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The Effectiveness of Using Virtual Classrooms in Developing the Developmental Learning Challenges for Students with Learning Difficulties

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ABSTRACT

The main objective of this study was to evaluate the efficacy of utilizing virtual classrooms in addressing developmental learning obstacles among students with learning disabilities in Abha Governorate. An investigation was carried out on a group of educators who were associated with high schools situated in Abha Governorate. The study aimed to assess the possible influence of the virtual classroom program on teachers' developmental learning difficulties in many domains, encompassing cognitive and performance-related aspects. The study lasted for a duration of one month. The study consisted of a group of 20 teachers, with an equal distribution of 10 participants in both the experimental and control groups. The study's results indicated that the experimental group outperformed the control group on post-tests assessing cognitive and performative learning problems, demonstrating a significant improvement. No statistically significant difference was seen in the scores of the experimental group and the control group in relation to their development of learning problems, both immediately after the intervention and during the follow-up evaluation.

KEYWORDS: virtual classrooms, developmental learning challenges, Abha Governorate

1. Introduction

The advancement of information technology and its integration into various aspects of life has made the Internet an essential component of modern society. This is particularly evident in the field of education, where the concept of virtual learning environments has emerged (Chițu et al., 2023). These environments refer to software or educational management systems that facilitate both direct and indirect communication. The team engages in direct learning through the use of computer technology and the Internet (Flynn, 2020). Many academic institutions have utilized current technologies, such as virtual learning environments, to enhance the teaching and learning process. Due to the growing demand for education, there is a rising interest in creating online educational courses (Garzotto et al., 2019). By utilizing the concept of virtual e-learning platforms through the Internet. The significant advancements in communications and information technology have resulted in a surplus of knowledge across several fields, and have eliminated the barriers between

information and individuals. This has also resulted in the rise of contemporary skills, methodologies, and technologies that have become integral to the functioning of modern societies. Consequently, there is a pressing need to enhance the teaching and learning approaches employed in educational institutions today (Khukalenko et al., 2022).

The late 1990s and early 2000s witnessed significant advancements in communications and information technology. This progress has continued and is now accelerating even faster. As a result, the world has become highly interconnected, resembling a small village where people interact through various means such as information networks, computers, satellites, e-learning, satellite channels, and electronic knowledge and information technology (Ofosu, 2021). The advancement and widespread adoption of communication technology through the Internet has led to the emergence of modern educational forms, including virtual education. This emerging educational trend has proliferated across numerous countries, manifesting in intricate and diverse forms and applications (Stavroulia & Lanitis, 2019). Virtual learning environments utilize distinct teaching strategies that deviate from traditional methods. They employ elements of educational interaction, which encompasses the influence between the teacher and students, as well as the interaction between students and their peers and educational activities. This interaction also encompasses feedback processes. The interaction aspect in educational communication is crucial because it serves as the link between all preceding elements of the communication process, rendering them valuable in the teaching and learning process (Tatale et al., 2019).

The Kingdom of Saudi Arabia, in its Vision 2030, recognizes the significance of virtual reality in education. To achieve this, they have implemented a program focused on enhancing human and educational capacity. The program aims to enhance the education and training system at all levels, from early education to lifelong continuing education and training. This will be accomplished through the implementation of education, qualification, and training programs that align with contemporary advancements and demands (Al-Ahmari, 2021). The school is regarded as an indispensable educational institution that plays a crucial role in society by fostering the holistic development of pupils and helping society achieve its objectives. The efficacy of the educational program in schools hinges upon the teachers, as they are primarily dedicated to the student's progress (Al Farsi et al., 2021). Training teachers in a professional, scientific, and cultural manner is crucial for equipping them with the necessary skills, knowledge, and experience to effectively fulfill their teaching and pedagogical responsibilities. It also ensures that they stay updated with the latest trends and advancements in the field of learning difficulties, enabling them to perform their roles with optimal efficiency (Al-Sharafi & Afyaa, 2021). The field of special education, also referred to as learning challenges, has experienced significant growth and focused attention at the classroom level. To developed this interest due to the significant influence of environmental influences on altering developmental trajectories, particularly throughout the school years (Al-Rashidi, 2019). Given this fact, the matter of intervention has emerged prominently in the therapeutic and educational domains. It is feasible to alleviate the impact of disabilities and challenges and proactively

address them if they are identified and managed. Learning challenges are classified as a subset of special education and might be anticipated during the school years (Barnes et al., 2020).

