

Artificial Intelligence and Teachers' Sustainability: Preschool Teachers' Perceptions of Conditions and Level of Support for Professional Development in Early Childhood Special Education

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Received date: 14 /6 /2023 Acceptance date: 3 /8 /2023 Published date: 15/12/2023

Doi:<https://doi.org/10.36473/ujhss.v62i4.2272>



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Abstract:

The purpose of this research is to explore Saudi early childhood special education (ECSE) teachers' attitudes towards professional development programs in ECSE. For this reason, survey data was obtained from 30 Saudi ECSE teachers who worked in Saudi Arabian early childhood stages, and then an interview was conducted with five of them to find out their training needs and the challenges they face. The researchers used the qualitative technique, which included a pre-survey and interviews. An online questionnaire was provided to the participants in order to examine their impressions of the professional development programs and assess their judgments of the success of these programs. The findings indicated teachers' positive impressions of these programs, as they regard them as useful tools that can help them get their teaching license. Therefore, participants perceived professional development programs to be valuable and capable of assisting and improving their teaching skills. These findings imply that prioritizing professional development programs for early childhood teachers in Saudi Arabia may result in greater proficiency as well as the capacity to overcome the requisite teaching license. The research ends with recommendations for further research on how to improve professional development programs to better fulfill the necessities of teachers.

Keywords: *Professional Development Programs, Early Childhood, Special Education, Saudi Teachers*

الذكاء الاصطناعي والتنمية المستدامة للمعلمين : تصورات معلمات رياض الاطفال للظروف ومستوى الدعم
للتنمية المهنية في التربية الخاصة في مرحلة الطفولة المبكرة

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المخلص :

هدف البحث الكشف عن اتجاهات معلمات التربية الخاصة في مرحلة الطفولة المبكرة السعوديات نحو برامج التنمية المهنية في مرحلة الطفولة المبكرة . تم الحصول على بيانات استطلاع الرأي من 30 معلمة سعودية في مرحلة الطفولة المبكرة ، وتم إجراء مقابلة مع خمسة منهن لمعرفة احتياجاتهن التدريبية والتحديات التي تواجهها كل منهن . استخدم الباحثون المدخل النوعي الذي اشتمل على استطلاع رأى مسبق ومقابلات . تم تقديم استبيان عبر الإنترنت للمشاركة من أجل الكشف عن اتجاهات بخصوص برامج التنمية المهنية وتقييم أحكامهم على نجاح هذه البرامج . أشارت النتائج إلى الاتجاهات الإيجابية عن هذه البرامج ، حيث تعتبرها المعلمات أدوات مفيدة يمكن أن تساعدن في الحصول على رخصة التدريس . لذلك ، رأت المشاركات أن برامج التنمية المهنية ذات قيمة وتساعدن على تحسن مهارتهن التعليمية . تشير هذه النتائج إلى إعطاء الأولوية لبرامج التنمية المهنية لمعلمات الطفولة المبكرة في المملكة العربية السعودية قد يؤدي إلى زيادة الكفاءة والقدرة والحصول على رخصة التدريس المطلوبة . ينتهي البحث بتوصيات لمزيد من البحث حول كيفية تحسين برامج التنمية المهنية لتلبية احتياجات المعلمات بشكل أفضل .

الكلمات المفتاحية: برامج التنمية المهنية ، الطفولة المبكرة ، التربية الخاصة ، المعلمات السعوديات

Introduction

Education sector, among others, has been greatly changed by the entry of artificial intelligence (AI). This sector has been compelled by this type of technology to implement the consumption of technology. So one can be said that the future of education is coupled with technologies and their advancements (Tut et al., 2021). John McCarthy first used the term AI in 1955 and he defined it as making a machine behave in ways that would be called intelligent if a human were so behaving. In 1950, Alan Turing popularized that computing machines may be thinking like humans someday. He believed that in the future automated machines would make such calculations that humans would not rationally do (Gültekin, 2022).

At present, artificial intelligence has a trend of integrated development in various fields. In the field of higher education, it is particularly necessary to pay close attention to the current situation and trend of artificial intelligence development, judge the development direction from the perspective of development, integrate the existing theoretical basis, and transmit it to students, so that students can constantly update their ideas and enhance their awareness of innovation (Xiaolin &Xiaojun,2022). The breakthrough of artificial intelligence technology, together with other technologies, will improve the efficiency of education and promote new teaching and learning methods Digital education or reality (Xiaolin &Xiaojun, 2022).

