Volume: 4 / Issue: 1 e-ISSN:2718-0107

Base for Electronic Educational Sciences

www.bedujournal.com

Tasarım: İsmail Aslan

Base for Electronic Educational Sciences (BEDU)

E-ISSN: 2718-0107

Volume 4/1 March

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I would like to thank my colleagues who have contributed to the journal with their articles.

Prof. Dr. Ahmet AKKAYA
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Base for Electronic Educational Sciences (BEDU)

E-ISSN: 2718-0107

Indexed by

ACAR Index, Modern Language Association (MLA)

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Volume 4/1 March 2023
Total Number of Issues 6
Elaziğ / Turkey

Base for Electronic Educational Sciences (BEDU)

E-ISSN: 2718-0107

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Elaziğ / Turkey

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E-ISSN: 2718-0107

Volume 4/1 March

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Available online at http://www.bedujournal.com/

BASE FOR ELECTRONIC EDUCATIONAL SCIENCES

ISSN: 2718-0107

Base for Electronic Educational Sciences, 4(1), 1-14; 2023

Investigation of Special Education Teacher Candidates' Problem-Solving Skills and Their Views on Mathematical Creativity

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APA Citation:
Koç Koca, A. (2023). Investigation of Special Education Teacher Candidates' Problem-Solving Skills and Their Views on Mathematical Creativity. *Base for Electronic Educational Sciences, 4*(1), 1-14.
Submission Date: 11/10/2022
Acceptance Date: 13/03/2023

Abstract

Mathematical creative thinking and problem-solving skills are essential for success in the 21st century. The present study investigated 43 special education teacher candidates' creative processes by examining their mathematical problem-solving skills and, later, by interviewing them. This qualitative case study revealed the creative process stages of the respondents while they worked on mathematical problems and examined how they achieved original ideas and strategies. The results showed that pre-service teachers did not produce enough original solutions to an arithmetic mathematical problem. Teacher candidates and teachers play a vital role in developing students' creative thinking skills in the teaching process. For this reason, the results show that it is essential to create, develop, and use learning activities that support the creativity of teacher candidates.

Keywords: Creative thinking, mathematical problem-solving, special education teachers, mathematical creativity.

Introduction

Problem solving, creative thinking, and mathematical creativity are all essential aspects of pure and applied mathematics education. These skills are needed by individuals who will one day research, criticize, question, and use creative thinking skills in school or future work. Creativity is a skill that every individual possesses and can take place in every aspect of daily life; it is involved in all mental and emotional processes and is fundamental to all aspects of development in many areas of life. In this process, new relationships are created by combining unrelated ideas. For this reason, creativity is a skill that is required for all kinds of occupations. Creativity is a solution individuals can use to be sensitive to inadequacies, problems, and incompatibilities—and to overcome difficulties.

Experts in the fields of psychology, design, education, and art are at the forefront of the researchers studying creativity in terms of personality. Some researchers working on this issue include Torrance, Lowenfeld, Ausubel, Guilford, Maslow, Adarno, Getzels, and Landua. Lowenfeld, in "Creative and Mental Growth," described creativity as a basic instinct that all humans have from birth and as something that makes us human (Lowenfeld, 1947). Torrance (1972) emphasized that creativity comprises divergent thoughts consisting of subcomponents such as fluency, flexibility, and originality. According to the author, fluency is the number of ideas produced or solutions that can be generated to deal with a problem in a given period. Flexibility is the ability to switch between approaches quickly. Originality involves distancing oneself from mediocrity or certain thoughts. Therefore, original ideas are based on unique, unexpected, unconventional, new, creative, original, and remarkable contexts or situations. Because of this, creativity, the personal, potential power that is more or less likely to emerge in a given situation—depending on the circumstances—differs from person to person.

Since creativity is related to the day-to-day and involves solving daily life problems, it is also related to mathematics. Since there is no universally accepted definition of creativity, there is also no agreed-upon definition of creativity in mathematics (Haavold, 2013). For this reason, various researchers define creativity in mathematics in different ways. According to Sriraman (2004), creativity in mathematics is the process of providing unusual (unconventional), precise, and deep solutions to a given problem regardless of complexity. Chamberlin and Moon (2005) and Shriki (2010) stated that when mathematical creativity is developed, a non-standard solution is created for a problem that can be solved using an algorithm. When these definitions are examined, it is understood that creativity in school mathematics deals with problem solving and problem posing; regarding creativity in mathematics, there is a growing consensus that problem-posing and problem-solving processes are central to creativity (Silver, 1997).

Today, practitioners are continuously improving several education methods in mathematical creativity and problem-solving studies in mathematics. Problem-solving and inquiry-based creative problem-solving processes enable students to produce and use new ideas. Therefore, problem-solving and mathematical creativity have been identified as central themes in mathematics education, and the importance of problem-solving and constructing activities that develop creative thinking skills in mathematics education is gradually increasing (Silver and Cai, 1996; NCTM, 2000). Creativity is not a momentary situation; instead, it is a skill that sometimes requires a controversial, critical, effortful thought process and develops with age (Sawyer, 2011). Due to its dynamic nature, to develop creativity in mathematics teaching, students should be given problems with multiple solutions that increase the flow of mathematical ideas, flexible thinking, and originality in their answers.

Creativity in mathematics includes analyzing given problems from different angles and solving problems in original, creative, and appropriate ways. This process develops by noticing the similarities and differences between seemingly independent fields, understanding known results more profoundly, discovering new mathematical concepts and realizing what is important in mathematics (Chamberlin and Moon, 2005; Chamberlin and Payne, 2022; Haylock, 1987; Laycock, 1970).

The development of creativity and problem-solving skills in mathematics in teaching the subject necessitates examining teachers' perspectives on the issue because the views and abilities of active and pre-service teachers are essential for further progress. In this study, the opinions of pre-service special education teachers on creativity in general and, more specifically, mathematical creativity, were collected and observed. Pre-service teachers were given a mathematical problem requiring creative thinking skills, and their problem-solving processes were subsequently examined. The investigation continued by taking the pre-service teachers' opinions on the subject. When the literature is reviewed, it can be seen that mathematical creativity studies mainly aim to examine students' creativity at different levels (Contreras, 2013; Tabach and Friedlander, 2013). Taking into account the critical role of teachers in the development of creativity, many studies examining teachers' views on creativity, their skill levels, and the development of creativity-related skills have also been conducted. Lev-Zamir and Leikin's study (2011), in which teachers' understanding of creativity was examined and put forward in a model, can be an example of the recent research on mathematical creativity in schools. The authors asked pre-service teachers to express their thoughts about components of creativity such as fluency, flexibility, and originality. Therefore, attempts have been made to reveal the characteristics of the creative individual, the student, and the creative mathematics teacher in mathematics.

Although various studies have been carried out on creativity in mathematics, studies about teacher candidates are limited. Undoubtedly, any new research on creativity in mathematics instruction will contribute to the literature. However, studies conducted with special education teachers are also quite limited. Examining the opinions of teachers who will work in this field on creativity in mathematics is very important in determining and addressing the mathematical needs of students in need of special education. Therefore, in this study, the views of special education teacher candidates on creativity were examined. The methods used by the pre-service teachers in the creative mathematics problems they solved contributed to a more detailed examination of teachers' views on creativity. Considering the above, the main research questions are: "What are the opinions of special education preservice teachers on mathematical creativity, and what are their creative problem-solving skills?"

Method

The case study method, one of the ways to conduct qualitative research, was used to examine pre-service teachers' creativity in solving mathematical problems and their views on creativity in mathematics. This method provides an opportunity to deeply explore one or more cases, phenomena, or events using a limited number of samples (Yıldırım and Şimşek, 2005).

Participants

The study group consisted of 43 pre-service teachers studying in their 3rd (22 candidates) or 4th (21 candidates) year in the Special Education Teaching Program at a state university in Türkiye. The literature indicates that students below a certain level of proficiency with insufficient mathematical knowledge and skills may

not be able to demonstrate their mathematical creativity because they do not have the adequate knowledge and experience to show their creative thinking skills (Haavold, 2013; Mann, 2004). For this reason, we ensured that the academic achievement levels of the pre-service teachers were at a minimum moderate and that respondents voluntarily participated in the study. To determine the participants' achievement levels, the opinion of their Mathematics Teaching in Special Education course instructor was consulted, and the relevant lecture notes were taken into account regarding their academic achievement. In addition, we ensured that the grade-point averages of the participants were all above 2.5, according to the 4-point scale. Therefore, the purposive sampling method was used in selecting the participants who were coded as T1, T2, T3, and so forth.

Data collection

The data were obtained by giving two forms to the teacher candidates, each of which consisted of interview-type questions. In the first form, six open-ended questions were asked of respondents to elicit their views on general creativity and mathematical creativity. The questions are as follows:

1. What do you think about creativity?
2. What are the characteristics of creative people?
3. How would you explain mathematical creativity?
4. Do you think people who know mathematics well also have mathematical creativity?
5. Are experience and talent important in mathematical creativity?
6. Can mathematical creativity be developed? How?

In the second interview phase, pre-service teachers were asked to answer the following math question:

Question: How many times does the number "1" occur in the sequence of natural numbers from 1 to 500? (Hershkovitz et al., 2009)

The participants were given 20 minutes to answer the question. Many of the pre-service teachers were still working on a method to solve the problem after the time was up. Afterward, the following questions were posed, and the respondents were asked to detail the process they had used in solving this problem.

1. Do you understand the problem?
2. How did you decide on a way to solve the problem?
3. Do you think your solution(s) are original?
4. Did you have difficulty solving the problem?

All the questions used in the interviews were finalized by submitting them to two math education experts and one special education consultant for review. In this way, we ensured that the semi-structured interview forms were carefully examined in terms of suitability for purpose, language, expression, and intelligibility criteria. Using the experts' opinions, the forms were prepared to ensure further clarity and comprehensibility and made ready for dissemination.

Data analysis

The systematic analysis method proposed by Wolcott (1994) was used to analyze the data obtained from the semi-structured interviews. Systematic analysis is a qualitative data analysis method in which data are presented with direct quotes

from the participants' answers. In addition, the data obtained using the content analysis method in systematic analysis can be shown using themes, categories, and codes. The data obtained in this study were examined with the help of codes and categories.

The data obtained from the interview form, through which the pre-service teachers' opinions on creativity and mathematical creativity were gathered, along with the data obtained from the semi-structured interview form used in the second step of the research, were analyzed using the descriptive analysis method. Thus, we ensured that the data obtained were described as thoroughly and carefully as possible.

The analysis was made in terms of the number of answers to the math question, the methods used in its solution, and the originality of the solutions. The findings were interpreted in line with the model developed by Leikin (2009) to evaluate creativity through multiple production activities. For this purpose, to examine the math problems given to the pre-service teachers more efficiently in terms of creativity indicators, first of all, the problems submitted to each respondent were coded, codes with similar structures were brought together, and themes were subsequently created. Later, for each code, we determined how many students developed a solution for each code category. Each student could see the problems in different categories (flexibility) and interpret original or unusual problems (originality).

In the second form of the study, the answers of the pre-service teachers to the mathematics question used in the examination of their mathematical creativity were analyzed by two researchers. Afterward, the codes obtained were examined by these researchers, and the items on which a consensus was reached and disagreements were determined. The percentage of consensus between encoders was calculated using the following formula: Reliability = Consensus/(Consensus + Disagreement) × 100, suggested by Miles and Huberman (1994). A rate of 91% was accepted as reliable for this study.

Results and Comments

1. Pre-service teachers' views on creativity and mathematical creativity

This section presents the results obtained from the prospective teachers' views on creativity and mathematical creativity. Later, findings regarding the analysis of the mathematical problem they solved regarding creativity in mathematics are described under the sub-headings.

Pre-service teachers' opinions on creativity

The pre-service teachers' views on creativity were subjected to descriptive analysis and examined under five themes and seven codes. The themes and codes obtained are shown in Table 1.

Table 1. Pre-service teachers' views on creativity

Theme	Code	Number of pre-service teachers
Meaning	Making sense of situations in life	2
	Giving direction to events by making sense of those events	5
Innovation	Presenting new situations	12
Productivity	Revealing or creating a product	15
Originality	Developing original ideas or concepts	15
	Thinking of something new before others	13

Problem solving	Developing effective solutions to problems encountered in daily life	7

When Table 1 is examined, the pre-service teachers define "creativity" as "meaning, innovation, productivity, originality, originality, problem solving." Some prospective teachers' views on or definitions of creativity are presented below.

Creativity is the creation of a product to make one's life easier (T9).

It is the ability to think differently from everyone else in any subject or event and to apply it (T32).

Creativity is finding fast and effective solutions to daily life problems. People with this skill produce original solutions to problems (T4).

Thinking differently from everyone else and developing different products can explain creativity (T18).

It is the design and creation of new products that did not exist before. But it also includes the development of previous products and the creation of different designs. Creative people think in a convergent to divergent way (T22).

Pre-service teachers' opinions on the characteristics of creative people

When the pre-service teachers' views on the characteristics of creative people were examined, they exhibited a wide variety of opinions. In the descriptive analysis made in line with the answers given by the respondents, three themes and 18 codes emerged, as seen in Table 2.

Table 2. Pre-service teachers' opinions on the characteristics of creative people

Theme	Code	Number of pre-service teachers
Social characteristics	Being advanced in communication	4
	Living an authentic life	2
	Being useful to society	4
	Being open to innovation	12
	Being curious	13
Innovative breakthroughs	Exhibiting leadership	3
	Being calm	3
	Having their own new ideas	15
	Being a researcher	6
	Advanced fantasy world	7
	Critical thinking	18
	Being practical minded	5
	Enhanced mental ability	17
Intellectual skills	Originality	7
	Developed abstract thinking skills	4
	Having metacognitive thinking skills	6
	Developed analytical thinking skills	6
	Excellence	4

In the analysis of the pre-service teachers' views on the characteristics of creative people, it can be observed that they consider the characteristics that these individuals should have to be in the social characteristics, innovative breakthroughs, and intellectual skills-related categories. Some of the specific respondent views on the characteristics of creative people are presented below.

They have average or above intelligence and produce new ideas outside of general acceptance (T13).

Due to their critical thinking skills, their questioning structure has developed. They analyze events very well and interpret events differently from everyone else (T25).