The significance of the school stage and its influence on individual development is evident from the above. Equally important is the role of teachers in facilitating the growth of students' diverse abilities and skills, as well as identifying any delays or deficiencies. This is particularly crucial given the substantial amount of time teachers spend with students, engaging in various activities that allow them to observe different facets of their development (Theelen et al., 2020). Undoubtedly, the awareness and expertise of instructors about developmental learning issues play a crucial role in recognizing pupils who are at risk of encountering learning difficulties. Therefore, it is imperative to guarantee that teachers are well-informed by offering them training courses and programs. To enhance their understanding and abilities in recognizing signs of developmental learning challenges, and to acquire the necessary intervention techniques to ease these issues and prevent their escalation (Al-Saeedi, 2021). Previous research, as demonstrated by the studies conducted by Al-Hassan and Ashabi (2017) and Alsaaideh (2022), has indicated that teachers possess a restricted comprehension of the indicators associated with learning difficulties. Several research has also emphasized the imperative of providing instructors with information on learning challenges. Based on the facts provided, the research topic might be defined as teachers' insufficient understanding of developmental learning challenges.

1.1. Research Questions

The objective of this study is to examine the previously indicated inquiries within the context of the preceding discourse.

1. Are there statistically significant changes in the outcomes of the experimental and control groups regarding teacher knowledge of developmental learning challenges following the implementation of the training program utilizing virtual classrooms?

2. Do teachers in the experimental group show notable variations in their knowledge of developmental difficulties with learning before and after the implementation of the training program using virtual classrooms?

3. Is there a statistically significant difference detected between the scores obtained from post-test and follow-up tests when assessing teachers' awareness of developmental learning difficulties?

2. Literature Review

The advancement of education relies on the availability of exceptionally skilled educators, achieved by thoroughly equipping them with academic and pedagogical knowledge, and focusing on their training to enhance their capabilities and deliver practical education that aligns with contemporary developments (Al-Gharagir, 2022). To attain the desired objectives of the educational process, it is imperative to design effective teacher training programs. The success of educational projects and

programs relies on the competencies of those working in the educational field (Aljenobi, 2022). The advent of globalization and information technology has placed an additional burden on teachers at all levels, including school teachers. This stage is crucial in shaping students' upbringing, making it imperative for teachers to enhance their abilities and upgrade their skills to keep up with modern advancements (Abu Kameel, 2020).

Elevating the professional standard necessitates an ongoing and prolonged commitment to professional development, which extends beyond the completion of teacher training programs and encompasses in-service training (Alrifai & Alansari, 2021). Providing in-service training to teachers is a crucial factor in elevating their proficiency and guaranteeing their ongoing development in a comprehensive manner. Many schools are encouraging teachers to participate in training courses and programs overseen by specialists (Abu Kameel, 2020). These initiatives aim to enhance teachers' talents and skills in order to improve their performance. In-service training is the educational and behavioral qualification process for teachers, involving the use of methods, techniques, and resources to enhance their professional abilities and possess the necessary skills for improved teaching performance (Alshehri, 2021). In-service training programs aim to regulate, guide, and invigorate the personal and professional development of teachers and individuals in the education sector. They achieve this by establishing suitable conditions that facilitate self-directed growth, leading to the mastery of teaching skills (Alzahrani & Allam, 2020). In-service training is a strategic investment aimed at enhancing teachers' skills and fostering their dedication to their profession, ultimately leading to an enhancement in the overall quality of education (Alshehri, 2021).

Teachers encounter novel problems and transformations in the realm of education, necessitating the acquisition of fresh knowledge and competencies. In addition to their role as an educator, the teacher must also engage in research activities and maintain a lifelong commitment to learning. This can be achieved by participating in in-service training programs (Alzain, 2019). In order to ensure that training has a favorable outcome, it is imperative for these programs to consider the requirements of the teacher and select suitable training methodologies. The significance of training is evident as it facilitates the modification of individuals' behavior to enhance production efficiency. Training fosters a favorable connection between the individual and their job, while also enhancing the trainees' self-assurance and belief in their own capabilities (Awad et al., 2020).

