Curriculum Research

Volume2, Issue 4
October 1, 2022

Describing the Elements of Preschool Curriculum with a Problem-Solving Approach from the Perspective of Curriculum Planning Specialists and Educational Psychologists

Article info

Article Type:

Original Research

Authors:

Shahrzad Sarkhosh[1]
Alireza Sadeghi [2*]
Batoul Faghiharam[3]
Hassan Shabani[4]
Rozita Zabihi[4]

Article Cite:

Sarkhosh Sh, Sadeghi AR, Faghiharam B, Shabani H, Zabihi R. Describing the Elements of Preschool Curriculum with a Problem-Solving Approach from the Perspective of Curriculum Planning Specialists and Educational Psychologists. Curriculum Research, 2022:2(4): 23-38

Article History:

Received: 2021/04/23
Accepted: 2021/08/22
Published: 2021/10/01

Abstract

Purpose: The present study aimed to describe the elements of the preschool curriculum with a problem-solving approach from the perspective of curriculum planning specialists and educational psychologists.

Methodology: This study was a qualitative study conducted in Tehran. The population consisted of curriculum specialists (n=200) and educational psychologists (n=238) who were selected using the purposive snowball sampling method, and 24 subjects were studied until reaching theoretical saturation. Semi-structured interviews were used to collect data. To analyze and interpret the data, the method of thematic analysis through coding was used.

Findings: The findings indicated that from the perspective of curriculum planning specialists and educational psychologists, a problem-solving curriculum for preschoolers includes goals (cognitive, attitudinal, functional), content (organization, presentation methods), teaching methods (traditional methods, attention to learner's age, instructor's characteristics, and active methods), learning activities (individual, group), instructional materials (features and types of resources), space (physical characteristics of facilities), time (duration, attention to the child's preparedness and age), grouping (attention to responsibility, respect for others, attention to ethics considerations, attention to group homogeneity, nature of the problem, group heterogeneity, number of group members, gender, age, personal differences), and evaluation (of the program based on personal, procedural, quantitative, and descriptive differences).

Conclusion: Given the importance of the Comments, it can be continuously applied to and formulated for the preschool level to raise problem-solving skills in children and foster their abilities to understand and reflect on life in the future society.

Keywords: Curriculum, Problem-Solving, Preschool

Affiliations:

1. PhD student, Department of Educational Sciences, Islamshahr Branch, Islamic Azad University, Tehran, Iran.
2. Associate Professor, Department of Educational Sciences, Allameh Tabatabai University, Tehran, Iran. sadeghi.edu@gmail.com
3. Associate Professor, Department of Educational Sciences, Islamshahr Branch, Islamic Azad University, Islamshahr, Iran.
4. Assistant Professor, Department of Psychology, Islamic Azad University, Islamshahr Branch, Tehran, Iran.

Introduction

Paying attention to children and caring for them not only guarantees a healthy life in childhood but also provides the conditions for a healthy life in adulthood. Frederick Froebel, the founder of the kindergarten, believed that the preschool level is an essential step on the ladder of instructional experience (Abri et al., 2011). Preschool education is defined as an instructional process that guides children in the best way in terms of preserving cultural features and values of the society, physical growth, social, emotional, language, and subjective development (Kazu & Iz, 2018).

Preschool helps children develop their capabilities and competencies such as adapting to other children, following daily schedules, learning, sitting still and focusing on activities for a certain period of time, prolonged attention, etc. All of these skills and competencies help children adjust to the early years of school. These preparations help to some extent to reduce the number of dropouts and failures at the school levels (Mofidi, 2019). The child begins to establish social relations on a regular basis outside his/her family for the first time since his/her birth upon starting the preschool education. The social relations that he/she establishes with teachers and peers in the classroom are the beginning of such relations. During the process of establishing such relations, the child encounters some problems while playing games with his/her peers, sharing their toys or requesting something from the teacher. In order for their social relations to continue appropriately they have to solve such problems in proper ways.(Durmuşoğlu, Arsalan & Arsalan, 2018). Therefore, creating problem-solving skills in preschoolers is the main task of children's instructors and curriculum specialists (Mesrobian, 2021). The concept of problem-solving in education was first developed by John Dewey. He emphasized the important role of school and teacher in problem-solving (Domoshoghlu, Arsalan & Arsalan, 2018). Moreover, researchers found that training problem-solving skills for children can improve their mental health (Tan et al., 2019). Thus, training basic skills of problem-solving can be started in preschool, helping children to improve their skills (Morin, 2021). Problems are an inevitable part of life and people deal with different problems and challenges in their life; therefore, people's ability to properly and efficiently deal with such challenging situations is of great importance (Lau et al., 2019).

