



Influence of Assistive Technology Training on Educators Performance in Saudi Special Education: With the Mediating Role of Educators Knowledge and Educators Self-Efficacy

Abdelmonim H. Baniawwad^{1*}, Lubna I. Bin Tarif², Yasser Rady³, Nazih I. Yousef⁴, Mona Soliman⁵, Hanan Ahmed Farag⁶, Ahmed Mahmoud Elkilany⁷, Khasawneh M.A.S.⁸

ARTICLE INFO

ABSTRACT

Article History:

Received: 01 December 2023

Received in Revised Form: 15 March 2024

Accepted: 10 May 2024

DOI: 10.14689/ejer.2024.110.01

Keywords

Assistive Technology Training, Educators' Knowledge, Educators' Self-Efficacy, Educators' Performance, Special Educational Institutions.

Purpose: The performance of educators has always been crucial for the success of educational institutions, and technology training has played a significant role in enhancing their performance. This aspect requires a strong focus from researchers. The present study investigates how training in assistive technology affects educators' knowledge and self-efficacy, as well as their performance in Saudi Arabia's special educational institutions. The study also examines the role of educators' knowledge and

self-efficacy in relation to assistive technology training and educators' performance. **Methodology:** The study used questionnaires to collect primary data from students at special educational institutions. The study also utilised the smart-PLS to assess the reliability of the data and the relationships between variables. **Findings:** The results revealed that the training on assistive technology has a positive correlation with educators' knowledge and self-confidence, which in turn positively impacts their performance. The results also revealed that

¹ Self-Development Department, Deanship of Preparatory Year and Supporting Studies, Imam Abdulrahman Bin Faisal University, P.O. Box 1982, Dammam 34212, Saudi Arabia. Email: ahawad@iau.edu.sa

² Department of Basic Sciences, Deanship of Preparatory Year and Supporting Studies, Imam Abdulrahman Bin Faisal University, P.O. Box 1982, Dammam 34212, Saudi Arabia. Email: litarif@iau.edu.sa

³ Self-Development Department, Deanship of Preparatory Year and Supporting Studies, Imam Abdulrahman Bin Faisal University Information Science Department, College of Arts, Imam Abdul Rahman bin Faisal University, Saudi Arabia. Email: hafarag@iau.edu.sa, & yarady@iau.edu.sa

⁴ Department of Basic Sciences, Deanship of Preparatory Year and Supporting Studies, Imam Abdulrahman Bin Faisal University, P.O. Box 1982, Dammam 34212, Saudi Arabia. Email: niyousef@iau.edu.sa

⁵ Self-Development Department, Deanship of Preparatory Year and Supporting Studies, Imam Abdulrahman Bin Faisal University, P.O. Box 1982, Dammam 34212, Saudi Arabia. Email: maSoliman@iau.edu.sa

⁶ Information Science Department, College of Arts, Imam Abdul Rahman bin Faisal University P.O. Box 1982, Dammam 34212, Saudi Arabia. Email: hafarag@iau.edu.sa

⁷ Self-Development Department, Deanship of Preparatory Year and Supporting Studies, Imam Abdulrahman Bin Faisal University, P.O. Box 1982, Dammam 34212, Saudi Arabia. Email: amelkilany@iau.edu.sa

⁸ Assistant Professor, Special Education Department, King Khalid University, Saudi Arabia, ORCID iD: <https://orcid.org/0000-0002-1390-3765>, Email: mkhasawneh@kku.edu.sa

* Correspondence Contact: ahawad@iau.edu.sa

educators' knowledge and self-efficacy play a significant role in mediating the relationship between assistive technology training and the performance of educators in Saudi Arabia's special educational institutions. This study offers valuable insights for regulators looking to improve educators' performance through effective assistive technology training.

© 2024 Ani Publishing Ltd. All Rights Reserved.

Introduction

Special education is a unique form of education that caters to students with diverse needs, abilities, and disabilities, whether they are physical or mental in nature. In an academic setting, educators have a crucial role in implementing management and teaching policies established by institutional administrators (Rumrill Jr et al., 2020). The teaching faculty plays a crucial role in the academic journey of students. They have direct interactions with students, conveying the messages of management, ensuring that students complete the designated course within the given timeframe, preparing them for tests and exams, fostering a sense of healthy competition and teamwork, and conducting examinations. In addition, educators are responsible for more than just teaching the curriculum and ensuring students pass exams. They also have a crucial role in shaping students' characters and developing their ability to thrive in an era of progress and competition (Mason-Williams et al., 2020). The success of students, progress of a class, and institutional progress all rely heavily on the performance of educators. The institutions where educators demonstrate exceptional efficiency, unwavering dedication, proactive engagement, and a strong sense of responsibility, consistently achieve the desired outcomes from students. As a result, both students and institutions experience remarkable success (Asbury et al., 2021).

To effectively engage with special or disabled students, educators must utilise a variety of tools, processes, and techniques. This will help them provide instruction, ensure course completion, and empower students to participate in various activities just like their peers. Assistive technology serves as a valuable resource for individuals with disabilities or special needs, providing them with tools, equipment, products, systems, and software programmes to enhance, sustain, or improve their functional capabilities (Cheng & Lai, 2020). Assistive technology offers support to individuals facing challenges in various areas such as communication, vision, hearing, writing, typing, memory, mobility, learning, and more. During assistive technology training, educators are introduced to a variety of advanced technologies that can assist individuals with disabilities. These technologies include electric devices, walkers, wheelchairs, eye-gaze and head trackers, pencil holders, screen readers, communication programmes, and educational programmes. Educators are then trained on how to effectively utilise these technologies to support their students or individuals with disabilities (Svensson et al., 2021). After completing assistive technology training classes, educators develop the skills to effectively support students with disabilities. These training sessions greatly enhance educators' knowledge and confidence, enabling them to better understand, instruct, and teach these students (confidence in own capabilities to do something) (McNicholl et al., 2021).