They produce new solutions to problems by analyzing today's needs. In addition, abstract thinking skills are developed. Their curious nature allows them to be open to new ideas (T1).

They can develop a dream, an idea, or a thought by putting it forward. Their opinions differ from everyone else's. These people can look at things through windows that no one else looks through (T6).

They are individuals who have developed abstract, analytical, and critical thinking skills—and they have no mental limits (T19).

Pre-service teachers' opinions on mathematic creativity

When their views about being creative in mathematics were examined, it was determined that they saw this concept as mathematical ability and thought it should be used in problem-solving skills.

Table 3. Pre-service teachers' opinions on mathematical creativity

Theme	Code	Number of pre-service teachers
Educational transmission	Ability to make sense	3
	Transferable to anyone	8
Originality	Developing new theories in mathematics	14
	Solving new problems	9
	Associating daily life in the context of originality	10
Connecting with different fields	Linking different fields with math	11
Ability	Possessing mathematical ability	18

The data analysis revealed that the pre-service teachers used four themes and seven codes when explaining mathematical creativity. It is interesting to note that some respondents consider mathematical creativity as the ability to "teach mathematics to others" and "transfer mathematical knowledge" (educational transmission theme). Some of their views on mathematic creativity are presented below.

It is the diversification of mathematics in all areas of life to facilitate human life, integrating it into other fields and revealing original products (T1).

It is the development and solution of different mathematical equations with the help of previously developed mathematical equations (T36).

Mathematical creativity is finding your own way in the problem. It requires originality (T3).

In fact, life always consists of 1s and 0s. These and mathematical creativity are necessary for technology that has not yet been developed (T17).

Pre-service teachers' opinions on mathematical creativity with those who are good at mathematics

The pre-service teachers' views on the association between good mathematical knowledge and mathematical creativity were examined. While most found this situation unrelated, a few participants believed it was related. Some of the views regarding this opinion are presented below.

I think knowing math is not a special skill, but mathematical creativity definitely is a skill (T26).

People who are good at math have studied hard. But creativity is innate (T5).

The two are interconnected. People with mathematical creativity are also good at math; therefore, the reverse is also true (T20).

Mathematics is an objective science. Creativity is subjective. I think these two are separate situations and do not affect each other (T38).

People who know and understand mathematics have creative thinking skills. They can develop new theories (T41).

Pre-service teachers' opinions on whether mathematical creativity is an experience or a skill

The respondents answered this question using the codes found in Table 4. The general view is that both constitute mathematical creativity.

Table 4. Pre-service teachers' opinions on whether mathematical creativity is an experience or a skill

Code	Number of pre-service teachers
Both	18
Skill	14
Experience	4
Experience comes first, then skill	2
Skill comes first, then experience	5

Just as the fields of music and painting are talents, so it is in mathematics (T36).

Mathematical creativity is an experience born of skill (T16).

Mathematical creativity is an innate chance (T7).

The ability for mathematical creativity is gained by trying. For this reason, activities that will reveal and develop creativity should be used in education (T43).

Pre-service teachers' opinions on the development of mathematical creativity

The participants stated that mathematical creativity is a phenomenon that can be developed and that it can be employed using different methods. In this respect, they observed that descriptive and formative methods could be used (16 respondents). "*Each skill can be enhanced if handled with a developmental framework; therefore, it should be supported by different applications and adaptations*" (T6*)*. They also emphasized that it should be worked on to develop mathematical creativity (27 respondents). "*Mathematical creativity can be developed through hard work and experience*" (T19*)*. According to some pre-service teachers, mathematical creativity cannot only be developed by developing methods or studying. Several also mentioned that individuals should be given appropriate motivation (7 respondents). "*It can be developed. However, it should be supported by the appropriate environment, appropriate motivation, and adequate arousal*" (T39*)*. In addition to these responses, two pre-service teachers stated that mathematical creativity could not be developed. "*It cannot be developed because it is an innate skill. For this reason, if a person does not have an innate mathematical ability, he cannot do mathematics no matter how hard he studies*" (T18).

2. Findings related to pre-service teachers' mathematical problem-solving skills

After collecting their opinions about creativity and mathematical creativity, the participants were asked the following mathematical problem:

Question: How many times does the number "1" occur in the sequence of natural numbers from 1 to 500? (Hershkovitz et al., 2009).

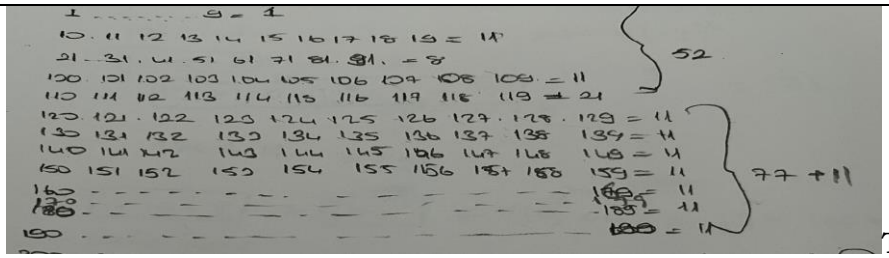
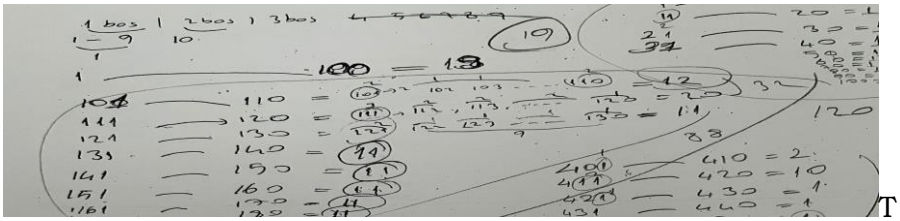
This question aimed to examine their ability to transfer their views on mathematical creativity to the mathematical problem they had solved. Their solutions were evaluated according to the methods used and their originality; the results are presented in Table 5.

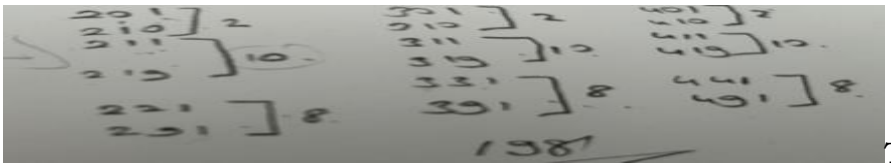
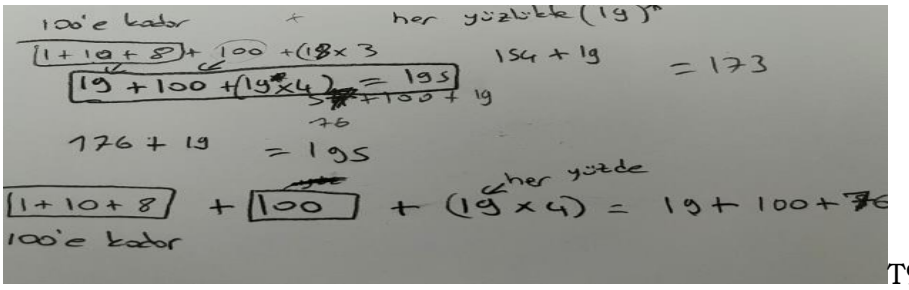
Table 5. Pre-service teachers' solution methods and ranking in terms of originality

Method	Total number	Originality ranking for the method used
Counting from 1 to 500	3	1
Grouping the numbers: 1–100, 101–200, …	7	-
Grouping the numbers: 1–10, 11–20, …	21	9
Irrelevant answers	2	-
Split by digits	3	1
Counting by forming various patterns	7	1

When Table 5 is examined, it can be seen that the respondents used five different methods to solve the mathematics question. They mostly grouped numbers from 1 to 500 by dividing them into small groups. This method also appears in the most original responses. In these novel methods, the correct solutions were accepted as original. Three of the pre-service teachers did their counting by writing all of the numbers from 1 to 500. Using this method, one participant gave an original answer. Some separated the numbers according to their place values and tried to count them one by one. Out of this group, one respondent provided an original answer. Others noticed patterns in the numbers and completed the counting process that way; it was determined that the solution made by one of the respondents using this method was original. Table 6 presents the original solutions of several of the pre-service teachers.

Table 6. Examples of pre-service teachers' original solutions

Method	Original solution
Counting from 1 to 500	 T25
Grouping the numbers: 1–10, 11–20, …	 T17

Split by digits	 T33
Counting by forming various patterns	 T9

When some of the original solutions in Table 6 are closely examined, it can be seen that the teacher candidates demonstrate various thinking skills. These skills differed according to the mathematical thinking levels of the respondents. This case is most evident in the "split by digits" and "counting by forming various patterns" categories.

After the participants had solved the math problem, their opinions were elicited once more with the following question: "Do you understand the problem?"All of the teacher candidates answered this question positively. When asked how they determined a way to solve the problem, they answered the question in the following ways: "by making patterns" (15 respondents) or "counting" (28 respondents). When asked whether their solutions were original, the majority (33 respondents) did not evaluate them as original. On the other hand, although the solution was considered original in the study, T33 stated that her solution was not original. "*If I have made counting errors, the result will not be correct. It was a little difficult to think of the numbers that could be in each digit. I also noticed that a certain pattern emerged. This made my job easier. Maybe this case can make my solution original. But I still think my solution is not original*" (T33*)*. Finally, the respondents were asked whether they had difficulty solving the problem. Twenty-seven participants stated that they had trouble solving it. "*I had a hard time because there were so many numbers. Maybe it would have been easier if I had been given a smaller set of numbers*" (T8). Sixteen respondents related that they had not felt pressure while solving the problem. "*No, I didn't have trouble; I thought about a lot of things while solving it; it was good*" (T42).

Conclusion and Discussion

This study examined preservice special education teachers' views on mathematical creativity and problem-solving skills. Our analyses of the data on "creativity" show that the participants summarize creativity under five themes (Table 1). Most of the opinions fall under the themes of production and originality. This indicates that respondents identify creativity with competencies such as putting forth new ideas or methods, producing original solutions to problems, and producing/thinking about different ways of doing things. These findings are parallel with explanations regarding creativity in the literature. Gunawan et al. (2017) define creativity as being able to think outside of the existing patterns, think critically, and present unconventional ideas to solve problems. Eckhoff (2011) states that most pre-service teachers have views that emphasize creativity as the ability to think in original and creative ways. Jahnke et al. (2017) showed that pre-service teachers from different disciplines view creativity as creating a new and original product and developing a new and different perspective on problems. As such, the opinions given by the teachers in the current study largely overlap with the literature.

When the prospective teachers were asked about the characteristics of creative people, three different categorical themes emerged: social characteristics, innovative breakthroughs, and intellectual skills. The respondents mainly stated that creative people develop critical thinking skills, have their own ideas, and possess developmental skills. These findings support the research results in the literature (Chamberlin and Chamberlin, 2010; Feldhusen, 1997; Karp, 2010; Shayshon et al., 2014; Whitlock and DuCette, 1989; Zain, Sailin and Mahmor, 2022). In this context, Merrotsy (2013) found that the creative personality possesses characteristics such as autonomy, flexibility, preference for complexity, openness to experience, sensitivity, playfulness, tolerance for ambiguity, risk taking or risk tolerance, intrinsic motivation, psychological androgyny, self-efficacy, broad interests, and curiosity. Montgomery et al. (1993) obtained similar results in their study; the authors found that creative people exhibit important characteristics such as imagination, openness to experience, curiosity, intuition, finding ideas, tolerance for uncertainty, independence, innovation, and insight.

Within the scope of the research, the special education teacher candidates' opinions on mathematical creativity were also collected. According to them, those who can use logic, develop new theories in mathematics, and solve new problems easily—and relate them to daily life—display mathematical creativity. In this respect, the findings align with the skills related to logical inferencing and problem solving by revealing mathematical relations that Ervynck (2002) observed in a study on mathematical creativity. They view mathematical creativity as the ability to associate mathematics with different disciplines. Their opinions also indicated that mathematical creativity is equal to mathematical ability. In the literature, several studies include opinions similar to the ones found in our research on mathematical creativity. Those studies concluded that mathematical creativity lies in problem-solving (Bicer, 2021; Sinniah et al., 2022) and problem-posing skills (Sadak et al., 2022; Hidayat and Evendi, 2022). Therefore, the results obtained in the current study are supported by the literature. However, pre-service teachers in other studies mostly specified that mathematical creativity results from skill and experience (Karsenty, 2014; Shayshon et al., 2014).

In this study, the candidate teachers believed that mathematical creativity is a phenomenon that can be developed. In their view, this can be accomplished using different descriptive and formative methods. They also mentioned that every skill could be developed. This belief was also expressed in various studies in the literature (Abraham and Collins, 2011; Sousa and Rocha, 2019).

In the current study, a mathematics question was posed to the teacher candidates. All of the participants answered the question using their own methods. Our analysis revealed that the teacher candidates frequently used five different solution techniques. Among the techniques used, they mainly preferred to arrive at solutions by dividing numbers into small groups. Twelve solutions were accepted as original solutions (Table 6). In the post-problem-solving interviews, all the participants stated that they had tried to solve the question by using patterns or counting when explaining the process they had gone through to solve the problem. The fact that only 12 of the participants reached the correct solution, developing solutions according to principles related to finding patterns or counting, suggests that the participants' creative thinking skills used to solve an arithmetic problem are not at the desired level. Several outcomes from various studies also support this finding. In those studies, pre-service teachers and teachers from different disciplines also experienced pronounced difficulties when they faced mathematical problems that necessitated using their creativity (Hoth et al., 2017; Nadjafikhah et al., 2012).

It is crucial that teacher candidates, as individuals who play an important role in educating generations with higher creative thinking skills, are able to effectively develop student creativity (Diakidoy and Kanari, 1999; Chamberlin and Chamberlin, 2010). A plethora of evidence suggests that creativity can be enhanced with adequate teacher training. Teacher education is an important issue in education research, and developing creativity is an important goal in teacher education. Activities that improve creative and critical thinking skills should be increased in teacher education and integrated into active learning (Gunawan et al., 2019; Leikin, 2011) since this type of activities foster both pre-service teachers' and students' growth in these skill domains.