There are many learning opportunities in preschool, which cannot be found at home. Therefore, the children who feel frustrated do not make attempts to solve their problems. However, they will be more confident about their abilities to make attempts when they are provided with a clear formula through the preschool curriculum (Cheng, Shi & Hong, 2018).

At the preschool level, academic, social, physical, and emotional courses, critical speech, fine motor skills, and other instructional and social skills are taken into consideration (Rock, 2021; Ackerman, 2019). The desired level of education is achieved via an effective curriculum through which goals, content, evaluation, materials, methods, and so on will be implemented. In this regard, it is not surprising that the curriculum used to realize a good preschool education should be formulated and implemented to provide for today's needs and social expectations and be open to development (Kazu & Iz, 2018). Educational specialists and teachers are among those who, considering the social status and expectations of preschoolers in any society, will be able to develop curricula focusing on problem-solving and stimulating children's exploratory ability. According to the previous studies, e.g., Ebrahimpour Kumale et al., (2018), Weiland et al., (2018), Mohammadzade (2016), the elements of curriculum to develop problem-solving skills include goals, content, materials, and instructional resources, learning-teaching strategies, learning activities, learning environment, the role of learner, the role of teacher, and evaluation. Ebrahimpour Kumale et al., (2018) proved the role of problem-solving skills in normal and positive behaviors of elementary students. Nadian (2016) concluded that the use of problem-solving skills can cause an increase in critical thinking and academic motivation. Khodabndehloo (2019) and Mohammadzade (2016) concluded that instructors' characteristics and competencies make learning effective and improve the use of life skills. Wang (2018) showed that a lack of time in doing the problem-solving activities affects the quality of students' final performance and they need enough time to do such activities. Weiland et al., (2018) found that time and place are of great importance in curricula focused on a specific skill because they are flexible and do not follow a special order and that the curricula for learning in children exactly determine what activities, where, and when should be done. Zhang (2019) found that ambiguous and problem-focused places and situations lead to the expansion of creativity and subsequent problem-solving. Schooner (2019) showed the role of problem-solving and critical thinking ability in educating technology in Sweden schools with the help of teachers. Rantavuori (2018) successfully described the problem-solving process as part of professional cross-border work

from preschool to school. Thornton and Brandon (2017) found that the learning environment for children should allow them to be creative, select, research, think, communicate with their project, and have privacy, which confirms the mentioned finding. Kaya et al., (2017) showed the effect of preschool games on preschool students' problem-solving skills. Daniel (2016) showed the effectiveness of quantitative and qualitative approaches to problem-solving abilities in the instructional curriculum. Fallahian et al., (2017), Naseri (2011), and Mousavi (2018) showed the effectiveness of active teaching methods for problem-solving skills. Sun et al., (2020), koc Akran and Gurbozturk (2019), Su John et al., (2018), Brown and Lan (2015), Ngang et al., (2014), and Salsabili (2006) found that group activities can develop problem-solving skill by creating the spirit of responsibility and participation in activities while dealing with the problem.

According to previous studies, though there are studies on problem-solving skills in preschool and after that, no study has investigated the elements of the curriculum with the problem-solving approach of preschoolers. Indeed, this issue has been neglected, though it is of great importance in terms of children's cognitive and behavioral development. However, early childhood education has been recently considered at all state planning levels. Instructional researchers and specialists not only attempt to improve the weaknesses of education but also seek to make education policy-makers interested in preschool education to provide the grounds for children's success in elementary school and society more than before (Zamani et al., 2019). It can be said that many specialists argued about this issue but practices in this regard are insufficient. More importantly, children in any society have certain expectations that need to be clearly defined and presented in line with the preschool curriculum, through which children can achieve the abilities of problem-solving by relying on their skills. Therefore, this issue requires the deep thinking and understanding of thematic specialists to motivate the root causes along with the structure of the curriculum in children, and demonstrate their problem-solving skills. In this regard, the importance of the present study is to be aware of the elements of the preschool curriculum, identify the problem-solving skills level in developing the preschool curriculum, know about the opinions of curriculum specialists and educational psychologists about the problem-solving approach in the curriculum, and to provide practical suggestions based on the results. The results of this study can be used by preschool instructors, curriculum specialists, and other preschool instructional agents. Therefore, it seems necessary to conduct this research with the aim of explaining the elements of the preschool curriculum with a problem-solving approach based on the opinion of curriculum experts and educational psychologists.

