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Special Education Teachers' Self-efficacy, Competence and Autonomy in Integrating Information Communication Technology during the COVID-19 Pandemic

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ABSTRACT The special education sector in Saudi Arabia has had to resort to virtual educational processes and, consequently, to a technology-infused society during the COVID-19 pandemic. This study aimed to investigate the use of Information Communication Technology (ICT) by surveying 244 special education during COVID-19 and the self-efficacy, competence, and autonomy associated with ICT use. Data were analyzed using confirmatory factor analysis (CFA) and multivariate analysis of variance (MANOVA). The data analysis results revealed that these instructors were equipped with the attributes of self-efficacy, competence, and autonomy regarding the use of ICT in educational processes throughout the COVID-19 period. All three attributes have high factor loadings (greater than 0.75). Although there was a great disparity among these educators with respect to their qualifications, experience, gender, and age, they all held similar perceptions of the three attributes. This study presents the implications for future research and practices in this domain.

INTRODUCTION

This section reviews the relevant literature in the field of ICT, specifically focused on teachers' use of ICT in the field of education. As this is a large field, this section focuses on five parts, which are (ICT, Self-efficacy, Competence, Autonomy, and Self-efficacy Competence and Autonomy).

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Information Communication Technology (ICT)

ICT has gained considerable importance in the field of education, specifically with the spread of COVID-19 within the last two years. It enables educationalists to use digital and telecommunication tools for quick access to reliable information (Woolsey and Bellamy 1997). It is different from information technology (IT) as it involves the ex-

ploitation of digital tools to facilitate communication. It is based on the use of the internet, smart gadgets, and other communication devices. Furthermore, it enables educational institutes to improve their teaching and learning processes and deliver high-quality services to students for higher academic outcomes and better student performance (Elston 2007). ICT is described in the current research as the technology that uses the internet to connect with digital tools like computers and smart devices for an effective flow of information which is essential for educational processes. The COVID-19 pandemic compelled the entire educational sector to shift to virtual practices and become familiar with the technology-infused world. Consequently, teachers had to be prepared to familiarize themselves with technology, specifically ICT use. This allowed them to continue learning and teaching processes in virtual environments during the COVID-19 pandemic that ceased most of the physical educational practices. Teachers differ from each other with respect to their knowledge, outlook, and proficiency regarding ICT use in their educational activities. This ICT disparity in the teachers may be attributed to the diverse competence, compatibility, and different exposure of each teacher to ICT in their personal lives (Al Khateeb 2017).

Self-efficacy

The concept of self-efficacy was best described by Bandura; it is how a person perceives and evaluates their capability to deal with different situations through their actions and management skills (Bandura 1997). A person's performance is associated with their self-efficacy, which exerts considerable influence on their perceptions, motivation levels, persistence levels, and emotions and feelings associated with work. Self-efficacy is directly associated with the skills and expertise of a person, as well as their beliefs and confidence in their abilities to exploit their skills in various situations and environments. Individuals can deliver better performance on certain tasks by promoting their self-efficacy about those tasks (Mostafa 2018). Considering the educational sector, if a teacher is confident about their ability to effectively implement teaching practices to ensure the proper learning of all students (including unmotivated students) and student engagement, that confidence is deemed as their self-efficacy (Tschannen-Moran and Hoy 2001).

Several studies in extant literature have indicated the positive effects of teachers' self-efficacy regarding ICT use on teaching processes. Teachers equipped with ICT-related knowledge and expertise consider themselves capable of implementing ICT effectively in their teaching practices and hence have a higher level of self-efficacy. Most studies indicate that teachers have higher self-efficacy regarding their knowledge and expertise in ICT and are more confident in implementing ICT in their teaching processes (Fanni et al. 2013; Scherer and Siddiq 2015; Hatlevik 2017; Hatlevik and Hatlevik 2018). A teacher's self-efficacy in implementing ICT in their teaching practices calls for an adequate perception of their ability to use ICT in addition to other factors (Almeida et al. 2016; Elstad and Christophersen 2017). This implies that effective ICT implementation in the classroom requires teachers to have adequate ICT knowledge and expertise.