In-service training becomes increasingly important, particularly during periods of significant changes and transitions observed in any society. This is because these transformations require educational systems to implement both quantitative and qualitative modifications that align with their underlying philosophy, objectives, and the principles, theories, and instructional methods associated with them (Alharthi, 2021). Furthermore, it is crucial to acknowledge that knowledge in the present era is continuously evolving. In-service training is a crucial means of professional development for achieving the desired change. It offers teachers the chance to stay updated on advancements in science, knowledge, and education as a whole (Al-Qahtani, 2019).

Given the swift transformations in contemporary society, the implementation of training programs for teachers has become imperative. This is because education is seen as the fundamental cornerstone of the learning process, since it must align with progress, contemporary difficulties, and the acquisition of information (Ta'amneh, 2021). Equipping teachers with diverse abilities is an imperative requirement to enhance their performance, foster professional growth, and enhance their capacity for innovative thinking, so enabling them to effectively adapt to their roles and effectively address and surmount challenges. It also facilitates the integration of teachers' duties to enhance job quality, creating a collaborative environment, while also enhancing productivity linked to improving the educational standard (Żammit, 2023). In line with the Kingdom's Vision 2030, the Ministry of Education aimed to enhance the performance of teachers and educational leaders. To achieve this, they initiated a project focused on professional development. The goal of this project is to create tools and programs that cater to the training needs of students. Additionally, it encompasses training programs and professional development activities focused on enhancing individuals' skills and competencies in line with internationally recognized best practices and standards. The aim is to enhance learning outcomes and achievements in subsequent higher levels (Al-Qahtani, 2019).

Virtual classrooms have been assigned several names. These virtual classrooms, also known as electronic classrooms, smart classrooms, or Internet classrooms, are simulated educational environments on the Internet. They utilize various tools, techniques, and software to enable teachers to publish lessons, assign tasks, and communicate with students (Chițu et al., 2023). Additionally, it allows the student to access and comprehend classes, hand in assignments, and engage in discussions and dialogues. Virtual classes resemble traditional classes by facilitating the connection between students and their instructor. However, these online gatherings are not limited to a specific time or location, and they offer various tools to foster interaction between the instructor and the students (Flynn, 2020). Virtual classrooms are a distinctive approach that combines modern technology with traditional educational methods to create a new form of education that caters to the specific needs and characteristics of learners. This allows for effective management of the educational process (Garzotto et al., 2019). Moreover, it effectively addresses numerous challenges encountered in conventional educational settings by enabling the dissemination of scientific content to specific audiences and allowing for simultaneous response. Additionally, it offers a chance to educate and enhance the performance of teachers prior to and during their service, while also facilitating the exchange of knowledge and experiences among them. This, in turn, leads to the improvement and increased effectiveness of instructors, as well as the development of their abilities (Khukalenko et al., 2022).

The objective is to attain a proficient and pragmatic equilibrium between synchronous and asynchronous virtual classrooms. In order to get the most efficient and effective online learning experience, the utilization of both synchronous and asynchronous virtual courses yields enhanced advantages, as it entails a shift in the teacher's position from being a prompter and central figure in the educational process to assuming the role of a supervisor and evaluator (Ofosu, 2021). Virtual classrooms aim to replicate reality by creating a simulated online environment where learners

can acquire knowledge in a manner that closely resembles real-life experiences. They have a substantial role in altering the learner's perception of the classroom community, fostering and cultivating a sense of camaraderie, and establishing an enjoyable and communicative climate among learners (Stavroulia & Lanitis, 2019). Additionally, it is distinguished by the ability to overcome the learner's potential shame experienced in conventional classroom settings. Due to his vocal inadequacy and suboptimal seating arrangement, he relies on communication technologies that enable him to freely express his opinions without feeling embarrassed. The facilitation of communication between students and the instructor fosters the interchange of perspectives, viewpoints, and recommendations, so enabling students to develop robust foundations and firm convictions through the insights gained from discussion (Tatale et al., 2019).

The Kingdom of Saudi Arabia places great emphasis on prioritizing and setting goals for continuous learning, particularly in response to the rapid advancements in science and technology. The Kingdom has primarily focused on enhancing the educational process by utilizing diverse technical breakthroughs and tools in the context of e-learning (Al-Ahmari, 2021). The primary objective of the National Center for E-Learning is to bolster trust in e-learning initiatives by formulating and implementing the requisite standards and procedures for overseeing e-education and training in the Kingdom. The objective is to offer electronic educational and training programs that align with the demands of the job market, while also providing accessible and continuous learning opportunities for all individuals (Al Farsi et al., 2021).