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Available online at http://www.bedujournal.com/

BASE FOR ELECTRONIC EDUCATIONAL SCIENCES

ISSN: 2718-0107

Base for Electronic Educational Sciences, 4(1), 15-26; 2023

An Overview of Teacher Education Practices: Examples from Four Countries in Three Continents

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APA Citation:
Borhan, E. (2023). An Overview of Teacher Education Practices: Examples from Four Countries in Three Continents. *Base for Electronic Educational Sciences, 4*(1), 15-26.
Submission Date: 27/09/2022
Acceptance Date: 13/03/2023

Abstract

Twenty-first-century has come up with skills that have mandated countries to update their teacher education systems to satisfy contemporary educational needs. Therefore, it is deemed remarkable to bring a comparative perspective on how teachers are trained and the practices in teacher education in different countries to be able to recognize how contemporary teacher competencies are satisfied and examples of improving the quality of teaching. The present study attempts to make a cross-country comparison of teacher education practices in Türkiye and to address contemporary teacher education practices in three countries with reference to those in our country. Accordingly, teacher education systems in Türkiye, the United States, Germany, and Singapore are compared in terms of pre-service teacher selection, pre-service education, and professional recruitment. The findings have yielded some implications for improving the teacher education system adopted in our country. Overall, keeping in mind that no teacher education system is perfect, although the teacher education system in our country shares some aspects with those in the mentioned countries, it has severe deficiencies that need to be addressed. It is believed that the duly implementation of the decisions in the 20th MoNE council meeting and the 2023 Education Vision would encourage a desirable teacher education system in Türkiye.

Keywords: Teacher, comparative teacher education, teacher candidate, pre-service education, professional recruitment

Introduction

It is now accepted that education is the greatest driving force for attaining prosperity. In achieving this ideal, what is expected from an education system - established and developed considering nations' unique social, economic, cultural, and political phenomena - is hidden behind its being a locomotive power raising qualified human resources (Azar, 2011). Indeed, while educational research primarily assesses the quality of education by student achievement, it would be prudent to assert that the phenomenon assessed in the background is, in a sense, teacher qualifications and competencies since the teaching profession is both the influencer of and the affected from educational outcomes (Yenel, 2021). To put it more clearly, teachers are those raised in a particular educational system and only those leading new generations to raise in that educational system with the help of their competencies (e.g., subject-matter knowledge (SMK), critical thinking, role-modeling, motivation, lifelong learning, etc.). In this sense, the teaching profession is characterized by "raising human capital" and being the most strategic part of a school system (Bursalıoğlu, 2019). Therefore, it should be underlined that teaching is accepted as a "professional" job despite contradictory practices in our country (Akdemir, 2013; Akyüz, 2020).

One fundamental condition for attaining prosperity and increasing the efficiency of the education system may be to employ competent teachers. Teacher quality is directly proportional to the quality of the teacher education system. In fact, it is argued that an education system is not a variable that affects school efficiency and student achievement more than a teacher education system and, therefore, training component teachers (Darling-Hammond, 2000). In this sense, it is not surprising that each country attempts to design the best teacher education system according to its own cultural, social, and economic conditions and educational goals.

In general, contemporary teacher education covers theory, practice, and professional development (Randi & Zeichner, 2004). In other words, pre-service teachers are included in a formal teacher education program, receive theory- and practice-based education covering teaching-related and SMK within formal education, and continue professional development programs following recruitment. Nevertheless, the emergence and development of modern teacher education systems can be attributed to the results of many processes and include differences in practice, particularly in our country.

Today, teacher education systems with diverse practices between countries are not immune to change, development, and being influenced by each other. While teacher education aimed to raise low-status and on-the-job-trained teachers within specific patterns in the 19th century, 21st-century skills have become the leading factor in updating education and teacher education systems to meet these competencies (Tutkun & Aksoyalp, 2010). In this regard, it may be remarkable to bring a comparative perspective on how teachers are trained in contemporary education systems, to reveal the practices in teacher education in different countries, and to review examples of increasing teacher quality and to what extent contemporary teacher competencies are satisfied. Thus, the present study attempts to make a cross-country comparison of teacher education practices and to investigate contemporary teacher education practices in Türkiye.

Teacher Education in Türkiye from the Establishment of the Council of Higher Education (CHE) to the Present: Faculties of Education

In 1982, universities undertook teacher education with Legislative Decree No. 41 within the CHE, established with Law No. 2547, but teacher recruitment remained with the Ministry of National Education (MoNE) (Azar, 2011). The law also ordered

to convert 2-year teacher institutes into education academies and 4-year higher teacher education schools into faculties of education (Akyüz, 2020). In 1992, the duration of the 2-year programs was increased to 4 years, and all programs (including classroom education) were incorporated into the faculties of education (Akyüz, 2020). However, the teacher employment gap could not be closed due to the coordination issues between MoNE and universities in the 90s. Hence, the need for teachers was attempted to be met with inappropriate methods such as employing those desiring to be a teacher among all higher education graduates or employing those receiving pedagogical formation in the subsequent years (Baskan & Aydın, 2006).

Since 1997, a series of revisions has been initiated for faculties of education and teacher education, thought to be lacking in quality and quantity. Within the scope of the "Pre-Service Teacher Education Project," launched in 1994 with the cooperation between the CHE and the World Bank, concrete steps were taken for comprehensive changes in faculties of education as a result of the joint efforts of the MoNE, representatives from faculties of education, and the CHE officials in 1998 (Azar, 2011). The changes, thought to be the most appropriate, became as follows: (1) the programs were reconstructed to prevent faculties of education from being academic units working predominantly on "basic science," (2) funds were allocated for many students to receive postgraduate education abroad to satisfy the need for academics in these faculties (Akdemir, 2013), (3) it was attempted to pave the way for training qualified teachers having school experience along with more pedagogical formation courses by creating a practice-oriented system based on faculty-school cooperation (Baskan, 2001), (4) within the idea of increasing compulsory education to 8 years, classroom education was included as a program within the department of elementary education to train teachers to be able to teach more than one subject-matter, (5) non-thesis master's programs (pedagogical formation programs) were offered for those graduating from science and arts programs to satisfy the teacher gap in secondary education (Abazaoglu et al., 2016). Although such a comprehensive transformation in the 90s was criticized in many aspects (Kızılçaoğlu, 2006), the deliverables of the project mentioned above continue to be the fundamental rationale of the idea of educating qualified teachers and the functioning of facilities of education.

In 2006, the relevant institutions of the CHE and the MoNE discussed faculties of education on the grounds of contemporary teacher competencies and European Union (EU) standards and implemented the following prominent changes to the curricula taught in these faculties: (1) the curricula of the programs were restructured as to include SMK, professional teaching skills, and liberal education (with increased rate); (2) faculties were granted initiative to set 25% of the courses to be taught; (3) a new course was included in the curricula, called "community service practices" to encourage students to focus on current social problems and participate in scientific studies; (4) national teacher education was attempted to shape with an understanding of educating intellectual teachers, instead of technician teachers, to adapt to the requirements of contemporary teacher education (YÖK, 2007). However, the reduction of school experience due to department administrations' difficulty finding a practice school can be shown as a negative outcome of these changes. In 2009, the CHE amended pedagogical formation programs within faculties of education, and, interestingly, these programs are still located as a means of teacher education. When it comes to 2020, the CHE transferred its authority to regulating and developing undergraduate teacher education programs, considering the Turkish Qualifications Framework and contemporary competencies of the teaching profession. Thus, all responsibilities and authorities were granted to universities in setting courses, credits, and course

hours for undergraduate teacher education programs on the condition of ensuring teaching SMK, professional teaching skills, and liberal issues (YÖK, 2020).

With numerous changes and efforts for development, an increasing number of faculties of education still respond to the country's teacher education domain in coordination with various organizations affiliated with the MoNE and the CHE. Besides, the curricula implemented in these faculties are often structured around SMK, professional teaching skills, and liberal education together with school experience in all undergraduate teaching programs despite varying weights of course hours, credits, and contents between programs.

In the last 15 years, the project of opening at least one state university in every province has naturally increased the number of faculties of education, raising "quality" concerns in these faculties (Azar, 2011; Akdemir, 2013). As of 2021, there are 95 faculties of education in state and foundation universities, higher than the number of other faculties (YÖK, 2021), which also reveals significant figures in the numbers of those enrolled in and graduated from these faculties. The CHE data demonstrates that the number of new and total students enrolled in faculties of education in the 2020-2021 academic year was 46,631 and 210,912, respectively, while the number of staff per student became 23 in the same academic year. On the other hand, a total of 45,679 students graduated from faculties of education in the 2019-2020 academic year (YÖK, 2021). It can be sound to assert that, based on the said figures and the ever-decreasing recruitment rates, only current students and graduate pre-service teachers can be placed if faculties of education do not give graduates for ten years (Aydın, 2015, as cited in Yenel, 2021). Currently, these statistics reveal that the number of pre-service teachers in Türkiye is superior to that in many countries, but it is promising that these numbers tend to decrease in each passing academic year. The advisory decision adopted in the 19th MoNE Council on the need to reduce the quota for faculties of education and increase the number of teaching staff per student in these faculties (MEB, 2014) and the CHE's decision to set a certain exam ranking threshold to be able to enroll in these faculties in 2016 (YÖK, 2016) has contributed to the strategy of increasing "quality" in faculties of education. For example, while the number of graduate pre-service teachers was 53,395 in the 2018-2019 academic year, 45,679 students graduated from these faculties in the subsequent academic year. Likewise, while the number of students enrolled in faculties of education was 54,871 in the 2019-2020 academic year, it became 46,631 in the subsequent academic year. Yet, the number of academic staff per student in the three academic years between 2018-2021 was recorded as 31, 28, and 23, respectively (YÖK, 2021).

Teacher Education in Four Countries

Across the world, teacher education is often carried out in two stages: undergraduate pre-service education and post-recruitment professional development (Abazaoğlu, 2014), and these two stages are demonstrated as the most significant predictors of teacher quality (Işık et al., 2010). In addition to these two visible stages, teacher education appears to be a multidimensional process that covers selection, school experience, recruitment, performance assessment, and promotion (TED, 2009; Yenel, 2021). Therefore, the present study compares teacher education in four countries within its three aspects: pre-service teacher selection, pre-service education, and recruitment.

Pre-service Teacher Selection

In pre-service teacher selection, there is no selection process other than standard academic tests following high school graduation in Türkiye. Following high school, students can qualify for faculties of education by taking an exam that measures

verbal and numerical skills, applied since 1985 with the changes in scope and now called the Higher Education Entrance Examination. The latest changes in pre-service teacher selection mandate a particular threshold score for candidates to apply to faculties of education.

In the USA, states undertake teacher education, and recruitments are carried out by considering the supply-demand balance of the country (Wang et al., 2003). Despite differences in pre-service teacher selection between states, the government adopts a standardized pre-service teacher selection system. While students can be enrolled in teaching programs without no further requirements in some cases, they complete the first two years of liberal education and then be registered in professional teaching education in some other cases (Gültekin & Özenç-İra, 2019). Yet, there are specific requirements to be admitted to teaching programs available in almost half of all universities. Unlike Türkiye, universities in the USA are directly authorized to select students, but in a way similar to our country, students are expected to succeed in one or more of the Praxis I, Collegiate Assessment of Academic Proficiency, SAT, ACT (University Level Academic Proficiency Tests) exams (Wichita State University, 2019). In addition, a high school cumulative GPA of 2.50/4.00 is the threshold score to be able to enter teaching programs, including exams measuring attitudes, skills, personality traits, and physical health tests and interviews. Finally, students applying for teaching programs are requested to submit three reference letters, one of which is from an academic in teacher education, and a letter of intent explaining why choosing the teaching program (Baskan & Aydın, 2006).

Singapore, which has achieved remarkable achievement in the PISA tests in recent years, has adopted a novel teacher education model thanks to the comprehensive reforms in education in 2009. In this model, only exceptional students with 21st-century competencies (e.g., critical thinking, technology literacy, collaboration, etc.) are admitted to teaching programs (Tan et al., 2017). At the same time, the government makes projections of teacher needs each year and announces how many pre-service teachers would be admitted to the programs for that year. Pre-service teachers, on the other hand, begin the process of becoming a teacher by taking tough exams. Despite varying requirements between programs, students must exhibit exceptional achievement in a higher education entrance exam, called Cambridge Advanced Level Examination, to be able to apply to undergraduate teaching programs (Aksoy, 2013). Candidates passing this stage are interviewed by a board of academics, school principals, and experienced teachers. In the interview, candidates' interests, desires and dispositions in teaching are tested (Goodwin, 2012). Following the exam and interview, about 10% of the applicants are admitted to teaching programs (Tan et al., 2017).

Students in Germany have to take final exams at the end of secondary education to be able to enter higher education programs (Baskan & Aydın, 2006). Those successfully passing the exams are granted a kind of high school diploma, "Abitur," and can obtain a "Hochschulreife" certificate to enroll in undergraduate teaching programs (Keçici, 2011). A standard selection and placement test does not exist in the German education system; candidates can apply individually to the universities of their choice. There are no other requirements for receiving teaching education in Germany other than the procedure mentioned above.

Pre-service Education

Two models stand out in pre-service teacher education in Türkiye. The first requires an undergraduate degree, as mentioned above. The other is that the candidates graduating from a faculty of arts and sciences are included in a pedagogical

formation certificate program that covers courses on professional teaching skills. Candidates admitted to faculties of education generally take courses on SMK (40-45%), professional teaching skills (30-35%), and liberal arts (15-20%) for four years, with partial changes between programs. In 2020, universities were authorized to designate their curriculum in faculties of education, keeping the above rates (YÖK, 2020). Besides, pre-service teachers attend classes in public or private schools within school experience in their last year and take part in various social responsibility projects within the Community Service course. Under the coordination of the relevant instructor and master teacher, they follow the lessons in the first semester and teach the lesson in the second semester. The instructor and master teacher are responsible for tracking and reporting the progress of pre-service teachers. Pre-service teachers who successfully complete their programs are entitled to a lifetime diploma in teaching.

