International Journal of Education and Practice
2025 Vol. 13, No. 4, pp. 1664-1689
ISSN(e): 2310-3868
ISSN(p): 2311-6897
DOI: 10.18488/61.v13i4.4483

Challenges facing early childhood educators in implementing the inquiry strategy within the developed national curriculum

Naglaa El-Sayed Ali El-Zahar[1+]
Manal Mohammed Abdulkarim Alkureea[2]
Fatma Mostafa Essa[3]
Fatima Sameer Bakr[4]
Yasmin Mohammed Aljouf[5]

[1,3,4]*Department of Early Childhood, College of Science and Humanities in Jubail, Imam Abdul Rahman bin Faisal University, Saudi Arabia.*
[1]*Email: Nealzahar@iau.edu.sa*
[3]*Email: Fmessa@iau.edu.sa*
[4]*Email: Fsbakr@iau.edu.sa*
[2]*Department of Curriculum and Instruction, College of Education, Imam Abdul Rahman bin Faisal University, Saudi Arabia.*
[2]*Email: Mmalkureea@iau.edu.sa*
[5]*Department of Kindergarten, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia.*
[5]*Email: Ymaljouf@iau.edu.sa*

(+ Corresponding author)

Article History
Received: 17 May 2025
Revised: 24 September 2025
Accepted: 3 October 2025
Published: 22 October 2025

Keywords
Challenges
Developed curriculum
Early childhood educator
Early childhood
Inquiry strategy.

ABSTRACT

The study aimed to identify the challenges faced by early childhood educators in implementing the inquiry strategy within the developed national curriculum. This research used the descriptive method. The study presents findings from collecting data from a representative sample of 50 early childhood educators in Jubail. The data were collected through interviews with ten early childhood educators and a questionnaire titled "Challenges Faced by Early Childhood Educators in Implementing the Inquiry Strategy within the Developed National Curriculum," administered to a sample of 40 educators. The results revealed a moderate level of challenges faced by the educators; the key challenges included limited time available for implementing activities, difficulty in managing individual differences among children, lack of necessary resources and capabilities, and difficulty in encouraging children to participate and express their ideas. The study also revealed statistically significant differences in the degree of challenges related to educational content based on academic qualification. The study recommends developing comprehensive training programs by establishing specialized professional development courses on inquiry-based learning methodologies for early childhood educators, with particular emphasis on applied and practical pedagogical components, and conducting regular workshops to facilitate peer-to-peer knowledge exchange and collaborative learning among practitioners in the field.

Contribution/Originality: This study uniquely examines the challenges faced by early childhood educators, specifically within the context of Saudi Arabia's developed national curriculum, when implementing inquiry-based learning strategies. Unlike previous research, it focuses on culturally specific implementation barriers within the Saudi educational transformation framework, providing localized insights for policy and practice improvements.

1. INTRODUCTION

Early childhood is one of the most essential formative phases for a child since it is when he learns basic skills that will assist him in confronting future challenges (Al-Zahrani, 2014). This stage is also the most effective educational institution in the educational and pedagogical process since it develops the majority of the child's talents (Al-Nashif,

2014). Early childhood educators assist and enhance children's growth and learning through a variety of educational activities and strategies (Al-Ghamdi, 2024). Consequently, in response to the (National Transformation Program, 2016) the Ministry of Education emphasized the importance of preparing and qualifying female educators, stating that the success of the educational process depends on the educator's competence as well as professional and academic empowerment. The twenty-first century has seen changes in the educational process, which have resulted in the formation of several obstacles, necessitating the search for current educational methodologies, such as inquiry-based learning (Al-Otaibi, 2020). Modern educational trends emphasize the need to build early children's scientific culture through engaging experiences that encourage self-activity and cooperation, which can be accomplished by using the inquiry approach (Nassar, 2019). This approach has also attracted the interest of educators in recent years, as it aims to create an educational environment rich in stimuli that encourages children to participate in their learning process (Al-Harithi, 2019; Zaitoun, 2014).

The inquiry strategy emphasizes the importance of children acquiring scientific skills to obtain knowledge related to research and exploration (McComas, 2016) as it scaffolds their scientific and practical skills, research abilities, discovery, creativity, problem-solving, and critical thinking.(Adnan, Zulfikar, Armia, Gade, & Walidin, 2021; Chen, Wang, Kirschner, & Tsai, 2018; Pedaste et al., 2015) and Scott, Smith, Chu, and Friesen (2018) confirm that inquiry-based learning leads to a deeper understanding of academic information and a better capacity to apply it in new circumstances. Despite the importance of adopting the inquiry strategy in early childhood and incorporating it into successful educational strategies in the Saudi national curriculum, educators encounter various challenges and obstacles when implementing it Al-Sayyar, 2022). As a result, the purpose of this study is to investigate the problems that early childhood educators face while implementing the inquiry strategy in the developed national curriculum.

2. RESEARCH PROBLEM

The inquiry-based approach to education is one of the most recent and effective early childhood educational strategies because it helps children develop a variety of scientific research, inquisitive, creative skills, and problem-solving abilities. As a result, this approach was incorporated into the successful teaching strategies in the Developed Saudi National Curriculum, although its implementation in the educational sector remains challenging.

Many previous studies, such as Eti and Sigirtmac (2022); Muimongkol, Subramaniam, and Wickstrom (2022); Al-Muhanna (2020); Al-Issa (2019); Capps and Crawford (2013); Al-Hindal and Al-Daihani (2016) and Al-Wahar (2016) pointed out that there are an array of challenges that early childhood educators encounter when applying the inquiry strategy, including difficulties in evaluating children, differences in teaching methods and viewpoints among educators, individual differences among children, insufficient material and conventional support from school administrations, educators' lack of experience and training, the difficulty of managing and controlling the classroom, children's fear of failure, a lack of enough time, in addition to class density. Furthermore, Nassar (2019) revealed a paucity of scientific and practical activities conducted by early childhood educators, such as using the inquiry approach, despite its usefulness in establishing children's scientific culture and raising their enthusiasm for learning. (Capraro et al., 2016) found that many educators lack the abilities required to effectively utilize inquiry tactics owing to a lack of training and practice. Ramnarain's (2014) study also discovered that educators' lack of familiarity with inquiry approaches results in a low degree of utilization in classrooms.

As a result, the current study aims to identify the most significant challenges that early childhood educators face when implementing the inquiry strategy in the developed national curriculum, reveal the extent to which they use the investigation steps, and propose solutions to these challenges by answering the following questions:

1. What are the most significant challenges faced by early childhood educators in implementing the inquiry strategy within the developed national curriculum?
2. What is the impact of years of experience on the performance of early childhood educators while applying the inquiry strategy?

3. How do academic qualifications influence the effectiveness of early childhood educators using the inquiry strategy?
4. How does training on the inquiry strategy affect the performance of early childhood educators when it is implemented?
5. How can the challenge of enabling early children to express themselves and explore new concepts be overcome?
6. How can early children be motivated to engage in productive inquiry learning activities?
7. How can early childhood educators devote the time and resources required to implement the inquiry learning strategy?
8. How can children's various levels of understanding and participation be addressed?
9. What are the most important suggestions and recommendations for overcoming the challenges that early childhood educators encounter?

3. RESEARCH OBJECTIVES

3.1. Main Objective

Identify the challenges that early childhood educators face in implementing the inquiry strategy within the developed national curriculum and propose appropriate solutions.

3.2. Minor Objectives

1. Identify the most significant challenges that early childhood educators face in implementing the inquiry approach within the developed national curriculum.
2. Determine the influence of early childhood educators' years of experience on their performance when using the inquiry approach.
3. Examine the influence of academic qualifications on the performance of early childhood educators when implementing the inquiry strategy.
4. Assess the influence of training on the inquiry approach among early childhood educators during its implementation.
5. Propose solutions to the challenge of enabling children to express themselves and explore new concepts.
6. Present recommendations to encourage children to actively participate in inquiry-based learning activities.
7. Establish procedures that will allow early childhood educators to allocate the time and resources required to apply the inquiry-based learning approach.
8. Create strategies to address children's varying levels of understanding and participation while implementing the inquiry approach.
9. Provide the most significant suggestions and recommendations to help early childhood educators overcome the problems they face when using the inquiry approach.

4. SIGNIFICANCE OF THE RESEARCH

The significance of the study is based on the following points:

1. It focuses on the main challenges that early childhood educators face when using the inquiry learning approach, which is a modern and essential technique for developing children's skills and assisting them in their own investigation and discovery of information.
2. Understand how elements such as years of experience, academic qualifications, and training affect educators' effectiveness while using this technique, which aids in determining their training and development requirements.

3. Offer practical solutions to the challenges of implementing the inquiry learning technique, such as encouraging children to communicate their ideas, inspiring them to engage successfully, and dealing with their varied levels of comprehension.
4. It helps early childhood educators apply the inquiry learning technique more effectively by providing the essential processes and resources.
5. Provide critical recommendations to those in charge of establishing curriculum and educator preparation programs to better the implementation of the inquiry learning technique in the early childhood stage.
6. It improves the quality of early childhood education while also developing children's research, investigative, and creative abilities, all of which have a favourable impact on their educational success and future.

5. RESEARCH LIMITATIONS

Objective Limits: The study addressed the reasons and problems that led to challenges and obstacles faced by early childhood educators when applying the investigation strategy in the developed national curriculum.

Human Limitations: The study was conducted on a sample of early childhood educators

Spatial Limitations: The current study was conducted in the Royal Commission kindergartens in Jubail Industrial City.

Time Limitations: The study was applied during the second semester of the academic year 1445/1446 AH.