To realize the goals of Saudi Arabia's Vision 2030, the Ministry of Education, through the National Center for Educational Professional Development, has prioritized the implementation of the 2020 summer educational professional development programs (Al-Gharagir, 2022). This third phase of the project, conducted remotely, utilized synchronous electronic training and encompassed all regions and governorates of the Kingdom (Alshehri, 2021). The program offered a range of specialized courses tailored to the needs of educational professionals. This was achieved by investing in the Ministry of Education's distance education channels, utilizing modern technology applications, and creating a flexible environment that allowed trainees to access a variety of training resources. The aim was to enhance the technological skills of educational professionals, boost their motivation, and improve their performance in delivering remote training (Alzahrani & Allam, 2020).

The field of learning difficulties is a burgeoning area within special education that has gained significant attention from parents and individuals invested in the well-being of children who exhibit learning challenges. These challenges cannot be attributed to mental, psychological, or emotional disabilities, nor can they be attributed to hearing or visual impairments, emotional disorders, or family circumstances (Alshehri, 2021). Despite the absence of these factors, these individuals struggle to acquire fundamental skills and grasp academic subjects. Learning challenges are seen as a subset of special education that has historically been and continues to be surrounded by obscurity (Alzain, 2019). The primary issue observed in youngsters with learning challenges is the conspicuous disparity between their aptitude and their actual academic performance. Evaluation is conducted by

comparing the child's real achievements in different academic domains with their anticipated achievements, taking into account their cognitive and chronological development (Awad et al., 2020).

According to the Ministry of Education (2014), learning difficulties are defined as impairments in the fundamental psychological processes involved in comprehending and utilizing written or spoken language. These impairments manifest in difficulties with listening, thinking, speech, reading, writing (spelling, expression, handwriting), and mathematics (Alharthi, 2021). It is important to note that these difficulties are not caused by mental, auditory, visual, or other disabilities, learning conditions, or family care. The causes of learning challenges are multifaceted, and this can be attributed to the varied features of children who have learning issues. The particular origins of learning challenges remain a subject of disagreement. However, it can be asserted that the majority of these difficulties stem from brain injury or functional disability acquired before to, during, or after birth (Ta'amneh, 2021). The causes of learning difficulties have been categorized in previous literature as genetic factors, maternal malnutrition, maternal infection during pregnancy, substance abuse, prenatal exposure to radiation, premature or obstructed birth, and diseases such as encephalitis, meningitis, or German measles. Factors contributing to malnutrition include accidents or falls resulting in head injuries, as well as the economic, cultural, and social status of the family (Żammit, 2023). Non-educational upbringing methods, such as punishment, threats, overprotection, or neglect, can also play a role. Attitudes towards school, parental and teacher expectations of children, and inappropriate teaching methods are additional factors that can impact a child's development (Al-Qahtani, 2019).

Previous studies

In a study conducted by Al-Ahmari (2021), the objective was to ascertain the precise utilization of virtual classrooms during the Corona pandemic, with a particular focus on female students at King Khalid University. The researcher utilized a descriptive analytical strategy in this study, employing a questionnaire as the study instrument. A survey was conducted on a group of 400 female students that are associated with the University King Khaled. The study findings suggest that the sample participants held positive opinions on virtual classrooms. This is a favorable and gratifying result, especially for female pupils. Virtual classrooms have become a highly efficient educational solution within the Corona crisis, facilitating continuous learning at times of emergency. The results also showed a minimal occurrence of difficulties associated with using virtual classrooms for this demographic.

Ofosu (2021) conducted a survey aiming to ascertain the viewpoints of educators who utilized virtual reality/augmented reality (VR/AR) technology in their classrooms. The study aimed to evaluate the impact of these technologies on student learning, investigate their diverse uses, and identify any obstacles found during their implementation. The researcher utilized a qualitative methodology, employing interviews with teachers as the primary research instrument to get insights about the utilization of virtual reality and augmented reality (VR/AR) technology by students in the pre-kindergarten to grade 12 educational setting. The results indicated that virtual and augmented reality (VR/AR) can create somewhat realistic environments,

which helps to combine academic and practical knowledge. Moreover, they possess the capacity to promote creativity, namely in the field of virtual indoor human space travel. This is particularly pertinent in the context of the COVID-19 pandemic and the surge of remote learning. The study also identified the main obstacles to the adoption of virtual reality technology (VR), which include the need for approval from educational authorities at both regional and school levels, as well as the existence of educational regulations and official protocols for the development of virtual and augmented reality. Moreover, virtual reality tools not only aid in classroom preparation, but also facilitate the acceptance of this technology by teachers.

