma (7.8%) and master’s degree (4.1%). They also had varied teaching experience, ranging from 1–5 years (22.5%), 6–10 years (29.1%), 11–15 years (25.0%), to more than 20 years (9.0%).

Measures

This study adopted the New General Self-Efficacy Scale developed and validated by Chen, Gully, and Eden

(2001) and the Basic Psychological Needs in Exercise Scale (BPNES) developed and validated by Vlachopoulos and Michailidou (2006). The former was used to measure special education teachers' self-efficacy in using ICT for instructional purposes (eight items), while the latter was used to measure special education teachers' competence (four items) and autonomy (four items) in using ICT for instructional purposes. The items were measured on a 4-point scale, from "Strongly Disagree" (1) to "Strongly Agree" (4). The items were adopted by adjusting the items to online learning during the pandemic. The following is the list of items used in this study:

Competence in using ICT for instructional purposes

1. I feel I have been making huge progress with respect to the online learning I adopt in my class during this pandemic.
2. I feel that I execute very effectively the online learning I adopt in my class during this pandemic.
3. I feel that the online learning I adopt in my class during this pandemic is an activity in which I do very well.
4. I feel that I can manage the requirements of the online learning I adopt in my class during this pandemic.

Self-efficacy in using ICT for instructional purposes

1. I will be able to achieve most of the goals that I have set for the online learning I adopt in my class during this pandemic.
2. When facing difficult tasks in the online learning I adopt in my class during this pandemic, I am certain that I will accomplish them.
3. In general, I think that I can obtain outcomes that are important to me in the online learning I adopt in my class during this pandemic.
4. I believe I can succeed in any endeavor to which I set my mind in the online learning I adopt in my class during this pandemic.
5. I will be able to successfully overcome many challenges in the online learning I adopt in my class during this pandemic.
6. I am confident that I can perform effectively on many different tasks of the online learning I adopt in my class during this pandemic.
7. Compared to other people, I can do most tasks very well using the online learning I adopt in my class during this pandemic.
8. Even when things are tough during this pandemic, I can perform quite well in the online learning that I adopt in my class.
- 9.

Autonomy in using ICT for instructional purposes

1. The online learning I adopt in my class during this pandemic is highly compatible with my choices and interests.

2. I feel very strongly that the online learning I adopt in my class fits perfectly with the way I prefer to teach during this pandemic.
3. I feel that the online learning I adopt in my class is definitely an expression of myself.
4. I feel very strongly that I have the opportunity to make choices with respect to the online learning I adopt in my class during this pandemic.

Statistical Analysis

Confirmatory factor analysis (CFA) and multivariate analysis of variance (MANOVA) were used as the main data analysis in this study. The CFA was used to confirm the structure of the special education teachers' self-efficacy, competence, and autonomy in using ICT for instructional purposes that emerged from the data in this study. *Mplus* version 7.2 (Muthén & Muthén, 1998–2012) was used for the CFA. To adjust for the non-normality of the survey data, the researchers used maximum likelihood estimation with robust standard errors (MLR), as suggested in Bentler (2005). Four main fit indices were used to indicate a good model fit of the data, i.e. Comparative Fit Index (CFI >.90), Tucker-Lewis index (TLI >.90), Root Mean Square Error of Approximation (RMSEA <.05), and Standardized Root Mean Square Residual (SRMR <.05). A ratio of 1/3 or less between the degrees of freedom (*df*) and chi-square statistics (χ^2) was also used as an acceptable model fit criterion (Wang & Wang, 2012).

4. Findings and Discussion

Findings from Confirmatory Factor Analysis

A CFA with *MPlus* 7.2 was conducted to examine whether the dimensions of special education teachers' self-efficacy, competence, and autonomy in using ICT for instructional purposes during the Covid19 pandemic emerged from the data collected in this study. The results from the CFA showed an excellent model fit to the data, with $\chi^2 = 164.46$, $df = 101$, $\chi^2/df = 1.6$, RMSEA = .05, SRMR = .03, CFI = .97, and TLI = .96. Table 1 presents the results of the CFA for the 16 items and their corresponding factors, standardized factor loadings, and Cronbach's α of each factor as a reliability measure. It can be seen from the table that the reliability of the three factors was high, with Cronbach's α values ranging from .89 (Autonomy) to .96 (Self-efficacy).