The digital age is characterized by the explosion of knowledge and technology, the proliferation of communications systems, the increasing use of computers and the expansion of the use of the Internet. The states are beginning to feel the growing importance of information education and technological culture. By providing an interactive learning and training environment. By attracting the attention of individuals in an era characterized by rapid development and constant change (Cukurova et al., 2019).

Shehata& Al-Najjar(2003) showed the most important justifications for the interest in the electronic professional development of teachers as follows:

- Technological development and its implications for the educational process, in terms of employment, learning techniques and education.

- Information technology and computers have radically affected education systems and methods.

Kabilan (2003) noted the importance of electronic professional development as a modern trend in the training of teachers in service. Professional development is an essential and integral aspect of a teacher's profession. With the Internet's explosion in the developing and developed countries, teachers are beginning to experiment, individually and informally, with self-managed and self-directed online professional development.

To creating a quality-learning environment for learners and a supportive work environment for teachers, it is necessary to develop an effective means of supporting and retaining teachers (Evers, Van der Heijden, & Kreijns, 2016). It can be said that professional development (PD) is a must in order develop skills of newly recruited teachers, and to continue to develop the experience of in-service teachers (Evers et al., 2016), “ensuring optimal conditions for the successful upbringing and holistic development of each child and enhancing those child's traits and skills that begin to form at an early age ...” (Čepić, Pejić Papak& Marijan, 2020). Professional development is a method of providing teachers with the skills and proficiencies needed to construct exceptional educational results for all students (Darling-Hammond, 2015). PD keeps the teacher up-to-date with the continuously changing practices, and student needs.

From the perspective of professional development, it is argued that without developing the skills and competencies of the teachers, improving schools would be impracticable (Manduca, 2017). The literature on preschool teachers' professional development starts from different methodological, structural, and philosophical perspectives/ approaches to their training and development and the role of preschool teachers in the development process (Čepić et al., 2020)

Early Childhood Special Education teachers come from a variety of backgrounds, making professional development an especially powerful tool for improving academic performance. As a result, children's outcomes can be improved (Henry and Pianta, 2011). Early childhood education professionals now consider PD a quality indicator as a result of changes in the field. Several countries around the world have implemented early childhood PD policies to achieve this goal (Schachter, Gerde, & Hatton-Bowers 2019).

Professional development influences students' effectiveness in school at several points. Educators should shape professional development in a high-quality frame by being cautious when they plan, implement, and use action research. Trusting the application of professional development in the classroom is considered an important step that should be taken by the teachers, and experts must follow up with teachers to provide a continuum of support. Further, after conducting professional development programs, evaluating students' achievement is the next step which can be used as proof of the effectiveness of these PD programs (Jones, 2009) .

This study was designed to explore preschool teachers' perceptions of professional development regarding conditions and level of support for professional development in early childhood special education during the COVID-19 pandemic in Saudi Arabia. Exploring preschool teachers' perceptions may augment the transfer of knowledge for future professional learning opportunities.

Professional Development

Supporting children with developmental disabilities is a vital part of early childhood education (Frantz et al., 2022). Teaching, like other professions, entails creative, dynamic, and autonomous individuals who strive to educate learners in optimum settings. Scholars have defined professional development (PD) in various ways. Karlberg and Bezzina (2020) first describe PD as processes that show improvements in teachers' job-related knowledge and skills and enable them to create effective instruction for improved student learning. These processes are designed to make classroom learning fulfilling for both teachers and students. Secondly, these authors contend that PD is comprised of activity programs, which teachers execute in order to grow personally and professionally. These activity programs are supportive of teacher improvement and student acquisition of knowledge. Both definitions serve as models for PD that enhance the field of education (Karlberg & Bezzina, 2020).

Researchers define professional development as experiences for improving practice and outcomes within an individual's field of work (Patton, Parker, and Tannehill, 2015). Additional core features that constitute PD include: 1) teacher's needs and interests, 2) learning as a social process, 3) learning communities of educators, 4) ongoing and sustained, 5) active learning, 6) pedagogical skills and content knowledge, 7) care facilitation, and 8) improving students' learning outcomes

(Patton, Parker, and Tannehill, 2015). These PD guidelines help to develop instructional approaches that ameliorate teacher prowess in general .

