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The Use of Educational Technology Competencies by Special Education Teachers and the Key Obstacles: A Field Study on a Sample of Teachers of Children with Hearing Impairments in the Wilaya of Saïda and Mascara

استخدام مربّي التربية الخاصة للكفايات التكنولوجية وأهم المعوقات:
دراسة ميدانية على عينة من أساتذة ومعلمي الأطفال ذوي الإعاقات السمعية
بولاية سعيدة ومعسكر

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Abstract:

This study aims to identify the obstacles faced by special education educators in utilizing educational technological competencies. To achieve this objective, the descriptive research method was employed, and a questionnaire consisting of 18 items was administered to a sample of 61 special education educators from schools for hearing disabilities in Saida and Camp during the first semester of the 2024/2025 academic year. The study's findings indicate that the primary obstacles faced by special education educators in the use of educational technological competencies include insufficient technological resources in schools relative to the number of students, the lack of training courses for educators in technology, and unsuitable classrooms for using technological tools. The results also reveal that there are no statistically significant differences in the educators' views regarding the challenges of using educational technological competencies based on gender, teacher class, or professional seniority.

Keywords: Obstacles, Special Education Educators, Educational Technological Competencies

المخلص: تهدف هذه الدراسة إلى التعرف على معوقات استخدام مربي التربية الخاصة للكفايات التكنولوجية التعليمية، ولتحقيق هدف الدراسة تم استخدام المنهج الوصفي، وطبق لغرض الدراسة استبيان مكون من (18) فقرة، على عينة مكونة من (61) من مربي التربية الخاصة بمدارس الإعاقة السمعية بولايي سعيدي ومعسكر خلال الفصل الأول من السنة الدراسية (2025/2024)، وخلصت نتائج الدراسة إلى أن أبرز المعوقات التي تواجه مربي التربية الخاصة نحو استخدام الكفايات التكنولوجية التعليمية هي أن الوسائل التكنولوجية داخل المدارس غير كافية مقارنة بعدد التلاميذ، وغياب الدورات التدريبية لفائدة المربين في مجال التكنولوجيا، وقاعات التدريس لا تلائم استخدام الوسائل التكنولوجية بها، كما خلصت نتائج الدراسة إلى عدم وجود فروق ذات دلالة إحصائية في آراء مربي التربية الخاصة في تحديثات استخدام الكفايات التكنولوجية التعليمية تبعاً لمتغيرات الجنس وصنف المدرس والأقدمية المهنية.

الكلمات المفتاحية: المعوقات، مربي التربية الخاصة، الكفايات التكنولوجية التعليمية

1. INTRODUCTION

The role of a special education teacher differs from that of a general education teacher. A special education teacher must work with a group of students based on the type and severity of their disabilities, as well as their psychological and educational characteristics. For special education to reach its goals, the teacher must be highly prepared. This preparation involves participation in multiple programs, exposure to relevant curricula, and access to appropriate teaching tools. These resources support special education in fulfilling its mission to enhance the educational and psychological support for students with special needs across all educational levels.

In addition, the special education teacher must have adequate knowledge of the educational system in which they work. They must also consider the individual differences between students. To teach effectively, they are required to use the latest methods and instructional technologies that meet diverse learning needs.

The preparation of special education teachers involves numerous challenges and obstacles. Teachers often face difficulty in responding to the unique conditions of students with special needs. They also require working environments that are adapted to fit the specific demands of their roles and the needs of their students.

2.The Problem of the Study

Students with special needs are an essential part of the educational system. In Algeria, more than 34,000 students with special needs were enrolled in schools during the academic year 2024–2025. In response, Algeria is working to provide comprehensive support for this significant segment of society. This support includes creating educational environments that are adapted to their disabilities and responsive to their psychological, educational, and health needs. Additionally, Algeria has established 239 specialized institutions across the country dedicated to the education of students with special needs. These institutions are staffed by more than 6,000 trained professionals—including educators, professors, and specialized teachers—who have received training to effectively support this population.