6. RESEARCH TERMINOLOGY

1. Challenges: They are characterized procedurally as all the challenges and hurdles that early childhood educators face when using the inquiry strategy in the proposed national curriculum, limiting the efficacy of teaching and learning.
2. Obstacles: They are characterized procedurally as variables that impede early childhood educators' capacity to properly apply the investigation approach, cause a delay in its application, or reduce the quality of its execution.
3. Inquiry: It is a procedural teaching technique that involves asking questions and exploring for answers, in which children generate hypotheses and test them to arrive at solutions to problems, which they subsequently use in new situations.
4. Curriculum Development: It is known procedurally as the approved curriculum in the early childhood stage, which aims to provide a variety of educational experiences for children at this stage.
5. Inquiry technique: It is a cooperative educational technique used in the early childhood stage in which children engage in small groups to explore and examine a specific topic, then gather and evaluate information to develop solutions.
6. Early Childhood: This developmental stage, which spans from three to six years old and is associated with kindergarten attendance, is practically described as the period during which children's moral, social, physical, and cognitive capacities mature.
7. Early childhood educators (Kindergarten Teachers): These are the educators responsible for implementing early childhood curricula and learning activities for children ages 3-6. They also utilize the inquiry learning approach included in the created national curriculum.

7. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

One well-known example of active learning is inquiry-based learning, which uses a scientific method of instruction to have children act and think like scientists in order to create knowledge. Learning ideas such as deep thinking and scientific reasoning requires inquiry (Liu, Bano, Zowghi, & Kearney, 2021). As part of the inquiry process, children gather data, formulate hypotheses, and ask questions. Based on the evidence uncovered, these actions lead to new discoveries in education (Liu et al., 2021; Markant, Ruggeri, Gureckis, & Xu, 2016; Pedaste et al., 2015).

Moreover, inquiry-based learning (EBL) sessions offer a flexible, adaptable, student-centered, and student-led approach to teaching (Goodall, 2017). To help children develop 21st-century learning abilities, inquiry-based learning is also fundamental (Chu, Reynolds, Tavares, Notari, & Lee, 2021). Asking questions and seeking answers are the cornerstones of the inquiry-based learning approach, which is implemented by motivating children to do just that (Brady, 2019). According to Avsec and Kocijancic (2016), inquiry-based learning (IBL) is a student-centered educational strategy that uses relevant assignments such as cases, projects, and research to facilitate learning. It is expected that children will be able to compare, conduct research, and collaborate to find solutions to problems (Avsec, Rihtarsic, & Kocijancic, 2014). It is regarded as one of the most recent developments in curricula, particularly in relation to the Saudi national curriculum for early childhood years. The National Center for Professional Development and the Ministry of Education in the Kingdom of Saudi Arabia have worked to hold training sessions for early childhood educators and leaders on implementing the early childhood inquiry strategy, in an effort to boost positive learning trends and enhance the quality of education (Ministry of Education, 2018).

Inquiry types: There are the following three categories of inquiry:

Aiming to enhance critical thinking and problem-solving skills, the IBL approach can be implemented at different levels (Duran & Dökme, 2016).

The guided inquiry: The early childhood educator leads and guides the children through specific procedures to ensure they have enough practice and are successful in using their cognitive skills. For this type, it is necessary that the children understand the intended outcome.

The semi-guided inquiry: In order to maximize children's potential to learn scientific and mental activities, the early childhood educator provides the problem to them while guiding and directing them without placing any limits.

The concept of free inquiry is considered the most effective type of inquiry, as it depends on children's knowledge and experiences, their ability to ask questions, and to find information from various sources to help answer these questions. This form of research encourages children to think scientifically, solve problems, and expand their knowledge, Shukur (2019), Al-Otaibi (2020), and Al-Ghaidani (2023). Numerous research studies have demonstrated that directed inquiry, as opposed to unstructured inquiry or direct teaching approaches, is the key to the success of inquiry-based learning (Kyza & Georgiou, 2018; Lazonder & Harmsen, 2016). According to Lazonder and Harmsen (2016), inquiry-based learning requires sufficient supervision, but too much illocutionary teaching will impede the inquiry process. In reality, the design of inquiry-based learning must be meaningful and should contribute to the creation of learning opportunities if it is to have a significant influence on learning. They have to do with intricate theories or ideas (Gómez & Suárez, 2020). There has been a consensus that sufficient guidance and support are necessary for inquiry-based learning to be effective (De Jong, Sotiriou, & Gillet, 2014; Kyza & Georgiou, 2018; Lazonder & Harmsen, 2016). Furthermore, utilizing technology should produce learner involvement and sufficient assistance, which are productively balanced in inquiry-based learning (Suárez, Specht, Prinsen, Kalz, & Ternier, 2018).

The distinctions between four categories of inquiry are described by Mackenzie (2016) as: constructed, guided, semi-guided, and free. According to him, educators often begin the year with a constructed inquiry model, progress to guided inquiry, then semi-guided inquiry, and, if everything goes according to plan, end with free inquiry.

7.1. Educational Philosophy of Inquiry

Several approaches, such as the teaching approach focused on open inquiry, encourage children to think imaginatively about objects and occurrences. This is in line with the constructivist notion of the constructivist teaching process. According to research by Gumilar, Sumantri, and Subandowo (2019) inquiry-based learning, which is grounded in constructivist theory, improves children's comprehension of scientific ideas and fosters the development of higher-order thinking abilities. As a result, constructivists believe that learners' activities contribute to the construction of knowledge. The child creates meaning for what they learn on their own, and when a child is faced with a genuine, everyday issue, learning occurs most effectively. This entails adhering to the principles of

inquiry science, which place equal emphasis on the educator and the child as knowledge-builders and on individual and group learning activities. According to Siantuba, Manalu, and Simanjuntak (2023), inquiry-based teaching strategies that prioritize the learner increase children's engagement and improve learning outcomes. Tsaliki, Pnevmatikos, and Kariotoglou (2022) also demonstrated how collaborative inquiry activities improve children's critical thinking skills and help them acquire knowledge more efficiently.

According to Aditomo and Klieme (2020), inquiry-based learning approaches help children become more independent and develop their personalities, which improves their academic achievement and life skills. Inquiry strategies also encourage learners to refocus their attention from external elements influencing learning to internal ones when faced with a real-world challenge that falls within their experience limitations (Al-Ajlan, 2018).

7.2. Inquiry Strategy Steps

First: Choose the subject of the inquiry: To assist the child in understanding the subject of study and to capture their interest, formulate the investigation as a problem or an open question.

Children should be grouped into cooperative research groups and encouraged to raise questions. Educators should also encourage children to collaborate effectively, even establishing smaller subgroups of five to six children to complete assigned tasks (Goodall, 2017).

- Outline a collection of tools to assist children in conducting research.
- The child looks through the sources to decide which questions he wants to research and discover solutions for.
- The inquiry questions are written by the educator and posted on the board.

Second: Planning the investigation: The educator helps the children distribute their roles within each group, such as recorder, investigator, and coordinator, and also assists in identifying the resources and tools required to conduct the investigation.

Third: Putting research or investigation into practice: Here is where children carry out the plan, gathering data and sources for experiments, assessing and interpreting the data, and coming to conclusions.

Fourth: Final report preparation and presentation: this includes explaining the findings during the presentation, drawing conclusions, and orally expressing them, creating a visual depiction, etc.

Fifth: The evaluation is conducted by the group members as well as the educator. Academic, practical, and social abilities are all evaluated (Nassar, 2019).

Figure 1 illustrates the systematic steps of inquiry strategy implementation in early childhood education.

Figure 1. Steps of inquiry strategy.

7.3. Benefits of the Inquiry-Based Learning Approach Include

Since the child is viewed as the center of the educational process, this approach aids in the development of the learner's scientific thinking, deduction, and discovery abilities, as well as their drive to learn, integrate, and seek out new experiences. It also assists him in accomplishing his objectives, which are challenging for him to achieve using other means. Moreover, it helps him become more independent and fosters the growth of his social and artistic skills. Meirbekov and Salikhanova (2021) demonstrate that children may gain a lot from inquiry-based learning, as it not only advances academic objectives in the classroom but also fosters the development of transferable interpersonal skills that can be utilized in other areas of the children's lives. The most notable benefits are:

1. It provokes students' curiosity and provides them with the chance to pose queries and consider various answers.
2. It fosters creativity in children by encouraging critical thinking, deep thinking, and the development of original problem-solving strategies.
3. It develops children's ability to solve problems by having them use logic and critical thinking to their answers.
4. It clarifies the connections between the knowledge that students acquire and what they already know from a variety of professions.
5. It fosters student independence in the classroom by allowing them to design their own classes based on their own research questions.
6. It offers pupils genuine differentiation by allowing them to work at their own pace and by selecting various techniques for gathering and presenting information.

Seven advantages of inquiry-based learning, or IBL, are listed by Guido (2017).
1) It enhances the content of the curriculum, 2) stimulates the brain for learning, 3) encourages a more thorough understanding of the content, 4) contributes to the enjoyable nature of rewarding, 5) fosters initiative and self-direction, 6) probably functions practically in any classroom, and 7) offers a wide variety of experiences.

According to a study by Gu, Chen, Zhu, and Lin (2015), students who engaged in inquiry-based practices demonstrated higher levels of academic self-efficacy, solved problems more frequently, exhibited less fear of taking risks, and were more inclined to persist by trying different strategies for success after experiencing failure..

7.4. The Role of the Educator in the Inquiry Strategy

The demands and characteristics of the early childhood education stage necessitate educators possessing the necessary training and understanding, and using the inquiry approach enables educators to stay up to date with contemporary developments. It may enhance children's aptitude for scientific thinking across a range of domains and increase their awareness of their immediate surroundings while igniting their passion for learning. A dynamic classroom atmosphere, encouragement to explore and discover, preparation for learning skills and thought processes, and assistance in identifying problems and their solutions are all the responsibilities of the educator. Educators who understand how important it is to use the inquiry technique are needed for this. Al-Dehani and Al-Hindal (2016) for the child to engage in a variety of fresh and varied activities and experiences, it is crucial to incorporate the exploration technique into the educational process. It fosters his sense of inquiry and group identity, which facilitates communication among them. It is the educator's job to pose queries, conduct experiments, and unearth scientific truths (Salama, 2017).

The Ministry of Education emphasized this to ensure the establishment of professional development programs for educators that meet the necessary quality standards and to provide specialized programs for early childhood educators at universities (Al-Sayyar, 2022).