Table 1. The results of the CFA for the 16 items and their corresponding factors, standardized factor loadings, and Cronbach's α

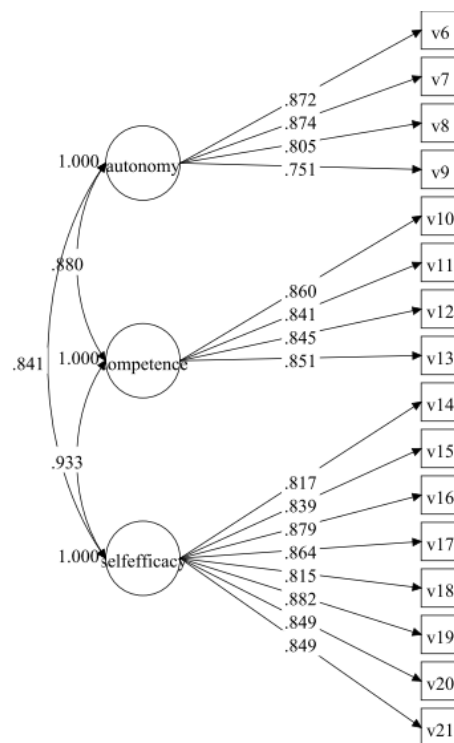
Items	F1	F2	F3
I feel I have been making huge progress with respect to the online learning I adopt in my class during this pandemic.	.86		
I feel that I execute very effectively the online learning I adopt in my class during this pandemic.	.84		
I feel that the online learning I adopt in my class during this pandemic is an activity in which I do very well.	.85		
I feel that I can manage the requirements of the online learning I adopt in my class during this pandemic.	.85		
I will be able to achieve most of the goals that I have set for the online learning I adopt in my class during this pandemic.		.82	
When facing difficult tasks in the online learning I adopt in my class during this pandemic, I am certain that I will accomplish them.		.84	
In general, I think that I can obtain outcomes that are important to me in the online learning I adopt in my class during this pandemic.		.88	
I believe I can succeed in any endeavor to which I set my mind in the online learning I adopt in my class during this pandemic.		.86	
I will be able to successfully overcome many challenges in the online learning I adopt in my class during this pandemic.		.82	
I am confident that I can perform effectively on many different tasks of the online learning I adopt in my class during this pandemic.		.88	
Compared to other people, I can do most tasks very well using the online learning I adopt in my class during this pandemic.		.85	
Even when things are tough during this pandemic, I can perform quite well in the online learning that I adopt in my class.		.85	
The online learning I adopt in my class during this pandemic is highly compatible with my choices and interests.			.87
I feel very strongly that the online learning I adopt in my class fits perfectly with the way I prefer to teach during this pandemic.			.87

I feel that the online learning I adopt in my class is definitely an expression of myself.			.81
I feel very strongly that I have the opportunity to make choices with respect to the online learning I adopt in my class during this pandemic.			.75
Reliability (Cronbach's Alpha)	.92	.96	.89

Note: F1: Competence, F2: Self-efficacy, F3: Autonomy

Based on the factor interpretability, the three latent factors were confirmed as: Competence in Using ICT for Instructional Purposes, Self-efficacy in Using ICT for Instructional Purposes, and Autonomy in Using ICT for Instructional Purposes. What is interesting about the data in this table is that all of the factor loadings in each factor are .75 or higher, indicating good factor loadings as the minimum accepted factor loadings for CFA is normally .40 (Wang & Wang, 2012). Figure 1 shows the pictorial presentation of how the items load in each factor.