The current study focuses on the performance of Saudi special education educators. In Saudi Arabia, special education schools were founded in 1960 to cater to people with visual and hearing impairments. Over time, specialised schools have emerged to address the needs of children with diverse disabilities such as visual impairments, hearing impairments, intellectual disabilities, autism, and more. There are 746 public schools dedicated to providing education for people with intellectual or similar disabilities, as well as 47 programs specifically designed for people with autism disorders. Throughout the country, there are 316 programs available to cater to the needs of students with hearing impairments or deaf students, along with 171 programs specifically designed for students with visual impairments and blind students (Almalki et al., 2021). Currently, there are 1417 programs available for students with learning disabilities. Special schools catering to students with multiple severe disabilities are still available. However, individuals with different types of disabilities such as Behavioural and Attention Deficit and Hyperactivity Disorder (ADHD) and Emotional Disorders (BED) do not have specific services catered to their needs. This is because these conditions are considered disorders rather than disabilities (Aldabas, 2020).

Despite the presence of numerous special schools in Saudi Arabia dedicated to serving disabled or impaired children and preserving human capital, there is still a significant number of children with mental or physical disorders and disabilities who are unable to access quality education. This study examines the issue within the country and proposes methods to enhance the performance of special educators in line with contemporary standards. The study seeks to investigate the impact of assistive technology training on educators' knowledge, self-efficacy, and performance in special education. It aims to investigate the relationship between educators' knowledge, self-efficacy, assistive technology training, and their performance.

The current study also adds to the existing body of literature. In previous academic literature, many authors have discussed the importance of assistive technology training, educators' knowledge, and educators' self-efficacy in enhancing educators' performance in special education. However, it is quite challenging to come across a study that comprehensively examines the effects of assistive technology training, educators' knowledge, and educators' self-efficacy on their performance all at once. The current study, which investigates the impact of various factors such as assistive technology training, educators' knowledge, and educators' self-efficacy on enhancing educators' performance in special education, contributes to the existing body of literature. Second, in previous research, one can explore the connection between educators' knowledge, self-efficacy, and performance. However, it is not often that we see the significant impact of educators' knowledge and self-efficacy on their performance as a result of assistive technology training. This study contributes to the existing body of literature by examining the role of educators' knowledge and self-efficacy in mediating the relationship between assistive technology training and educators' performance. Furthermore, this study stands out in the academic literature because it investigates the impact of assistive technology training on educators' knowledge, self-efficacy, and performance in Saudi special education.

This article is divided into sections. The second part provides a literature review to establish hypotheses for the study. The study's methods will be examined in the third part. Following a

thorough quantitative analysis, we will present the findings. We compare the study's findings with various research articles and provide supporting evidence. Finally, we briefly discuss the study's implications, conclusion, and limitations.

Literature Review

Special education plays a crucial role in harnessing the potential of individuals who may face challenges due to disabilities, impairments, or disorders. It guarantees the recognition and utilization of their talents. Educators' performance is critical for the success of special education, just as it is for traditional education. The strategy of assistive technology training enhances educators' performance by impacting their knowledge and self-confidence. Various previous studies have documented the correlations between training in assistive technology, educators' knowledge, educators' self-efficacy, and educators' performance. The following paragraphs formulate research hypotheses, drawing on previous literature.

In today's modern era, where technology has rapidly advanced and greatly benefited humanity, assistive technology is now being utilised in special education institutions. Periodically, educators receive training classes in assistive technology to meet their needs. These training sessions provide educators with valuable insights into assistive technology, equipping them with the necessary tools to effectively engage with their students (Holmes & Tuomi, 2022). Almethen (2017) conducted a study to investigate the correlation between assistive technology training and the level of knowledge among educators in this field. The researchers conducted 27 question surveys and approached 37 final participants through the General Directorate of Education in Unaizah, Saudi Arabia. When teaching faculty in special education institutions receive assistive technology training, they gain knowledge about various technologies and techniques that can be used to teach students with disabilities. In their study, Keown et al. (2021) explore the correlation between educators' attitudes and knowledge with assistive technology training. A workshop approach was utilised during class, and a study was conducted using a combination of methods. Surveys were distributed to the participants, who were all enrolled in a 400-level course on special education approaches, to assess their perceptions and knowledge before and after the course. The study suggests that the opportunity to observe and utilise assistive technologies during training offers valuable technical insights and enhances educators' understanding. Thus,

H1: *Assistive technology training has a positive association with educators' knowledge.*

Individuals with disabilities specifically benefit from assistive technologies. Special education institutions provide assistive technology training programs that are specifically designed for educators to learn about innovative technologies. These sessions enable educators to develop self-efficacy and satisfaction in utilising technology and innovative techniques (Soetan et al., 2020). Surajudeen et al. (2023) investigated the relationship between assistive technology training and educators' self-efficacy and readiness. A total of 119 special education teachers were selected from Oyo State using the purposive sampling technique. The analysis and testing of hypotheses were conducted using SPSS version 20.0, employing descriptive and inferential statistics. The study asserts that educators in assistive training classes become

familiar with tools, instruments, devices, techniques, and programmes specifically designed to support the learning of disabled students. Upon receiving this information, educators developed confidence in their ability to utilise these technological tools in the classroom with disabled and impaired students. Assistive technology training enhances educators' self-efficacy. [Kareem et al. \(2019\)](#) examine the correlation between assistive technology training, facility condition, and educators' self-efficacy. Data were collected from special education primary schools in Central Nigeria using a quantitative research approach. The study suggests that assistive technology training involves teaching students about various human disabilities and the corresponding technical solutions. Consequently, students with disabilities may develop self-efficacy. That's why,