Methodology

This research is applied and qualitative, with grounded theory method, and was conducted in Tehran, Iran. The population consisted of curriculum specialists and educational psychologists in Tehran. 200 curriculum specialists who were regular members of the Curriculum Association for one year, and 238 educational psychologists who were the official and regular members of the Instructional Psychology Association were selected. Purposeful and snowball sampling method was used for sampling,Each group was separately interviewed and reached theoretical saturation. Thus, the group of curriculum specialists reached theoretical saturation after 14 interviews and the group of educational psychologists reached theoretical saturation after 10 interviews. In general,24 the researcher reached theoretical saturation after 24 interviews. However, to ensure the validity of data, despite the repetition of opinions, several other people were interviewed in each group.

The data collection tools were deep semi-structured interviews with 10 open-ended questions. The questions were in line with the specialized literature of both fields to make the questions easy to understand and the answers more precise. To validate the interview questions, the opinions of several scholars in curriculum planning and educational psychology were used and the required changes were made. The researchers used a voice recorder and note-taking method, and in-person interviews were performed via telephone. Each interview lasted for about half an hour to an hour. Transcribing the interviews, theme analysis was performed through coding with MaxQDA 2018, and the basic themes, organizing themes, and the core theme were extracted.

Findings

The findings from the interviews were coded, and were presented as follows, according to the questions:

Question 1. what are the goals of the problem-solving skills curriculum for preschoolers?

According to the opinions of curriculum planning specialists and educational psychologists, data are presented in Table 1.

Table 1. Phrases and descriptions of problem-solving curriculum goals

Group	Participants	Code	Phrases
Educational psychologists	Psychologist#2	Curriculum goals/attitudinal goals/creating a sense of competence	Feeling competent
	#10	Curriculum goals/attitudinal goals/ reducing anxiety	Less anxiety
	#8, 10	Curriculum goals/attitudinal goals, controlling feelings and emotions	Anger management
	#5	Curriculum goals/attitudinal goals/developing adaptation	Compatible with child
	#1, 2, 4	Curriculum goals/attitudinal goals/ increasing self-confidence	Self-confidence
	#4	Curriculum goals/attitudinal goals/ developing interpersonal relationships	communicating with peers
	#5	Curriculum goals/cognitive goals/ identifying and recognizing the problem	Understanding the problem
	#4, 8, 9	Curriculum goals/cognitive goals/ developing self-awareness	Self-awareness
	#2	Curriculum goals/cognitive goals/ insight-based	Creating insight
	#2	Curriculum goals/cognitive goals/ features of the problem objectives	Logical
	#2	Curriculum goals/cognitive goals/ features of the problem objectives	Motivating
	#2	Curriculum goals/cognitive goals/ features of the problem objectives	Being clear
	#2	Curriculum goals/cognitive goals/ image self-efficacy	Image self-efficacy
	#2	Curriculum goals/cognitive goals/ guided exploratory problem-solving	Guided exploratory
	#1, 6	Curriculum goals/cognitive goals/ developing creativity	Creative
	#1, 2	Curriculum goals/cognitive goals/ developing intellectual independence	Intellectual independence
	#1, 6, 8	Curriculum goals/cognitive goals/ brainstorming	Brainstorming
	#1, 2, 4	Curriculum goals/attitudinal goals/developing self-confidence	Self-confidence
	#2	Curriculum goals/functional goals/goal-setting skill	Goal-setting
	#8, 10	Curriculum goals/functional goals/selection skills	selecting the right solutions
	#2	Curriculum goals/functional goals/ cost-benefit skill	Cost-benefit
	#6	Curriculum goals/functional goals/ analysis skill	Eliminating inapplicable solutions
	#8	Curriculum goals/functional goals/analysis skill	Evaluating solutions
	#10	Curriculum goals/functional goals/ analysis skill	All good and bad solutions
	#7, 8, 10	Curriculum goals/functional goals/ developing stress management skill	Stress management
	#2, 7, 8, 10	Curriculum goals/functional goals/developing decision-making skill	Decision-making