7.5. Challenges of Implementing the Inquiry Strategy

Challenges for children: The inquiry strategy presents certain challenges for children because it depends on highly structured methods of evaluation, which are ineffective for young children. Additionally, some children

struggle with group learning, which aims to promote accuracy and high-quality thinking (Eti & Sigirtmac, 2022). Using this strategy may be hampered by the child's individual differences because each child is unique in terms of mental development, psychological and social traits, and capacity for knowledge acquisition. In addition to the fear that accompanies failure to meet desired goals, this fear may limit the child's activity (Al-Muhanna, 2020). Additionally, the child may become disengaged from the plan since it requires a lot of time to research and investigate.

Challenges faced by early childhood educators: Although this strategy is important, early childhood educators encounter difficulties in implementing it due to various factors, such as their limited experience or lack of expertise (Al-Hindal & Al-Daihani, 2016). This knowledge gap disables educators when applying the strategy optimally and also limits the effectiveness of the strategy due to differences in viewpoints among educators (Subramaniam & Muimongkol, 2022). Apart from time constraints, the child is not offered the chance to engage in independent research and draw conclusions (Odegaard, 2016). Additionally, some early childhood educators do not believe in the effectiveness of this method since it is hard to maintain classroom discipline (Al-Wahar, 2016). Curriculum that emphasizes inquiry-based learning must be used as well. After all, the dense classes are still one of the challenges.

For the experienced educator, imparting the suggested knowledge may be a very simple and comfortable task. Additionally, the conventional approach to teaching may not have the desired effect because of low long-term retention (Goodall, 2017; Lincoln, 2019).

7.6. Challenges to the Physical Environment

The lack of material and moral support from the school administration, the lack of tools necessary to implement it, the lack of appropriate classroom spaces, and the lack of confidence in the efficacy of using the inquiry strategy with early childhood children are some of the physical environment issues encountered by early childhood educators. All of these factors make it more difficult to put this approach into effect (Al-Dehani & Al-Hindal, 2016; Al-Essa, 2019). It was also discovered that the supplies, instruments, and equipment required to implement this strategy had not been supplied (Capps & Crawford, 2013).

Numerous studies have indicated that early childhood educators encounter multiple obstacles while implementing the inquiry approach to teach children, particularly when it comes to teaching scientific concepts. According to the findings of these research, there is a deficiency of preparation and training for educators to implement inquiry processes, including encouraging children to ask meaningful questions, assess the evidence, and make predictions (Al-Ghamdi, 2024; Blevins, 2017; Brady, 2019). They additionally highlighted the inadequate financial support and inadequate classroom setting, as well as the skills necessary to implement the inquiry strategy (Al-Eisi, 2019; Al-Ghamdi, 2024; Al-Sayyar, 2022; Nollmeyer, Spielman, & Stains, 2019). Furthermore, research has indicated that curricula designed for teaching inquiry are inadequate, and that educators are not given enough time to apply inquiry activities in the classroom (Brady, 2019; Gatt & Zammit, 2017; Nollmeyer et al., 2019). Additionally, integrating natural educational materials into the classroom setting and transitioning from traditional approaches to inquiry-based teaching remain challenges for female educators (Black, 2019; Ergazaki, Liouta, Koleza, & Psycharis, 2013).

Thus, in order to maximize the benefits of this strategy in enhancing children's learning and developing their various skills, it is imperative to examine the difficulties early childhood educators face when implementing the inquiry strategy in the developed national curriculum. This is the goal of this study.

8. STUDY PROCEDURES: STUDY METHODOLOGY

A research approach was used to accomplish the study's goals, which include determining the difficulties early childhood educators encounter when incorporating IBL into their lessons, investigating their attitudes and ideas about the subject, and exploring their reasons for favoring IBL in the classroom. A hybrid approach was employed to

gather and analyze data. The study utilized the descriptive method, as in descriptive studies, the researcher collects open data and analyzes it to gain a better understanding of the phenomenon (Creswell, 2014; Patten, 2012).

To do this, a questionnaire titled "Challenges of Applying the Survey Strategy to the Developed National Curriculum" is administered to the research sample. Following this, a specific sample of early childhood educators is interviewed. We refer to this process as triangulation. This is accomplished by examining the closed questions asked during the questionnaire's application and then qualitatively analyzing the data from the open questions asked during the interviews. This approach provides the interviewer with greater flexibility in responses because they are not constrained by questionnaires with closed answers or predetermined options (Fadil & Dalo, 2014).

Study population: The study population consisted of all early childhood educators who teach children aged between 4 and 6 years in the Royal Commission kindergartens in Jubail.

Study sample: The study sample consisted of 40 early childhood educators who teach children between the ages of 4 and 6 years in the Royal Commission kindergartens in Jubail. They were selected using a random method.

Table 1 presents the distribution of the study sample according to their socio-demographic and academic characteristics (N=40).

Table 1. Distribution of the study sample according to their socio-demographic and academic characteristics (N=40).

Variables		N	%
Qualification	Bachelor's	34	85.00
	Diploma	4	10.00
	Master	2	5.00
Years of experience	1 - less than 5 years	15	37.50
	5 - less than 10 years	10	25.00
	10 years and above	15	37.50
Specialization	Kindergarten	28	70.00
	Educational	6	15.00
	Other	6	15.00
Number of training	There are no	4	10.00
	One training	22	55.00
	Two or more training sessions	14	35.00

Study Tool: To achieve the objectives of the study, the researchers prepared a questionnaire entitled "The challenges facing early childhood educators that hinder their use of the inquiry strategy." It consisted of four categories: (Challenges facing educators - Challenges facing children - Challenges related to the learning environment - Challenges related to educational content). An interview was also conducted with a group of ten early childhood educators who teach children between the ages of three and six years in government kindergartens in the Eastern Province.

8.1. Challenges Facing Early Childhood Educators Questionnaire

Description of Questionnaire: This questionnaire aims to measure challenges faced by early childhood educators in early intervention, Table 2 shows the Questionnaire description.

Table 2. Shows the Questionnaire description.

Dimensions	Number of Items
Challenges facing educators.	13
Challenges facing children.	9
Obstacles related to the learning environment.	5
Challenges related to educational content.	10
Total	37

The questionnaire was constructed after reviewing the literature and studies that dealt with the application of the survey method in early childhood and the challenges facing educators when applying this method (Al-Ghamdi, 2024; Al-Otaibi, 2020; Al-Sayyar, 2022). The questionnaire is corrected using a five-point scale. The responses are: strongly disagree, a score of 1; disagree, a score of 2; neutral, a score of 3; agree, a score of 4; and strongly agree, a score of 5. The highest score is 185, and the lowest score is 37.

Questionnaire validity: The questionnaire was presented in its first image, involving ten professors of kindergarten at Saudi universities. The percentages of agreement among university faculty members on each item of the Challenges Facing Early Childhood Educators Questionnaire ranged between 80% and 100%. The total agreement of the arbitrators on the items of the questionnaire was 93.762%. Regarding the content validity ratio (CVR), it was found that all items of the Challenges Facing Early Childhood Educators Questionnaire had acceptable content validity values. The average content validity percentage for the questionnaire as a whole was 0.894, which indicates acceptable validity. Responses were rated on a five-point Likert scale, ranging from "Strongly agree" (5) to "Strongly disagree" (1).

Questionnaire Reliability: The Cronbach's α of the questionnaire was .88 for Challenges Facing Educators, .82 for Challenges Facing Children, .79 for Obstacles Related to the Learning Environment, .85 for Challenges Related to Educational Content, and .91 for the overall questionnaire.

Statistical Methods Used: Based on the nature of the research and the objectives that the researchers aimed to achieve, the questionnaire was designed and analyzed using the Statistical Package for the Social Sciences (SPSS 26). The following statistical tests were employed:

- Frequencies and Percentages; to describe the study sample, as well as to indicate the importance of the statement in relation to the rest of the statements.
- Weighted averages: To determine the direction of the sample members' responses.
- Standard deviations: To determine the extent to which responses range.
- Cronbach's alpha coefficient: To ensure the stability of the questionnaire.
- Pearson correlation coefficient: To calculate internal consistency.
- One-way analysis of variance.

8.2. Study Findings and Discussion

Research question one: "What are the main obstacles early childhood educators face when implementing the inquiry strategy in the created national curriculum?" The following analysis of the ten instructors' interview replies reveals the primary difficulties they encountered when using the inquiry learning strategy:

1. Lack of time: As the inquiry approach takes longer to deploy than traditional methods and it might be challenging to manage time efficiently under a predetermined timeline, this difficulty was brought up four times.
2. Individual differences among children: One answer brought up this difficulty, pointing out that children have different learning styles and rates, which might make it challenging to address each child's requirements within the overall framework of inquiry-based learning.
3. Difficulty of content: One contributor brought up this issue, pointing out that some topics could be hard for children to comprehend and deduce from their questions.
4. Children learn to infer: One answer raised the difficulty of teaching children to infer concepts from the questions posed in the inquiry strategy.
5. Too many activities: One respondent raised this issue, noting that it might be challenging to combine a number of activities related to the inquiry strategy with other program activities.
6. One participant brought up the issue of lack of capabilities, stating that educators might not have the tools or skills necessary to use the inquiry learning technique efficiently.

However, three of the educators made no mention of any particular difficulties. That is, as previously noted, 70% of the sample cited obstacles that they agreed upon, whereas 30% of the sample reported no challenges at all.

Through quantitative analysis of the questionnaire, these challenges were also confirmed, as was the degree to which they existed and the variations in the degree of difficulties faced by early childhood educators when implementing the inquiry strategy in the developed national curriculum based on factors such as academic background, years of experience, specialization, and number of trainings. The following outcomes were highlighted:

8.3. Degree of the Challenges Facing Early Childhood Educators in Applying the Survey Strategy in the Developed National Curriculum

The researchers used the weighted mean, standard deviation, rank, and estimate of the degree of agreement to determine the degree of challenges facing early childhood educators in applying the survey strategy in the developed national curriculum, and the results are shown in Table 3:

Table 3 of the weighted mean, standard deviation, rank, and estimate of the degree of agreement with the degree of the challenges facing early childhood educators in applying the investigation strategy in the developed national curriculum (n=40).

Table 3. Mean scores, standard deviations, and ranking of inquiry strategy implementation challenges in early childhood education (N=40).