Despite varying between the states and universities, pre-service teachers in the USA start with courses on professional teaching skills to last 2-3 years following a 2-year program on SMK. While pre-service teachers to teach at primary and secondary schools are required to have a bachelor's degree, those to teach at high schools must hold a master's degree in teaching (Baskan & Aydın, 2006). In this journey, the pre-service teachers attend courses on professional teaching skills and intense practice teaching in K-12 schools affiliated with universities or local education committees during the last two years. The first three terms are held with school experience (practicum), and the final term of the mentioned two years is internship (student teaching). In the first three semesters, pre-service teachers engaging in activities, such as observation, data collection, assistant teaching, and material preparation, move on to teaching and leading students in the last semester. With great importance for pre-service teachers, these activities are performed, monitored, evaluated, and reported under the supervision of master teachers and instructors. Apart from this model, there is also an alternative certification program for those with a bachelor's degree from other programs. At the end of the 6-8 weeks of education at universities or accredited educational institutions, candidates are recruited and are expected to fulfill the relevant professional requirements in the next 2-year period. In most states, pre-service teachers satisfying the relevant requirements of the program graduate with a bachelor's degree and a two-year Initial Teaching Certificate (Baskan & Aydın, 2006).

The only authorized institution for teacher education in Singapore is the National Education Institute (NEI) within the Nanyang Technological University. Pre-service teachers, supported with satisfying scholarships, attended courses on educational sciences (45%), SMK (50%), and liberal arts (5%) during 4-year undergraduate teaching programs (Göçen-Kabaran & Görgen, 2016). All courses in this program consist of stages, called academic units or modules, and the curriculum is determined by the Ministry of Education and the NIE (Yenel, 2021). All academic studies are shaped around educational sciences, program courses, SMK, principles of education, practice, language acquisition and academic speaking/writing skills, group work, research, and elective courses (Ministry of Education Singapore, 2018, as cited in Göçen- Kabaran & Görgen, 2016). The curriculum also includes a Multiculturalism course to improve pre-service teachers' ability to respect and adapt to different cultures, and they have the opportunity to study abroad for an academic term within the country's own international exchange program (Saracaloğlu & Ceylan, 2016). In addition, all pre-service teachers have to do internships in practice schools for 1-10 weeks (Gültekin & Özenç-İra, 2019). Besides this type of undergraduate teaching program, there are two other types of pre-service education. The first is a 2-year program designed to raise a kind of technical teacher. Candidates to be enrolled in this program are required to have an

A (Advanced) score from Cambridge General Certificate of Education (GCE) or a certificate from a polytechnic college. Those admitted to the program must take all teaching skills and practice courses, courses on SMK courses, as in the undergraduate programs. The second program is the Professional Graduate Diploma in Education (PGDE) program for those with an undergraduate degree from other programs. This program, offering a model dedicated to educational sciences and practice, lasts one year. Any certificate from these three models is deemed sufficient for permanent recruitment and has lifelong validity (Gültekin & Özenç-İra, 2019).

In Germany, one needs to receive education for 7-9 semesters to teach in lower/upper secondary schools (Viebahn, 2003). In the Bologna process leading to standardization, it can be asserted that the first group of teachers receives undergraduate education, and the second group receives graduate education (Cortina & Thames, 2013). Germany applies a two-stage teacher education model. At the first stage, pre-service teachers take courses on SMK, emphasized in the German education system, and professional teaching skills, the intensities of which vary between programs. For this reason, the share of educational sciences and school experience in this first stage does not exceed 5% (Cortina & Thames, 2013). While pre-service teachers to be recruited for academic high schools (Gymnasium) attended more courses on SMK and are expected to complete more credits, while courses on professional teaching skills are more included in the curriculum for those to teach in lower level schools (Cortina & Thames, 2013). To complete the first stage, pre-service teachers have to take the First State Examination (Erste Staatsexamen), which assesses students' knowledge of educational sciences and SMK. Those who succeed in this exam move on to the second stage, where they will practice teaching intensely for 18-24 months (Maandag et al., 2007). At this stage, the state is obligated to place pre-service teachers in a school where they can do paid internships (Referendariat). A mentor teacher is assigned to each pre-service teacher to monitor and report their progress. At this stage, much more intense than the first stage, pre-service teachers are included in all school processes, from observing classes to teaching. The contents and methods to be applied at this stage are strictly followed by a state institute (Studienseminar) (Ostinelli, 2009).

Recruitment

While the major recruiter of pre-service teachers in Türkiye is the MoNE, they may be employed by private schools. The MoNE carries out the recruitment of pre-service teachers according to the pre-determined quotas every year. While recruiting pre-service teachers, the MoNE considers the scores of the candidates on a nationwide test, called the Public Personnel Selection Examination (PPSE), which measures knowledge of liberal arts, teaching skills, and SMK, and their results from an oral examination that has been implemented since 2016. Starting from the one getting the highest score on the PPSE, the pre-service teachers three times as much as the quota opened are invited to the oral exam where they are assessed in reasoning ability, communication skills, knowledge of current developments, and representation ability. Those successful in the oral exam are deployed in a 24-week paid "Pre-service Teacher Orientation" process covering in-service training with in- and out-of-school work accompanied by an experienced mentor teacher. The orientation ends with a performance evaluation of the candidates' school activities. At the end of the second year of recruitment, the candidates need to take the "In-Service Teacher Qualification Exam," which covers mostly legislation and professional teaching skills. Regardless of their exam results, all candidates are invited to an oral exam covering similar topics in the first oral exam. Candidates

with an arithmetic average of 60 points in the written and oral exams are then qualified as in-service teachers with a civil servant status (Yılmaz, 2017).

In the United States, states and school districts are directly involved in recruiting teachers. Pre-service teachers receiving the initial teaching certificate apply to schools with vacancies with a portfolio containing reports of their activities during their undergraduate education and reference letters. A board consisting of school administrators, teachers, and school stakeholders decides on the recruitment as a result of a series of interviews and evaluations of the portfolios. Recruited teachers start teaching with a one-year contract, and their activities in the relevant academic year are closely monitored (Fidan, 2021; Yenel, 2021). Teachers completing this process are granted a permanent teaching certificate in some states, while some states mandate teachers to attain other standard teaching certificates. For example, some states expect teachers to earn a master's degree within ten years, while others require teachers to take the Teacher Licensing Exam (TLE) for permanent recruitment after their initial certification expires. The TLE consists of Praxis I (academic skills exam), Praxis II (SMK exam), and Praxis III (in-class performance exam) stages administered by the Educational Testing Service, which is one of the most accredited assessment institutions in the world (Gültekin & Özenç-İra, 2019).

Singapore follows a "scrutiny" policy in teacher recruitment as well as in selection. At the first stage, only the applications of pre-service teachers in the first 30% by academic achievement are accepted. In the second stage, candidates are taken for an examination testing their liberal knowledge. Candidates who pass this stage are included in a series of interviews before a board of school principals, education experts, and experienced teachers. The interviews are aimed at testing the personality, intelligence, attitudes, and behavior styles of the candidates, as well as their teaching skills. In the last stage, pre-service teachers are deployed to paid in-service training within the NIE for professional development. Teachers completing the in-service training are recruited to schools to serve for four years compulsorily (Wang et al., 2003; Göçen Kabaran & Görgen, 2016).

In Germany, pre-service teachers passing the first stage take the Second State Examination (Zweites Staatsexamen) which tests their teaching skills. In fact, this is not a one-stage exam but is based on their average scores during their internships (pre-service teachers collect scores from the evaluation of the mentor teacher and other education experts, from a thesis prepared on the subject matter, from an exam including questions on legislation, pedagogy, and methodology, and from two sample lectures and lesson plans evaluated by a committee) (Baskan & Aydın, 2006). Those successfully passing the exam are duly certified and recruited as civil servants (Beamte auf Probe) to vacancies by the Ministry of Education and Culture (Cortina & Thames, 2013).

Discussion and Conclusion

Today, countries shape their expectations of future generations according to their own economic, social, and cultural structures through education policies. It is inevitable that one end of these expectations concerns teachers and teacher qualifications because what kind of education system will lead to raising individuals with 21st-century skills is deemed directly proportional to what kind of teacher education system raises teachers (Abazoğlu et al., 2016). Yet, it is not prudent to assert that the teacher education system of any country is perfect because the political, environmental, and technological transformations/difficulties of the countries inevitably force the teacher education systems to be reformed, be influenced by other countries, or be completely changed (Yenel, 2021). However, as summarized above, it is essential to make a cross-country comparison and draw

conclusions for our country to make a reasonable evaluation of the transformations and current status of our 150-year-old teacher education journey. Therefore, this study discusses teacher education in Türkiye by comparing current practices with those in the USA, Singapore, and Germany. The practices employed in the countries and discussed in this paper are limited only to those as of 2021.

While standardized tests are administered in pre-service selection in the mentioned countries, the USA and Singapore also make verbal/psychological evaluations to measure pre-service teacher candidates' disposition toward the profession, attitudes, and behaviors. A similar practice is carried out in our country after pre-service teachers graduate from the undergraduate program. Practices in the said countries can prevent undesirable situations in the following years (e.g., dropping out of the education/profession), as well as favoring those with a greater disposition to the profession and a higher readiness to fulfill relevant requirements. The substantial part of the criticisms on this subject in our country is related to the fact that pre-service teachers are selected only based on their scores on academic tests and not considering their any other characteristics (e.g., personality traits, attitudes, interests, and physical characteristics) (Işık et al., 2010; Akdemir, 2013). Another disadvantageous aspect of outdated selection may be that it disrupts the supply-demand balance and leads to yielding too many pre-service teachers to be recruited. Despite following a decreasing tendency with the council decisions of CHE and the MoNE, the number of undergraduate students in teaching programs in our country is far above the current policy demand. Current statistics show that about 5-10% of pre-service teachers are recruited by the MoNE every year (MEB, 2018), indicating that Türkiye hosts an army of teachers who are unemployed or employed in other jobs. Finally, such a selection system still encourages the understanding that "If somebody cannot find a job, they will be a teacher!"

In the mentioned countries, the curricula of the programs are determined by different institutions and practiced in different ways in pre-service teacher education. Yet, it can confidently be stated that pre-service teachers in all countries compared need to take undergraduate courses on SMK, professional teaching skills, and liberal arts. The major difference between the countries stems from school experience practices that pre-service teachers participate in during undergraduate education. In the USA and Singapore, school experience practices are considered key, and pre-service teachers carry out practices in a way to participate in all school processes under tight supervision throughout their education. Even in Germany, the dual system of teacher education obliges pre-service teachers to spend the last two years in schools. Yet, school experience in the curriculum, within the scope of faculty-school cooperation introduced with the 1998 reform in Türkiye, does not go beyond being a practice performed a few hours once or twice a week. The programs in faculties of education sometimes have difficulty finding schools due to the lack of coordination between the CHE and the MoNE. Moreover, the poor interests and shortcomings of the mentor teachers and program instructors in the schools may cause pre-service teachers to ignore the school experience and start their in-service career inexperienced (Işık et al., 2010; Akdemir, 2013). Even teachers certified with the pedagogical formation certificate programs do not even participate in this inadequate practice. The thought of complementing the school experience through the pre-service teacher orientation program after the recruitment may bring adverse pedagogical consequences.

The government is authorized to recruit teachers in public schools (central appointment), but pre-service teachers apply directly to schools for recruitment in the USA. Similarly, pre-service teachers need to take a standardized written exam for recruitment in these countries, except the USA. In our country, relevant

statistics demonstrate that, varying by program, pre-service teachers had an average of 29-54 correct answers in the SMK test of the mentioned examination (ÖABT), which consists of 75 multiple-choice questions, in 2019 (ÖSYM, 2021). This finding raises concerns about the quality of teacher education in Türkiye. On the other hand, pre-service teachers are taken for one or a series of oral examinations following the written tests in the countries compared. At this stage, pre-service teachers' attitudes, skills, professional knowledge, and representation abilities, as well as their portfolios within pre-service education and school experience and assessments of their practice teaching by their mentors and instructors, are also evaluated by education experts in the USA, Singapore, and Germany. Although it is claimed that pre-service teachers are assessed in reasoning ability, communication skills, knowledge of current developments, and representation ability in the oral exam in Türkiye, it is a matter of debate how these assessments are made in the interviews with the candidates that do not exceed five minutes in practice.

Overall, keeping in mind that no teacher education system is perfect, although the teacher education system in our country shares some aspects with those in the mentioned countries, it has severe deficiencies that need to be addressed. It should be noted training competent teachers starts with selecting pre-service teachers considering their physical, psychological, and socio-cultural characteristics eligible for the teaching profession. Moreover, redesigning the selection processes for pre-service education and recruitment considering contemporary teacher competencies and the needs of the country seems to be one of the urgent reforms for teacher education in Türkiye. Finally, teaching practices and school experience that are often complemented during the orientation stage may have adverse consequences for in-service teachers. It is believed that the duly implementation of the decisions in the 20th MoNE council meeting and the 2023 Education Vision would alleviate the mentioned limitations and encourage a desirable teacher education system in Türkiye.

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Available online at http://www.bedujournal.com/

BASE FOR ELECTRONIC EDUCATIONAL SCIENCES

ISSN: 2718-0107

Base for Electronic Educational Sciences, 4(1), 27-48; 2023

Teachers' View of High School Principals' Support for Alternative Assessment as a Tool for Meaningful Learning

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APA Citation:
Alhassanat, K. A. A. & Shehadeh, S. A. I. (2023). Teachers' View of High School Principals' Support for alternative assessment as a tool for Meaningful Learning. *Base for Electronic Educational Sciences, 4*(1), 27-48.
Submission Date: 27/09/2022
Acceptance Date: 13/03/2023

Abstract

We conducted this study to determine the extent "Teachers' View of High School Principals' Support for alternative assessment as a tool for Meaningful Learning, during the first semester of the academic year 2021-2022, using the descriptive approach. The population consisted of all of the (94) secondary schools in Bethlehem governorate and in Negev Sector. The sample consisted of (268) teacher from both areas. We used the questionnaire to achieve the goals of the study. The results showed that the role of principals in supporting alternative assessment from the teacher's point of view was high with a mean of (3.71) over/out of (5). The result also revealed that there were no statistically significant differences due to gender and academic qualifications. However, there were statistically significant differences due to years of experience in favor of less than five, and due to location in favor of Negev sector. In light of the results, the researchers recommended that teachers should replace the traditional assessment to more meaningful assessment, and encourage the students to use the higher order thinking skills in their daily life. The principal should involve the alternative assessment spirit in building the school vision, and encourage cooperation between teachers rather than competition. The Palestinian Ministry of education should raise the awareness of the local communities about the importance of the alternative assessment at schools, to have more cooperation between the local communities and the schools, Adopting the Negev experience in implementing the alternative assessment theory, in order to apply it at the schools of Palestinian Ministry of education.