H2: *Assistive technology training has a positive association with educators' self-efficacy.*

Educators' attitudes and behaviours, as well as their success in accomplishing their tasks, are influenced by their thoughts and mindset. Special education students need information on the needs of students with various disabilities in their class, as well as techniques and strategies for effectively teaching them. Students who possess sufficient knowledge are more likely to achieve higher performance. [Reynolds and Park \(2021\)](#) examine the relationship between educators' knowledge and their performance in vocational education. The dataset used in this study was derived from the SKiLL study conducted in Austria in 2012. The sample for this research comprises 246 in-service educators at vocational schools in Austria. The software Mplus was utilised for conducting all data analysis. The study suggests that educators in special education who possess a deeper understanding of the subject matter, effective communication strategies for students with disabilities, and methods for achieving the curriculum objectives, are likely to demonstrate superior teaching performance. [Byrd and Alexander \(2020\)](#) examine the impact of educators' knowledge and skills on their performance in special education. The study sample consists of 20 educators working in special education across the western United States, specifically in Utah, Arizona, California, Hawaii, and Nevada. The study employed a qualitative approach and utilised semi-structured interviews conducted through in-person and Skype interactions. The study emphasises that educators with specialised knowledge in special education are more likely to fulfil their duties according to management expectations. So,

H3: *Educators' knowledge has a positive association with educators' performance.*

Educators' self-efficacy refers to their assessment or belief in their competence and proficiency to attain desired outcomes in terms of students' participation, engagement, and learning, even in the face of challenging and unmotivated students. According to [Yada et al. \(2022\)](#), educators with higher self-efficacy are more effective in teaching students with special needs. [Alnahdi and Schwab \(2021\)](#) conducted a study to examine the correlation between educators' self-efficacy and their performance in special education. A sample of 135 teachers from special education primary schools in Riyadh, Saudi Arabia, was collected for data collection. This study's statistical analysis used IBM SPSS Statistics 21 software. The analysis included conducting a data reliability test, descriptive statistics, multiple regression analysis, and an ANOVA test. The study demonstrates a positive association between educators' self-

efficacy and their performance in the special education system. High self-efficacy among educators can enhance their ability to effectively instruct students with disabilities. [Metsala and Harkins \(2020\)](#) examine the impact of educators' self-efficacy on their performance. The study discusses how educators' self-efficacy allows them to assess their cognitive, physical, and technical abilities to successfully complete their professional tasks. The ability to use their capabilities effectively instils confidence in students and helps them achieve their learning goals. Therefore, the self-efficacy of educators enhances their performance. Hence,

H4: *Educators' self-efficacy has a positive association with educators' performance.*

Special education encompasses a range of disabilities, special needs, and disorders among students. Their communication and teaching methods are distinct and challenging compared to the traditional education system. Assistive technology training enhances educators' knowledge and equips them with the skills to overcome such difficulties. According to [Kisanga and Kisanga \(2022\)](#), educators demonstrate improved performance as a result. [Alsolami \(2022\)](#) examines the impact of assistive technology training on educators' performance in special education, focusing on their knowledge, perceptions, and professional development. Data was collected from special education teachers working for the Board of Education in Jeddah School District (JSD), KSA, using the Qualtrics Survey programme and an online self-administered survey. SPSS was used for the data analysis. The study suggests that providing assistive technology training to educators in special education institutions enhances their knowledge and improves their effectiveness in performing their duties. Educators' knowledge serves as a connection between assistive technology training and their performance. [Khalil and Hantira \(2022\)](#) examine the integration of assistive technology training, educators' knowledge, and educators' performance. The authors used a quasi-experimental research design and purposive sampling to approach 68 teachers from four settings in Jeddah, Saudi Arabia. IBM SPSS version 25 conducted an analysis of the data, incorporating descriptive statistics and a t-test. The authors argue that the presence of assistive technology in special education institutions enhances educators' job performance by increasing their knowledge and efficiency. Thus,

H5: *Educators' knowledge plays a significant mediating role between assistive technology training and educators' performance.*

When educators appointed by special education institutions receive assistive technology training, they have the opportunity to gain personal experience with various types of assistive technologies. Students are taught how to utilise these technologies to elicit specific responses from students with disabilities. According to [Crossan \(2020\)](#), educators' teaching performance improves when they have self-efficacy in reducing difficulty in communication with students. [Joo et al. \(2018\)](#) conducted a study on the relationship between assistive technology, educators' self-efficacy, and educators' performance in using technology. The technology acceptance model serves as the foundation for the study. The College of Education at three Korean universities conducted a questionnaire-based survey, collecting a total of 296 responses. The data was analysed using the structural equation modelling technique. The study suggests that assistive technology training enhances educators' ability to handle special cases while teaching and improves their self-efficacy. The resulting self-efficacy improves educators' engagement

and teaching performance. Similarly, [Opoku et al. \(2023\)](#) conducted a study using the technology acceptance model to investigate the impact of assistive technology training on the self-efficacy and performance of female pre-service special education educators in the field of special education. The study sample comprised 138 participants, and data analysis was conducted using SPSS and AMOS version 28 software. The study suggests that there is a relationship between educators' self-efficacy, assistive technology training, and their performance. Educators who receive training in assistive technology develop higher self-efficacy, which in turn leads to improved teaching performance. So,

H6: *Educators' self-efficacy plays a significant mediating role between assistive technology training and educators' performance.*

Research Methodology

This study examines the effects of assistive technology training on educators' knowledge, self-efficacy, and performance in special educational institutions in Saudi Arabia. It also explores the mediating role of educators' knowledge and self-efficacy in the relationship between assistive technology training and educators' performance. The study used questionnaires to collect primary data from students at special educational institutions. The questionnaire items are derived from previous studies. For instance, the assistive technology training section consists of six questions ([Atanga et al., 2020](#)), the educators' knowledge section includes seven questions ([Jamaludin et al., 2020](#)), the educators' self-efficacy section comprises six questions ([Clark & Andreassen, 2021](#)), and the educators' performance section contains four questions ([Reza et al., 2020](#)).