Variables	Mean	Standard deviation	Estimate the degree of agreement	Rank
Challenges facing educators.	3.08	0.71	Moderate	3
Challenges facing children.	3.44	0.72	High	1
Obstacles related to the learning environment.	2.80	1.06	Moderate	4
Challenges related to educational content.	3.10	1.05	Moderate	2

It is clear from the previous table that the level of challenges facing early childhood educators in applying the investigation strategy in the developed national curriculum is moderate. While the challenges facing children are high.

Figure 2 shows the graphs of the arithmetic mean of the Degree of challenges. Figure 2: Facing early childhood educators in applying the investigation strategy in the developed national curriculum.

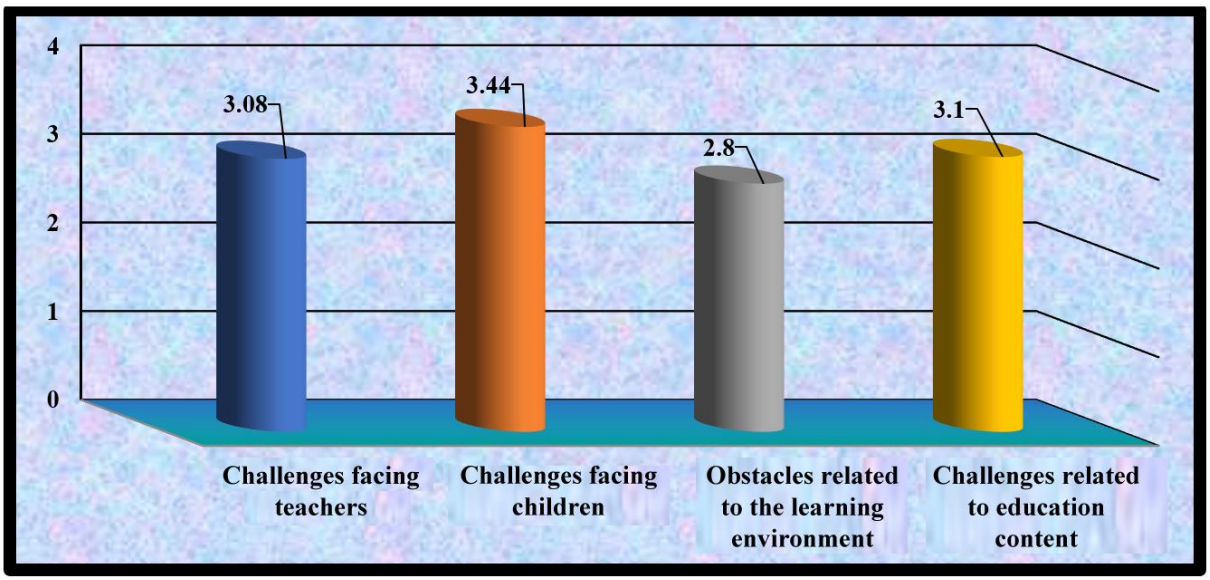

Figure 2. Mean scores of inquiry strategy implementation challenges across four main categories.

Figure 2 of the graphs of the arithmetic mean of the degree of the challenges facing early childhood educators in applying the investigation strategy in the developed national curriculum.

Differences in the degree of challenges faced by early childhood educators in applying the investigation strategy within the developed national curriculum, according to variables such as qualification, years of experience, specialization, and number of training sessions.

The researchers used the N-Way ANOVA to calculate the significance of the differences in the degree of challenges faced by early childhood educators in applying the investigation strategy in the developed national curriculum, according to the variables of qualification, years of experience, specialization, and number of training sessions. The results are shown in Table 4:

Table 4 results of the one-way analysis of variance in (n) direction for the significance of the differences in the degree of challenges facing early childhood educators in applying the investigation strategy in the developed national curriculum according to the variables of qualification, years of experience, specialization, and number of training (n=40).

Table 4. Analysis of variance (ANOVA) for inquiry strategy implementation challenges by demographic and professional variables (N=40).

Variables	Source of variance	Type III sum of squares	df	Mean square	F	Sig.
Challenges facing educators	Qualification	124.574	2	62.287	0.613	0.548
	Years of experience	39.342	2	19.671	0.194	0.825
	Specialization	46.008	2	23.004	0.226	0.799
	Number of training	20.656	2	10.328	0.102	0.904
	Error	3151.385	31	101.658		
	Total	82099.000	40			
Challenges facing Children	Qualification	212.491	2	106.246	2.535	.096
	Years of experience	25.239	2	12.619	.301	.742
	Specialization	95.575	2	47.788	1.140	.333
	Number of training	49.242	2	24.621	.588	.562
	Error	1299.050	31	41.905		
	Total	44914.000	40			
Obstacles related to the learning environment	Qualification	22.783	2	11.392	.355	.704
	Years of experience	88.532	2	44.266	1.381	.266
	Specialization	28.260	2	14.130	.441	.647
	Number of training	22.499	2	11.249	.351	.707
	Error	993.522	31	32.049		
	Total	14905.000	40			
Challenges related to educational content	Qualification	859.404	2	429.702	4.141	.025
	Years of experience	187.613	2	93.807	.904	.415
	Specialization	235.883	2	117.941	1.137	.334
	Number of training	63.396	2	31.698	.305	.739
	Error	3217.043	31	103.776		
	Total	45116.000	40			

It is clear from the previous table that:

- There are no statistically significant differences at the 0.05 level in the challenges facing educators according to the variables of qualification, years of experience, specialization, and training.
- There are no statistically significant differences at the 0.05 level in the challenges facing children according to the variables of qualification, years of experience, specialization, and training.
- There are no statistically significant differences at the 0.05 level in the Obstacles Related to the Learning Environment according to the variables of Qualification, years of experience, Specialization, and Training.
- There are statistically significant differences at the 0.05 level in the Challenges Related to Educational Content according to Qualification. However, there are no statistically significant differences at the 0.05 level in the

Challenges Related to Educational Content according to the variables of years of experience, specialization, and training.

And below, the table indicates the means and standard deviations for the degree of challenges faced by early childhood educators in applying the investigation strategy within the developed national curriculum, according to variables such as qualification, years of experience, specialization, and number of training.

Table 5 presents the means and standard deviations for the degree of challenges faced by early childhood educators in applying the investigation strategy within the developed national curriculum. The analysis considers variables such as qualification, years of experience, specialization, and number of training sessions (n=40). The table below indicates the Scheffe value for significant differences in challenges related to educational content according to qualification.

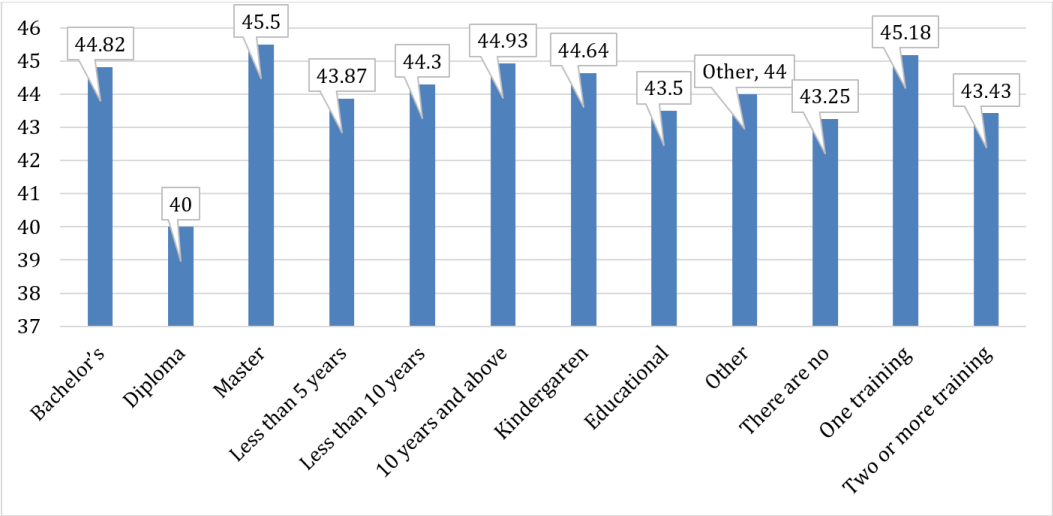

Figure 3. Mean challenges facing educators.

Figure 3 illustrates the main challenges facing educators in implementing inquiry strategies across different demographic characteristics.

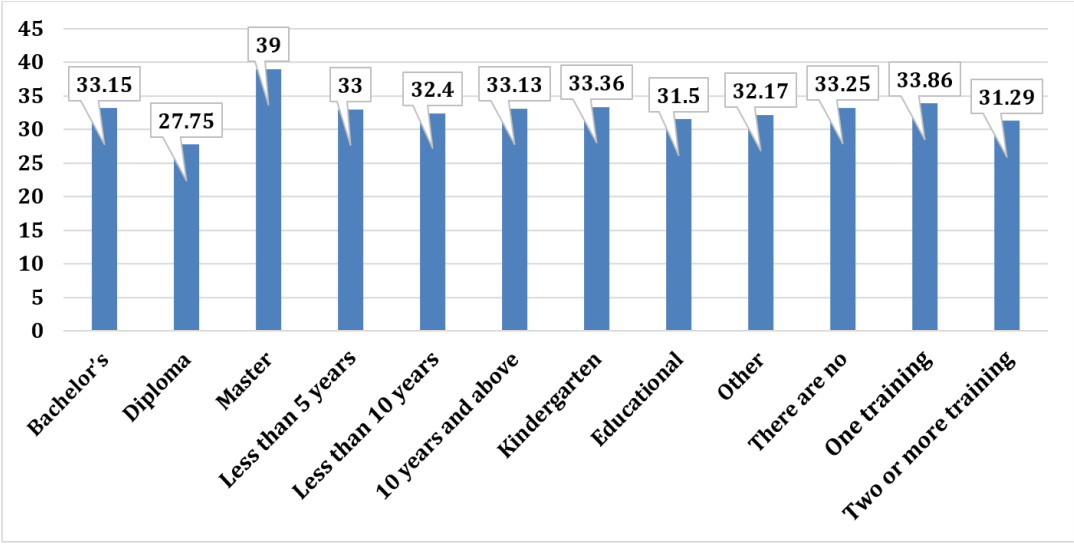

Figure 4. Mean challenges facing children.