Keywords: High School Principals, alternative assessment, Bethlehem Governorate, Negev Sector.

Introduction

People can benefit from technology used in business, health, care, and manufacturing. This technology could be applied in education even before the spread of the internet. Teachers used to convey this knowledge through lecturing, discussions, and readings. Gozuyesil & Tanriseven (2017) While many teachers, principals and district administrators, use new forms of project-based curricula and performance based on assessment-where students get information from many sources. The role of their teachers is as a coach and manager.

Barron and D-Hammond (2008) pointed out that nowadays many scholars report about the need for powerful leadership where learning focuses on the demands of life to prepare the students for twenty-first-century skills. Teachers help in avoiding the traditional academic approaches and the narrow tasks that are not going to develop students' ability for critical thinking and writing. Stalheim (1998) added that life in schools focuses on learning.

Teachers and principals learn continually as we teach and carry out our activities. They fight to improve learning environment and to facilitate learning for the students According to Ausubel (1963), educators have to reach the heart of the education process through deliberate attempts to influence cognitive structure to maximize meaningful learning. According to Hunter et. al (2022) teachers Sometimes find it difficult to achieve it without organizing the curriculum to provide for the traumatic introduction of new facts and concepts.

Novak (2002) explained that Ausubel's theory covers the whole learning process from the planning to the assessment and the application. Alternative assessment helps the learner choose conscientiously to integrate the new knowledge that learner already possesses (Burrows et. Al, 2021), Scientists who studied human learning agreed that the meaning constructed by human beings at birth is faulty or limited. This faulty and limited meaning can distort new meaning construction Demir et. al (2019).

Howland et al. (2012) pointed out that students mostly experienced standardized tests or memorized information. Schools have become testing factories. When students finish the high school, they only know how to take tests, students seldom invest their knowledge in attempting to understand the knowledge being tested because the test is done individually.

Through the testing process there will be no need for cooperative learning, students will not develop conceptual understandings (Patmisari et. Al., 2022), learning to take tests does not result in meaningful learning. Through meaningful learning, students have to be willfully engaged in meaningful tasks as well as engage in active, constructive, intuitional, authentic and cooperative activities (Gozuyesil & Tanriseven, 2017). The role of schools is to teach students how to recognize and solve problems. In order to achieve this goal, principals have to recognize and implement the curriculum around the alternative assessment activates.

According to Novak (2011), alternative assessment involves thinking and feeling. Rote learning studies recall information. Students are motivated only when they get the right answer. Whereas in alternative assessment students are rewarded intrinsically and there is usually a higher level of positive affect resulting. In rote learning, teachers tend to simplify the new knowledge and separate it from the real world. While in meaningful learning, teachers teach the new material with context.

Historical Background (The importance of Meaningful learning):

According to Hunter et. al (2022), Alternative assessment embodies "a distinctive kind of learning process." The learner employs a set to incorporate within his cognitive structure, nonverbal in fashion, in no arbitrary, potential meaningful materials. Alternative assessment does not mean learning of meaningful material. Meaningful material cannot be meaningful learned because it is only potentially meaningful. Alternative assessment should have components that determine the aspect of learning material or be potential meaningfully Ausuble (1963).

Burrows et. Al (2021) argue that It is difficult to demonstrate that alternative assessment has occurred; the only feasible way is an independent problem-solving to check whether the learners comprehend meaningfully the idea they are able to verbalize. Problem solving demands other abilities and qualities to achieve such as, reasoning power, flexibility, perseverance, sensitivity, improvisation and tactical smartness. Ausuel (1968).

Ausuel (1968) pointed out that we can distinguish three distinct phases during meaningful reception learning and retention. First, before potentially meaning material can be learned, it must be perceived; the second phase is the learning-retention process that is observed by a relevant and appropriate inclusive conceptual system. The third phase is the reproduction of the retained information.

Alternative assessment requires both that learners manifest a alternative assessment set and that the learner should potentially absorb the material they are learning (Patmisari et. Al., 2022). When the learner establishes a alternative assessment relationship between new and established knowledge, then what the learner requires to involve both the nature of the learning task and the nature of particular learners' structure of knowledge, which is a more complicated matter than a alternative assessment set. Alternative assessment is an emergent outcome of the interaction between the ideas to be learned in the instructional material and relevant subsuming ideas in the learner's cognitive structure Ausubel (1963).

Ausubel (1963) add that Motivational factors (enhancing effort, attention and immediate readiness for learning) have a positive effect on ensuing meaningful learning, besides the cognitive variable that influences availability during the retention interval. In addition, the above factors influence the cognitive interactional process in the particular aforementioned ways through the cognitive variables that determine precision, stability, clarity and discriminability, which emerges new meanings during learning.

Vallori (2014) illustrated the most vital principles in applying meaningful learning. Those are open: work assists all learners to learn, then motivation; they help increase classroom environment and make learners be involved in their tasks. In addition, they must be related to the environment of learners. They are also creative, which reinforces imagination and intelligence. Moreover, they are built on concept mapping, which helps to link and connect concepts. Finally, they are based on educational programs and must be adjusted in considerable to learners with special necessities.

According to Karpicke (2012), through meaningful learning, people have the ability to reconstruct knowledge rather than reproducing it exactly. People do not store the same copies of experiences that reproduce verbatim in retrieval because knowledge is reproduced on the basic of present context and available retrieval cues (Ahmad et. Al, 2020).

Understanding the process involved in retrieving and reconstructing knowledge is essential in order to understand learning. Because the act of retrieval itself is a

powerful tool for enhancing long term learning (Gozuyesil & Tanriseven, 2017). When people reconstruct knowledge, people's expression depends on a retrieval cues available in a given content. In addition, every time people retrieve knowledge, the knowledge is changed, so retrieving knowledge will improve their ability to regain knowledge again in the future (Demir et. Al, 2019). Retrieval is important for understanding learning because all types of knowledge requires retrieval and depends on of retrieval cues. Therefore, retrieval is the key to promote learning through improving the match between a cue and particular desired knowledge. Retrieval-based learning helps improve students' performance. There are many activities that active retrieval could be potentially incorporated into and retrieval could be integrated in such activities in many different ways (Sadilloyevna, 2022).

Novak and Gowing (1984) added "that alternative assessment needs an effective tool to visualize it by using a concept map to better understanding and an assessing concept map as a graphical tool for representing knowledge structure in the form of a graph. The nodes of graph represent concepts. The edge that runs between concepts represent relationships. Concept and relationships between them formulate propositions". (p.5) concept maps require constantly integrated newly acquired concepts and relationships into existing concept maps. It is important that in alternative assessment the concept map can be modified to accommodate the change.

Principals can use the concept map as a tool to improve teaching, concept map-based on assignments has different formats, which has an impact on the outcomes. What makes incorporation of concept map into teaching is feasible: if you use the concept map tools and learning curves, a concept map can be constructed in many different ways Wie and Yue (2017).

How could principals use the theory of alternative assessment effectively? It is important that principals believe in alternative assessment theory as a tool for developing their schools by understanding how knowledge is produced and reconstructed, be certain of the significance of retrieval in implementing alternative assessment and besides, be aware of the concept map. This basic understanding can help principals develop their effectiveness in implementing meaningful learning. In this study, I will draw a picture about the role of the principal in fulfilling alternative assessment in schools, the importance of technology in adopting alternative assessment and the importance of alternative assessment in evaluating students in alternative assessment process.

Alternative assessment definition:

Harpaz (2013) defined alternative assessment as "It is the rebuilding or the reorganization of knowledge that adds to the meaning of experience, and that increases the capacity to direct the course of subsequent experience.

On the other hand, it is a procedure in which the learner offers new meaning to his mental concepts, contents, ideas, insights, positions, attitudes that were learnt in the earlier and opens paths for learning more complex contents in the future.

Vallori (2014) defined the alternative assessment according to Ausubel, "the most important single factor that influences learning is what the learner knew." Therefore, meaningful learning, which implies longer retention than memorizing, occurs when humans relate new concepts to pre-exist familiar concepts. Then, changes are produced in our cognitive structure, concepts are modified and new links are created. It is a useful tool because it enables real learning, it generates greater retention and it facilitates transferences to other real situations.

Wei and Yue (2017,5) defined alternative assessment (as identified by Ausubel in Ausubel, 1963) as the most important learning principle) as a process signified by integrating new concepts and propositions with existing relevant ideas in some substantive ways, within one's cognitive structure.

"Meaningful learning," by definition, involves the acquisition of new meanings. New meanings, conversely, are the end products of meaningful learning. That is, the emergence of new meanings in the learner reflects the prior operation and completion of a alternative assessment process. Ausubel (2000).

The role of principals in supporting the alternative assessment:

Allison et al. (2015) stated that in developed countries, schools are expected to provide learners with ways that lead to an active lifestyle by emerging their ways of understanding through evolving their experiences to make education more meaningful, relevant and engaging. Egalite et al. (2015) Explained that Policymakers run the risk of rating student's development by raising standardized tests that focus on the cognitive outcome. Researchers are paying attention towards the importance of non-cognitive skills for students' outcome, but tend to ignore what ingredients are needed for students' success. Schools have a rich bank of cognitive measurement compared to shortage selection in assessing students for non-cognitive measurement Patmisari et. Al. (2022).

Egalite et al. (2015) added that in early childhood programs, the social-emotional development is promoted. The institutions of higher education recognize the importance of the non-cognitive skills. Some universities evaluate their students on resilience and teamwork as well as the knowledge integrity, communication, and organizational skills.

Allison et al. (2015) showed that Project-based learning increase popularity in pedagogy. It builds knowledge from a variety of curriculum subjects, but if it is applied, it will lead to deeper learning, which creates opportunities for personal learning and avoid meaningless outputs, which means avoiding lack of learning motivation and communities of learning. Residential project work was important in contributing to (among other things) autonomy, a reassuring climate, an autonomous enthusiasm, a perceived competence and a task approach oriented towards a goal.

Lee and Lo (2007) stated that accelerated school project improves educational quality through the school reform model. It depends on three principles. The first is that all school community shares the vision for the school, in order to achieve a powerful learning by setting their goals together. Secondly, all participants share the responsibilities for the outcomes because they are empowered to take part in the decision-making process. Thirdly, the school community should realize, making use of the knowledge, talent, and resources of every member of the school community. This change has to cover the entire school.

Baran et al. (2017) agreed that when teachers adopt mobile learning, it enhances teachers with mobile tools, knowledge, and skills to carry out mobile in their classes. Therefore, the need for criteria for evaluating educational mobile applications is essential to evaluate the effectiveness of mobile learning environments. Teachers have to adopt rubrics and tools related to authenticity, social interactivity, portability and personalization to fulfill assessment meaningfully.

Fisher et al. (2010) suggested that in order to make professional development accessible, it is important that teachers embrace computerized programs to build effective and improve students' outcomes.

Non-cognitive skills (behaviors, attitudes, and strategies) are responsive to educational intervention Egalite et al. (2015). Teachers need to get training to evaluate students in pedagogical affordances to make decisions about using them in the future and on electing educational applications. Baran et al. (2017).

Previous studies

Patmisari et. Al. (2022): The purpose of this paper is to provide an alternative assessment approach for teachers in civic learning so that it can be used as a reference for civic teachers to conduct the affective assessment. This research is included in the Library Research type of research. Data is obtained from various books, journals, scientific papers, and other documents that examine the distance learning assessment model. The results showed that five assessment approaches could assess students' attitudes: survey techniques, interviews, observation, self-assessment, and user data. The survey approach is most commonly used in various disciplines to show course satisfaction, perceived course usability, and intention-fulfilment. Interviews were used to reveal experiences during their learning, such as professional development, leader motivations, and barriers. Self repost with a Likert scale reflects students' perceptions of affective learning outcomes, such as learning experiences, perceived learning benefits, and civic learning satisfaction. Observation and self-assessment are used to reveal students' evaluations of learning experiences and distance learning benefits. Meanwhile, user data is used to measure the experience and emotional state of students.

Sadilloyevna (2022): In all academic settings, assessment is viewed as closely related to instruction. Assessment is needed to help teachers and administrators make decisions about students' linguistic abilities, their placement in appropriate levels, and their achievement. The article analyses importance and benefits of alternative assessment in teaching English as a foreign language.

Burrows et. al (2021): Research has begun to explore the undergraduate laboratory in many facets, such as students' feelings, goals, and instructional approaches to the laboratory. However, research has not explored the experiences of students with summative assessment in the laboratory. This qualitative study investigates the experiences of upper-level undergraduate students' exposure to lab interviews as an oral summative assessment. A phenomenological approach guided the analysis and interpretation of data gathered from 16 semistructured student interviews. The exploration of the data resulted in the development of an outcome space with three fundamental features and students' core perceptions about lab interviews. This outcome space explores students' feelings, performances, and perceived conceptual understandings before, during, and after the interview process. Implications and suggestions for the design and improvement of assessment practices are discussed.

Ahmad & Jamil (2020): this article discusses the applications of different types of assessment and evaluation procedures in teaching. The main research objective was to strengthen the superiority of alternative forms of assessment methods over traditional assessments in the light of learning theories i.e. behaviorism, cognitivism, and constructivism. These learning theories define learning differently. A growing body of research suggests that assessment greatly influences classroom instruction and that it is closely linked to teaching and learning. Students learn the way they think they will be assessed rather than what is mentioned in the curriculum. The present study concludes the importance of alternative assessment techniques to highlights learner's misconceptions and gaps in their knowledge.

Demir et al (2019): This literature review investigate alternative assessment in order to highlight key findings in this research field; to identify challenges and

facilitate its adoption; to illustrate gaps or shortcomings in the literature, and to further contribute to the body of research on alternative assessment. Descriptive content analysis was used to review, identify and describe the general trends and research results in a particular scope. Using the content analysis, 42 studies regarding alternative assessment were collected and analyzed. Multiple variables including: study method, participants, research area, research design, context of the study were extracted, and categorized according to teacher perceptions related to pedagogy, student impact, challenges in implemention and teacher competency on alternative assessment methods. The major findings were that although some teachers do not feel competent in using alternative assessment; they nevertheless have positive attitudes towards these methods, and they believed that the methods improve students' higher-level thinking and creativity.