The study's respondents are students from special educational institutions in Saudi Arabia. The study employed simple random sampling to select the students. In addition, the surveys were distributed through personal visits to the institutions. The researchers distributed 598 surveys and obtained 357 valid responses, indicating a response rate of approximately 59.70%. The study employed smart-PLS to assess the reliability of the data and the relationships between variables. The tool effectively analyses primary data ([Hair et al., 2017](#)). Furthermore, it yields optimal results when applied to extensive datasets ([Hair Jr et al., 2020](#)). The study employed one independent variable, assistive technology training (ATT), along with two mediating variables, educators' knowledge (EKN) and educators' self-efficacy (ESE), and one dependent variable, educators' performance (EP). The constructs are presented in [Figure 1](#).

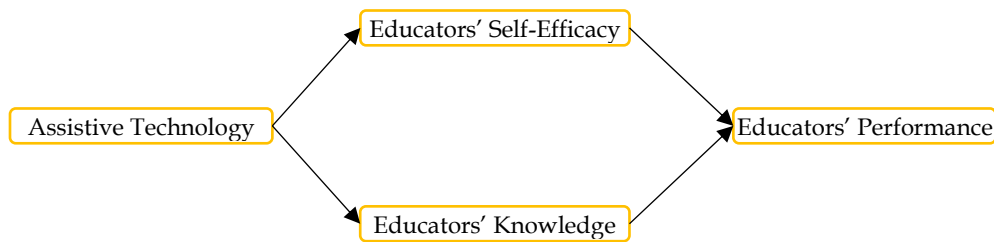


Figure 1: Research Model.

Research Findings

The study examines the correlation between items. The study employed Alpha and composite reliability (CR) to assess the data. The results indicated that both tests yielded values exceeding 0.70. The examination of the data includes the use of average variance extracted (AVE) and factor loadings. The results of both tests indicate values greater than 0.50. The values indicated a strong correlation among the items. The values are listed in [Table 1](#).

Table 1

Convergent Validity.

Constructs	Items	Loadings	Alpha	CR	AVE
Assistive Technology Training	ATT1	0.878	0.922	0.939	0.720
	ATT2	0.799			
	ATT3	0.814			
	ATT4	0.876			
	ATT5	0.860			
	ATT6	0.862			
Educators' Knowledge	EKN1	0.874	0.891	0.915	0.607
	EKN2	0.832			
	EKN3	0.787			
	EKN4	0.678			
	EKN5	0.822			
	EKN6	0.757			
	EKN7	0.680			
Educators' Performance	EP1	0.774	0.794	0.866	0.618
	EP2	0.796			
	EP3	0.792			
	EP4	0.782			
Educators' Self-Efficacy	ESE1	0.825	0.860	0.896	0.591
	ESE2	0.829			
	ESE3	0.737			
	ESE4	0.766			
	ESE5	0.765			
	ESE6	0.679			

The study examines the correlation between variables. The study employed the Fornell Larcker criteria to analyse the data. The results showed that the first value in the column was larger than the other values in the same column. The values suggest a weak correlation between the variables. The values are listed in [Table 2](#).

Table 2*Fornell Larcker.*

	ATT	EKN	EP	ESE
ATT	0.849			
EKN	0.460	0.779		
EP	0.599	0.634	0.786	
ESE	0.468	0.521	0.667	0.769

The study examines the correlation between variables. The study employed cross-loadings to examine the linkages between constructs. The results showed that the values representing the linkages with the constructs themselves were larger than the values representing the linkages with other variables. The values indicated a low correlation among variables. The values are listed in [Table 3](#).

Table 3*Cross-Loadings.*

	ATT	EKN	EP	ESE
ATT1	0.878	0.389	0.544	0.426
ATT2	0.799	0.382	0.525	0.398
ATT3	0.814	0.438	0.449	0.356
ATT4	0.876	0.377	0.510	0.387
ATT5	0.860	0.389	0.532	0.436
ATT6	0.862	0.364	0.483	0.372
EKN1	0.430	0.874	0.595	0.445
EKN2	0.433	0.832	0.537	0.409
EKN3	0.309	0.787	0.423	0.458
EKN4	0.326	0.678	0.451	0.386
EKN5	0.360	0.822	0.509	0.364
EKN6	0.264	0.757	0.387	0.421
EKN7	0.337	0.680	0.504	0.370
EP1	0.445	0.510	0.774	0.539
EP2	0.457	0.407	0.796	0.660
EP3	0.520	0.547	0.792	0.451
EP4	0.462	0.540	0.782	0.429
ESE1	0.372	0.483	0.605	0.825
ESE2	0.373	0.365	0.536	0.829
ESE3	0.453	0.428	0.526	0.737
ESE4	0.286	0.416	0.495	0.766
ESE5	0.297	0.326	0.460	0.765
ESE6	0.352	0.364	0.424	0.679

The study examines the correlation between variables. The study employed the Heterotrait Monotrait (HTMT) ratio, which revealed values below 0.90. The values indicated a low

correlation among variables. The values are presented in Table 4.

Table 4

Heterotrait Monotrait Ratio.