Figure 4 demonstrates the main challenges facing children during the implementation of inquiry-based learning according to various participant groups.

Table 5. Descriptive statistics for inquiry strategy implementation challenges by participant demographic and professional characteristics (N=40).

Variables		N	Challenges facing educators		Challenges facing children		Obstacles related to the learning environment		Challenges related to educational content	
			Mean	Std. deviation	Mean	Std. deviation	Mean	Std. deviation	Mean	Std. deviation
Qualification	Bachelor's	34	44.82	9.64	33.15	6.29	18.74	5.33	33.00	9.71
	Diploma	4	40.00	7.26	27.75	6.40	17.75	4.03	20.25	12.09
	Master	2	45.50	4.95	39.00	2.83	17.50	10.61	37.50	9.19
Years of experience	1 - less than 5 years	15	43.87	10.62	33.00	7.99	17.27	6.65	32.40	10.92
	5 - less than 10 years	10	44.30	9.12	32.40	5.80	19.00	4.59	29.60	11.55
	10 years and above	15	44.93	8.44	33.13	5.46	19.60	4.24	33.07	9.77
Specialization	Kindergarten	28	44.64	9.81	33.36	7.04	18.71	5.52	31.96	11.43
	Educational	6	43.50	6.32	31.50	5.17	18.17	4.92	31.17	8.08
	Other	6	44.00	10.30	32.17	5.00	18.33	5.61	32.67	9.22
Number of training	There are no	4	43.25	5.74	33.25	2.06	19.75	3.30	33.00	3.37
	One training	22	45.18	7.60	33.86	4.90	18.77	4.44	33.05	8.47
	Two or more Training	14	43.43	12.37	31.29	8.96	17.93	7.04	29.93	14.29

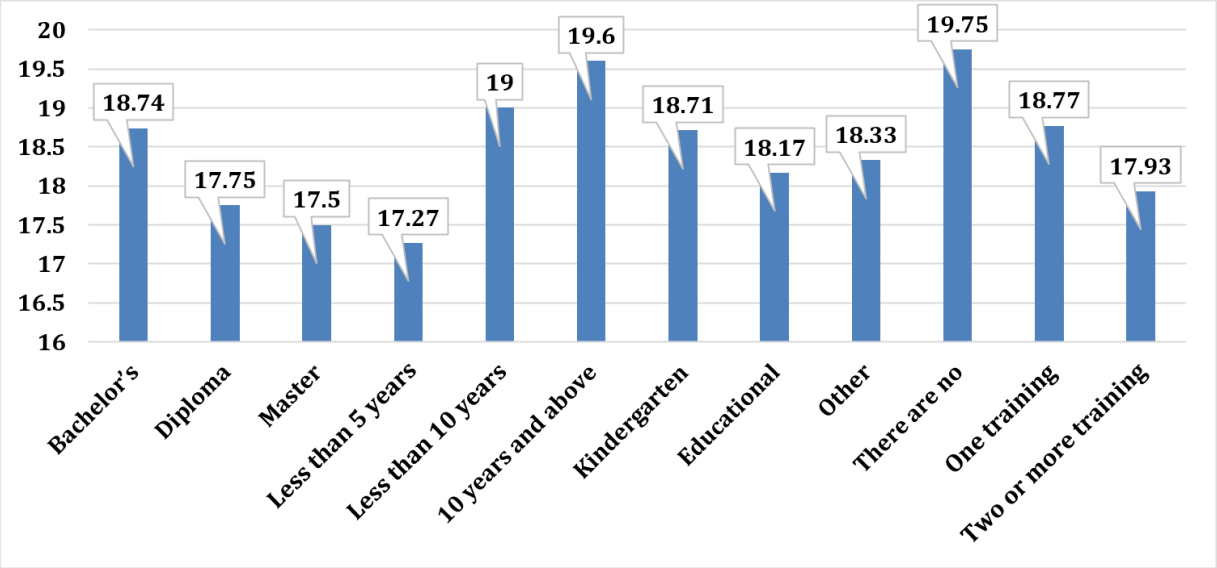

Figure 5. Mean obstacles related to the learning environment.

Figure 5 presents the main obstacles related to the learning environment in inquiry strategy implementation by educator characteristics.

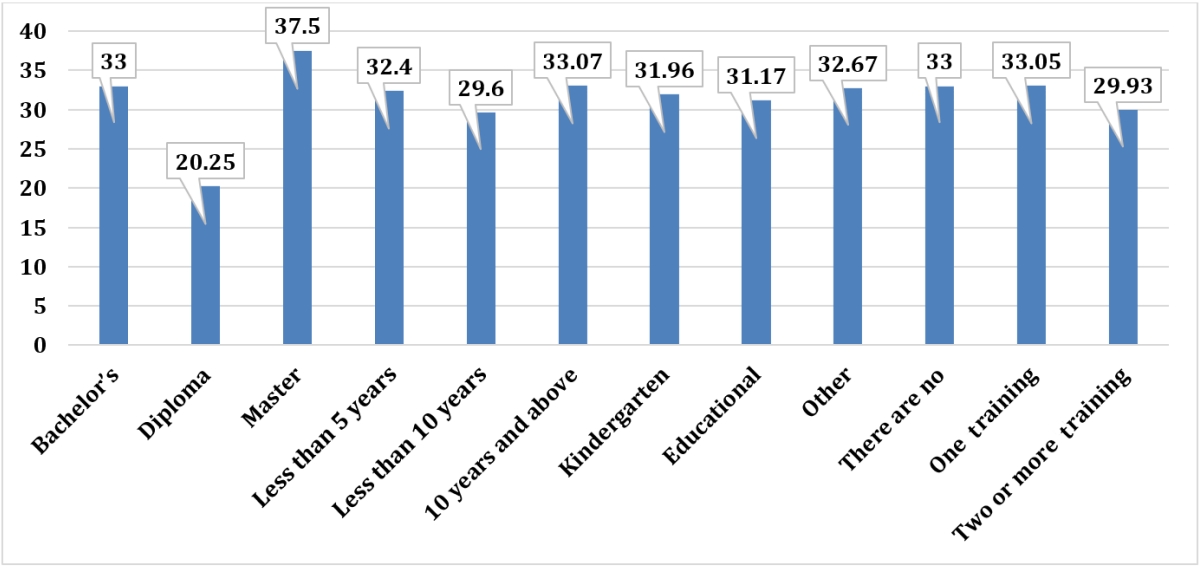

Figure 6. Mean challenges related to educational content.

Figure 6 shows the main challenges related to educational content in inquiry-based learning across different demographic variables.

Table 6: Scheffe value for significant differences in the Challenges Related to Educational Content according to Qualification (n=40).

Table 6. Post-hoc Scheffe test results for challenges related to educational content by qualification level (N=40).

		N	Challenges related to educational content		Scheffe value		
			Mean	Std. deviation	Bachelor's	Diploma	Master
Qualification	Bachelor's	34	33.00	9.71	---	---	---
	Diploma	4	20.25	12.09	12.75*	---	---
	Master	2	37.50	9.19	4.50	17.25*	---

It is clear from the previous table that:

- There are statistically significant differences in the challenges related to educational content according to qualification between bachelor's and diploma for bachelor's.
- There are statistically significant differences in the challenges related to educational content according to qualification between Master's and Diploma for Master.

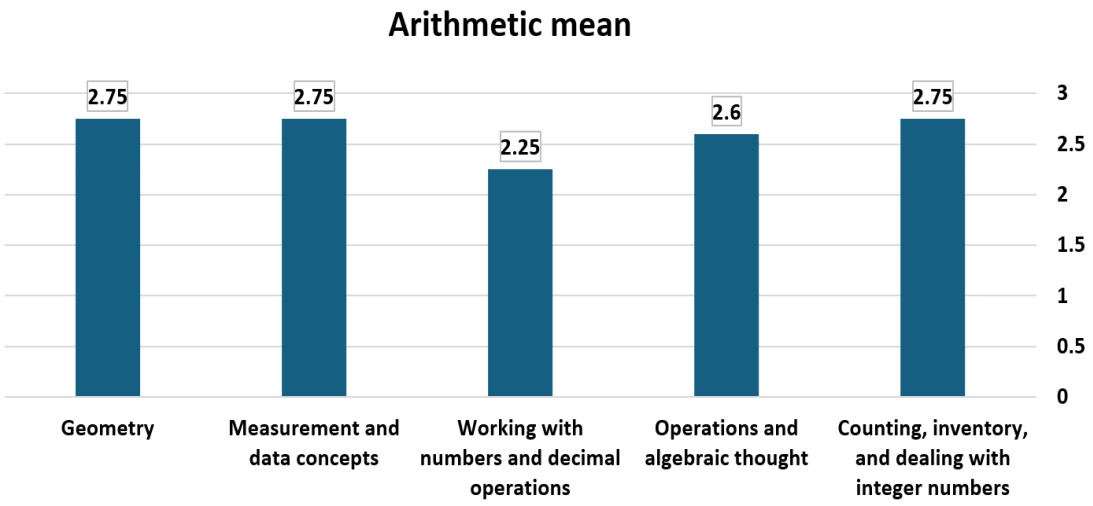

Figure 7. Mean challenges related to educational content.

Figure 7 displays the mean challenges related to educational content implementation within the inquiry strategy framework.

Research question Two: What is the impact of years of experience on the performance of early childhood educators while applying the inquiry strategy? The findings were based on educators' responses regarding the impact of years of experience on their performance while applying the inquiry strategy. Replies can be analyzed as follows:

1. The positive impact of experience: According to most educators, years of experience have had a positive impact on their performance in applying the inquiry strategy. Through experience, they were able to use the method more quickly and easily and gained greater abilities in handling individual differences among children and skill development.
2. The low impact of experience: One of the educators stated that years of experience had little effect on her performance in applying the inquiry strategy, as she had previously applied it in a simpler way.
3. The effect of experience with the new curriculum: One of the educators mentioned that her success in using the inquiry approach was generally impacted by her inexperience with the new national curriculum.
4. The effect of experience on facing challenges: One of the educators mentioned that the years of teaching experience of science educators affected the extent of their ability to face the challenges associated with applying the inquiry strategy.
5. Flexibility in the new curriculum: One educator felt that the new national curriculum is more flexible, which makes it easier to implement the inquiry strategy.