Yoon and colleagues (2007) highlighted the association between professional development and students' academic performance. The researchers concluded that professional development influences student's effectiveness in school at several points. Educators should shape professional development in a high-quality frame by being cautious when they plan, implement, and use action research. Trusting the application of professional development in the classroom is considered an important step that should be taken by the teachers, and experts must follow up with teachers to provide a continuum of support. Further, after conducting professional development, evaluating students' achievement is the next step which can be used as evidence of the effectiveness of the professional development .

The use of information technology and the Internet in training and education is one of the most important indicators of society's transformation into an information society. As this will contribute to increasing the efficiency and effectiveness of education systems and in spreading information awareness. Thus, it will be contributing to the building of the information cadres that societies seek in the digital age.

One of the most important effects of the digital age on the professional development of teachers has been the emergence of a new system of teacher training and the improvement of their professional skills. The e-learning system, which depends on communication and information technologies in the activities necessary for the professional development process to include e-learning, e-training, which is not only to send scientific material to the beneficiaries, but also to include all the steps and procedures of management, training and monitoring of the training process. In fact, there are many justifications for the introduction of e-learning in the field of teacher professional development, including the problems of traditional training, such as:

- The lack of strategic planning of teacher training systems and programmers: training topics are not chosen in the light of a comprehensive study of teachers' needs in general

- The lack of continuity of training programs necessary for professional development, with the intervals of training programs attended by teachers that may be up to several years.
- The lack of training programs for teachers and their distance from keeping pace with the change in the objectives, methods and modern methods of professional development of teachers.
- The lack of the previous programs to follow modern concepts of professional development, and the applications that should accompany them (Amanda, Andrea, M. &Mike, 2006)

Vision 2030

As part of Vision 2030, the Saudi government developed a program for transforming the kingdom's vision. By 2030, Vision 2030 aims to overhaul the healthcare, economy, safety, and education of the country. The National Transformation Program for Vision 2030 outlines a method and roadmap for the economy to develop effectively in the Kingdom of Saudi Arabia (KSA) (Asiri, 2020). Vision 2030 respectively focuses on six objectives that pertain to education, and they are as follows: 1) student-level education services, 2) teacher recruitment, training, and development, 3) learning environment stimulation, 4) curricula and teaching methods improvement, 5) student values and core skills improvement, and 6) a system of education that can meet the needs of national development as well as the labor market (Asiri, 2020). These objectives facilitate country-wide improvements in the development of education. Teacher training affects the educators' knowledge of content. Despite some problems, teacher training initiatives are being implemented to help to build KSA's association of educators .

PD in Saudi Arabia

Several studies have addressed teachers' perspectives on professional development in Saudi Arabia, including Al-khresheh, Mohamed, and Asif, (2022), Al-Bargi (2021), Alshaikhi (2020), and Alghamdi and Li (2011). It is necessary to design, implement, and evaluate Saudi Arabian CPD programs (Alghamdi and Li, 2011).

In Saudi Arabia, PD can be defined as the overlapping of school development and continuous improvement of teachers and administrators (Sywelem & Witte, 2013).

A professional development program is a critical component of school-level change, and it improves pedagogy, curriculum, and teacher commitment at all levels. In addition, elements of PD in Saudi Arabia include meeting teacher needs, teacher's commitment, leadership style, the particular school context, and feedback on teacher's development (Sywelem & Witte, 2013). Further, continuing professional development (CPD) in Saudi Arabia is delivered nationally via Local Education Authorities (LEAs). Both pre-service and in-service training occurs in order to support CPD in Saudi Arabia as well .

In Saudi Arabia, CPD does not prepare teachers effectively to manage classrooms, communicate with parents, or use technology in the classroom. (Sywelem & Witte, 2013,). Other problems include a lack of professional support, a lack of teaching materials, lesson planning troubles, and the selection of appropriate teaching methods. Furthermore, teacher training does not usually consider the educators' background knowledge, experiences, and beliefs demonstrated in professional learning experiences, and teacher training does not affect the educators' retention of PD materials (Sywelem & Witte, 2013) .