	#2	Curriculum goals/functional goals/developing searching	Curious
	Planner #2	Curriculum goals/functional goals/developing thinking skills/developing convergent thinking	Convergent thinking
	Planners#2, 13,14,7,8,10	Curriculum goals/functional goals/developing thinking skills/developing creative thinking	Creative thinking
	Psychologist#2, 6, 8, 10	Curriculum goals/functional goals/developing thinking skills/developing critical thinking	Critical thinking
Curriculum planner specialists	#10	Curriculum goals/attitudinal goals/ controlling feelings and emotions	Anger
	#7	Curriculum goals/attitudinal goals/developing adaptation in person	Adaptation to different situations
	#7	Curriculum goals/attitudinal goals/understanding others	Understanding others
	#2	Curriculum goals/attitudinal goals/developing self-confidence	Self-confidence
	#2	Curriculum goals/attitudinal goals/developing interpersonal relationships	interpersonal relationships
	#5, 9, 12	Curriculum goals/functional goals/developing searching	Researcher
	#2, 13, 14	Curriculum goals/functional goals/developing thinking skills/developing creative thinking	Creative thinking
	#2	Curriculum goals/functional goals/developing thinking skills/developing a logical thinking	Logical thinking
	#2, 13, 14	Curriculum goals/functional goals/developing thinking skills/developing critical thinking	Critical thinking

According to table 1, it was indicated that the goals of a problem-solving curriculum for preschoolers from the perspective of curriculum specialists and educational psychologists are based on three cognitive, attitudinal, and functional goals. Concerning the cognitive goals of the preschool problem-solving curriculum, children get familiar with knowledge, understanding, application, analysis, evaluation, and combination of situations. Cognitive goals include logical, specific and specialized, objective, and attractive features. In attitudinal goals, children learn how to communicate, manage their feelings, understand others, control their anger, and adapt to different situations to achieve competence and self-confidence. In functional goals, specific skills and behaviors such as goal-setting, analysis skills, decision-making skills, inquiry, searching, thinking correctly, and achieving critical thinking skills, creative thinking, and logical thinking are created in children.

Question 2. what are the content features of the preschool problem-solving curriculum?

According to the data, the content features of the problem-solving curriculum for preschoolers are presented in Table 2.

Table 2. Phrases and descriptions of the content features of the problem-solving curriculum

Group understudy	Participants	Code	Phrases
Educational psychologists	Psychologist#7	Content/content organization/based on individual differences	Individual differences
	#1, 2, 8, 9, 10	Content/content organization/attention to rational age	Based on age
	#7	Content/Content organization/based on needs	Need to survive, love and sense of belonging,

			power, freedom, and entertainment
	#6,9	Content/content organization/ based on interests	Favorite content
	#8	Content/content organization/vertical organization/ guided exploration	The child should explore, and be curious.
	#2, 3, 5, 9	Content/ content organization/ vertical organization/ objective to subjective	Objective concepts
	#8	Content/ content organization/vertical organization/ thinking-based	The child should think
	#10	Content/ content presentation methods/picture/painting	Painting
	#6, 8, 10	Content/ content presentation methods/performance/role-playing	Performance
	#1, 2, 7	Content/content presentation methods/performance/animation	Animation
	#7	Content/ content presentation methods/auditory/story	story
Curriculum planning specialists	Planner#2, 12,13	Content/content organization/attention to rational age	Based on age
	#2, 10, 14	Content/content organization/ based on needs	Based on children's needs
	#2, 8, 11, 9, 6, 12	Content/content organization/ based on interests	Interests
	Planner#1	Content/content organization/ participatory and active	Child's participation
	#3,12	Content/content organization/ vertical organization/attention to the structure of knowledge	Previous learning
	Planner#9, 14, 4	Content/content organization/ vertical organization/ simple to difficult	Simple to difficult
	#8	Content/content organization/ vertical organization/ attention to social space	Culture of the society
	#12	Content/content organization/ vertical organization/attention to social space	Child's natural life
	#1, 3, 5	Content/content organization/ vertical organization/thinking-oriented	Force them to think