Competence

Studies on teachers' competence have indicated the significance of their ICT-related competence. Like all fields, education requires teachers to upgrade themselves with evolving technology and invest the best possible efforts in effectively integrating ICT into their teaching practices (Badau and Sakiyo 2013; Chapman and Malilick 2004). In 2008, with the introduction of the ICT Competency Framework for Teachers (ICT-CFT) by the United Nations Educational, Scientific, and Cultural Organization (UNESCO), curriculum developers and policymakers in the educational sector gained insight into the most essential technology skills for teachers. Cisco, Intel, Microsoft, and the ISTE (International Society for Technology in Education) collectively formulated competency standards. The competencies essential for ICT use according to the European Parliament and Council (2006) are as follows: (1) ability to communicate via native language; (2) ability to communicate via international languages; (3) adequate level of competence in math, science, and technology; (4) digital competence; (5) competence to enhance one's learning; (6) civic and social competences; (7) sense of initiative and entrepreneurship for the transformation of ideas into actions; (8) competence of cultural awareness and expression involving cultural knowledge, and acceptance of diversity in culture.

The interconnection between ICT and digital competence has prompted researchers to study these concepts (Kotsanis 2018). Teachers interested in implementing digital competence and ICT must be equipped with the traits of effective communication and information handling and must be proficient in the retrieval, assessment, storage, and exchange of information; they must also be proficient in using the internet, digital devices, and social networking tools (Alsawalem 2020). Teachers must be able to exploit the new features offered by ICT, have adequate knowledge of using digital tools in teaching and learning practices simultaneously, and resolve any issues faced by students in the classroom (Alsawalem 2019). The use of technology allows teachers and students to gain access to educational resources and facilitates collaboration and problem solving; hence, it improves learning and teaching processes (Alsawalem 2019). ICT is strongly associated with teachers' professional competencies; therefore, it is further associated with teaching and learning processes, making it inevitable for teachers to be equipped with digital skills and ICT competence. Specifically, special education teachers must be offered support through the provision of training and opportunities to allow them to make effective use of ICT (Yeni and Gecu-Parmaksiz 2016; Brodin and Lindstrand 2003). With the outbreak of COVID-19 and the shift to virtual systems, it has become inevitable for teachers and students to implement ICT and other educational technologies to conduct educational activities (Iivari et al. 2020).

Autonomy

Teacher autonomy refers to the extent to which teachers can conduct teaching activities independently (Smith 2000; McGrath 2000). As per Street and Licata (1989), teacher autonomy refers to teachers' perceived independence in making their own decisions about class rules, teaching methods, and the selection of books and curricula without any influence from the institution. Other definitions describe teacher autonomy as a teacher's feeling of independently performing teaching practices without others' guidance and confidence in effectively pursuing self-direction/self-development (Webb 2002). Unfortunately, the literature lacks studies on teacher autonomy despite several studies on student autonomy (Cakir and Balcikanli 2012; Harris 2021; Kengatharan 2020). It is evident from the available studies that teacher autonomy leads to effective teaching since those with a feeling of autonomy depict higher responsibility and constant reflection; such teachers also use their skills to identify the best ways to control teaching activities cognitively and emotionally (Little 1995).

Limited literature is available on teacher autonomy in terms of technology use and the integration of technology in teaching practices. Most studies conducted in this domain offer insights into teaching practices (Lamb 2000; McGrath 2000; Smith 2000; Aoki 2002). A few studies have highlighted teachers' willingness to integrate ICT into teaching (Hu and McGrath 2011). Others have investigated how the integration of ICT in teaching is affected by teachers' autonomy (Lee and Nie 2020; Reeve 2006). Additionally, some studies have attempted to establish a link between student performance and teachers' autonomy concerning ICT use (Comi et al. 2017). Teachers who are given autonomy in ICT use depict greater enthusiasm in resolving issues relevant to technology and show greater willingness and readiness towards the integration of technology in teaching (Wu and Wu 2018). Moreover, teachers' self-efficacy and confidence in adding ICT into the teaching and learning process also play an important role in their positive attitudes towards the integration of ICT in teaching practices (Hatlevik and Hatlevik 2018). Hence, all these factors collectively facilitate smooth and effective integration of ICT by teachers in their professional and personal lives in the form of online or virtual classrooms and allow them to deal with the challenges faced in this attempt.