The special education teacher plays a central role in the care and education of students with special needs. According to Bani Hamad (2019), the success of any educational development primarily relies on the teacher, especially their academic and professional competence. These competencies enable the teacher to achieve the educational objectives appropriate to the level they teach. The teacher is responsible for implementing the curriculum, selecting instructional strategies, designing learning activities, and applying educational technologies. Furthermore, Azzaoui and Kourat (2024) highlighted that teaching students with hearing impairments requires specific efforts. These efforts include providing instruction in areas such as art, crafts, and sports, and integrating various technological tools into the educational process.

With the rapid advancement of technology and the rise of educational programs, applications, and devices that support learning for students with special needs—particularly for those with hearing impairments—the need to adopt modern tools in special education has grown. These developments emphasize the growing importance of using up-to-date technologies

in the teaching and learning process for this student group.

With the rapid advancement of technology and the emergence of educational programs, applications, and devices designed to support students with special needs—particularly in schools for hearing-impaired children—the importance of integrating modern technologies in the education of deaf and hearing-impaired students has grown. These students primarily depend on visual input to learn, which makes the use of technology essential for enhancing their academic achievement. Cooper and Bull, as well as Collier and Rivera (1999), emphasized that a successful teacher is not defined merely by subject mastery, but by their ability to integrate technology effectively into the learning process. They also noted that this integration should be implemented in alignment with the curriculum.

Despite the widespread availability of modern technological tools within the broader community, several barriers prevent teachers from using them effectively in the classroom. These include a lack of training in how to apply technological tools in education, such as using computers and multimedia. Al-Tuwaijri (2014) highlighted that one of the most significant challenges teachers face is the absence of adequate training programs in technology. He also pointed out a shortage in the budget allocated for acquiring technological resources for education, as well as limited internet connectivity in some schools and special education departments. As a result, training teachers in educational technology has become an urgent priority to improve their skills and enhance their professional performance.

Based on the above, the study raises the following research questions:

- What are the obstacles facing special education educators in using educational technological competencies?
- Are there statistically significant differences between the responses of special education educators toward obstacles to using

educational technological competencies based on gender and professional seniority?

Study Objectives

This study aims to achieve the following objectives:

1. To identify the obstacles that special education educators face in using educational technological competencies.
2. To examine whether there are statistically significant differences in the responses of special education educators regarding these obstacles based on the gender variable (male/female).
3. To assess the significance of differences in the responses of special education educators concerning obstacles to the use of educational technological competencies based on their professional seniority.
4. To evaluate the significance of differences in the responses of special education educators related to the use of educational technological competencies according to their teaching grade level.

Significance of the Study

The importance of this study lies in several key areas:

- ✓ It contributes to identifying the main obstacles that hinder special education educators from effectively using educational technology.
- ✓ It provides insights for stakeholders in the education sector on the necessity of integrating technological tools in teaching students with special needs.
- ✓ It assists special education educators by offering ways to overcome or reduce the barriers they may encounter when using technology.
- ✓ The findings can serve as a theoretical reference for developing effective teaching strategies for deaf and hard of hearing students.

It highlights the challenges that special education educators face, reflecting their personal views and professional experiences. **Terms of the Study**

Challenges

According to Al-Otaibi (2011), challenges are defined as "a set of factors that affect the teaching process, which limits or reduces its

effectiveness and efficiency" (p. 11). In this study, challenges are procedurally defined as any obstacles—whether material, cognitive, or institutional—that prevent or hinder the use of modern technological tools in the teaching of pupils with special education needs, from the perspective of special education educators.

Special Education

Ali (1999) defines a special education teacher as "a teacher qualified in special education who provides educational, training, rehabilitation and guidance programs and services to students with special needs." In this study, special education educators are defined as teachers who have received training to work with and support students with special needs, offering appropriate educational and support services in specialized institutions. The study specifically focuses on teachers and instructors working with students who have hearing impairments.