In general, the majority of educators seem to believe that their years of experience have improved their ability to implement the inquiry strategy, as it has helped them acquire better skills in dealing with the challenges associated with this strategy.

Research question three: "How do academic qualifications influence the effectiveness of early childhood educators using the inquiry strategy?" It is highlighted that:

Based on educators' responses about the impact of academic qualification on their performance while applying the inquiry, the analysis can be summarized as follows:

1. Positive effect of the academic qualification: Some educators expressed that the academic qualification helped them to better apply the inquiry strategy and increased their flexibility in dealing with it.
2. Limited impact of academic qualification: Several educators reported that academic qualification did not have a significant impact on their performance in implementing the strategy, as they relied more on their experience in teaching and discovery.
3. Academic qualification has no effect: According to some educators, having an academic degree did not prevent them from using the inquiry strategy or significantly affect their performance.
4. Developing skills and individual differences: A few responses emphasized how the academic degree improved the educators' ability to deal with the unique differences among students while implementing the strategy.

It appears that there is a lack of consensus among educators regarding how educational qualifications influence their ability to utilize inquiry strategies effectively. While some report positive effects, others observe negligible or no effects at all, relying more on their prior teaching and research experiences.

Research Question four: "How does training on the inquiry strategy affect the performance of early childhood educators when it is implemented?"

Based on the educators' responses regarding the impact of practicing the inquiry strategy on their performance during its implementation, the replies can be analyzed as follows:

1. Positive impact of training: Most educators expressed that training on the inquiry strategy had a positive impact on their performance during its implementation, as it helped them better understand the strategy and apply it effectively.
2. Greater flexibility: Despite the fact that the method was fairly similar to what she had previously used, one of the instructors said that the training had given her more freedom to implement it.
3. Facilitating children's understanding: An educator indicated that the training enabled her to implement the method in a way that encourages children to comprehend it.
4. Benefiting from training: One of the educators mentioned that the strategy training was really beneficial to her.
5. Increasing efficiency: One of the educators reported that the training increased her effectiveness in delivering the lesson.
6. Time constraints: Some educators stated that, even with favorable feedback on the training, the full implementation of the strategy requires more time than is available.

Overall, it appears that the training on the inquiry strategy had a positive impact on the educators' performance while implementing it, as it helped them better understand the strategy and apply it effectively and flexibly. However, there are still some challenges related to time management while fully implementing the strategy.

Research question five: How can the challenge of enabling young children to express themselves and explore new concepts be overcome?

From educators' responses, suggested methods for encouraging children to express their ideas and explore new concepts through inquiry can be summarized as follows:

1. Gradual activities: To progressively build children's confidence, one of the educators recommended beginning with simple, gradual activities before advancing to more challenging ones.
2. Use instructional methods: A number of educators stressed the value of utilizing a range of instructional methods, including games and concrete instruments, to grab kids' attention and inspire them to share their thoughts.
3. Ask questions and pose challenges: One of the educators suggested motivating children by asking questions and offering challenges that encourage them to think and explore.

4. Encouragement and reinforcement: Numerous educators emphasized the importance of encouraging children and strengthening their attempts to express their own ideas, whether correct or incorrect, to develop their self-confidence.
5. Develop individual differences: One of the educators pointed out the need to consider the individual differences among children and meet their different needs to encourage them to participate.
6. Diversifying reinforcement methods: One of the educators suggested diversifying reinforcement methods, whether material or moral, to motivate children to express their ideas.
7. Play: According to one educator, play may be a useful tool for inspiring children to experiment and express themselves.

While several educators acknowledged initial challenges, they provided various recommendations for overcoming these obstacles through the use of teaching aids, encouragement, and a variety of techniques.

Research question Six: - How can early children be motivated to engage in productive inquiry learning activities?

Educators' responses highlighted that the proposed methods for motivating children to actively participate in inquiry learning activities and interact with educational materials positively can be summarized as follows:

1. Diversify the presentation of activities: One educator proposed introducing a variety of ways to present activities in order to get children interested and excited to participate.
2. Play and encouragement: Multiple educators emphasized the value of playing with children and involving them in educational activities so they can interact with the materials in an enjoyable way.
3. Add an element of surprise: Another educator proposed incorporating a surprise element into the activities in order to spark children's curiosity and encourage them to participate.
4. Involve mothers: One educator mentioned that including mothers in the educational process helped solve some obstacles regarding children's participation.
5. Pose queries and questions: One educator recommended posing thought-provoking queries and questions to encourage children to engage and investigate.
6. Support and encouragement: A number of educators emphasized the need to support children and assist them in engaging with learning resources in a constructive manner.
7. Consolidate and clarify the information: To help the children grasp the information and encourage them to engage, one of the educators proposed making the content more relatable to the children's real-life experiences.
8. Material and moral reinforcement: A number of educators emphasized the value of employing moral and material reinforcement, such as praise, to encourage children to engage in class.

In general, educators suggested a variety of motivational methods, including play and enjoyable activities, thought-provoking questions, involving mothers, and material and moral reinforcement to encourage children to actively participate in inquiry learning activities and positively interact with educational materials.

Research Question Seven: - How can early childhood educators devote the time and resources required to implement the inquiry learning strategy?

According to the educators' comments, one of their greatest difficulties was figuring out how to allocate the time and resources required to successfully implement the early childhood inquiry learning strategy. A number of educators mentioned that one of their biggest challenges was the lack of sufficient time. Nonetheless, educators employed a few tactics to attempt to overcome this obstacle, such as:

1. Task distribution: According to one of the educators, in order to put the approach into practice, she efficiently managed her time and dispersed the work.
2. Develop a plan: According to one of the educators, she created an orderly plan to assign daily responsibilities and make the most of the training sessions she attended.
3. Prepare materials in advance: One instructor mentioned that it is challenging to prepare materials on the same day, emphasizing the need to prepare materials in advance.

4. Rely on improvising: One educator shared that in order to overcome these challenges, she resorted to improvising.

Overall, it seems that educators' primary approaches to overcoming the difficulty of allocating the time and resources required to effectively implement the inquiry learning strategy in early childhood were to assign tasks, manage their time well, and prepare resources ahead of time.

Search question eight: - How can children's various levels of understanding and participation be addressed?

Educators' responses to recommended strategies for addressing children's differing comprehension and involvement levels during early childhood inquiry learning sessions can be summarized as follows:

1. Flexibility and variety of activity presentations: One of the educators proposed addressing this disparity by adapting and changing the ways in which activities are presented to accommodate students of varying skill levels.
2. Reinforcement and confidence building: According to one of the educators, children's differing learning levels may be handled by providing reinforcement and boosting their self-esteem.
3. Multiple ways to present concepts: One educator suggested presenting concepts in several different ways to accommodate children's varying comprehension levels.
4. Concentrate on all levels: One educator said that she addressed the disparity by emphasizing all levels of comprehension in the levels and groups.
5. Reacting to all students: A number of educators emphasized the significance of answering all students, irrespective of their ability levels.
6. Recognize individual differences: A number of educators emphasized the need to appreciate the unique characteristics of each student and to tailor the curriculum to meet each student's level.
7. Following individual methods of understanding: An educator proposed that each child's preferred manner of understanding has to be followed.
8. Respect individual differences: A number of educators emphasized the need to recognize and embrace children's distinct peculiarities.

To effectively address varying levels of understanding and participation among children during early childhood inquiry learning sessions, educators generally suggest the following: flexibility and diversification in presentation methods; building confidence and reinforcement; understanding and respecting individual differences; and responding to all children regardless of their levels.

Research Question nine: What are the most important suggestions and recommendations for overcoming the challenges that early childhood educators encounter? The most significant suggestions and ideas to address the challenges faced by early childhood educators can be summarized as follows, based on their responses:

1. Changing the time and activities to better fit the children's skills and levels was the suggestion made by one of the educators.
2. Play-based confidence-building and positive reinforcement: A number of educators stressed the value of play-based confidence-building and positive, efficient reinforcement.
3. Diversify instructional approaches: According to one of the educators, children benefit from and enjoy learning more when instructional approaches are varied.
4. Curriculum simplification: An educator proposed making the curriculum less complex and more straightforward, particularly at the beginning.
5. Providing resources and capabilities: A number of factors suggest that, in order to carry out tasks successfully, the required resources and capabilities must be provided.
6. Learning to develop creative activities: An educator recommended that students learn how to use their artistic and sensory faculties to create unique activities.

7. National curriculum training: An educator emphasized the significance of receiving thorough training on the national curriculum in order to comprehend all of its requirements.
8. Read and research curriculum development: An educator recommended going over all the material pertaining to creating the national curriculum.
9. Organize training sessions: To improve educators' productivity, an educator proposed organizing training sessions.
10. Save time and space: An educator brought up the point that in order to execute plans successfully, time and space must be saved.
11. Consider individual differences: An educator emphasized the need to consider individual variations among students.

On the whole, the majority of the suggestions emphasized the need to give educators the required tools and resources, reset schedules and activities, streamline the curriculum, vary teaching approaches, provide educator training, boost children's self-esteem, and recognize their unique differences.

9. EXPLAINING AND INTERPRETING THE FINDINGS

It was discovered that there were benefits and advantages to the inquiry learning strategy; however, there were also numerous difficulties in implementing it in early childhood education. The main issues raised by educators are the scarcity of time for activities, the difficulty of addressing children's individual differences, the unavailability of the required materials and resources, and the challenge of getting children to participate and share their thoughts.

The findings also suggest that early childhood educators have a moderate level of difficulty when using the inquiry strategy included in the developed national curriculum. Although early childhood still faces numerous challenges.

The study's findings, which outline the primary challenges to the adoption of the inquiry strategy in early childhood education, are consistent with those of several other research studies.

The results of the current study demonstrate that the lack of time available to implement activities is one of the most significant problems, are similar to Odegaard (2016) who listed time constraints as one of the primary challenges. It is in line with Kim and Bolger (2017), who found that one of the greatest obstacles educators face when using the inquiry strategy is managing time restrictions.