	ATT	EKN	EP	ESE
ATT				
EKN	0.498			
EP	0.699	0.747		
ESE	0.519	0.595	0.794	

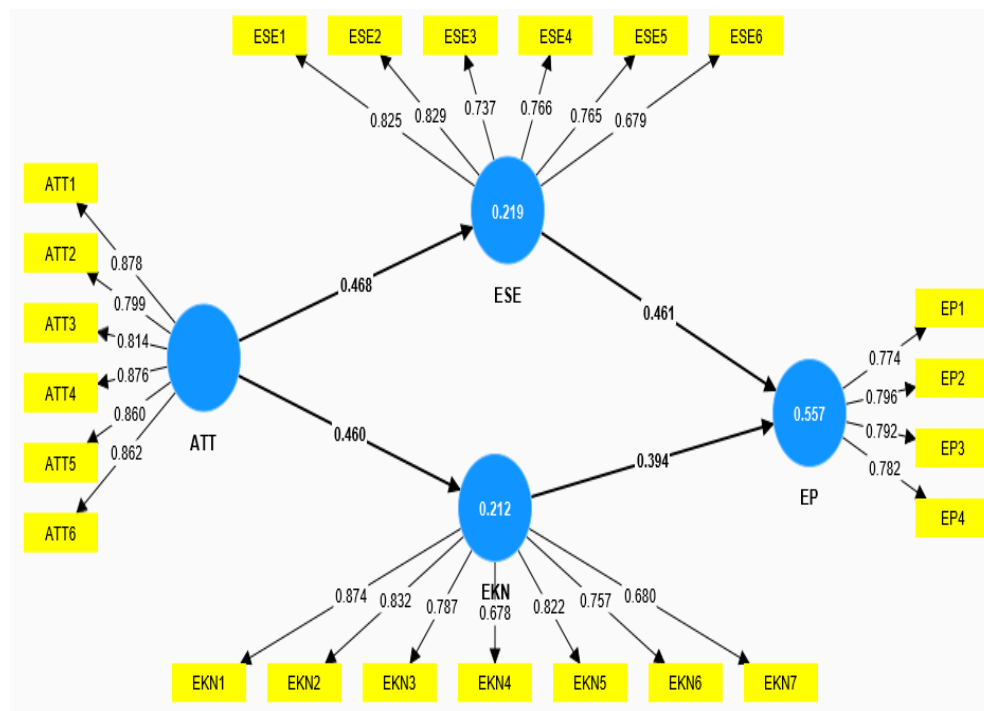


Figure 2: Measurement Assessment Model.

The results revealed a positive correlation between assistive technology training and educators' knowledge, as well as educators' self-efficacy. This supports the acceptance of hypotheses H1 and H2. The results showed a positive correlation between educators' knowledge and their self-efficacy in performing their duties. This supports the acceptance of hypotheses H3 and H4. The results of the study indicate that educators' knowledge and self-efficacy mediate the relationship between assistive technology training and their performance in special educational institutions in Saudi Arabia. The findings support hypotheses H5 and H6. Table 5 presents the associations.

Table 5

Path Analysis.

Relationships	Beta	Standard deviation	T statistics	P values
ATT -> EKN	0.460	0.045	10.265	0.000
ATT -> ESE	0.468	0.051	9.242	0.000
EKN -> EP	0.394	0.056	6.995	0.000
ESE -> EP	0.461	0.053	8.706	0.000
ATT -> EKN -> EP	0.181	0.032	5.720	0.000
ATT -> ESE -> EP	0.216	0.040	5.368	0.000

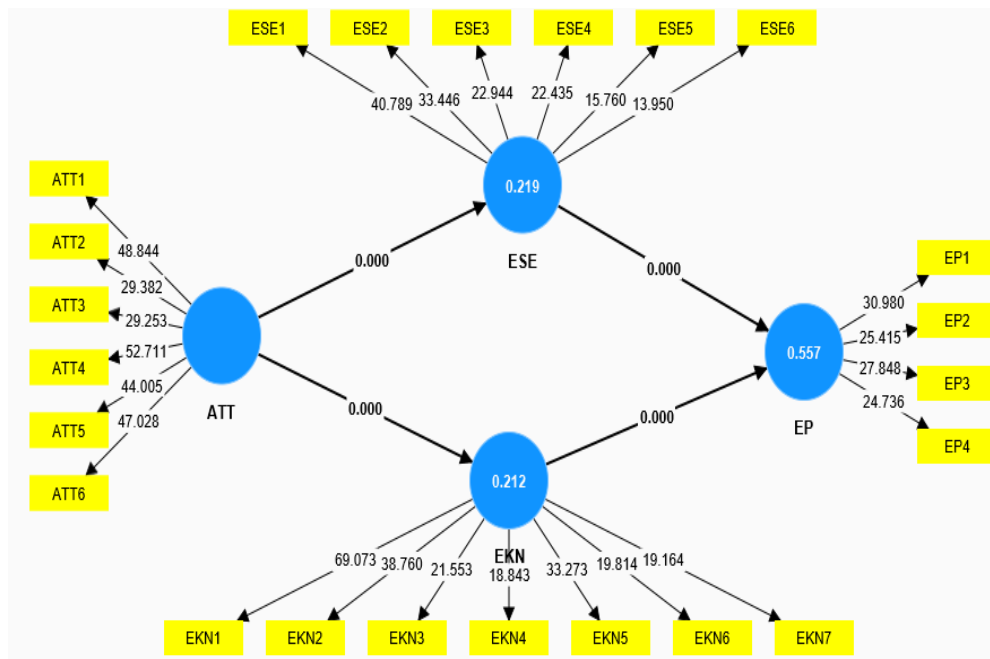


Figure 3: Structural Assessment Model.

Discussions of the Results

The study found a positive correlation between assistive technology training and educators' knowledge. [Atanga et al. \(2020\)](#) found that educators who receive training on using various types of assistive technology in special education institutions can enhance their technical knowledge for working with special students. The findings align with [Kamaghe et al. \(2020\)](#), who assert that educators gain knowledge about various types of assistive technologies, their practical applications, and the benefits they provide in special education through assistive technology training. The study found a positive correlation between assistive technology

training and educators' self-efficacy. The findings align with the study conducted by [Omar and Ismail \(2021\)](#), which demonstrates that providing training on assistive technology to educators decreases their reluctance to engage with various technologies during the teaching process. This phenomenon enhances educators' self-efficacy. The findings are consistent with [Menon et al. \(2020\)](#), who found that educators who receive training in assistive technology feel more confident in their ability to teach special students.