Khukalenko et al. (2022) reported the results of a comprehensive survey investigating teachers' viewpoints on the application of virtual reality (VR) in education. The survey examined the relationship between the teachers' degree of incorporation of virtual reality (VR) technology into their teaching methods, as well as the frequency with which they use VR. Furthermore, the survey collected data on the relationship between the availability of IT personnel and the frequency of virtual reality (VR) utilization. Overall, teachers expressed positive attitudes towards the implementation of Virtual Reality (VR) in the sphere of education. There was an absence of a substantial correlation between instructional methods and the extent of virtual reality (VR) incorporation. Nevertheless, instances where the integration of virtual reality (VR) was less prominent were associated with a greater predominance of conventional teaching methods. The results revealed a clear and favorable correlation between the level of virtual reality (VR) incorporation and the frequency of VR usage. However, the correlation between the frequency of virtual reality (VR) usage and the presence of information technology (IT) professionals was found to be minimal.

Chițu et al. (2023) investigated the practicality of employing virtual reality (VR) technology to improve the educational experience of children with disabilities. A qualitative study employing the Focus Group methodology was carried out with a cohort of 31 professionals specializing in the care of children with impairments. The objective was to investigate the possible benefits and constraints of employing virtual reality (VR) technology in the instruction of this specific cohort of students. The research findings suggest that most of the interviewees perceived the VR application as a unique and innovative experience. They acknowledged the capacity of this technology to augment the educational process for children with impairments and regarded it as a beneficial instrument to facilitate their education. These findings have the potential to significantly impact the decisions made by policymakers, academics, and the economic landscape as they strive to implement policies that improve the inclusive education system.

3. Methodology

The study employed an experimental methodology, wherein one or more variables (known as the independent variable) were altered, and the subsequent impact on the dependent variable was observed. In order to assess their influence on the study population, the researcher employed both a traditional method and a virtual

classroom application. The study involved dividing the participants into two distinct groups: the experimental group, which underwent instruction using the virtual classrooms program, and the control group, which underwent training using the traditional technique.

3.1. Population and Sample

The 1851 teachers who worked in the Abha Governorate and were later split up into 170 schools make up the study population. It was purposefully decided to include a sample of teachers from Saqr Quraish Secondary School for Boys and Abha Secondary School for Boys. Random sampling was used to choose the sample. Two classrooms were sampled for the study; ten teachers each were assigned to the experimental group in one classroom, while ten teachers each were assigned to the control group in the other.

3.2. Research Instrument

Two different research instruments were used to achieve the study's aims.

1. A lesson plan designed for a virtual classroom: The study that was carried out was focused on evaluating an developmental learning challenges in Abha schools. The current study was designed with the intention of being completed in the 2023–2024 academic year. With careful consideration of the overall objectives and subject matter pertinent to the themes under investigation in the experiment, the researcher created a preliminary set of twenty-five behavioral objectives. Remembering, comprehending, applying, analyzing, synthesizing, and evaluating are the several components that make up the framework. A panel made up of professionals and specialists evaluated the data to make sure it was accurate and comprehensive. The particular goals were changed in response to the feedback that was received, but the total number of objectives remained at 25. For the experimental group, the study groups have created lesson plans that use a virtual classroom program package; for the control group, they have implemented traditional methods. The panel of experts in the field of instructional strategies received several examples of exemplars. This activity was taken in order to assess their suitability in relation to the topic at hand and the pre-established behavioral goals. Several paragraphs were revised further in response to the experts' criticism, culminating in their final draft. Between the two techniques, a total of 28 educational plans were implemented for each of the two groups. Particularly, 14 plans made use of an electronic program, whilst the other 14 plans employed a traditional method.