The findings align with Al-Muhanna (2020), who suggested that the utilization of the inquiry technique is hindered by individual variations among children. This is consistent with the present study's findings regarding how challenging it might be to cope with children's distinctive characteristics. Fitzgerald, Danaia, and McKinnon (2019) also demonstrated that one of the biggest obstacles educators face when using this method is addressing children's distinctive characteristics.

The findings are in line with those of Al-Issa (2019) and Capps and Crawford (2013) who found that implementing the inquiry method might be difficult when the required tools and resources are unavailable. The findings were corroborated by Engeln, Euler, and Maass (2013), who found that one of the main barriers to the successful implementation of the inquiry strategy in the classroom is a lack of funding and resources.

Even though the current study did not find statistically significant differences in the degree of challenges due to years of experience or training, the educators indicated that experience and training helped them. It was also evident from the results that there are no statistically significant differences in the degree of challenges due to years of experience or training to carry out the plan more effectively. This is somewhat in line with the findings of Al-Hindal and Al-Daihani (2016), which suggested that educators' inexperience makes it difficult to put the technique into practice. It is in line with Ramnarain and Hlatswayo (2018), which showed that educators with greater training and experience were better equipped to handle the difficulties of implementing the inquiry strategy.

Nonetheless, there were statistically significant variations between the bachelor's degree and bachelor's diploma in terms of the difficulties associated with the course material based on academic qualifications. Depending on the academic qualifications, there are statistically significant variations in the educational content difficulties between master's degrees and master's diplomas. In other words, some people benefited from the academic degree, while others did not significantly benefit from it. This outcome is in line with Al-Sayyar (2022) observations about the significance of training in modern teaching techniques.

The findings are also in line with Gillies and Nichols (2015), who discovered that educators with more advanced qualification degrees were better equipped to use the inquiry technique and get beyond its obstacles. Notwithstanding these difficulties, the current study unequivocally shows that educating early children involves the activation of the inquiry technique.

This is in line with the advantages of inquiry-based learning that (Meirbekov & Salikhanova, 2021) discussed, including how it helps children become more curious, creative, and proficient problem solvers. It is in line with Eckhoff (2017), who highlighted the benefits of using the inquiry technique while instructing early children, as it was discovered to improve their capacity for creativity and critical thinking.

Numerous suggestions have been presented to address the issues, including changing the schedule and activities, providing educators with more tools and resources, organizing teacher training sessions, and developing new ways to inspire children.

Despite these difficulties, every teacher attested to the clear use of the inquiry technique in the instruction of early children. This suggests that female educators worked very hard to overcome obstacles and implement this technique in the classroom.

In general, it is evident that the inquiry learning strategy holds significant potential in educating young children; however, there is a persistent need to provide the necessary support and resources to teachers, to train them continuously, to consider individual differences among children, and to manage time effectively in order to achieve the maximum benefit from this strategy.

10. CONCLUSION

This study provided valuable insights into the challenges faced by early childhood educators in implementing the inquiry strategy within the developed national curriculum. The findings reveal that educators encounter moderate levels of implementation challenges, including limited time allocation, difficulty addressing individual differences among children, inadequacy of necessary resources, and challenges in motivating children's participation.

The research identified statistically significant differences in content-related challenges based on academic qualification, highlighting the importance of higher education preparation and continuous professional development. Despite these challenges, educators remain committed to implementing inquiry-based approaches, recognizing their importance in fostering children's curiosity, creativity, and critical thinking skills.

The study contributes to the literature on inquiry-based learning in early childhood education by providing context-specific evidence that aligns with international research trends. The findings emphasize that successful implementation requires comprehensive support systems, including adequate resources, enhanced educator preparation, and ongoing professional development opportunities.

The research affirms that inquiry-based learning holds significant promise for early childhood education, but its successful implementation depends on providing educators with the necessary support and resources to overcome existing challenges and maximize educational benefits for young learners.

11. RECOMMENDATIONS

A series of suggestions may be made to enhance the use of the inquiry learning technique in early childhood based on the prior findings:

1. Develop a comprehensive training program by creating specialized training courses on the inquiry learning technique for educators, emphasizing the applied and practical components of instruction, and holding regular workshops to facilitate teacher-to-teacher experience sharing.
2. Restructure the activity schedule: this involves adding flexible times to the plan to allow for inquiry activities as well as assessing and changing how time is distributed among the activities to meet the needs of the strategy.
3. Strengthen capabilities and resources: by supplying the equipment and supplies required to conduct inquiries, providing instructional equipment that facilitates inquiry-based learning, and outfitting classrooms in accordance with the strategy's specifications.
4. Develop plans to address individual differences by educating educators about diversified teaching techniques, creating inquiry-based games with varied levels of complexity to accommodate children's diverse skill levels, and providing extra assistance to children facing difficulties in implementing them.
5. Enhance children's motivation skills: through training teachers on methods of motivation and arousing curiosity in children. Develop engaging inquiry activities relevant to children's interests. Encourage cooperative learning and active participation of children.
6. Strengthen cooperation between teachers and parents: Educate parents about the importance of the inquiry learning strategy. Involve parents in some home inquiry activities. Provide workshops for parents on how to support inquiry learning at home.
7. Develop an appropriate evaluation system: design evaluation tools that suit the nature of inquiry learning. Train teachers to use alternative assessment methods. Continuously document and analyze learning outcomes to improve practices.
8. Enhance administrative support: offer the administrative and logistical help required to carry out the plan. Allocate enough funds to cover the cost of training and resources. Encourage exploration and creativity as a culture throughout the school. In order to enhance their methods, educators should be encouraged to perform applied research, engage in collaborative research to carry out effectiveness assessment studies of the inquiry approach.
9. Evaluate and develop curricula: Examine course materials to ensure they align with the inquiry-based learning approach. Create policies and procedures to assist educators in implementing the strategy across various subjects.

These suggestions are intended to alleviate the challenges and enhance the advantages of the inquiry-based learning approach in the early years. The strategy's effectiveness will improve, and its educational goals will be achieved if it is implemented thoughtfully and cohesively.

Funding: This study received no specific financial support.
Institutional Review Board Statement: The Ethical Committee of the Imam Abdul Rahman bin Faisal University, Saudi Arabia has granted approval for this study on 4 June 2024 (Reference No. RB-2024-28-453).
Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.
Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

REFERENCES

Aditomo, A., & Klieme, E. (2020). Forms of inquiry-based science instruction and their relations with learning outcomes: Evidence from high and low-performing education systems. *International Journal of Science Education, 42*(4), 504–525. https://doi.org/10.1080/09500693.2020.1716093

Adnan, G., Zulfikar, T., Armia, M. S., Gade, S., & Walidin, W. (2021). Impacts of inquiry learning model on students' cognitive and critical thinking ability. *Cypriot Journal of Educational Sciences*, *16*(3), 1290–1299. https://doi.org/10.18844/cjes.v16i3.5851

Al-Ajlan, A. S. (2018). The effect of inquiry strategies on student engagement in science classrooms. *Journal of Educational Research*, *25*(2), 123–135.

Al-Dehani, F. A., & Al-Hindal, H. M. (2016). *Modern teaching strategies in early childhood education.* Kuwait: Kuwait University Press.

Al-Eisi, H. A. (2019). *Challenges in implementing inquiry-based curricula in early childhood education.* Cairo: Dar Al-Fikr.

Al-Essa, A. M. (2019). *Challenges facing early childhood educators in implementing inquiry-based strategies.* Riyadh: King Saud University Press.

Al-Ghaidani, N. (2023). Using the inquiry strategy in teaching social studies to develop metacognitive skills among second-grade female students in the Kingdom of Saudi Arabia. *Arab Journal of Science and Research Publishing*, *12*(3), 54–98.

Al-Ghamdi, N. A. (2024). Challenges of teaching a kindergarten child using the inquiry strategy from the teachers' point of view. *Journal of Arts, Literature, Humanities and Social Sciences*, *100*, 124–135.

Al-Harithi, M. S. (2019). The effect of using the cooperative inquiry strategy on developing number sense skills among fifth grade students. Master's Thesis. Ministry of Education, Bisha University, College of Education.

Al-Hindal, D., & Al-Daihani, M. (2016). The extent of using the inquiry strategy in teaching science in primary schools: A comparative study between general education schools and intellectual education schools. *Journal of Educational Sciences*, *24*(2), 349–384.

Al-Issa, M. A. (2019). Evaluating the extent of science teachers' familiarity with the steps of scientific inquiry in teaching science and the obstacles they face from their point of view. *Educational Journal*, *12*(68), 423–453.

Al-Muhanna, M. S. (2020). Challenges of applying cooperative learning strategy in early childhood. *Journal of Scientific Research in Education*, *21*(7), 215–247.

Al-Nashif, H. (2014). *Preparing the Arab child to read and write.* Beirut, Lebanon: Dar Al-Fikr.

Al-Otaibi, A. M. (2020). The effectiveness of using the investigation strategy in developing children's skills from the point of view of government kindergarten teachers. *Journal of Educational and Social Studies, Helwan University*, *26*(3), 97–130.

Al-Sayyar, M. Y. (2022). Teachers' attitudes toward using the inquiry strategy and obstacles to its application in early childhood. Master's Thesis. King Saud University.

Al-Wahar, A. A. (2016). *Challenges facing early childhood educators in implementing inquiry-based learning.* Amman, Jordan: Dar Al-Fikr.

Al-Zahrani, E. M. (2014). The importance of the primary stage and the child's personality traits. *Journal of Childhood and Education*, *22*(6), 13–40.

Avsec, S., & Kocijancic, S. (2016). A path model of effective technology-intensive inquiry-based learning. *Journal of Educational Technology & Society*, *19*(1), 308-320.

Avsec, S., Rihtarsic, D., & Kocijancic, S. (2014). A predictive study of learner attitudes toward open learning in a robotics class. *Journal of Science Education and Technology*, *23*, 692-704. https://doi.org/10.1007/s10956-014-9496-6

Black, A. L. (2019). Exploring the challenges and benefits of inquiry-based learning for elementary students. *Journal of Instructional Pedagogies*, *22*, 45–59.

Blevins, K. (2017). Kindergarten teachers' understanding of the elements of implementing inquiry-based science instruction. Doctoral Dissertation, Capella University, USA.

Brady, M. (2019). *Inquiry-based learning science curriculum for kindergarteners.* Capstone Project No. 307. Hamline University.