Self-efficacy, Competence and Autonomy

The literature is enriched with studies highlighting the connection between the three constructs of self-efficacy, competence, and autonomy in special education teachers, considering the integration of ICT into teaching practices during COVID-19. A few studies have indicated a positive association between self-efficacy and perceived autonomy (Lu et al. 2015; Noughabi and Amirian 2020; Skaalvik and Skaalvik 2014), while others have indicated a positive link between self-efficacy and competence of a teacher (Hatlevik 2017; Miller et al. 2017; Mannila et al. 2018). Some studies (Averill and Major 2020; Kajfez and Matusovich 2017; Kiemer et

al. 2018) found a positive association between teacher autonomy and competency.

Although many academic studies have investigated teachers' autonomy, competence, and self-efficacy in the integration of ICT in teaching practices (Ogirima et al. 2017), most of the work has been associated with general education teachers, overlooking special education teachers. It is important to study this subject in the context of special education teachers because they are confronted with various challenges in their teaching profession, specifically while using ICT to impart online lessons or conduct distance learning programs for disabled and special students (Alsawalem 2019). Teachers must invest extra effort in enabling their students to effectively grasp the content being taught online through ICT (Rana et al. 2011). Hence, special education teachers must fulfill the dual tasks of managing the use of ICT through their autonomy, competence, and self-efficacy and ensure that teaching practices involving ICT use are compatible with those students. It is also essential to study the interaction between autonomy, competence, and self-efficacy as special education teachers implement ICT in their classrooms during the COVID-19 pandemic.

There are several studies on how special education teachers' use of ICT is affected by the constructs of their perceived autonomy, competence, and self-efficacy. Earlier research has highlighted how student motivation is affected by teachers' autonomous use of ICT in their teaching practices (Canrinus et al. 2012). A few studies have also investigated the association between teachers' self-efficacy and students' learning, while others have investigated how student learning is affected by teachers' competence in ICT use (Peralta and Costata 2007).

Although the literature is enriched with studies on the qualities of self-efficacy, competence, and autonomy that enable teachers to effectively implement ICT in their teaching practices, there is a lack of studies exploring this subject in the context of special education teachers and their implementation of ICT for conducting teaching activities during the COVID-19 pandemic. Special education teachers can take advantage of professional development programs formulated after investigating their self-efficacy, competence, and autonomy. Such programs offer benefits, such as the fulfilment of technological needs and exploitation of career opportunities that equip teachers with the skills essential for virtual teaching practices to be conducted in the event of a pandemic and even afterwards. This study aimed to identify the integration of ICT self-efficacy, competence, and autonomy of special education teachers' teaching practices during the COVID-19 pandemic. This study also explored the connections between the constructs of self-efficacy, competence, and autonomy present in different teachers who employed ICT in special education. The research questions were as follows:

(a) To determine the level of each construct of self-efficacy, competence, and autonomy as perceived by special education teachers for the integration of ICT into teaching practices during the COVID-19 pandemic.
(b) To identify the connection between the three constructs—self-efficacy, competence, and autonomy-as perceived by special education teachers, considering the integration of ICT into teaching practices throughout the COVID-19 pandemic.
(c) To determine the effect of teachers' gender, age, education, and experience on self-efficacy, competence, and autonomy as perceived by special education teachers, considering the integration of ICT into teaching practices during the COVID-19 pandemic.

METHODOLOGY

Instrument

A survey was conducted using two scales. The first was the New General Self-Efficacy Scale formulated by Chen, Gully, and Eden (2001), and the second was Vlachopoulos and Michailidou's (2006) Basic Psychological Needs in Exercise Scale (BPNES). The scales were modified to include a 16-rating item survey for this study. The first scale provided eight items associated with the assessment of special education teachers' self-efficacy. As demonstrated in Table 1, the second scale included four items associated with the assessment of the competence of special education teachers; four items for the assessment of the autonomy of these teachers with respect to ICT integration in teaching activities to impart education to special students during the COVID-19 pandemic are also included. The survey is divided into two sections. The first section aimed at collecting the demo-

graphic data of the participants, including gender, age, qualification, and experience, while the second section contained 16 statement items. A 4-point Likert scale was used to evaluate the items by grading them from "Strongly Disagree" (1) to "Strongly Agree" (4). Both sections were used to create an online Qualtrics survey. A pilot study was conducted wherein 11 special education teachers, apart from the study participants, were chosen and asked to complete the survey. Their responses were recorded, and three experts from two universities in Saudi Arabia were approached to assess them. The researchers then made the required modifications to the survey with consensus after considering the review results of the pilot study responses by experts.