A qualitative study investigated the types of professional development activities that English teachers use and how they frequently utilize ideas from these activities (Alshumaimeri & Alshumaimeri, 2017). It was revealed in the study that observation by supervisors, in which supervisors provide feedback and evaluate the teacher's performance, is the most used PD activity. Certainly, this activity is considered as an essential requirement by the Ministry of Education. Collaborating and sharing the teaching experiences with others and attending workshops came next in importance. Additional research has been conducted with Saudi English teachers on their perceptions about self-directed professional development (PD) in Saudi Arabia (Alshaikhi, 2020). The researchers found that teachers gain PD in different ways such as from their experience of teaching students, websites, sharing the experiences with others, social media, relying on reading books, earning a graduate degree or enrolling in paid courses from academic institutes (Alshaikhi, 2020) .

Problem Statement

There are not many Arab and foreign investigations that tended to the part of AI in the professional development of teachers, where most of studies focused on addressing the topic of artificial intelligence and highlighting its role in educational

applications, contributing to the provision of high-quality curricula, educational environments that develop different thinking patterns, especially higher thinking skills in the student.

There has been little research conducted on special education preschool teachers' perceptions of professional development regarding conditions and level of support for online professional development in early childhood special education during the COVID-19 pandemic in Saudi Arabia. An interpretation of preschool teachers' perceptions of professional development regarding conditions and level of support for online professional development in early childhood special education during the COVID-19 pandemic may be used to advance existing professional development approaches and concentrate on the knowledge and skills needed for children in inclusive settings. In this regard, the fundamental question is *what are Preschool teachers' perceptions of conditions and level of support for Professional Development in Early Childhood Special Education during the COVID-19 pandemic?*

Method

The author began the study during April 2021. A qualitative design was used, with interviews and pre-surveys to collect data. The anonymous pre-survey results will serve as a holistic guide for the semi-structured interviews. From the surveys, 30 special education early childhood teachers from the five major cities in Saudi Arabia (including Riyadh, Jeddah, Dammam, Jazan, and Arar) were recruited. To do this, we contacted the local Department of Planning and Development for each city, requesting the names of schools that have special education early childhood classrooms. Interview participants were recruited from the initial survey .

For the analysis plan, the interviews were transcribed verbatim in Microsoft Word. In coding and analyzing the data, Saldana's (2021) techniques were adopted.

The data obtained from the research were processed using the statistical program for computer data processing (SPSS) by descriptive and inferential statistics procedures.

Participants of the Study

The study was conducted to recruit ECSE teachers from the five major cities in the Kingdom of Saudi Arabia (including Riyadh, Jeddah, Dammam, Jizan and

Arar). To conduct the study, 30 special education teachers who work in schools in the designated areas were recruited. Special attention was paid to teachers who worked in ECSE. The following table shows a classification of the study sample according to years of experience and qualification.

Table 1
Participants Characteristics

| Participants | Gender | Qualification | Years of experience |
|---------------------|---------------|-------------------------|----------------------------|
| 5 | Female | BA in Special Education | 5-0 |
| 9 | Female | BA in Special Education | 10-6 |
| 8 | Female | MA in Special Education | 15-11 |
| 5 | Male | BA in Special Education | 20-6 |
| 3 | Male | MA in Special Education | +20 |

All participants were female and male ECSE teachers. All of them are experienced ECSE teachers. Nineteen of them have bachelor's degrees in special education and eleven have master's degrees. The participants had experience teaching students in early childhood.

Five of the 30 participants in the study who had already taken part in the survey were interviewed as well. Their brief biographies are as follows:

TEACHER A. is a 35-year-old ECSE MA graduate with 8 years of classroom experience.

TEACHER M. is a 29-year-old special education major with three years of classroom experience.

TEACHER S., 32 years old, has five years of teaching experience and a BA in special education.

TEACHER T., 29-year-old has three years of experience teaching and a BA in special education.

TEACHER R., 31, has four years of teaching experience and is currently pursuing his MA in special education.