Figure 1. The factor loadings for each item



There are a few notable findings about the three factors retained in this study. First, it appears that the first retained in this study represents how teachers of special education in Saudi Arabia perceived their huge progress

with respect to the online learning in their class during this Covid19 pandemic. They also reported how effective and efficient their online instruction has been during this pandemic. This indicates that these teachers perceived that they have had good competence in using ICT for instructional purposes.

The second interesting finding is that the teachers in this study reported how they perceived their self-efficacy in using ICT for instructional purposes, which included how successful they overcame many challenges in the online learning and how successful they performed effectively on many different tasks in the online learning. The third interesting finding is related to teachers' perceived autonomy in using ICT for instructional purposes. It indicates how they perceive the opportunity to make choices with respect to the online learning and how they perceive their choice as an expression of their own will to use online learning.

A closer look at the correlation between the dimensions of special education teachers' competence, self-efficacy, and autonomy in using ICT for instructional purposes shows that there is a strong positive relationship between teachers' competence in using ICT for instructional purposes and their self-efficacy in using ICT for instructional purposes ($r:.93$), teachers' competence in using ICT for instructional purposes and their autonomy in using ICT for instructional purposes ($r:.88$), and teachers' autonomy in using ICT for instructional purposes and their self-efficacy in using ICT for instructional purposes ($r:.84$),

Table 2. *Correlation among the special education teachers' competence, self-efficacy, and autonomy in using ICT for instructional purposes*

	Competence	Self-efficacy	Autonomy
Competence	1	.93	.88
Self-efficacy	.93	1	.84
Autonomy	.88	.84	1

Findings from Multivariate Analysis of Variance

After the CFA, MANOVA was conducted to examine if there was any significant difference in the special education teachers' competence, self-efficacy, and autonomy in using ICT for instructional purposes during the pandemic. Surprisingly, the results from the MANOVA show that there is no significant difference in the special education teachers' competence, self-efficacy, and autonomy in using ICT for instructional purposes by their gender [$F(3, 242) = 1.61, p = .19$; Wilk's $\Lambda = .98$], age [$F(3, 242) = .87, p = .59$; Wilk's $\Lambda = .94$], academic background [$F(3, 242) = 1.23, p = .26$; Wilk's $\Lambda = .94$] and teaching experience [$F(3, 242) = .36, p = .98$; Wilk's $\Lambda = .98$]. These indicate that special education teachers in

Saudi Arabia do not report different perceptions toward their competence, self-efficacy, and autonomy despite their different gender, age group, academic background, and teaching experiences.

Discussion

This study set out with the aim of examining special education teachers' competence, self-efficacy, and autonomy in using ICT for instructional purposes. The use of ICT inside and outside of the classroom for instructional purposes has recently become a trending topic due to the outbreak of Covid 19. Despite the growing body of literature that recognizes teachers' use of ICT for instructional purposes in the last decade, none has been conducted on teachers' competence, self-efficacy, and autonomy in using ICT for instructional purposes amid this pandemic.

This study revealed several important findings. The first most interesting finding is related to the emergence of the dimensions of special education teachers' competence in using ICT for instructional purposes. This finding indicates that despite the difficult condition due to the covid19 pandemic, teachers of special education in Saudi Arabia still possess the ability to exert control over the use of ICT for instructional purposes, to cope with specific problems related to the use of ICT for instructional purposes effectively, and to make changes to one's behavior and one's environment about the use of ICT of instructional purposes. This study is in line with the findings from Badau and Sakiyo (2013), Chapman and Malilick (2004), and Kotsanis (2018). The emergence of teachers of special education competence in using ICT for instructional purposes was quite surprising since some previous studies showed a great need for training in the ICT field and the lack of time and financial resources that teachers of special education need due to the need for extra support from their students (Yeni & Gecu-Parmaksiz, 2016; Brodin & Lindstrand, 2003). One possible reason for this finding is that, due to the pandemic, these teachers do not have choices but to incorporate ICT in the teaching and learning process (Iivari, Sharma, & Ventä-Olkkonen, 2020), though this may require them to put extra effort into the extra needs their students may need.