Technological Competencies

Al-Sharif (2005) describes technological competencies in the field of education as "the knowledge, skills and trends of the field of educational technology necessary for the human element to reach the degree of mastery in the performance of its functions." For the purposes of this study, technological competencies are procedurally defined as the knowledge and practical skills that special education educators have in educational technology. These competencies enable them to effectively use educational tools and resources to support learning outcomes for students with special needs.

Previous Studies

Al-Khudair (2019) conducted a study aimed at identifying the challenges faced by female teachers of deaf and hearing-impaired students in using modern technologies at the secondary school level. The study sample included 35 female teachers working in public secondary schools in Riyadh, Saudi Arabia. Using a questionnaire as the primary data collection tool, the study revealed that the major challenges encountered by these teachers

were financial, administrative, and technical in nature. Furthermore, the results showed no statistically significant differences in the perceived obstacles based on variables such as academic qualification, years of experience, or participation in training courses related to technology.

Al-Salami and Al-Makawi (2021) examined the challenges of distance education for students with hearing disabilities and explored ways to address these challenges during pandemics. The researchers adopted a descriptive-analytical approach and collected data through a questionnaire administered to a sample of 391 teachers of students with hearing disabilities in both Egypt and Saudi Arabia. The findings highlighted several key challenges, including a lack of teacher training, weak internet connectivity, limited use of modern technologies such as virtual classrooms, and the misalignment between existing curricula and the requirements of distance education for students with hearing impairments.

Swaiem (2021) conducted a study to investigate the obstacles to using augmented reality (AR) technology in the education of students with intellectual disabilities in schools located in Riyadh. The study sample consisted of 170 teachers specializing in intellectual education. Utilizing a descriptive research approach and a structured questionnaire, the study found that approximately one-third of these teachers faced significant challenges when integrating AR technologies into their teaching practices. These challenges were mainly related to lack of training, insufficient resources, and limited institutional support for implementing AR-based learning strategies.

Al-Thaqafi (2021) aimed to identify the obstacles to the use of augmented reality (AR) technology in teaching deaf and hard-of-hearing students from the perspective of teachers in Jeddah. The researcher developed a questionnaire consisting of 28 items and administered it to a sample of 148 teachers. Using the descriptive survey

method, the study found that significant barriers included the scarcity of specialized teams in AR design and production, and the lack of equipment necessary to implement AR technology in classrooms. The study also revealed no statistically significant differences in responses concerning technical obstacles. However, significant differences were found regarding teacher-related obstacles, influenced by the educational environment variable, favoring teachers in inclusion programs.

Al-Kulaib (2022) investigated the obstacles to distance education for deaf and hard-of-hearing students from the perspective of their teachers. The study sampled 105 teachers working in deaf and hard-of-hearing programs in Dammam and employed the descriptive method through a structured questionnaire. Key findings indicated multiple challenges, particularly those related to the unique characteristics of students with hearing impairments and the nature of the curriculum. The results also showed statistically significant differences based on educational qualification, while no significant differences were observed concerning years of experience.

Commentary on Previous Studies

- A review of the aforementioned studies reveals several points of agreement and shared insights with the current research:
- All studies addressed the challenges faced by teachers in integrating modern technology into the education of deaf and hard-of-hearing students.
 - There is a consistent emphasis on **technical, financial, and administrative barriers**, along with issues of **insufficient training** and **inadequate infrastructure**.
 - Most studies highlighted a **lack of specialized personnel and resources**, such as AR content designers or assistive tools tailored to students with hearing impairments.
- Several findings pointed to **variability in teacher readiness and competence** based on factors like **educational qualifications**

and the **teaching environment** (e.g., inclusion vs. specialized settings).

– Despite contextual differences, the research converges on the urgent need to **support teachers professionally**, especially in the areas of technological training and educational technology application.

This alignment between prior studies and the present research underscores the relevance and timeliness of examining the barriers that hinder special education teachers in effectively using educational technological competencies. It also supports the need for systemic changes in policy, training, and resource allocation to promote inclusive, technology-enabled learning environments.