Procedures and Participants

The researcher distributed the survey to 350 special education teachers. Distribution was performed randomly. Participants had served in different educational settings in different cities in Saudi Arabia. Email addresses of the study participants were gathered from The Saudi Arabia Ministry of Education General Special Education Administration (GSEA) databases. GSEA mandates all types of special education programs conducted in the Kingdom of Saudi Arabia. The researcher sent the survey link to participants in media groups, like WhatsApp, created for special education teachers. The participants agreed on a volunteer basis and completed an online survey. The completed surveys were assessed to remove those with incomplete or duplicate answers to survey queries.

This study involved 244 special education teachers from various locations and settings. An online survey was conducted to collect data. This method yielded a response rate of 69.7 percent . Males and females formed 78.3 percent and 21.7 percent of the study sample. All the participants currently serve as special education teachers. Of the participants, 23.4 percent were aged 30-34 years, 17.6 percent were aged 20–24 years, 17.6 percent were aged 35-39 years, and 17.6 percent were aged 40–44 years. All participants had acquired different levels of education: 73.0 percent held a bachelor's degree, 7.8 percent completed a graduate diploma, and 4.1 percent completed a master's program. Considering the experience of the participants, 22.5 percent had 1-5 years of experience, 29.1 percent had 6-10 years, 25 percent had 11-15 years, and 9.0 percent had been serving in this domain for over 20 years.

Data Analysis

The data obtained in this study were analyzed using confirmatory factor analysis (CFA) and multivariate analysis of variance (MANOVA). CFA was conducted using Mplus version 7.2 to identify the patterns of self-efficacy, competence, and autonomy of special education teachers in the integration of ICT into teaching practices (Muthén and Muthén 1998–2012). Additionally, a maximum likelihood estimation with robust standard errors (MLR) was employed to normalize non-normality in the study data (Bentler 2005). Model fit was checked using four fit indices as criteria. These indices were the 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). Another model fit criterion suggested that the model fit of the data was acceptable in the case of a maximum of 1/3 ratio between the degree of freedom (DF) and chi-square value (x2) (Wang and Wang 2012). The disparity in teachers' self-efficacy beliefs, autonomy, and competence was checked using MANOVA.

RESULTS

What are the levels of belief in abilities, skills, and independence among special education instructors in implementing technology for teaching during the COVID-19 outbreak?

This study investigated the perceptions of special education instructors regarding their autonomy, self-efficacy, and competence in implementing technology for teaching during the COVID-19 pandemic. Using MPlus 7.2 software, a CFA was performed on the data collected. The data revealed that the CFA model was highly consistent with the results: $\chi^2/df = 1.6$, $df = 101$, $\chi^2 = 164.46$ TLI = 0.96, CFI = 0.97, RMSEA =.05 and SRMR =.03. The consistency and dependability of the three factors of autonomy, self-efficacy, and competence were strong, as indicated by Cronbach's á values between 0.96 (Self-efficacy) and 0.89 (Autonomy). This indicates that the factors and measures of consistency of the concepts being studied were compatible. Table 1 presents the results of the CFA,

including the standardized factor loadings and measures of consistency for the 16 items.

Interpretability analysis revealed that three important aspects were central to the use of ICT in instruction: autonomy, self-efficacy, and competence. Each factor demonstrated a strong loading of at least 0.75. This level of loading is considered robust as it exceeds the typical minimum loading threshold of 0.40, as outlined in the relevant research (Wang and Wang 2012). Figure 1 reflects the item loadings for each factor.

Does the COVID-19 pandemic impact the association between autonomy, self-efficacy, and competence of special education teachers in their use of ICT for educational objectives?

Table 2 shows the association among special education teachers' concepts of autonomy, self-efficacy, and competence in using ICT to teach during the COVID-19 pandemic. A deeper examination of the relationship between these three factors revealed a compelling positive association between teachers' self-efficacy and autonomy in

Table 1: Presents the survey items, the outcomes of the CFA for the 16 items, Cronbach's α, the factors they correspond to and the standardized factor loadings