The study found a positive correlation between educators' knowledge and their performance. The findings of [Crispel and Kasperski \(2021\)](#) support the notion that educators who possess sufficient knowledge of technologies, techniques, procedures, and resources for effectively instructing students with disabilities can achieve positive learning outcomes. These findings are consistent with the findings of [Brownell et al. \(2020\)](#). Educators who possess a comprehensive understanding of their subject matter, as well as the manual and technical methods for engaging with diverse students, are able to demonstrate higher levels of performance, as indicated by a previous study. The study found a positive correlation between educators' self-efficacy and their performance. The findings of [Guo et al. \(2021\)](#) support the notion that a teacher's belief in their mental and physical abilities enhances their courage to complete assigned tasks and improves their performance. The findings are consistent with [Wray et al. \(2022\)](#), who argue that educators with high self-efficacy are more likely to remain engaged in challenging situations, possess a deeper understanding of students' circumstances, and effectively implement their assigned curriculum. Educators demonstrate improved performance.

The study found that educators' knowledge mediates the relationship between assistive technology training and their performance. [Lamond and Cunningham \(2020\)](#) corroborate the findings. The authors contend that assistive technology training enhances educators' knowledge and performance. The findings are consistent with [Chukwuemeka and Samaila's \(2020\)](#) study, which suggests that training in assistive technology improves educators' knowledge and enhances their teaching performance. The study found that educators' self-efficacy mediates the relationship between assistive technology training and their performance. The findings of [Maurer et al. \(2021\)](#) support the notion that educators' self-efficacy is enhanced through assistive technology training, leading to improved performance. The findings of [Kiel et al. \(2020\)](#) support the notion that training in assistive technology enhances educators' self-efficacy and subsequently improves their teaching performance.

Study Implications

Special education is a crucial component of education systems worldwide, playing a vital role in fostering human capital development. This study focuses on the performance of educators in special education in Saudi Arabia and its significance for similar countries' education systems. Special education institutions should provide study guides to offer assistive technology training for educators, aiming to enhance their knowledge. The study proposes implementing specific periodic assistive technology training sessions for educators in special institutions to enhance their self-efficacy in teaching. The study suggests that educators and

educational management should focus on improving educators' professional knowledge in special education to enhance their performance. The study suggests that increasing educators' self-efficacy can enhance their efficiency and teaching performance when interacting with special students. The study suggests implementing and organising assistive technology training classes for educators. By enhancing educators' knowledge, their performance can be improved. Moreover, the study suggests that special educational institutions should provide assistive technology training for teaching faculty. Thus, the development of educators' self-efficacy can lead to improvements in their teaching performance. This study helps regulators in developing regulations aimed at improving educators' performance through effective assistive technology training.

Conclusion

The aim of the current research article is to examine the influences of assistive technology training in educators' knowledge, educators' self-efficacy, and educators' performance in special education. It also aimed to examine the role of educators' knowledge and educators' self-efficacy between assistive technology training and educators' performance. Survey was conducted to Saudi special education institutions for collecting data for assistive technology training, educators' knowledge, educators' self-efficacy, and educators' performance. The results revealed that assistive technology training has a positive relationship with educators' knowledge and educators' self-efficacy. The findings indicate that institutions that provide special education can improve outcomes for students with disabilities by offering training courses for educators on assistive technology and its practical application. This training can help educators develop effective solutions for students with specific disabilities and enhance their teaching methods. Special education institutions that offer assistive technology training classes for educators can help them develop confidence in their abilities, skills, and practices. Therefore, it improves the self-efficacy of educators. The study found a positive relationship between educators' knowledge, self-efficacy, and performance in special education. Educators who possess extensive knowledge in their field of education, as well as an understanding of students' disabilities, the necessary manual and technical assistance for special students, the curriculum, and teaching resources, are better equipped to fulfil their teaching responsibilities. In special education institutions, educators who possess high self-efficacy are more likely to be hired and retained. This is because they are better prepared to handle the challenges of teaching students with disabilities, resulting in improved performance. The study highlights that assistive technology training enhances educators' knowledge and self-efficacy, leading to improved performance in special education.

Limitations and Future Directions

The present study may have limited implications due to its inherent limitations, and it is recommended that the authors address and mitigate these limitations. The current study has a narrow focus, only considering factors such as the training of educators in assistive technology and its impact on their performance in special education. It is crucial for future researchers to

expand the scope of factors being studied in order to better understand the performance of higher educators. In addition, the study analyses the Saudi special education system to examine the impact of assistive technology training on educators' knowledge, self-efficacy, and performance in special education. So, the study is more specific than anticipated. Therefore, it would be beneficial for future researchers to expand their study to include education systems beyond Saudi Arabia.