2. 2. Creating a developmental learning challenges: The purpose of the study was to determine how much the materials used in the experiment enhanced the secondary school teachers' Developmental learning challenges. A variety of abilities are included in the realm of a developmental learning challenges, such as the capacity to plan lessons, carry them out in the classroom, and assess their results. The elements of the test were meticulously designed to ensure that the desired goal was accurately represented and that the methods for evaluating developmental learning challengess followed the principles outlined in recent academic research. The test's items were created using the virtual classroom application, which made notable use of the multiple-choice format. The secondary level planned level of the

developmental learning challenges enhancement served as the basis for the item selection procedure. Each question in the set consists of a first statement and four possible answers. Teachers must choose the correct answer. There are thirty-two items on the test.

3.3. Instrument Validity and Reliability

The reliability of the instrument was evaluated using two techniques:

1. To evaluate the validity of the instrument, it must be sent to a panel of eight arbitrators, and an acceptance rate threshold of 80% must be established.

2. A group of 12 teachers was evaluated to determine how much discriminant validity it exhibited. Using the observed (F) values of 4.70 and 5.30, the statistical significance of the discriminant validity of the coefficients was determined.

The Cronbach's alpha formula was employed to calculate the internal consistency of the instrument. The instrument exhibited a commendable degree of overall reliability, as shown by a value of (0.833). In addition, it is important to mention that the dependability coefficients for each of the two criteria show a range of variations, ranging from 0.813 to 0.856.

3.4. Data Analysis

After the data gathering process was finished, the standard deviations and mean test scores for both the pre- and post-test were calculated. We used the Eta square to determine the effect size, which shows how much of an impact virtual classrooms have in building the integrated education system. The statistical methods of Wilcoxon's test and Z-value were utilized to better explain the disparities between two comparable samples.

4. Results and Discussion

Table 1 illustrates that prior to the implementation of the virtual classroom program, the developmental learning challenges of both the experimental and control groups were similar.

Table 1: Initial Assessment

Dimensions	Groups	N	M/R	S/R	U	Z	P
The cognitive aspect	Experimental	10	25.30	253.00	30.00	9.60	0.150
	Control	10	26.10	261.00			
The performative aspect	Experimental	10	23.30	233.00	33.00	8.80	0.170
	Control	10	24.00	240.00			
Total	Experimental	10	24.30	243.00	34.00	9.20	0.163
	Control	10	25.05	250.50			

Table 1 presents data indicating that there was no statistically significant difference between the two groups' mean scores on the pre-test developmental learning challenges across multiple domains, including cognitive and performative domains.

Table 2: Post-Measurement

Dimensions	Group	N	M/R	S/R	U	Z	P
The cognitive aspect	Experimental	10	30.20	302.00	360.00	0.650	0.000

	Control	10	24.00	240.00			
The performative aspect	Experimental	10	29.30	293.00	353.00	0.730	0.000
	Control	10	21.20	212.00			
Total	Experimental	10	29.70	297.00	357.00	0.690	0.000
	Control	10	22.60	226.00			

The results of the post-testing conducted on the experimental group are displayed in Table 2. The mean scores of both the control and experimental groups changed in ways that were statistically significant when looking at developmental problems with learning, such as cognitive and performative aspects. This suggests that there are significant difficulties with developmental learning among the teachers in the experimental group.

This outcome is ascribed to the trainees' requirement to enhance their understanding of developmental learning issues, as they encounter challenges in addressing pupils who exhibit certain manifestations of developmental delay. Their eagerness to gain diverse knowledge and abilities, and their inclination to pose ongoing inquiries during the session, influenced their involvement. However, highlighting the teacher's role in school activities aimed at enhancing students' developmental skills and connecting them to signs of learning difficulties contributed to enhancing the trainees' understanding and facilitating the connection of information. The explicitness of the program goals and their reiterated mention at the commencement of each session resulted in the trainees' comprehension of the intended accomplishments for that particular session. Furthermore, the program employed techniques such as interaction, discussion, brainstorming, and instant reinforcement to facilitate the trainees' expression of information, opinions, and exchange of experiences. Furthermore, various encounters. Furthermore, the presentation of diverse methods, distinct instruments, and activities that can be employed to enhance students' abilities had a beneficial influence on the teachers' engagement. This, in turn, motivated the two researchers to compile numerous concepts for physical activities that foster the various developmental skills of students. These ideas were then organized into a guide to provide teachers with guidance during their work with students. This finding is in line with previous research by Chițu et al. (2023).