The researchers use these tables to deduce the number and percentage of responses from the respondents and put them in a table of two columns, the first representing the frequency and the second the percentage, as shown in the following tables:

Distribution of the research sample by region**Table 2***The number and proportion of the distribution of the research sample by region*

| Region | Frequency | % Percentage |
|--------|-----------|--------------|
| Riyadh | 9 | 30% |
| Jeddah | 8 | 26.6 % |
| Dammam | 7 | 23.3 % |
| Jizan | 3 | 10 % |
| Arar | 3 | 10% |
| Total | 30 | 100 |

As shown in table (2), 56.6% of ECSE teachers are from Riyadh and Jeddah, whereas 23.3% are from Dammam. Teachers from the cities of Arar and Jizan made up 20 percent of the teachers in the sample. The study sample is concentrated most heavily in Riyadh, Jeddah and Dammam due to the presence of more ECSE programs than in other cities.

Distribution of the research sample by area of specialization**Table 3***The quantity and percentage of the research sample distribution by area of specialization.*

| Area of specialization | Frequency | % the percentage |
|---------------------------|-----------|------------------|
| Intellectual Disabilities | 21 | 70% |
| Learning Disabilities | 9 | 30 % |
| Total | 30 | 100 |

The frequency and participation rate of the instructors are shown in the table, and it shows that 30% of participating teachers specialize in learning disabilities while 70% of teachers specialize in intellectual disabilities.

Instrument

An eleven-question survey aims to collect demographic data of participants and to discover their attitudes towards PD programs. Moreover, it addresses areas of expertise, problems associated with working with students with special needs, and professional development opportunities.

The interview questions address three topics: the participants' professional development requirements in their area of specialty, any difficulties they are experiencing when educating children with special needs, how professional development might help them overcome these issues, and which of these difficulties they believe is the most significant for professional development planning

Data Collection

Semi-structured in-depth interviews were used throughout the first semester of 2022 to gather the data. Literature research and three pilot interviews were used to create the interview questions. Participants were asked to participate in 30-minute face-to-face interviews that would take place in complete silence. Participants supplied demographic data on their employment and schooling before the interview. The participants' experiences with their workplace environments, professional development activities, and ideas were the focus of the interview sessions.

As soon as their transcripts were transcribed, each participant received a copy so they could request clarification, and the researcher could do the same. According to the participants, the transcript fairly described their opinions and experiences. A thematic analysis was conducted (Braun & Clarke, 2006). Several techniques were used to increase the study's credibility, including long-term fieldwork, numerous data collection methods, and verbatim transcription. The researchers employed additional techniques to improve reflexivity and limit bias.

Findings and Discussion

The main objective of this study was to explore Saudi teachers' attitudes towards professional development programs in ECSE. In this part, we discuss the study's findings in relation to the research questions stated in the introduction. Professional development needs and challenges were considered in relation to the initial study questions.

The second part of the survey contained eight statements to explore the participants' perceptions of professional development programs and to answer the first sub-question as well. The following tables show the percentages of their responses to the statements.

According to the following table (4), the percentage of teachers who attended professional development programs or didn't participate in any was displayed.

Table 4

Do you participate in professional development?

| Responses | Frequency | % the percentage |
|-----------|-----------|------------------|
| Yes | 10 | 33.3 |
| NO | 15 | 50% |
| Unsure | 5 | 6.7% |
| Total | 30 | 100 |

Table (4) shows the percentages of the teachers who participated in professional development programs, and we can see that the teachers who did not participate in these programs made up the biggest percentage—50%—followed by those who did—33.3%. Probably because there were not any traditional professional development programs because of the COVID-19 pandemic. Additionally, it seems that the participants are not aware of the importance and effectiveness of the professional development programs. This result contrasted with the study of Al-khresheh, et al (2022), which corroborated the assertion made in other studies that many teachers are aware of the benefits and efficacy of professional development programs.

As shown in the following table (5), a percentage of teachers said their school required them to participate in professional development.

Table 5

Does your school require that you participate in professional development?

| Responses | Frequency | % the percentage |
|-----------|-----------|------------------|
| Yes | 17 | 56.6% |
| NO | 9 | 30% |
| Unsure | 4 | 13.3% |
| Total | 30 | 100 |

Table (5) displays the responses of the participating teachers regarding whether or not their schools require them to participate in professional development programs. We find that 56.6 percent of them say "yes," followed by 30 percent of them who say "no," and 13.3 percent who say they are "unsure."

The following table displays the percentage of ECSE teachers who believe that they gain knowledge, skills, and understanding from professional development programs.