References

- Aldabas, R. (2020). Special education teachers' perceptions of their preparedness to teach students with severe disabilities in inclusive classrooms: A Saudi Arabian perspective. *Sage Open*, 10(3), 215-236. <https://doi.org/10.1177/2158244020950657>
- Almalki, S., Alqabbani, A., & Alnahdi, G. (2021). Challenges to parental involvement in transition planning for children with intellectual disabilities: The perspective of special education teachers in Saudi Arabia. *Research in Developmental Disabilities*, 111, 103872. <https://doi.org/10.1016/j.ridd.2021.103872>
- Almethen, M. A. (2017). Saudi Special Education Teachers' knowledge, Skills, And Professional Development Needs Of Assistive Technology In The Classroom. *Csusb Scholarworks*, 5, 81-97. <https://scholarworks.lib.csusb.edu/etd/448/>
- Alnahdi, G. H., & Schwab, S. (2021). Special education major or attitudes to predict teachers' self-efficacy for teaching in inclusive education. *Frontiers in Psychology*, 12, 680909. <https://doi.org/10.3389/fpsyg.2021.680909>
- Alsolami, A. S. (2022). Teachers of special education and assistive technology: Teachers' perceptions of knowledge, competencies and professional development. *Sage Open*, 12(1), 21-39. <https://doi.org/10.1177/21582440221079900>
- Asbury, K., Fox, L., Deniz, E., Code, A., & Toseeb, U. (2021). How is COVID-19 affecting the mental health of children with special educational needs and disabilities and their families? *Journal of autism and developmental disorders*, 51(5), 1772-1780. <https://doi.org/10.1007/s10803-020-04577-2>
- Atanga, C., Jones, B. A., Krueger, L. E., & Lu, S. (2020). Teachers of students with learning disabilities: Assistive technology knowledge, perceptions, interests, and barriers. *Journal of Special Education Technology*, 35(4), 236-248. <https://doi.org/10.1177/0162643419864858>
- Brownell, M. T., Jones, N. D., Sohn, H., & Stark, K. (2020). Improving teaching quality for students with disabilities: Establishing a warrant for teacher education practice. *Teacher Education and Special Education*, 43(1), 28-44. <https://doi.org/10.1177/088406419880351>
- Byrd, D. R., & Alexander, M. (2020). Investigating special education teachers' knowledge and skills: Preparing general teacher preparation for professional development. *Journal of Pedagogical Research*, 4(2), 72-82. <https://doi.org/10.33902/IPR.2020059790>
- Cheng, S.-C., & Lai, C.-L. (2020). Facilitating learning for students with special needs: a review of technology-supported special education studies. *Journal of Computers in Education*, 7(2), 131-153. <https://doi.org/10.1007/s40692-019-00150-8>

- Chukwuemeka, E. J., & Samaila, D. (2020). Teachers' perception and factors limiting the use of high-tech assistive technology in special education schools in North-West Nigeria. *Contemporary Educational Technology*, 11(1), 99-109. <https://doi.org/10.30935/cet.646841>
- Clark, S. K., & Andreasen, L. (2021). Exploring elementary teacher self-efficacy and teacher beliefs: are we preparing teachers to teach culturally diverse students? *Asia-Pacific Journal of Teacher Education*, 49(1), 128-142. <https://doi.org/10.1080/1359866X.2020.1777528>
- Crispel, O., & Kasperski, R. (2021). The impact of teacher training in special education on the implementation of inclusion in mainstream classrooms. *International Journal of Inclusive Education*, 25(9), 1079-1090. <https://doi.org/10.1080/13603116.2019.1600590>
- Crossan, J. (2020). Thai Teachers' self-Efficacy Towards Educational Technology Integration. *AU eJournal of Interdisciplinary Research (ISSN: 2408-1906)*, 5(1), 73-87. <https://core.ac.uk/download/pdf/304907462.pdf>
- Guo, Y., Dynia, J. M., & Lai, M. H. (2021). Early childhood Special education teachers' self-efficacy in relation to individual children: Links to children's literacy learning. *Early Childhood Research Quarterly*, 54, 153-163. <https://doi.org/10.1016/j.ecresq.2020.09.002>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., & Thiele, K. O. (2017). Mirror, mirror on the wall: a comparative evaluation of composite-based structural equation modeling methods. *Journal of the Academy of Marketing Science*, 45(5), 616-632. <https://doi.org/10.1007/s11747-017-0517-x>
- Hair Jr, J. F., Howard, M. C., & Nitzl, C. (2020). Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *Journal of Business Research*, 109, 101-110. <https://doi.org/10.1016/j.jbusres.2019.11.069>
- Holmes, W., & Tuomi, I. (2022). State of the art and practice in AI in education. *European Journal of Education*, 57(4), 542-570. <https://doi.org/10.1111/ejed.12533>
- Jamaludin, R., McKAY, E., & Ledger, S. (2020). Are we ready for Education 4.0 within ASEAN higher education institutions? Thriving for knowledge, industry and humanity in a dynamic higher education ecosystem? *Journal of Applied Research in Higher Education*, 12(5), 1161-1173. <https://doi.org/10.1108/JARHE-06-2019-0144>
- Joo, Y. J., Park, S., & Lim, E. (2018). Factors influencing preservice teachers' intention to use technology: TPACK, teacher self-efficacy, and technology acceptance model. *Journal of Educational Technology & Society*, 21(3), 48-59. <https://www.jstor.org/stable/26458506>
- Kamaghe, J. S., Luhanga, E. T., & Michael, K. (2020). The challenges of adopting M-learning assistive technologies for visually impaired learners in higher learning institution in Tanzania. *International Journal of Emerging Technologies in Learning (Online); Vienna*, 15(1), 140-151. <https://doi.org/10.3991/ijet.v15i01.11453>
- Kareem, M., Nsofor, C., & Tukura, C. (2019). Assessment of the Facilitating conditions and self-efficacy of teachers on assistive technology tools in special education Primary Schools in North-Central Nigeria. *Primary Schools in North-Central Nigeria*, 6, 38-53. <http://repository.futminna.edu.ng:8080/jspui/handle/123456789/3802>