Survey items	*Corresponding factors and standardized factor loadings*	*F1*	*F2*	*F3*
1.	I believe that I have made substantial advancements in adapting to the virtualeducation methods I have implemented in my class through this pandemic period.	0.86		
2.	I am pleased with my performance in delivering the virtual education methods I have implemented in my class through this pandemic period.	0.84		
3.	I am confident in my abilities with the e-learning techniques I have embraced in my class through this pandemic period.	0.85		
4.	I believe that I can handle the demands of the remote instruction methods I have implemented in my class through this pandemic period.	0.85		
5.	I am optimistic that I can reach most of the targets placed for the e-learning methods I have implemented in my class through this pandemic period.		0.82	
6.	I am confident that I will be able to complete any challenging assignments that arise during my online class through the pandemic.		0.84	
7.	I believe that I can achieve my desired results through the e-learning methods used in my class during this pandemic.		0.88	
8.	I am confident that I can achieve success in any task I undertake during the virtual learning in my class through this pandemic.		0.86	
9.	I am optimistic that I will meet my goals through the virtual learning methods being used in my class through this pandemic, despite any obstacles that may present themselves.		0.82	
10.	I am self-assured that I will be able to execute a wide range of assignments effectively through the virtual learning in my class during this pandemic.		0.88	
11.	I am confident that I can excel in various assignments and activities that are part of the digital education methods adopted in my class during this pandemic.		0.85	
12.	I am positive that I can achieve success even when circumstances are challenging in the time of this pandemic, through the online education methods in my class.		0.85	
13.	The digital education approach used in my class during this pandemic aligns well with my preferences and passions.			0.87
14.	I am convinced that the virtual education methods used in my class during the pandemic are an ideal match for my teaching style.			0.87
15.	I believe that the virtual education approach used in my class is a true reflection of my teaching style and philosophy.			0.81
16.	I am convinced that I have the autonomy to make decisions related to the virtual education methods used in my class during this pandemic.			0.75
17.	Reliability (Cronbach's Alpha)	0.92	0.96	0.89

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

integrating ICT into their teaching (r =0.84), teachers' autonomy and competence in using ICT for teaching (r =0.88), and teachers' self-efficacy and competence in using ICT for teaching (r =0.93).

Table 2: The relationship between special education teachers' autonomy, competence, and self-efficacy in utilizing ICT for teaching during the COVID-19 pandemic

	Competence	*Self-efficacy*	*Autonomy*
Competence	1	0.93	0.88
Self-efficacy	0.93	1	0.84
Autonomy	0.88	0.84	1

Based on factors such as professional background, educational qualifications, age, and gender during the COVID-19 pandemic, does the use of ICT in teaching by special education teachers lead to significant variations in their perceptions of self-efficacy, autonomy, and competence?

A MANOVA statistical test was performed to investigate whether there were any significant variations in the autonomy, self-efficacy, and competence of special education instructors when utilizing ICT for educational purposes during the COVID-19 pandemic in relation to factors such as professional background, educational qualifications, gender, and age. The results revealed no significant variations across these factors: specifically, no significant difference was observed in terms of professional background [F (3, 242) = 0.36, p = 0.98; Wilk's $\phi = 0.98$], educational qualifications [F (3, 242) = 1.23, p = 0.26; Wilk's $\phi = 0.94$], gender [F (3, 242) = 1.61, p =.19; Wilk's $\phi = 0.98$] and age [F (3, 242) = 0.87, p =.59; Wilk's $\phi = 0.94$. These findings suggest that in Saudi Arabia, regardless of their professional background, educational qualifications, gender, or age, special education instructors have not reported any change in their sense of competence, self-efficacy, or autonomy while using technology for teaching during the COVID-19 pandemic.

DISCUSSION

During the COVID-19 pandemic, the use of technology for instructional purposes by special education teachers has become a crucial topic. This study aimed to investigate teachers' autonomy, competence, and self-efficacy in using technology for instruction. Despite an abundance of research on teachers' use of technology in education in recent years, there is a gap in understanding the self-efficacy, autonomy, and competence of special education teachers, specifically during the COVID-19 pandemic.

An important finding of this study is the development of special education teachers' abilities to integrate technology into their teaching during the COVID-19 pandemic. Regardless of the difficulties presented by the pandemic, special education instructors in Saudi Arabia have demonstrated a high level of control over their use of technology for instruction, adapting their knowledge and skills in ICT to implement e-learning and distance learning methods, as found in other studies (Badau and Sakiyo 2013; Chapman and Malilick 2004; Kotsanis 2018). This outcome was unexpected given previous research indicating difficulties with ICT training and a shortage of resources among special education teachers (Brodin and Lindstrand 2003; Yeni and Gecu-Parmaksiz 2016). A potential explanation for this result is that the COVID-19 outbreak necessitated the adoption of different teaching methods, which prompted special education teachers to develop new competencies and understanding in technology-based instruction to address the requirements of their students (Iivari et al. 2020).