Presentation and Discussion of Findings

This section will present and discuss the results obtained from the statistical analyses in relation to the research questions and objectives.

Judgment Criterion:
[From 1 - 2.33: Low]
[From 2.34 - 3.67: Medium]
[From 3.68 - 5: High]

Arithmetic Means and Standard Deviations:

it is clear that the arithmetic means for the obstacles to using educational technological competencies for special education educators ranged between **3.86** and **2.14**, with standard deviations between **1.40** and **1.01**. The overall arithmetic mean for the questionnaire was **2.98**, with a standard deviation of **0.64**. This indicates that the obstacles identified were perceived to be of medium difficulty by the educators, with a general tendency toward a moderate level of challenges.

- The results suggest that, while there is some degree of difficulty in using educational technology, there are variations in how these obstacles are experienced across different dimensions.

Analysis of Specific Items:

- **Items with High Difficulty (Paragraphs 14 and 12):** These items highlighted that technological means within schools are insufficient relative to the number of

students. Additionally, there is a lack of training courses in the field of educational technology, and classrooms are not suitable for using some technologies, such as interactive whiteboards and computers.

- **Items with Low Difficulty (Paragraphs 1, 10, 6):** These items reflect less concern among teachers about certain obstacles, possibly indicating that there are fewer challenges related to certain aspects of educational technology use.

Overall Interpretation:

The total score of **2.98** suggests that, while there are challenges in using educational technological competencies, these challenges are perceived as moderate. Special education educators have the desire to incorporate modern technology into their teaching but face significant obstacles that hinder their ability to do so effectively.

The **most notable obstacles** include:

1. **Insufficient Technological Resources:** The lack of sufficient technological tools compared to the number of students.
2. **Lack of Training:** The absence of professional development opportunities in the use of educational technologies.
3. **Unsuitable Teaching Environments:** The physical classrooms are often not equipped to integrate certain technological tools, such as interactive whiteboards and computers.
4. **Special Needs Characteristics:** The unique needs of students with special education requirements create challenges in effectively utilizing technology in teaching.

Consistency with Previous Studies:

The findings of this study align with those of several previous studies, such as:

- Al-Thaqafi (2021)
- Algebra study, Al-Khudair (2019)
- Al-Kulaib study (2022)
- Al-Salami and Al-Makawi (2021)

All these studies identified similar obstacles in the use of educational technologies, such as the characteristics of students with special needs, financial and administrative difficulties in acquiring technology, and the lack of necessary equipment in schools.

Results of the Second Question and Discussion:

Second Question:

Are there statistically significant differences between the responses of special education educators towards obstacles to the use of educational technological competencies according to the gender variable (male/female)?

Analysis of Results:

the following results are observed:

Mean:
Male Educators: Mean = 59.23 , Standard Deviation = 9.23
Female Educators: Mean = 50.87 , Standard Deviation = 11.70
Calculated T-value: 2.48
Degrees of Freedom: 59
Significance Level: 0.06 , which is not significant at the 0.05 level of error.

We note from Table (05) that the arithmetic mean value for the male study sample is 59.23, with a standard deviation of 9.23, while the arithmetic mean value for the female study sample is 50.87, with a standard deviation of 11.70. This is further supported by the calculated "t" value of 2.48, which is not significant at 59 degrees of freedom and a significance level of 0.05 (p-value = 0.6). This indicates that there are no statistically significant differences in the responses of special education educators regarding the obstacles to the use of educational technological competencies based on gender.

The two researchers interpret this result as suggesting that there are no significant differences between male and female special education educators in their responses to the obstacles to using educational technological competencies. This implies that both male and female educators face the same obstacles and challenges, as they work in the same environment and receive the same training to support individuals with special needs. They both require significant attention and support in terms of providing various educational innovations within schools.

These findings contrast with those of Swailem (2021), whose study showed statistically significant differences in the

responses of the study members regarding obstacles related to the use of educational technology (specifically augmented reality technology) based on gender.