Al-Mahrooqi, R., & Denman, C. (2018): This literature review investigate alternative assessment in order to highlight key findings in this research field; to identify challenges and facilitate its adoption; to illustrate gaps or shortcomings in the literature, and to further contribute to the body of research on alternative assessment. Descriptive content analysis was used to review, identify and describe the general trends and research results in a particular scope. Using the content analysis, 42 studies regarding alternative assessment were collected and analyzed. Multiple variables including: study method, participants, research area, research design, context of the study were extracted, and categorized according to teacher perceptions related to pedagogy, student impact, challenges in implemention and teacher competency on alternative assessment methods. The major findings were that although some teachers do not feel competent in using alternative assessment; they nevertheless have positive attitudes towards these methods, and they believed that the methods improve students' higher-level thinking and creativity.

Gozuyesil & Tanriseven (2017): This study aims to examine the impact of alternative assessment techniques on achievement. Research Methods: In the study, a meta-analysis was conducted to combine the effect sizes of the primary studies during data collection and data analysis. Findings: Data analysis indicated that alternative assessment techniques have a significant and positive effect (d=0.84) on students academic achievement. Such techniques have been found to be more effective in Mathematics courses (d=0.84), and the effect of using portfolios in class (d=1.01) is worthy of note. In accordance with the moderator analysis, whereas the effect sizes do not significantly vary in terms of subject matter and type of alternative assessment technique, there is a significant difference in the effect sizes in terms of school levels of students. Implications for Research and Practice: The results highlighted portfolios as a highly effective assessment technique for students' academic achievements, and it revealed the impact of alternative assessment techniques on enhancing academic outcome. However, the low effectiveness of authentic assessment at the primary level may be associated with the development of creativity and critical thinking skills over time

Ahmed Al-Thawabiya and Khalid Al-Saudi (2016): The aim of this study was to identify the obstacles hindering the implementation of realistic evaluation strategies and tools from the point of view of Islamic education teachers in Tafileh Governorate according to their gender, qualifications and years of experience. The school community consisted of (140) teachers and teachers, Responded to them (49). To achieve the goal of the study, a questionnaire was developed consisting of (26) Items divided into four dimensions. As has been confirmed the tool is reliable and stable. The study showed that the obstacles related to the conditions of application came first, followed by obstacles. Obstacles related to the school curriculum, and the obstacles related to students ranked last, there are significant

differences between the mean of the real-time constraints, due to the period of study in the fields of (α statistically significant at 0.05) and no significant differences were found due to the rest of the variables or interactions between them. In light of these results.

Ashraf Attia Fouad Mustafa (2016): this study aims at identifying the status of practicing Alternative Assessment by the Islamic education teachers of the elementary schools in Gaza. To achieve the above objective, the researcher used the descriptive analytical approach to conduct this study. The researcher also designed the tools of the study, which are a questionnaire and a focal group to collect the necessary data. The researcher also selected all the teachers of Islamic education in the elementary stages in the directorate of education in the middle governorate whose number was (24 male teachers) and (91 female teachers) as the study sample.

Camburn et al. (2016): conducted a study in United States aimed at examining the potential benefits, limitations, and challenges involved in using experiments to evaluate professional development for principles. The study was based on urban school's district with 48 principals. It describes the intended curriculum developing attendance records, and interview data. There is a growing belief that professional development for principals that has coherent, research-based content and that provides principals with authentic, problem-based, collaborative learning experiences can be effective in improving principals' practice, It is also assumed that the program would likely have no effect on principals' emphasis on instructional leadership of planning. The DPD may have had a short-term impact on the amount of time principals spent planning and setting goals.

Akram Adel Al-Basheer and Areej Isam Barham (2012): the study aimed at investigating the degree of Mathematics and Arabic teachers' using of the alternative assessment strategies and its tools in Jordan. To achieve the objectives of the study; a questionnaire was built and it was distributed over 86 teachers, and semi- structured interviews were conducted with 20 teachers from the two specializations. Results of the study revealed that the degree of teachers' using for the pencil and paper strategy was high, while it was intermediate for the use of performance –based assessment strategy, the observation strategy, and the communication strategy, and it was low for the reflection assessment strategy and in the use of the alternative assessment tools. Results also revealed that there were no statistically significant differences in the degree of teachers' using for the alternative assessment strategies related to the effect of teachers' specialization. Whereas, there was statistically significant differences related to the effect of number of years of experience and to the effect of the training courses. Recommendations were offered in the light of the study.

Mohammed Shehadeh Zaqout (2011): The objective of this study is to determine recent trends in the evaluation. It also aims to identify the reality the Arabic language teacher's use, in the preparatory stage in UNRWA schools in the Gaza Strip, of alternative evaluation, and determine whether different teachers use the methods of evaluation depending on the gender variable, to achieve these goals the researcher followed the descriptive approach, using two tools, namely: the questionnaire and note card. The study sample included (60) teachers from the east and the West of the Gaza Strip. It included also sample of (24) managers and supervisors. The researcher noted the reality of the use of Arabic language teachers, in UNRWA schools in Gaza City, of the alternative methods of evaluation. A questionnaire was distributed among managers and supervisors for the same purpose. The study recommended a number of recommendations including:

- review of the current evaluation practices that rely on traditional tests; it is no longer acceptable for the teachers to continue to understand that the evaluation is a synonym for the exams; and the role of the school continues to be limited in the scope of preparing the students for the tests rather than the understanding.

- Develop of curricula, in particular the subjects of the Educational Measurement and evaluation studied by the students - future teachers. In Education Faculties to include methods of alternative evaluation.

Gaps in the Literature

There is a huge gap in applying alternative assessment between the schools in the Negev Sector and Bethlehem governate. Many researchers tackled this issue in the Negev Sector, While schools in Bethlehem governorate lack of researches that study this issue.

The originality of the present study

Principals have an important role in supporting alternative assessment, which has a pronounced positive effect in general. Education in the 21st century greatly needs such an approach in learning. Currently, the principal's role in supporting alternative assessment is still ineffective. The researchers felt the importance of the principal's role in supporting alternative assessment in both Bethlehem and Bedouin high schools.

The importance of the study appears in focusing on a new approach in education, which is alternative assessment. According to the researcher's knowledge, this research is the first to tackle this subject. This study is one of a few studies that make a comparison in fields of education between the Palestinian system and the Negev system.

This study aims to

The purpose of the study is to examine teacher perspectives toward the extent to which high school principals in the Bethlehem governorate and Bedouin Sector support alternative assessment. In addition, the study aimed to acknowledge if there are statistical differences in supporting alternative assessment by high school principals in Bethlehem governorate and Bedouin Sector from the teacher perspective.

Questions of the Study:

The Main Question: to what extent Teachers' View of High School Principals' Support for alternative assessment as a tool for Meaningful Learning?

Based on the main question the following sub-question formed:

Is there a difference in the extent Teachers' View of High School Principals' Support for alternative assessment as a tool for Meaningful Learning due to gender, location, years of experience, academic qualification?

Study Hypothesis:

1. There are no statistically significant differences at ($\alpha \leq 0.05$) in the means of Teachers' View of High School Principals' Support for alternative assessment as a tool for Meaningful Learning due to gender.
2. There are no statistically significant differences at ($\alpha \leq 0.05$) in the means of Teachers' View of High School Principals' Support for alternative assessment as a tool for Meaningful Learning due to location.

3. There are no statistically significant differences at ($\alpha \leq 0.05$) in the means of Teachers' View of High School Principals' Support for alternative assessment as a tool for Meaningful Learning due to years of experience.
4. There are no statistically significant differences at ($\alpha \leq 0.05$) in the means of Teachers' View of High School Principals' Support for alternative assessment as a tool for Meaningful Learning due to academic qualification.

The significance of the Study:

The importance of the study appears in focusing on a new approach in education, which is alternative assessment. According to the researchers' knowledge, this research is the first to tackle this subject in Bethlehem and the Negev sector. This study is one of a few studies that make a comparison in fields of education between the Palestinian system and the Negev system.

Definition of Terms:

Alternative assessment: defined by Washington, DC (1999) as a blanket term that covers any number of alternatives to standardized tests. While the traditional paper and pencil tests may be effective to assess some of the skills (such as listening), they are not sufficient to assess the productive skills of speaking and writing. The nature of proficiency-oriented language learning calls for a variety of assessment options reflecting the numerous instructional strategies used in the classroom. Authentic assessment, performance-based assessment, and portfolio fall under this category. And defined by (carol et al, 2007) "way to gauge student learning other than formal testing" (p222).

Procedural definition: a method of evaluation that measures a student's level of proficiency in a subject as opposed to the student's level of knowledge. The overall goal of alternative assessment is to allow students to demonstrate their knowledge and execute tasks.

Bethlehem Governorate: Bethlehem Governorate is one of the largest West-Bank eleven governorates. It occupies 607.8 km2 of mass land and is bordered with Jerusalem Governorate in the North and Hebron Governorate from the South. (page 2)

Bedouin Sector: According to data from the Central Bureau of Statistics, in 2009 the Bedouin (Muslim) people of the Negev numbered 192,800 represent 27.4% of the total residents of the Negev (around 02,600). In 2009, the Bedouin citizens of the Negev constitute 15.6% of the total Arab population of Arab citizens Israel (1,239,230 not as well as the 296,370 Arab residents of East Jerusalem).

Methods (Design of the Study):

The current study adopted the descriptive analytical approach. After collecting the data, the researchers used the analytical-statistical method to answer the question of the study and interpreted the results.

Population and sample of the study:

Population of the study:

The population of the study consisted of all secondary school teachers in both Bethlehem governorate and the Negev sector. The total Number of teachers was (2463) and the total Number of the secondary schools was (94).

Sample of the Study:

From this population (268) sample of teachers from a random cluster of twenty secondary schools were chosen to respond to the questionnaire.

Table (I): statistical description of the research sample according to demographic variables

Demographic Variables		Frequency	Percent %
Gender	Male	126	49
	Female	132	51
	Total	268	100
Geographical area	Bethlehem	129	50
	Negev Sector	129	50
	Total	268	100
Years of experience	less than 5	101	40
	5-10	62	23
	more than 10	95	37
	Total	268	100
Qualification	Diploma	23	7
	BA	181	73
	Master and above	54	20
	Total	268	100

instruments of the study:

The researchers developed Questionnaire to examine the teacher's attitudes toward the extent to which a principal's in Bethlehem governorate and Arab schools in Negev support alternative assessment from teachers' point of view. The researchers developed the questionnaire, which consists of two sections. The first section included personal information about the respondents. The second section included (12) items, to investigate the role of principals in supporting the alternative assessment" Here are some of the studies that helped the researcher in developing the questionnaire: Moran et al (2010), Allison et al (2015), Wang et al (2004), Bolligar et al (2015). Vermeulen et al (2015), Baran et al (2016). The researchers developed the questionnaire with 5-point Likert scales ranging from strongly agree - strongly disagree. The questionnaires were distributed to 240 teachers.

Validity of Instruments:

To ensure that the content of the questionnaire, was valid, it was handed to a jury of professional doctors in the field at Al-Quds, Bethlehem, Beir Zait Universities and educators in Negev. The Panel of judges were asked to evaluate the opportunities of the instruments to the whole purpose of the study. They accepted the items and the parts of the questionnaire, but they asked the researchers to follow some modifications. The researchers took these recommendations into amount before issuing the final drafts of the tool, then the instrument was distributed to the subject of the study.

Reliability of Instruments:

Cronbach's Alpha Value for the questionnaire was (94.6%) which is appropriate for the purposes of the study.

Procedures of the study:

The study carried out in the following manner:

1. The relevant literature was reviewed to establish the theoretical background of the study.

2. The population was identified and the samples were selected on which the instruments will be applied.
3. The questions of the study were put up, depending on previous studies.
4. The reliability and validity of the instrument were approved.
5. A letter of permission was obtained from the Ministry of education and higher education Directorate of Education/Bethlehem to facilitate the implementation of the research.
6. The researchers himself distributed the instruments on teachers in order to obtain valid and credible results.
7. The instrument was distributed and gathered in the Second semester of the scholastic year 2021-2022.
8. The data was gathered and analyzed by using SPSS program.
9. The researchers explained the information to reveal whether the outcomes agree or disagree with previous studies.

Variables of the study:

Independent variables: Gender (Female/Male), Geographical area (Bethlehem/Negev), Years of experience (less than 5, 5-10, more than 10), Qualification (Diploma, BA, Master and above).

Dependent variables: The extent Teachers' View of High School Principals' Support for alternative assessment as a tool for Meaningful Learning.

Data Analysis:

In order to analyze the data, the researcher used statistical Package for social science (SPSS), descriptive statistics (means, frequencies, percentage, and Std. Deviation) and inferential statistics. (Independent T-test, one-way ANOVA, LSD and Cronbach Alpha).

Results related to the first question:

To what extent Teachers' View of High School Principals' Support for alternative assessment as a tool for Meaningful Learning?

Table (II): means, Std. Dev. and degrees of the items of the questioner.

#	Item	N	Mean	Std. Dev.	Degree
10	The principal encourages the teachers to be aware of the differences of the student's characters while using the alternative assessment.	268	4	0.7	High
11	The principal encourages students to do their work in groups to increase cooperation among the students.	268	3.9	0.8	High
9	The principal encourages using the student portfolio as a kind of the alternative evaluation.	268	3.8	0.8	High
8	The principal encourages using the alternative evaluation as an effective way in the education process.	268	3.8	0.8	High
5	The principal encourages the alternative evaluation for its effectiveness in achieving the school's goals.	268	3.7	0.8	High
4	The principal encourages the teachers to be aware of the importance of giving feeding back when using the alternative evaluation.	268	3.7	0.9	High
12	The principal encourages teachers to adopt the scientific methods when using the school research as a way of the alternative evaluation process.	268	3.7	0.9	High

3	The principal encourages taking part in workshops about the strategies of using the alternative evaluation.	268	3.7	1	Moderate
6	The principal encouraging using the alternative to evaluate the achievements of the students.	268	3.7	0.9	Moderate
7	The principal provides financial support to the alternative assessment.	268	3.6	0.9	Moderate
2	The principal provides the needed information when using the strategies of the alternative assessment as a required for the meaningful learning	268	3.5	0.9	Moderate
1	The principal explains the difference between the alternative and the traditional evaluation.	268	3.5	1	Moderate
	Total	268	3.71	0.66	High

Results in table show that the 10th Item [The principal encourages the teachers to be aware of the differences of the student's characters while using the alternative assessment] came first with a mean of (4) out of (5), the 11th Item [The principal encourages students to do their work in groups to increase cooperation among the students] came second with a mean of (3.9) out of (5), the 9th Item [The principal encourages using the student portfolio as a kind of the alternative evaluation] came third with a mean of (3.8) out of (5). The 1st Item [The principal explains the difference between the alternative and the traditional evaluation] came last with a mean of (3.5) out of (5), the 2nd Item [The principal provides the needed information when using the strategies of the alternative assessment as a required for the meaningful learning] came before the last Item with a mean of (3.5) out of (5).