The second interesting finding is that teachers of special education perceived self-efficacy in using ICT for instructional purposes also emerged in this study. This finding confirms previous studies by Almeida, Jameson, Riesen, and McDonnell (2016) that found how teachers of special education possessed a particular set of beliefs that determine how well they can incorporate ICT in their instruction, especially during this pandemic (Parmigiani,

Benigno, Giusto, Silvaggio, & Sperandio, 2020; Samaila, Ayanjoke, Mailafia, & Joshua, 2020). This result may be explained by the fact that teachers of special education still had to run their classes amid the pandemic, which in turn motivates them to keep in touch with ICT and face the challenges in dealing with ICT for their instructional purposes (REFERENCES). Their strong will and effort to use ICT to support their students with special needs may have led them to grow their belief in how well they can use ICT in the teaching and learning process.

The next interesting finding is related to the emergence of Saudi Arabian special education teachers' autonomy in using ICT for instructional purposes during the Covid19 pandemic in this study. This result corroborates the findings of a great deal of the previous work in the area of teachers' autonomy, which revealed that teachers' belief in their freedom to use technology helps them in organizing their instruction better (Comi, Argentin, Gui, Origo, & Pagani, 2017; Lee & Nie, 2020; Reeve, 2006), which is likely to also happen to teachers of special education. These results are likely to be related to special education teachers' freedom to organize their instruction during the pandemic, about the choice of the platforms to use, the timing, and also the evaluation procedure and tolls.

Another significant finding is that special education teachers' competence, self-efficacy, and autonomy in using ICT for instructional purposes during the pandemic are strongly related to one another. This finding broadly supports the work of other studies in this area linking teachers' competence in using ICT for instructional purposes with self-efficacy in using ICT for instructional purposes (Hatlevik, 2017; Mannila, Nordén, & Pears, 2018; Miller, Ramirez, & Murdock, 2017), competence in using ICT for instructional purposes with autonomy in using ICT for instructional purposes (Kierner, Gröschner, Kunter, & Seidel, 2018; Kajfez & Matusovich, 2017; Averill & Major, 2020), and self-efficacy in using ICT for instructional purposes with autonomy in using ICT for instructional purposes (Slaalvik & Slaalvik, 2014; Lu, Jiang, Yu, & Li, 2015; Noughabi & Amirian, 2020). These relationships may partly be explained by the urgency of incorporating ICT in the teacher's instruction due to this pandemic time.

One unanticipated finding was that the results from the MANOVA revealed no significant difference in Saudi Arabian special education teachers' competence, self-efficacy, and autonomy in using ICT for instructional purposes during the pandemic by their gender, age group, academic experience, and teaching experience. This is quite surprising, as many previous studies showed contrasting results (Alharbi, 2018; Oyaid, 2009). Since this difference has not been found elsewhere, it is probably due to the Covid19 pandemic, which forces every special

teacher to struggle to use ICT in their instruction amid their gender.

The empirical findings in this study provide a new understanding of how special education teachers perceived their competence, self-efficacy, and autonomy in using ICT for instructional purposes during the Covid19 pandemic. This study appears to be among the first to explore Saudi Arabian special education teachers' perceived competence, self-efficacy, and autonomy in using ICT for instructional purposes during the Covid19 pandemic.

5. Limitations of the Study

One source of weakness in this study that could have affected the measurements of special education teachers' perceived competence, self-efficacy, and autonomy in using ICT for instructional purposes during the Covid19 pandemic is the limited number of respondents participating in this study (244 special education teachers in Saudi Arabia). Future research may also need to involve qualitative examination of special education teachers' perceived competence, self-efficacy, and autonomy in using ICT for instructional purposes during the Covid19 pandemic.

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