Table 6

Teachers gain knowledge, skills, and understanding from professional development programs.

| Responses | Frequency | % the percentage |
|-------------------|-----------|------------------|
| strongly agree | 6 | 20% |
| Agree | 11 | 36.6% |
| Neutral | 3 | 10% |
| Disagree | 8 | 26.6% |
| strongly disagree | 2 | 6.4% |
| Total | 30 | 100 |

The table shows that most of the participants agree that they gain knowledge, skills, and understanding from professional development programs, while we find that about 33 percent of the participants disagree with the statement.

The following table displays the percentage of ECSE teachers who have found professional development activities extremely helpful in resolving my difficulties:

Table 7

In the classroom, I have found professional development activities extremely helpful in resolving my difficulties

| Response | Frequency | % the percentage |
|-------------------|-----------|------------------|
| strongly agree | 9 | 30% |
| Agree | 6 | 20% |
| Neutral | 2 | 6.6% |
| Disagree | 5 | 16.6% |
| strongly disagree | 8 | 26.8% |
| Total | 30 | 100 |

The data indicate that participants felt professional development programs to be very helpful in resolving their problems, with roughly 50% of instructors agreeing, or around half of the study sample. A significant portion of respondents (43.4%) disagree with the assertion, according to the statistics.

The following table displays the percentage of ECSE teachers who have access to enough in-service opportunities or activities.

Table 8

ECSE teachers have access to enough in-service activities/opportunities.

| Response | Frequency | % the percentage |
|--------------------------|-----------|------------------|
| strongly agree | 10 | 33.3% |
| Agree | 5 | 16.6% |
| Neutral | 3 | 10% |
| Disagree | 9 | 30% |
| strongly disagree | 3 | 10% |
| Total | 30 | 100 |

Table (8) shows the percentage of ECSE teachers who have access to enough in-service opportunities or activities. We discovered that 49.9% of these teachers have access to enough in-service opportunities or activities, while 40% of them do not.

The following table (9) displays the percentage of ECSE teachers who recommend professional development programs to their colleagues and teachers

Table 9

I recommend professional development programs to my colleagues and teachers

| Responses | Frequency | % the percentage |
|-------------------|-----------|------------------|
| strongly agree | 5 | 16.6% |
| Agree | 7 | 23.3% |
| Neutral | 12 | 40% |
| Disagree | 4 | 13.3% |
| strongly disagree | 2 | 6.6% |
| Total | 30 | 100 |

According to the table, 39.9% of teachers recommend professional development programs to their colleagues and teachers. In the following order, we find that the majority of teachers agree, followed by the number 23.3%, followed by the number 40% of teachers who are neutral, followed by the number 13.3% of teachers who strongly disagree, followed by the number 6.6% of teachers who strongly disagree.

The following table (10) displays the percentage of ECSE teachers who believe that administrators support their professional development.

Table 10

In schools, administrators support teachers' professional development.

| Responses | Frequency | % the percentage |
|-------------------|-----------|------------------|
| strongly agree | 10 | 33.3% |
| Agree | 10 | 33.3% |
| Neutral | 2 | 6.6% |
| Disagree | 4 | 13.3% |
| strongly disagree | 4 | 13.3% |
| Total | 30 | 100 |

The majority of participants (66.6%) concur that school administrators promote teachers' professional development, while just about 26.6% don't agree with them. This result may be due to the importance of professional development programs in enhancing ECSE teachers.

The following table (11) displays the percentage of ECSE teachers who believe that professional development programs are suitable for students' developmental needs.

Table 11

I believe that professional development programs are suitable for students' developmental needs

| Responses | Frequency | % the percentage |
|-------------------|------------------|-------------------------|
| strongly agree | 14 | 46.6% |
| Agree | 5 | 16.6% |
| Neutral | 2 | 6.6% |
| Disagree | 7 | 23.3% |
| strongly disagree | 2 | 6.6% |
| Total | 30 | 100 |

Considering the opinions expressed in the table, professional development programs are appropriate for students' development needs. Approximately 46.6% of respondents strongly agree, followed by 16.6% who agree, and finally around 29.9% who disagree. Continuous Professional development keeps ECSE teachers on track. Professional development programs are beneficial as they can enrich their teaching skills and help them deliver their courses in many modern ways that can help their student achieve better, so the study sample believed that professional development programs are beneficial to their students too. Your professional development can provide you with the tools you need to effectively accomplish those goals.