Results of the Third Question and Discussion:

The third question was: *Are there statistically significant differences between the responses of special education educators towards obstacles to the use of educational technological competencies according to the teacher's class variable (specialized education teacher/specialized education professor)?*

that the arithmetic mean value for the specialized education teacher is 53.48, with a standard deviation of 11.85, while the arithmetic mean for the specialized education professor is 54.00, with a standard deviation of 11.46. This indicates that the responses of both types of special education educators regarding obstacles to using educational technological competencies are similar.

The calculated "T" value is 3.00, which, when compared to the degrees of freedom (59) and the error level (0.05), gives a significance level of 0.86. This means that there are no statistically significant differences in the responses of special education educators towards the obstacles to the use of educational technological competencies based on the teacher class variable.

The researchers interpret this result to mean that there are no significant differences between the responses of special education educators based on their class (specialized education teachers for primary hearing-impaired students versus specialized education professors for intermediate hearing-impaired students). Both groups face the same difficulties, as reflected in their responses to the study. They work in the same schools, with the same administrative staff, and use the same technical equipment available at the school level.

These results are consistent with the studies of Swailem (2021) and Al-Khudair (2019),

both of which showed that there were no statistically significant differences in responses regarding the obstacles to the use of educational technological competencies based on the teacher's class or academic qualifications.

Results of the Fourth Question and Discussion:

Fourth Question: Are there statistically significant differences between the responses of special education educators towards obstacles to the use of educational technological competencies according to the variable of professional seniority?

The arithmetic mean for special education educators with less than 8 years of experience is **55.06**, with a standard deviation of **11.92**.

The arithmetic mean for special education educators with more than 8 years of experience is **52.40**, with a standard deviation of **11.19**.

The calculated T value is **0.89**, with **59** degrees of freedom and a significance level of **0.37**. This means that there are **no statistically significant differences** in the responses of the study sample towards the obstacles to the use of educational technological competencies according to the variable of professional seniority.

The researchers explain that the absence of significant differences may be attributed to the fact that the challenges faced by both groups of educators are similar. Both groups have comparable difficulties in using educational technology, which suggests that the issues are not strongly related to years of experience but rather to broader factors such as the availability of resources and training. Teachers and professors across different levels of experience believe that the obstacles they face are related not only to a lack of training and technological equipment but also to classroom management challenges. For example, educators feel that using technological tools like data display devices and computers might distract students, making it difficult to maintain control in the classroom. Additionally, the results suggest that all educators, regardless

of their years of experience, have the necessary skills to use various educational technologies.

The findings of this study align with those of Al-Jabir, Al-Khudair (2019), and Al-Kulaib (2022), who also reported no significant differences in the responses of special education educators regarding obstacles related to the use of educational technology based on professional seniority.

Recommendations of the Study:

Based on the findings of the study, the researchers offer the following recommendations:

- **Organizing Regular Training Courses:** It is crucial to provide continuous professional development opportunities for special education educators, focusing on enhancing their skills in educational technology. This will enable them to effectively integrate technology into their teaching practices.
- **Allocating Suitable Classrooms:** Schools should designate and equip specific classrooms with appropriate technological tools and equipment. This will ensure that educators have access to resources that can enhance the learning experience and improve educational outcomes.
- **Providing Educational Technological Tools:** Schools should invest in the necessary technological tools and equipment that can significantly contribute to improving the educational care and support provided to students with special needs. Such tools can be used to cater to the diverse needs of these students.
- **Encouraging Technological Innovation:** Teachers and professors should be motivated to incorporate innovative educational technologies into their teaching methods. This will help improve engagement and learning outcomes for students.
- **Strengthening**

School-Family Communication: Schools should encourage greater involvement from the families of students, particularly by inviting parents to participate in cultural and sports activities. This will foster stronger

communication and collaboration between the school and the families, benefiting both students and educators.

- **Training Educators in English:** Given that many technological tools, innovations, and electronic applications are available primarily in English, it is recommended to provide special education educators with English language training. This will allow them to better utilize these tools and stay up-to-date with advancements in educational technology.

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