Capps, D. K., & Crawford, B. A. (2013). Inquiry-based professional development: What does it take to support teachers in learning about inquiry and nature of science? *International Journal of Science Education*, *35*(12), 1947–1978. https://doi.org/10.1080/09500693.2012.760209

Capraro, R. M., Capraro, M. M., Scheurich, J. J., Jones, M., Morgan, J., Huggins, K. S., . . . Han, S. (2016). Impact of sustained professional development in STEM on outcome measures in a diverse urban district. *The Journal of Educational Research, 109*(2), 181–196. https://doi.org/10.1080/00220671.2014.936997

Chen, J., Wang, M., Kirschner, P. A., & Tsai, C.-C. (2018). The role of collaboration, computer use, learning environments, and supporting strategies in CSCL: A meta-analysis. *Review of Educational Research, 88*(6), 799–843. https://doi.org/10.3102/0034654318791584

Chu, S. K. W., Reynolds, R. B., Tavares, N. J., Notari, M., & Lee, C. W. Y. (2021). *21st century skills development through inquiry-based learning: From theory to practice*. Cham, Switzerland: Springer International Publishing.

Creswell, J. W. (2014). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (5th ed.). Upper Saddle River, NJ: Pearson/Merrill Prentice-Hall.

De Jong, T., Sotiriou, S., & Gillet, D. (2014). Innovations in STEM education: The Go-Lab federation of online labs. *Smart Learning Environments, 1*(1), 3. https://doi.org/10.1186/s40561-014-0003-6

Duran, M., & Dökme, İ. (2016). The effect of the inquiry-based learning approach on students' critical-thinking skills *Eurasia Journal of Mathematics, Science and Technology Education, 12*(12), 2887–2908. https://doi.org/10.12973/eurasia.2016.02311a

Eckhoff, A. (2017). Partners in inquiry: A collaborative life science investigation with preservice teachers and kindergarten students. *Early Childhood Education Journal, 45*(2), 219–227. https://doi.org/10.1007/s10643-015-0769-3

Engeln, K., Euler, M., & Maass, K. (2013). Inquiry-based learning in mathematics and science: A comparative baseline study of teachers' beliefs and practices across 12 European countries. *ZDM – Mathematics Education, 45*(6), 823–836. https://doi.org/10.1007/s11858-013-0507-5

Ergazaki, E., Liouta, A., Koleza, E., & Psycharis, S. (2013). Inquiry-based learning in non-conventional educational settings. *Themes in Science and Technology Education, 6*(1), 69–82.

Eti, I., & Sigirtmac, A. (2022). Developing inquiry-based science activities in early childhood education: An action research. *International Journal of Research in Education and Science, 7*(3), 785–804.

Fadil, J., & Dalo, M. (2014). Challenges of using cooperative learning strategy in early childhood: A qualitative study on a sample of early childhood teachers. *Journal of Childhood Studies, 17*(58), 75–98.

Fitzgerald, M., Danaia, L., & McKinnon, D. H. (2019). Barriers inhibiting inquiry-based science teaching and potential solutions: Perceptions of positively inclined early adopters. *Research in Science Education, 49*(2), 543-566. https://doi.org/10.1007/s11165-017-9623-5

Gatt, S., & Zammit, M. (2017). Challenges faced by female teachers in implementing inquiry-based learning in early childhood education. *International Journal of Early Years Education, 25*(2), 145–158.

Gillies, R. M., & Nichols, K. (2015). How to support primary teachers' implementation of inquiry: Teachers' reflections on teaching cooperative inquiry-based science. *Research in Science Education, 45*, 171-191. https://doi.org/10.1007/s11165-014-9418-x

Gómez, R. L., & Suárez, A. M. (2020). Do inquiry-based teaching and school climate influence science achievement and critical thinking? Evidence from PISA 2015. *International Journal of STEM Education, 7*(1), 43. https://doi.org/10.1186/s40594-020-00240-5

Goodall, N. C. (2017). Exploring the use of fictional film as a trigger to enquiry based learning. Doctoral Dissertation, Open University, United Kingdom.

Gu, X., Chen, S., Zhu, W., & Lin, L. (2015). An intervention framework designed to develop the collaborative problem-solving skills of primary school students. *Educational Technology Research and Development, 63*, 143-159. https://doi.org/10.1007/s11423-014-9365-2

Guido, M. (2017). *Inquiry-based learning: Definition, benefits & strategies. TeachThought.* Retrieved from https://www.teachthought.com/pedagogy/inquiry-based-learning/

Gumilar, I., Sumantri, M. S., & Subandowo, D. (2019). The effect of open inquiry learning model on students' creative thinking skills. *International Journal of Instruction*, *12*(1), 143–156.

Kim, D., & Bolger, M. (2017). Analysis of Korean elementary pre-service teachers' changing attitudes about integrated STEAM pedagogy through developing lesson plans. *International Journal of Science and Mathematics Education*, *15*, 587-605. https://doi.org/10.1007/s10763-015-9709-3

Kyza, E. A., & Georgiou, Y. (2018). Scaffolding augmented reality inquiry learning: The design and investigation of the TraceReaders location-based, augmented reality platform. *Interactive Learning Environments*, *27*(2), 211-225. https://doi.org/10.1080/10494820.2018.1458039

Lazonder, A. W., & Harmsen, R. (2016). Meta-analysis of inquiry-based learning: Effects of guidance. *Review of Educational Research*, *86*(3), 681-718. https://doi.org/10.3102/0034654315627366

Lincoln, A. (2019). Can a blended learning environment enhance teaching and learning in large heterogeneous first-year classes?: A study in a private higher education institution. Doctoral Dissertation, Queen's University, Belfast.

Liu, C., Bano, M., Zowghi, D., & Kearney, M. (2021). Analysing user reviews of inquiry-based learning apps in science education. *Computers & Education*, *164*, 104119. https://doi.org/10.1016/j.compedu.2020.104119

Mackenzie, T. (2016). *Dive into inquiry: Amplify learning and empower student voice*. United States: EdTechTeam Press.

Markant, D. B., Ruggeri, A., Gureckis, T. M., & Xu, F. (2016). Enhanced memory as a common effect of active learning. *Mind, Brain, and Education*, *10*(3), 142-152. https://doi.org/10.1111/mbe.12117

McComas, W. F. (2016). *Principles and practices of science education: A guide for teachers and practitioners* (2nd ed.). New York: Routledge.

Meirbekov, A., & Salikhanova, Y. (2021). Inquiry-based learning: Strategies and benefits. *KazNU Bulletin, Pedagogical Series*, *67*(2), 18-26.

Ministry of Education. (2018). *National curriculum framework*. Riyadh, Saudi Arabia: Ministry of Education.

Muimongkol, S. C., Subramaniam, K., & Wickstrom, C. D. (2022). Dimensions and orientations of pre-service early childhood teachers' conceptions of teaching science. *Early Childhood Education Journal*, *50*(1), 145-156. https://doi.org/10.1007/s10643-020-01146-1

Nassar, H. M. (2019). The effectiveness of using the cooperative inquiry strategy in developing biological scientific culture and cooperative behaviors among hyperactive kindergarten children. Unpublished Master's Thesis. Alexandria University, Faculty of Early Childhood, Alexandria, Egypt.

National Transformation Program. (2016). *National transformation program 2020: Delivering Saudi Arabia's vision 2030*. Kingdom of Saudi Arabia: Council of Economic and Development Affairs.

Nollmeyer, G. E., Spielman, S. E., & Stains, M. (2019). Identifying and addressing obstacles to inquiry-based instruction in elementary science. *International Journal of STEM Education*, *6*(1), 1-14.

Odegaard, M. (2016). *Science education in early childhood: Inquiry-based approaches for young children*. Oslo: University of Oslo Press.

Patten, M. (2012). *Understanding research methods*. United States: Pyrczak Publishing.

Pedaste, M., Mäeots, M., Siiman, L. A., De Jong, T., Van Riesen, S. A. N., Kamp, E. T., . . . Tsourlidaki, E. (2015). Phases of inquiry-based learning: Definitions and the inquiry cycle. *Educational Research Review*, *14*, 47-61. https://doi.org/10.1016/j.edurev.2015.02.003

Ramnarain, U., & Hlatswayo, M. (2018). Teacher beliefs and attitudes about inquiry-based learning in a rural school district in South Africa. *South African Journal of Education*, *38*(1), 1-10.

Ramnarain, U. D. (2014). Teachers' perceptions of inquiry-based learning in urban, suburban, township and rural high schools: The context-specificity of science curriculum implementation in South Africa. *Teaching and Teacher Education*, *38*, 65-75.

Salama, M. H. (2017). *Exploration techniques in child education*. Cairo: Dar Al-Fikr Al-Arabi.

Scott, D. M., Smith, C., Chu, M.-W., & Friesen, S. (2018). Examining the efficacy of inquiry-based approaches to education. *Alberta Journal of Educational Research*, *64*(1), 35-54.

Shukur, A. S. (2019). *Inquiry-based learning and its impact on scientific thinking in early childhood*. Baghdad, Iraq: Dar Al-Ma'arif.

Siantuba, I. P., Manalu, D. C., & Simanjuntak, M. P. (2023). The effect of inquiry-based learning on student engagement in early childhood education. *International Journal of Multicultural and Multireligious Understanding*, *10*(1), 45–53.

Suárez, Á., Specht, M., Prinsen, F., Kalz, M., & Ternier, S. (2018). A review of the types of mobile activities in mobile inquiry-based learning. *Computers & Education*, *118*, 38-55. https://doi.org/10.1016/j.compedu.2017.11.004

Subramaniam, P., & Muimongkol, N. (2022). Teachers' perceptions of inquiry-based learning in early childhood education. *Early Childhood Education Journal*, *50*(3), 345–356.

Tsaliki, E., Pnevmatikos, D., & Kariotoglou, P. (2022). Promoting inquiry-based learning in early childhood science education: Teachers' views and practices. *European Early Childhood Education Research Journal*, *30*(4), 521–535.

Zaitoun, A. K. (2014). *Teaching science: Concepts and applications of contemporary strategies.* Amman, Jordan: Dar Al Shorouk.