To address the second question, "Do teachers in the experimental group show notable variations in their knowledge of developmental difficulties with learning before and after the implementation of the training program using virtual classrooms?" The results are presented in the table below.

Table 3: Pre and Post-Measurement

Dimensions	Pre/Po	N	M/R	S/R	Z	P
The cognitive aspect	negative rank	3	2.00	6	24.50	0.000
	positive rank	7	3.00	21.00		
	ties	0				
	total	10				
The performative aspect	negative rank	3	2.00	6	24.80	0.000
	positive rank	7	3.00	21.00		
	ties	0				
	total	10				
Total	negative rank	3	2.00	6	24.60	0.000
	positive rank	7	3.00	21.00		
	ties	0				

	total	10				

A substantial statistical difference was observed in the mean scores of the experimental groups on various developmental learning tasks, including cognitive and performative components, as well as the overall score following the test (Table 3). These findings indicate that teachers in the experimental group demonstrated enhanced proficiency in facilitating developmental learning challenges following the evaluation.

The researcher affirms that the efficacy of the virtual classroom-based program in addressing developmental learning problems can be attributed to the observed outcome. This is attributed to the heightened enthusiasm and dedication of educators as a result of using this approach, which involves delivering the content in a manner that aligns with the targeted concepts and their applicability to the learner's personal experiences. Consequently, students were involved in dialogues, actively contributed to scientific debates, and demonstrated respect towards their classmates. The participants in this collaborative initiative demonstrated mutual respect's ideas, fostering an environment conducive to the development of groundbreaking scientific discoveries that surpass the mere preservation of current information. The process of inquiry is equally significant to the aforementioned tasks of follow-up, anticipation, inference, design, alternative thought selection, grouping and reasoning, integrative thinking, and formative assessment. Furthermore, the explanation step serves to enhance teachers' skills to a more advanced degree. This finding aligns with prior studies undertaken by Al-Ahmari (2021), Ofosu (2021), Khukalenko et al. (2022), and Chițu et al. (2023)., which examined the efficacy of virtual classroom-based programs in improving instructors' different skill sets.

The final question is whether a statistically significant distinction can be observed between the scores obtained from the post-test and follow-up tests when evaluating teacher awareness of developmental learning issues. To provide a suitable answer, it is essential to directly tackle the question at hand. The findings are presented in the provided table.

Table 4: Post and Follow-up

Dimensions	Po/ Foll	N	M/R	S/R	Z	P
The cognitive aspect	negative rank	7	3.80	26.60	9.410	0.190
	positive rank	0	0.00	0.00		
	ties	3				
	total	10				
The performative aspect	negative rank	7	3.80	26.60	9.370	0.150
	positive rank	0	0.00	0.00		
	ties	3				
	total	10				
Total	negative rank	7	3.80	26.60	9.380	0.160

positive rank	0	0.00	0.00
ties	3		
total	10		

When comparing the post-test and follow-up assessments, it is clear from examining the data in Table 4 that there are no statistically significant differences in the experimental group's average scores. The findings of this research imply that the program's efficacy did not appear to drop following its termination, but rather stayed constant throughout the post-intervention period.

The success of employing virtual classrooms to create developmental learning obstacles, including those in the cognitive and performative domains, for students with learning disabilities can be linked to the observed results. Consequently, there was no discernible decline in the previously reported values for the concerned individuals. Programs for virtual classrooms also facilitate lifetime learning by making it simpler to relate newly taught concepts to previously learned notions. The theory is that abrupt or early turnover will be less likely if teachers have opportunities to apply and refine their cognitive and practical skills in a range of settings, as outlined in the curriculum.

5. Conclusion

This study presents empirical evidence that confirms the hypothesis that the introduction of a virtual classroom program among instructors in Abha Governorate has a positive impact on addressing the developmental learning obstacles faced by children with learning impairments. Therefore, one of the most important criteria is the effectiveness of virtual classroom programs in promoting teacher motivation and producing positive results. The virtual classroom program's captivating and enjoyable attributes enhance pupils' enthusiasm and inclination towards studying. In addition, educators utilize a wide variety of sensory modalities to accelerate the process of acquiring knowledge and foster comprehension. By actively participating in the act of remembering, children develop the ability to ask questions, which helps them analyze themselves and comprehend instructional material in different time periods. Consequently, the inclusion of aural, visual, and tactile stimulation leads to increased levels of engagement.

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