Professional development needs

It was clear that all participants had professional development needs, which they believed would certainly benefit them and their students alike. For instance, the participant (TEACHER S) said as follows: "To assist me in dealing with special needs students, I need professional development programs in rehabilitation and special education; I am unprepared to manage the paperwork, the conduct of the kids, their educational needs, and the curricula". This participant expressed her professional development needs and her dissatisfaction with the office atmosphere and caseload. These statements demonstrated both the needs and the difficulties

teachers had when modifying curriculum to suit the student's learning requirements.

Moreover, teacher T said that "Schools should provide training opportunities for special education teachers to train them how to practice scientific research and to practice new teaching strategies that can help them innovate and lead to their professional growth to assume their new roles". She also added, "Schools should also provide training programs to develop the skills of the special education teacher on the use of modern learning and communication technology, and how to use them to enrich the learning environment inside and outside the classroom."

Obtaining a teaching license requires determining training needs for ECSE teachers. Therefore, teacher M mentioned that "determining training needs is a concern for many early childhood teachers, as it is a prerequisite to obtaining a teaching license. I attended some training courses in my area of specialization during my service and found them very useful". It is, therefore, necessary for school principals or education offices to determine the specific training requirements that fit the core of each specialization based on realistic training requirements, and then to identify any limitations that may hinder the vision of achieving the maximum benefit from these programs. This result was supported by Teacher A, who stated, "I am able to effectively teach this category of students due to training programs that are tailored to our needs and address the core of my specialty."

A professional development event addressing special education's technical components might benefit teachers, according to these findings. However, an investigation of the professional experiences of special education teachers is crucial for determining the needs of instructors to support their students' learning.

Professional development challenges

The study employed the interview question to answer the study second and third sub-questions. The participants emphasized that certain issues and stress were common as a result of the lengthy professional development sessions. Some participants thought the paperwork was uninteresting, however, the majority of respondents said that they should spend enough time planning their lessons. TEACHER A stated, "I still have difficulty matching the standards of my work after many years of teaching. It's challenging to keep up with everything. I have

only attended two PD sessions on this subject to date, even though the schools now host regular professional development activities”. TEACHER T also added: “In accordance with a schedule that has been prepared since the beginning of the year, our school organizes professional development programs on a regular basis. There are both in-person and online options for these programs.”

It was noted by five participants that adjusting curricula to meet the needs of students in special education can be challenging. Teacher R said: “The preparation process is extensive. I must adapt my instructional techniques, activities, and interventions to meet the needs of each child. I occasionally lose patience with this.”

The participants discussed their personal insights and agreed that this difficulty was especially challenging and irritating for brand-new teachers. According to TEACHER R, she spent the first few years contemplating quitting because she felt unqualified and was "still buried by the amount of work." Maintaining composure is challenging.

The need for professional development that was pertinent to their duties was evident in every comment. One of the challenges that face ECSE teachers is that the professional development programs did not address some of the most pressing problems that the instructors were encountering. This topic was mentioned by 3 teachers. As Teacher T pointed out, there were no activities geared toward adapting curricula to special education pupils or learning styles, or assistance in planning for these children at the same time. According to participants, the lesson plans were enhanced by their on-the-job training. However, this preparation was insufficient to adequately get them ready for the classroom. This suggested that professional development would be advantageous for special education instructors. Both the government. These results might be taken into account by the Saudi Arabian Ministry of Education when creating a professional development program, for ECSE instructors.

Because each participant had distinct needs and requested different kinds of help, they all received varying degrees of assistance. Although TEACHER R would have preferred it, mentorship help was not officially offered, so she sought it out from other special education teachers. She received assistance from these teachers with paperwork and other formal processes, such as creating attendance reports. Although professional development events were frequently provided, there was a

mismatch between the program's implementation and the demands of each individual. Teachers S and A modified the curricula for their own students, while TEACHER T and TEACHER M were not able to do so. Because of the lack of resources and space in my classroom, teacher A said, "A great idea might come to me, but I'm not sure how to implement it with my students. An approach that worked four years ago might not work for my current students. If we could talk about how I can help my current students that would be helpful".

While TEACHER M highlighted the advantages of exploring new ideas in the wake of an international workshop she had attended, two participants mentioned the challenge of transforming the knowledge from in-service workshops into classroom abilities. All of the participants agreed that all teachers would require significantly more assistance than what was provided.