Furthermore, this study found that special education instructors in Saudi Arabia have a strong sense of self-efficacy when using technology for educational purposes. This finding supports earlier research by Almeida et al. (2016), suggesting that special education teachers hold a certain perspective that influences their ability to integrate technology into their instruction, particularly during the COVID-19 pandemic. Even during the pandemic, special education instructors continued to teach, which propelled them to stay engaged with technology and overcome the difficulties associated with using technology for educational goals. Their commitment to using technology to aid students with disabilities may have boosted their confidence in using technology during the teaching process.

This study revealed that special education teachers in Saudi Arabia gained autonomy in utilizing technology for educational goals during the COVID-19 pandemic. This includes the selection of platforms for instruction, learning, scheduling, and methods for evaluating performance. As indicated in previous studies, this autonomy aligns

with the perceptions of general teachers who have reported freedom in classifying instruction efficiently with technology (Comi et al. 2017; Lee and Nie 2020; Reeve 2006). The emergence of this autonomy is likely related to special education teachers' freedom to organize their instruction during the pandemic.

The study found that among special education instructors, there was a strong correlation between their autonomy, self-efficacy, and competence in utilizing ICT for educational goals during the pandemic. This confirms previous research in this field that establishes a connection between teachers' autonomy in utilizing ICT and their competence in integrating technology into their teaching (Averill and Major 2020; Kajfez and Matusovich 2017; Kiemer et al. 2018), their competence and self-efficacy in utilizing ICT (Hatlevik 2017; Mannila et al. 2018; Miller et al. 2017), and their autonomy in utilizing ICT and their self-efficacy in utilizing ICT for educational goals (Lu et al. 2015; Noughabi and Amirian 2020; Skaalvik and Skaalvik 2014). Furthermore, the study found that Saudi Arabian special education instructors adapted to teaching during the pandemic, regardless of personal characteristics such as professional knowledge, educational setting, gender, and age. This is supported by the fact that the study did not find significant differences in autonomy, self-efficacy, or competence among these teachers in utilizing ICT for instructional purposes during the pandemic. However, a strong correlation was found among these factors, which confirms the findings of previous studies in this area. Technological support provided by the Saudi Arabian Ministry of Education during the pandemic may have played a role in teachers' adaptability.

CONCLUSION

This study aimed to investigate teachers' autonomy, competence, and self-efficacy in using technology for instruction in Saudi special education schools. An important finding of this study is the development of special education teachers' abilities to integrate technology into their teaching during the COVID-19 pandemic. Regardless of the difficulties presented by the pandemic, special education instructors in Saudi Arabia have demonstrated a high level of control over their use of technology for instruction, adapting their knowledge and skills in ICT to implement e-learning and distance learning methods.

The study also found that Saudi special education teachers have a strong sense of self-efficacy when using technology for educational purposes. They continued to teach, which propelled them to stay engaged with technology and overcome the difficulties associated with using technology for educational goals. Interestingly, they gained autonomy in utilizing technology for educational goals during the COVID-19 pandemic. To conclude, The study found that among special education instructors, there was a strong correlation between their autonomy, self-efficacy, and competence in utilizing ICT for educational goals during the pandemic.

IMPLICATIONS

A potential application of this study's findings is to establish a community for special education educators in which they can exchange skills and experiences. This could be beneficial for improving instruction for students with special needs, as most teachers in the study had a high level of self-reliance on technology during the COVID-19 pandemic. In addition, a strong sense of autonomy, self-efficacy, and competence in utilizing technology is crucial for providing efficient instruction to students with special needs. The participants' positive outlook towards their knowledge of technology and its utilization in education can provide a strong foundation for enhancing instruction for students with special needs.

LIMITATIONS

When evaluating the study's outcome, it is crucial to consider a few limitations. First, the study utilized only a single data collection technique-a survey-which could be enhanced by incorporating other methods, such as interviews, to improve the legality and consistency of the study. Another limitation is the small sample size, which included 244 special education educators from Saudi Arabia. This could affect the external legality and consistency of the results. Therefore, it would be beneficial to conduct additional research with a larger sample from various cultures and countries. Moreover, it would be useful to explore how special education instructors' views on utilizing ICT for

educational goals have changed throughout the pandemic.

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