- Keown, S., Smothers, M., & Colson, T. (2021). Preservice teachers' attitudes and knowledge towards assistive technology: exploring and in-class workshop approach. *Kentucky Teacher Education Journal: The Journal of the Teacher Education Division of the Kentucky Council for Exceptional Children*, 8(1), 42-58. <https://doi.org/10.61611/2995-5904.1027>
- Khalil, A. I., & Hantira, N. Y. (2022). Special education teachers' knowledge and attitudes toward the use of assistive technology for disabled children management: impact of an educational intervention. *Creative Education*, 13(3), 821-845. <https://doi.org/10.4236/ce.2022.133054>
- Kiel, E., Braun, A., Muckenthaler, M., Heimlich, U., & Weiss, S. (2020). Self-efficacy of teachers in inclusive classes. How do teachers with different self-efficacy beliefs differ in implementing inclusion? *European Journal of Special Needs Education*, 35(3), 333-349. <https://doi.org/10.1080/08856257.2019.1683685>
- Kisanga, S. E., & Kisanga, D. H. (2022). The role of assistive technology devices in fostering the participation and learning of students with visual impairment in higher education institutions in Tanzania. *Disability and Rehabilitation: Assistive Technology*, 17(7), 791-800. <https://doi.org/10.1080/17483107.2020.1817989>
- Lamond, B., & Cunningham, T. (2020). Understanding teacher perceptions of assistive technology. *Journal of Special Education Technology*, 35(2), 97-108. <https://doi.org/10.1177/0162643419841550>
- Mason-Williams, L., Bettini, E., Peyton, D., Harvey, A., Rosenberg, M., & Sindelar, P. T. (2020). Rethinking shortages in special education: Making good on the promise of an equal opportunity for students with disabilities. *Teacher Education and Special Education*, 43(1), 45-62. <https://doi.org/10.1177/0888406419880352>
- Maurer, J., Becker, A., Hilkenmeier, J., & Daseking, M. (2021). Experiences and perceived self-efficacy in distance learning among teachers of students with special educational needs. *Frontiers in Psychology*, 12, 733865. <https://doi.org/10.3389/fpsyg.2021.733865>
- McNicholl, A., Casey, H., Desmond, D., & Gallagher, P. (2021). The impact of assistive technology use for students with disabilities in higher education: a systematic review. *Disability and Rehabilitation: Assistive Technology*, 16(2), 130-143. <https://doi.org/10.1080/17483107.2019.1642395>
- Menon, D., Chandrasekhar, M., Kosztin, D., & Steinhoff, D. C. (2020). Impact of mobile technology-based physics curriculum on preservice elementary teachers' technology self-efficacy. *Science Education*, 104(2), 252-289. <https://doi.org/10.1002/sce.21554>
- Metsala, J. L., & Harkins, M. J. (2020). An examination of preservice teachers' self-efficacy and beliefs about inclusive education. *Teacher Education and Special Education*, 43(2), 178-192. <https://doi.org/10.1177/0888406419873060>
- Omar, M. N., & Ismail, S. N. (2021). Empowering teacher self-efficacy on ICT: How does technology leadership play a role? *MOJEM: Malaysian Online Journal of Educational Management*, 9(3), 1-22. <https://mojes.um.edu.my/index.php/MOJEM/article/view/30567>
- Opoku, M. P., Elhoweris, H., Alhosani, N., Mustafa, A., Alkhateri, T., & Nketsia, W. (2023). Factors influencing the intention of trainee special education teachers to integrate

- assistive technology into teaching students with disabilities in the United Arab Emirates. *Heliyon*, 9(12), e22736. <https://doi.org/10.1016/j.heliyon.2023.e22736>
- Reynolds, W. M., & Park, S. (2021). Examining the relationship between the Educative Teacher Performance Assessment and preservice teachers' pedagogical content knowledge. *Journal of Research in Science Teaching*, 58(5), 721-748. <https://doi.org/10.1002/tea.21676>
- Reza, M., Manurung, D., Kolmakov, V., & Alshebami, A. (2020). Impact of education and training on performance of women entrepreneurs in Indonesia: Moderating effect of personal characteristics. *Management Science Letters*, 10(16), 3923-3930. <https://doi.org/10.5267/j.msl.2020.7.018>
- Rumrill Jr, P. D., Cook, B. G., & Stevenson, N. A. (2020). *Research in special education: Designs, methods, and applications*. Charles C. Thomas. https://www.ccthomas.com/details.cfm?P_ISBN13=9780398093167
- Soetan, A. K., Onojah, A. O., Alaka, T. B., & Aderogba, A. J. (2020). Hearing impaired students' self-efficacy on the utilization of assistive technology in federal college of education (special) Oyo. *International Journal for Cross-Disciplinary Subjects in Education*, 11(1), 4658-4666. <https://infonomics-society.org/wp-content/uploads/Hearing-Impaired-Students-Self-Efficacy-on-the-Utilization-of-Assistive-Technology.pdf>
- Surajudeen, T. B., Ibironke, E. S., & Aladesusi, G. A. (2023). Special Education Teachers' readiness and self-efficacy in utilization of assistive technologies for instruction in secondary school. *Indonesian Journal of Community and Special Needs Education*, 3(1), 33-42. <https://doi.org/10.17509/ijcsne.v3i1.44643>
- Svensson, I., Nordström, T., Lindeblad, E., Gustafson, S., Björn, M., Sand, C., Almgren/Bäck, G., & Nilsson, S. (2021). Effects of assistive technology for students with reading and writing disabilities. *Disability and Rehabilitation: Assistive Technology*, 16(2), 196-208. <https://doi.org/10.1080/17483107.2019.1646821>
- Wray, E., Sharma, U., & Subban, P. (2022). Factors influencing teacher self-efficacy for inclusive education: A systematic literature review. *Teaching and Teacher Education*, 117, 103800. <https://doi.org/10.1016/j.tate.2022.103800>
- Yada, A., Leskinen, M., Savolainen, H., & Schwab, S. (2022). Meta-analysis of the relationship between teachers' self-efficacy and attitudes toward inclusive education. *Teaching and Teacher Education*, 109, 103521. <https://doi.org/10.1016/j.tate.2021.103521>