Results related to the second question:

Is there a difference in the extent Teachers' View of High School Principals' Support for alternative assessment as a tool for Meaningful Learning due to gender, location, years of experience, academic qualification?

To answer this question, the researcher investigated the following hypothesis, which was based on:

Results related to the first Hypothesis:

There are no statistically significant differences at ($\alpha \leq 0.05$) in the means of Teachers' View of High School Principals' Support for alternative assessment as a tool for Meaningful Learning due to gender.

To test this hypothesis, the researchers used independent t-test as table (III) shows: The results of independent t-test for the differences in participant's responses related to principal's support to alternative assessment due to gender.

Table (III): Results of the independent t-test for gender variable.

Gender	N	Mean	Std. Dev.	Std. Error Mean	t	df	Sig.
male	126	3.65	0.71	0.07	-1.25	266	0.21
female	132	3.76	0.61	0.05			

The results in table (III) show that the level of significance for the differences in participant's responses related to principal's support to alternative assessment due to gender is (0.21) this means that there are no statistically significant differences at ($a<0.05$). thus, the hypothesis is accepted.

Results related to the second Hypothesis:

There are no statistically significant differences at (α ≤ 0.05) in the means of Teachers' View of High School Principals' Support for alternative assessment as a tool for Meaningful Learning due to location.

To test this hypothesis, the researchers used independent t-test as table (IV) shows: The results of independent t-test for the differences in participant's responses related to principal's support to alternative assessment due to location.

Table (IV): Results of the independent t-test for location variable.

Geographical area	N	Mean	Std. Dev.	Std. Error Mean	t	df	Sig.
Bethlehem	129	3.31	0.58	0.05	-11.67	266	0.00
Negev	129	4.11	0.48	0.04			

The results in table (IV) show that the level of significance for the differences in participant's responses related to principal's support to alternative assessment due to location is (0.00). This means that there is statistically significant differences at (a<0.05). Which results in rejection of the Hypothesis. By considering the means for both geographical areas, it shows that The Negev has the highest mean (4.2), therefore the statistical differences in favor of the Negev geographical area.

Results related to the third Hypothesis:

There are no statistically significant differences at (α ≤ 0.05) in the means of Teachers' View of High School Principals' Support for alternative assessment as a tool for Meaningful Learning due to years of experience.

To test this hypothesis, the researcher used one-way ANOVA- test, table (**V**) shows: the distribution of the participant's responses related to principal's support to alternative assessment due to years of experience.

Table (V): means, Std. Dev. And degrees of the items for years of experience variable.

Years of Experience	N	Mean	Std. Dev.	Degree
Less than 5 years	101	3.98	0.52	High
Form 5 – 10 years	62	3.68	0.65	High
More than 10 years	95	3.44	0.69	Moderate

The results in this table (IV) show that there is a clear difference between the means of the three levels for the years of experience. Therefore, the researcher used the One-Way ANOVA test as shown in table (VI).

Table (VI): the results of ANOVA- test for the differences in the participant's responses related to principal's support to alternative assessment due to years of experience.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	13.23	2	6.61	17.12	0.00
Within Groups	91.58	265	0.39		
Total	104.81	267			

The results in this table (VI) show that the level of significance for the differences in the participant's responses related to principal's support to alternative assessment due to years of experience is (0.00) this means that there are statistically significance differences at (a<0.05). And thus the hypothesis is rejected.

To clarify to whom the differences refer to, the researcher used the LSD (the less significant deference's test) as shown in table (VII).

Table (VII): the results of LSD test for the participant's responses related to principal's support to alternative assessment due to years of experience.

(I) Experience	(J) Experience	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval Lower Bound	95% Confidence Interval Upper Bound
Less Than 5	5-10	.22343*	.09295	.017	.0403	.4066
	More than 10	.16469*	.08139	.044	.0043	.3250
5-10	Less Than 5	-.22343*	.09295	.017	-.4066	-.0403
	More than 10	-.05874	.09411	.533	-.2441	.1267
More than 10	Less Than 5	-.16469*	.08139	.044	-.3250	-.0043
	5-10	.05874	.09411	.533	-.1267	.2441

The result in table (VII) shows that the statistically significance differences were between less than 5 and 5-10 levels and refers to less than 5 level. And between less than 5 and more that 10 levels and refers to less than 5 level.

Results related to the fourth hypothesis:

There are no statistically significant differences at ($\alpha \leq 0.05$) in the means of Teachers' View of High School Principals' Support for alternative assessment as a tool for Meaningful Learning due to academic qualification.

To test this hypothesis, the researcher used one-way ANOVA- test, table (VIII) shows: the distribution of the participant's responses related to principal's support to alternative assessment due to academic qualification.

Table (VIII): **means, Std. Dev. and degrees of the items for academic qualification variable.**

Qualification	N	Mean	Std. Dev.	Degree
Diploma	23	3.92	0.51	High
BA	181	3.78	0.59	High
Master and above	54	3.38	3.62	Moderate

The results in table (VIII) show that there is a clear difference between the means of the three levels for academic Qualification. Therefore, the researcher used the One-Way ANOVA test as shown in table (IX).

Table (IX): the results of ANOVA- test for the differences in the participant's responses related to principal's support to alternative assessment due to academic qualification.

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.67	2	3.33	8.05	0.00
Within Groups	98.14	265	0.41		
Total	104.81	267			

The Results in table (IX) show that the level of significance for the differences in responses related to principal's support to alternative assessment due to academic qualification (0.00) this means that there are no statistically significance differences at ($a<0.05$). Thus the hypothesis is accepted.

Conclusion

The study results showed that Teachers' View of High School Principals' Support for Meaningful Learning was high with a mean of (3.71) over/out of (5). The result also revealed that there were no statistically significant differences in due to gender and academic qualifications. However, there were statistically significant differences due to years of experience in favor of less than Five and location in favor of Negev sector.

Dissection of the results of the study:

Results related to the first question: The researchers attributed this to the fact that Alternative assessment tasks strengthen the relation between the students and teacher. Alternative assessment tasks affected the school atmosphere positively through building the trust between students and teachers, close cooperation with the teachers and students felt that they receive the attention from the school.

Results related to the second question

To answer this question, the researcher investigated the following hypothesis, which was based on:

Results related to the first Hypothesis: The researchers attributed this to the fact that First, principals provided instructions for both male and female teachers without taking into account gender. Secondly, the Ministry of education in both Governorates provided counseling to all teachers. Thirdly, when universities train teachers, the teachers get the same training. Finally, Male and female teachers carry out their duties and responsibilities according to their experience and qualification.

Results related to the second Hypothesis: The researchers attributed this to the fact that the ministry of education in Negev adopted the Alternative assessment Theory four years ago. Therefore, the ministry of education informed the principals about the need to change the way they run their schools. Principals participated in workshops to be trained to apply the alternative assessment program. Many principals in Negev were aware of the needs to equip their schools with the necessary tools such as tablets, computers etc. The principals in the Negev realized the importance of this trend, which is going to move the level of their students from traditional learning to more advance by making learning more meaningful for the students. The universities in Negev shared the ministry's vision in adopting the alternative assessment theory and planned. In addition, the ministry of education gave the students 30% of their final grade for each subject. Students can get the 30% for the alternative assessment tasks. The principals provided guidance to teachers to use the alternative assessment as a tool to evaluate the students. The new teachers who teach in The Palestinian Ministry of Education provide alternative assessment individually.

The Palestinian Ministry of Education did not adopt the alternative assessment theory, the principals and teachers did not receive training to accomplish this change, besides, the schools lacked of the tools to attain the alternative assessment needs. Teachers evaluate the students by using the traditional way, which contradicts with the spirit of the alternative assessment theory.

Results related to the third Hypothesis: The researchers attributed this to the fact that the universities played an important role in training the new teachers to adopt alternative assessment as part of their daily work in schools. In addition, the new teachers practiced the components of the alternative assessment such as the alternative assessment, higher order thinking skills and using technology during their years of studies. The new teachers are familiar with the use of smart phones a technology, while, experienced teachers faced problems in adopting technology in their classes. The new teachers are more motivated to carry out the alternative assessment in schools because they can sense the students' progress since they use the same tools in real life with their students. The experienced teachers are often afraid of the change, which means that they have to attend more workshops to learn how to be more involved in alternative assessment program. The experienced teachers needed to adjust their plans to meet with the requirements of

the alternative assessment program, which is met most of the time with complaints and doubts about the effectiveness of this program.

Results related to the fourth hypothesis: The researchers attributed this to the fact that Teachers share the same responsibilities and duties in schools while they are performing the same task. Therefore, the academic qualification they have does not make huge difference when teachers do the same work. All the teachers received the same instruction on how to implement the alternative assessment program. Many of the teachers earned their second degree in a different field from their first one, which did not help them much in improving their ways in adopting the alternative assessment program.

Limitations of the study:

The current study has the following limitations:

1. This population study consisted of the High schools in Bethlehem Governorate and Bedouin sector in the south of Palestine.
2. The study was carried out in the academic year (2021-2022) at the first semester.
3. The study was limited by the concepts and definitions mentioned in it.

Recommendations:

In light of the results, the researcher recommended the following:

Regarding for Teachers:

1. Teachers (particularly Bethlehem governorate) should replace the traditional assessment to more meaningful assessment through using the Alternative assessment.
2. Teachers (particularly Bethlehem governorate) should encourage the students to use the higher order thinking skills in their daily life.

Regarding for Principals:

1. Principals should work more to enhance the alternative assessment program and providing the schools with workshops to train teachers to apply the alternative assessment program effectively.
2. The principal should work more to involve the alternative assessment spirit in building the school vision.
3. The principal should encourage the cooperation between teachers rather than competition.

Regarding for Decision-makers:

1. Urging the Palestinian ministry of education to be more concerned about adopting the alternative assessment theory by increasing the school's budgets, providing the needed tools and labs, as such been done at the Negev Sector.
2. The Palestinian Ministry of education should raise the awareness of the local communities about the importance of the alternative assessment at schools, to have more cooperation between the local communities and the schools.
3. Adopting the Negev experience in implementing the alternative assessment theory, in order to apply it at the schools of Palestinian Ministry of education.

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Available online at http://www.bedujournal.com/

BASE FOR ELECTRONIC EDUCATIONAL SCIENCES

ISSN: 2718-0107

Base for Electronic Educational Sciences, 4(1), 49-59; 2023

An Idiographic Study on the Stereotypic Images of Teachers Through Draw - A - Scientist Test (Dast)

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APA Citation:
Alhassanat, K. A. A. & Shehadeh, S. A. I. (2023). An Idiographic Study on the Stereotypic Images of Teachers Through Draw - A - Scientist Test (Dast). *Base for Electronic Educational Sciences, 4*(1), 49-59.
Submission Date: 27/09/2022
Acceptance Date: 13/03/2023

Abstract

Children are born with some intrinsic qualities as well as certain invisible endowments, both of which contribute to the fact that each child is endowed as well as unique. In addition, children might either have an introverted or outgoing personality. Youngsters who are more introverted may also have a vibrant inner world, just as children who are more extroverted. Those kids are more likely to rely on their own internal resources in order to educate themselves. These children have opinions and perspectives that are very complex. In addition, even if they prefer their own company, introverted youngsters often have a strong interest in playing creative games. In addition to this, they have a propensity to spend their time engaging in solo pastimes such as painting. There is a wide range of abilities among youngsters, including the ability to answer verbally or in writing to queries. Therefore, the Draw-A-Scientist Test, also known as DAST (Chambers, 1983), is a resourceful opportunity for scientists who are attempting to delve into the intricacies of children's cognitive and emotional worlds. This test evaluates the paintings of young children and can be administered to children as young as three years old. As a result, the current study was constructed based on the cognitive constructs of a kindergartener aged six who was given the Draw-A-Scientist Test to assess their perceptions of teachers in general (DAST). It should come as no surprise that the preconceived notions that youngsters have about their instructors significantly impact their capacity to learn. As a consequence, the results of the study might have useful consequences for pedagogy, education, and scientific research.