As a result of the lack of mentors, all participants agreed that there wasn't enough coaching or mentoring. For their professional development, they demanded assistance from ECSE teachers via a digital platform. There are sophisticated digital systems for teachers' professional development, as mentioned by TEACHER R, for instance. She also said, "I feel that in certain nations with inclusion schools, special education teachers have access to assistant teachers, group teaching, and websites for professional development, as well as aid from the general education teachers' development". Since there have been so many changes, this is now too challenging for us, but a professional development platform might significantly help if they avoided technical difficulties that may hinder us from getting the best use of it. A professional development program that addresses these challenges would be beneficial to ECSE teachers (Ahead et al., 2021; Parsons et al., 2019).

This assistance, direction, and criticism might be useful to teachers when organizing lessons and activities. The option of peer observations could also be considered when enriching new skills. Despite everyone's willingness to assist one another, they acknowledged that their workload made it nearly hard to find time for a meeting. The Five participants thought it would be preferable if they had access to an online platform where they could create their own schedules.

Professional development techniques and initiatives can be found at special education centers. However, not all of them provided the support teachers needed. Additionally, the study's findings revealed that online delivery of

professional development programs worked better for participants' schedules. This conclusion is in accordance with Al-threshed, Mohamed, & Asif, (2022), but not with Fishman et al (2013). The participants also found that professional development sessions were uninteresting and had more work than they expected. Additionally, even though most participants thought the professional development programs provided a solid theory, they had trouble putting it into practice in their jobs (Lewis, 2002).

A new idea is professional development. To support the teacher, the school must keep researching professional development strategies. Additionally, all parties must be involved in this process. To support teachers, the Ministry of Education should also implement and maintain a mechanism to identify and choose mentor teachers. Mentors ought to come from the same subject area, grade level, or discipline. The mentors must receive training from the schools that consider the objectives of special education. Policies and procedures that are supportive should be included in the development process. To determine whether the procedure is effective and to gather information to determine whether the programmer requires adjusting, the special education centers must undertake programmer evaluation.

Limitations and recommendations

There were several limitations to this study that require further investigation. Since this study is qualitative, it may not be appropriate to quantify how professional development education impacts ECSE teacher performance. It may be difficult to generalize the results based on the findings of the study's participants. So, research should be conducted with a larger sample of participants from Saudi Arabia and throughout the world in the future.

Conclusion

This study aims to explore Saudi teachers' perceptions of ECSE professional development opportunities. For this reason, survey information was gathered from 30 Saudi teachers who worked in early childhood programs in Saudi Arabia. The participants were given access to an online survey to gauge their opinions of the professional development programs and gauge their assessments of their effectiveness. The results showed that teachers had favorable opinions of these programs and that they saw them as helpful resources that could aid in their pursuit of a teaching license in case, they overcome their challenges. Participants thought

professional development programs were worthwhile and could help them improve their teaching abilities as a result.

They also stressed the significance of the ongoing technical difficulties regarding documentation and attending meetings. Additionally, collaboration, teamwork, and continual communication were among the advantages of professional development programs. This development was required in the early stages of the profession combined with the assistance offered by ECSE professors. Studies from the past support the idea that opportunities for professional development should be made available often and when they are pertinent.

This should be a continuous process requiring organized courses, mentors, and a supportive environment. The availability of knowledgeable instructors through a digital platform would provide teachers with an efficient through professional development; special education instructors could close the gap between theory and practice. Additionally, it would help ECSE teachers by motivating them and aiding in the updating of their knowledge and instructional methods.

Previous studies have proven the adequacy of human improvement programs. In two decades at the latest, AI systems were occupying most of human life. It is then inevitable to manage them dependent on the measure of information put away and the way they are processed. In addition, the responsible for teacher professional development programs should take seriously the question of the benefits from artificial intelligence in teacher education, relying on it as human intelligence.

The increasing pervasiveness of artificial intelligence in consumer products, toys and various smart technologies and applications creates the need for today's generation of children to better understand this technology. One way to achieve this kind of understanding and resourcefulness is to engage meaningfully in AI in an educational context. The integration of AI literacy and reflection into school curricula is in its infancy in various countries

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Declaration of conflicting interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author received no financial support for the research, authorship, and/or publication of this article.

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