Keywords: Idiographic, nursery, teacher image, the Draw - A - Scientist Test (DAST)

Introduction

Until recently, the majority of mental evaluations of both children and adults included painting or sketching. Drawings have been used throughout history to assess information that has been purposefully or accidentally compressed, and more recently, to get an understanding of how cognitive processing works (Meichenbaum, 1977). Due to the vital role that pictures play in communication, the process of identifying and conceiving images may have both practical and theoretical implications. As a means of expressing and analysing their daily experiences, people create pictures. Thus, we not only form the soul of drawings, but we are also spiritually moulded by them (Wilson, B. & Wilson, M., 1977; Weber & Mitchell, 2002). Drawings mimic the evolution of mental representations, which are crucial to human cognition (Wilson, B. & Wilson, M., 1979). Normal children like sketching and exhibit no signs of tension or anxiety while doing so. Therefore, it is thought that using drawings as a kind of assessment is a useful method. In contrast to the fact that many children loathe answering conventional and formal exam questions, drawing evaluations may be conducted quickly, conveniently, and in a pleasant way (Lewis & Greene, 1983). It is undeniable that every picture or sketch represents the artist's existence, ideas, and inner self. People who are enthusiastic about an activity prefer to represent their inner worlds when they create art. When a youngster discloses her true self, her heart grows independence. Utilizing a child's sketching talents is a simple way to collect information about her inner world (King, 1995). According to Crook (1984), the substance of a child's drawing or painting may disclose his or her feelings and worldview. The premise of Crook's argument is the generally believed assumption that the breadth of children's drawings may act as a database. Similarly, since a child's drawing is a reflection of her own mental picture, the drawings of children serve as a window displaying their innermost emotions and ideas (Thomas & Silk, 1990). Individuals strive to make sense of themselves and others by constructing and displaying mental images that represent their knowledge and experiences. After becoming a part of human behaviour, pictures are susceptible to being reconstructed and clarified. Although pictures will always have some relationship with other people, places, items, or events, their ability to elicit a variety of emotions gives them a distinct function. Thus, not only do we manipulate images, but we are also manipulated by them. Images' capacity to stimulate cognition is largely due to their important role in metaphor. It is difficult to get a consensus about the tendency of metaphor. Drawings, according to Chambers (1983), are able to bridge linguistic borders and provide comparisons across groups of persons with very different language and skill sets. According to Hawkes (1972), the idea of metaphor is formed at each given moment by language and social constraints, in addition to its own history; it has no pure form. Dickmeyer (1989) used the term metaphor to characterize the linguistic representation of a thing. In order to adequately facilitate the student's understanding of the given phenomena, the student's native language must be visible, palpable, and tactile in our world calibrated. The act of placing information on a child's empty plate is one way to explain a phenomenon in an extremely detailed manner. Even apparently conflicting depictions of the self are key components of the structure and foundation of children's identities as shown in their artwork. If drawings are examined and their effects determined, children's ideas of the world are judged to be more purposeful and effective. Seeing it not only as a tenuous source of wisdom and discernment, but also as a viable source of revitalization and assertiveness, we may seek methods to use and even laud diversity (Weber & Mitchell, 2002). A significant proportion of education professionals are intrigued by children's artwork. Numerous researches by academics, psychologists, and educators have analysed and shown the messages

contained in children's artwork (Farokhi & Hashemi, 2011). Observing and analysing children's artwork provides essential insight into their social and emotional development, as well as their physical and cognitive maturation. Typically, toddlers learn about their surroundings via mental, physical, and psychological processes. A pencil, a paintbrush, and some paper are the most effective tools for younger children to communicate their deepest desires and anxieties. The advancement of a child's drawings through time may reveal substantial growth and development, as well as intellectual abilities and skills indicative of their developmental level. This is feasible both qualitatively and statistically. Children may begin sketching as soon as they can physically grasp a drawing tool in their hands. Children are continually seeking to connect with their surroundings and build meaning via the images they create, from their first efforts at drawing, which consist of random strokes and lines, through their first attempts at representational drawing (Lowenfeld & Brittain, 1987). It has been suggested that drawings are one of the most often used evaluations by psychologists in clinical settings (Lubin, Larsen, & Matarrazzo, 1984) and educational settings with pupils who are presumed to have social or emotional problems. This tendency has persisted for many decades (Vukovich, 1983). Young children's drawings are a powerful reflection of their thoughts and perceptions of the world around them (Farokhi & Hashemi, 2011). Drawings are often used with children to gain insight into the child's internal conflicts, fears, perception of the immediate world, and family connections, as well as to generate hypotheses that serve as a foundation for future evaluation. Young children may use drawings to generate hypotheses that might serve as the basis for future inquiry (Cummings, 1986). Teachers have showed considerable interest in the artwork of youngsters. The manner in which the youngster expresses himself is a fundamental aspect of his personality. Children who are painting carefully pick the crayons, papers, colours, and shapes they will use, as well as the subject's size, position, and scope. Children's paintings are unique works of art that may reveal personal information about the artist (Thomas & Silk, 1990). Children who draw have a generally optimistic attitude towards life. Through their drawings, kids easily mirror their emotions, concerns, dreams, anxiety, and sadness. Furthermore, drawings provide suggestions about the inner worlds of the children whose artworks accordingly reveal their personalities. It is quite scarce to encounter a child who does not draw, and if you do, it may be the result of a terrible incident (Farokhi & Hashemi, 2011). The most often employed drawing technique with young children is the Draw-A-Person test (Harris, 1963), also known as the Human Figure Drawing (Koppitz, 1968) and the Draw a Scientist Test. Children who draw have a cheerful outlook on life in general. Children's artwork quickly reflects their emotions, worries, desires, worry, and unhappiness. In addition, drawings give insights into the inner lives of youngsters, whose artworks represent their personalities. If you see a youngster who does not sketch, it is often because of a horrific event (Farokhi & Hashemi, 2011). The most common drawing method used with young children is the Draw-A-Person test (Harris, 1963), also known as the Human Figure Drawing (Koppitz, 1968) and the Draw a Scientist Test. This particular research was designed to uncover the cognitive constructs that are present in preschool-aged children. In order to accomplish the purpose of the study, the following research question was conceived of:

• How does a young child in preschool conceptualize the archetypal picture of a teacher?

Methodology

Participants

The data required for the research was obtained from a nursery student (a female) attending a private college in the city of Adana in the country of Turkey. The respondent's participation in the research was entirely voluntary. Because the target population was so broad and difficult to reach, the convenience sampling approach was chosen as the appropriate data collection strategy.

Instruments and Data Procedure

Idiographic is a term that describes the understanding of a person that may be applied to a specific situation. As opposed to inquiries into the global aspects of groups of people or circumstances, an idiographic technique involves the in-depth and focused study of only one person or case in order to achieve an extensive understanding of that individual or scenario. A kindergarten student (female) who attends a private college in Adana, Turkey, was interviewed for the purposes of this idiographic research to investigate her ideas. In addition to these preconceived notions of what a teacher should be like, the Draw a Scientist approach was used to uncover previously hidden information. In the Draw a Scientist component of the research, the informant was given the task of drawing whatever comes to mind for her when she considers the role of a teacher. In addition to that, she did not have a time constraint when it came to finishing her sketches. She was just given the freedom to create the drawings in an untroubled setting in which she was not interrupted by anything.

Findings of the Study

The drawings of the respondent are represented by the following pictures and the explanations that are linked to them. Each instructor of the courses is highlighted individually in the following order.

Figure 1

Class Teacher

Colour is often used by children to both show and explain the subject matter of their works of art. In order to convey a sense of atmosphere, brightness, depth, and perspective in their pieces of art, children in particular, rely heavily on their understanding of colour. As displayed here in the painting, the respondent

interprets the class teacher with a human figure in various bright colours. The use of a range of colours allows the young artist to create an impressive piece, which is both eye-catching and clearly conveys the mood they wish to portray. This use of colour is an incredibly powerful tool for children, allowing them to express their imagination, their understanding of the world, and even how they feel about certain subjects. Furthermore, the smiling face of the teacher clarifies the happy mood of the child in the course. The use of a human figure to portray the teacher is also interesting and demonstrates the child's personal connection with their subject. The use of colour and texture, the attention to detail, and the incorporation of a human figure help to capture the emotions that the child is trying to convey. Further, the table, pencil, and pencil case relate the human figure with the course that is taught. All these elements together make this artwork a beautiful representation of the teacher-child relationship.

Figure 2

English Teacher

The response depicts the English instructor as a human person dressed in a variety of vivid hues, as seen above in the artwork. The young artist was able to make an attractive painting by using a variety of colours. Children are able to convey their imaginations, their level of comprehension of the world, and even how they feel about specific topics via the use of colour, which is an extremely effective instrument for this purpose. In addition, the joyful expression on the face of the instructor again explains why the student is having a good time in the class. In addition to being a fascinating choice, the artist's decision to depict the instructor as a human being also reveals the degree to which he or she feels personally connected to the topic at hand. The insertion of a human figure, as well as the use of colour and texture, careful attention to detail, and all of these other elements, all assist to portray the feelings that the artist is attempting to get over. In addition, the table, the pencil, and the pencil case all have some kind of connection to the subject matter. The connection between a teacher and student is shown in this piece of artwork in a way that is both beautiful and meaningful thanks to all of its components. By incorporating these meaningful symbols, the child is able to express her personal connection to the topic and is also able to show how a student can find joy in learning.

Figure 3

Music Teacher

A lively music instructor is seen in this photo, together with a few other types of musical instruments. These tangible resources, which are used in the music classes, are connected to the course that is presented by this lively music instructor. The upbeat disposition that the child had toward the activity is reflected once again in the picture. While it is evident that the tangible resources are an integral part of the learning process, it is also true that a passionate and knowledgeable instructor such as this one has the capability to truly engage students and bring out the best in them. The importance of the instructor's role in creating an enjoyable learning experience is highlighted by this photo. This demonstrates the importance of having a teacher who not only provides tangible resources but also imparts knowledge, enthusiasm and charisma in the classroom.

Figure 4

Swimming Teacher

The blue colour of the swimming instructor's t-shirt is a reflection of the water in the pool as well. Once again, the face of the instructor is shown as being happy here. It would seem that the youngster is having a good time in this class since it involves some kind of physical exercise. The majority of kids really like being active and swimming is one of their favourite sports in particular. As a result, the responder has favourable feelings about this particular class as well. This is evidenced by the instructor's joyous expression, which suggests that she is just as delighted to be teaching the children as they are to be learning. The positive attitude of the instructor is infectious and it is clear that the children are enjoying their class immensely.

Figure 5

Art Teacher

The disposition of the art classroom is reflected in the art teacher's face, which is beaming with happiness once again. In addition, the image depicts both the seats and the table that are used for creating works of art. The responder thus associates the instructor with the activities that he does in the art classes. The instructor's cheerful disposition highlights the positive atmosphere in the classroom, which further encourages students to explore their creativity. The art teacher's face is a reflection of the general mood in the room, which is one of excitement and exploration. This is further highlighted by the tools that are found in the art room, such as the art supplies that are placed neatly around the table and chairs.

Figure 6

Drama Teacher

In this picture, the male theatre instructor is wearing a blue t-shirt. In addition, the instructor always seems to have a pleasant expression on his face, which sets the tone for the classes. In addition, the vibrant stage that is used during the theatre classes is a visual representation of the dynamic energy that is present inside the classroom. The instructor's demeanour, along with the eye-catching stage, provides a sense of energy and enthusiasm to the class.

Figure 7

Assistant Teacher

The child's vivid and bright picture captures the assistant teacher's lively spirit, which is mirrored in the child's own animated demeanour. The teacher consistently displays a cheerful demeanour, which may encourage the student to develop

positive relationships with the instructor. These positive relationships are necessary for the student's educational development, and it is clear that this teacher is a role model for the student. It is a powerful demonstration of how influential teachers can be in providing support and guidance to their students.

Discussion

The purpose of this research was to decipher the cognitive structures and imagery of a six-year-old youngster. Steinke et al. (2007) conducted a similar study to see how pupils perceive scientists. In their investigation, they discovered that male respondents drew more male scientists, whereas female respondents drew more female scientists. In our survey, men instructors outweigh their female counterparts. In their research, Fralick, Kearn, Thompson, and Lyons (2009) discovered that children view scientists as working inside and undertaking colourful experiments. In our research, the responder drew human beings and associated objects when depicting a teacher, emphasizing the problem from a more physical perspective. Thomas, Henley, and Snell (2006) examined the cognitive constructs of undergraduate students in order to determine the typical gender stereotypes in their research. They concentrated on comparing and contrasting the findings of their sample with those of previous research. They noticed that the findings were largely same, suggesting that gender prejudices are very enduring. In our research, we also found that the picture of a stereotypical female instructor predominated. In his research, Minogue (2010) analyzed the attitudes of prospective teachers about scientific education courses and found notable differences in respondents' mental models of science education. In our research, the drawings that represented personal mental models or pictures of instructors were diverse. Moseley, Desjean Perrotta, and Utley (2010) discussed the cognitive images of the environment maintained by candidate teachers and recognized that the drawings of the environment represent an incomplete mental model. Furthermore, they provided valuable data on candidate teachers' beliefs about the environment, which may be useful for teacher educators in the relevant field. The outcomes of our research may also be of tremendous use to teacher educators by offering a vast array of practical information on the teacher image portrayed by pupils. Our research suggests that pupil's drawings can provide teacher educators with an insight into the mental models of instructors. Teacher educators can use this information to make effective teaching decisions, such as the content and structure of their courses, as well as their approach to the teacher-student interaction. By analysing the drawings of teachers provided by the pupils, we were able to explore how the pupils view and interpret their instructors. Our findings indicate that the mental models of teachers held by pupils are heavily influenced by the personality traits and physical characteristics of the instructor. In addition, our research suggests that pupils' drawings may reflect the emotions and motivations of teachers. We believe that this information can be used to improve teaching methods, as it provides insight into how pupils interpret the behaviour of their teachers. By understanding the mental models of teachers held by their pupils, educators can make adjustments to their teaching styles and methods that can help create an environment where students feel comfortable expressing themselves and learning in a more productive way. This has practical implications for the classroom and provides a valuable understanding of the teacher-student dynamic.

Conclusion

This idiographic research revealed that young children identify teacher archetypes with pleasant and tangible pictures. Thus, it may be concluded that children typically form mental images of archetypal instructors. Another significant

conclusion of the research was that the young kid was mostly taught by women. The study's findings should serve as guides for lawmakers revising school curriculum and syllabi. It also suggests that the Turkish education system should be reformed and reexamined, and that professors should cooperate with students to alter perceptions in a much more positive manner. Learners' attitudes toward instructors, classes, and schools may be better comprehended by examining their views of teachers. In a sense, students' fixed and unfavourable perceptions of instructors should be replaced with more positive ones. Otherwise, learners' impressions of instructors might result in poor judgments of education, since learners prefer to identify schools and courses with teachers and that in turn has a significant impact on their overall schema and perspective. Future research should investigate other cultures that may yield distinct views. Consequently, the DAST approach may be a liberating strategy that can revolutionize educators, students, administrators, and politicians. Thus, it is paramount for instructors to build and maintain positive relationships with their students, as this can have a major impact on how learners perceive their teacher's knowledge and level of instruction. The DAST approach can help instructors to better understand and respond to their students, thus improving student satisfaction and engagement. As well, the DAST approach can also provide instructors with deeper insights into the cultural dynamics of their students, which is essential for helping to create an inclusive and welcoming learning environment. By understanding the diverse backgrounds and experiences of their students, instructors can create better learning experiences that are tailored to meet the needs of all learners.

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