According to Table 2, it was indicated that the features of problem-solving curriculum content from the perspective of educational psychologists and curriculum specialists are based on two factors of organizing and presenting the content. Therefore, the organization curriculum content should be applicable in children's everyday life, simple, exploratory, based on children's needs, interests, differences, and age, taken from children's real-life environment, and provoke thinking and problem-solving in children. Also, the content of the curriculum for children should be presented in the form of stories and tales, performances, paintings, and games to motivate inquiry in children and persuade them to solve the problem.

Question 3. What are the materials and resources for a problem-solving curriculum for preschoolers?

According to the interviews, the data are presented in Table 3.

Table 3. Phrases and descriptions related to the materials and resources of the problem-solving curriculum

Group	Participants	Code	Phrases
Educational psychologists	Psychologist #2	Instructional materials/ features of resources	Creativity
	#3	Instructional materials/ features of resources	Attractiveness
	#3	Instructional materials/ features of resources	Based on the child's age
	#3	Instructional materials/ features of resources	Culture
	#7	Instructional materials/ features of resources	Story
	#7	Instructional materials/ features of resources	Objective
	#10	Instructional materials/ features of resources	Flexible
	#10, 3, 6	Instructional materials/ types of resources	Different storybooks
	#10,9,4,3	Instructional materials/ types of resources	Different types of toys
	#1	Instructional materials/ types of resources	Game
	#2	Instructional materials/ types of resources	Cartoons
	#3,4	Instructional materials/ types of resources	Films
	#6	Instructional materials/ types of resources	flashcards
	#4	Instructional materials/ types of resources	Role-play
curriculum specialists	planner #1	Instructional materials/features of resources	Participatory
	#2, 5	Instructional materials/features of resources	Real life
	#3	Instructional materials/features of resources	Strongly motivating
	#12	Instructional materials/features of resources	Flexibility
	#12	Instructional materials/features of resources	Diverse
	#12	Instructional materials/features of resources	Colorful
	#12	Instructional materials/features of resources	Children can use it
	#12	Instructional materials/features of resources	Non-dangerous
	#1	Instructional materials/features of resources	Computer games
	#2	Instructional materials/features of resources	The child's toys
	#2,7	Instructional materials/different types of resources	Sand
	#2,7	Instructional materials/different types of resources	Water
	#2	Instructional materials/different types of resources	Art materials
	#6	Instructional materials/different types of resources	human relationship, are the best resources
	#4	Instructional materials/different types of resources	Handicraft
	#4	Instructional materials/different types of resources	Poems
	#7, 10	Instructional materials/different types of resources	Puzzles
	#7, 9	Instructional materials/different types of resources	Books
	#9	Instructional materials/different types of resources	Animation
	#9	Instructional materials/different types of resources	Role-playing
	#10	Instructional materials/different types of resources	Lego

According to Table 3, it was indicated that the instructional materials from the perspective of curriculum specialists and educational psychologists depend on children's age, can be modified and manipulated, and are flexible, safe, and efficient. Moreover, various types of instructional materials such as mind games, creative performance, storytelling, etc. should be used to develop problem-solving skills in children.

Question 4. What are problem-solving curriculum activities for preschoolers?

Table 4 presents the data related to curriculum activities:

Table 4. Phrases and descriptions of problem-solving curriculum activities

Group	Participants	Code	Phrases
Educational psychologists	#3,6	Learning activities/group activities	Group games
	#3	Learning activities/group activities	Exhibitions
	#3	Learning activities/group activities	Camping
	#7	Learning activities/group activities	Playing cards
	#7	Learning activities/group activities	Imaginary trip
	#9	Learning activities/group activities	Sculpturing workshop
	#9	Learning activities/group activities	Culinary workshops
	#9	Learning activities/group activities	Traditional games
	#7	Learning activities/group activities	Storytelling
	#9	Learning activities/individual activities	Pottery
	#10	Learning activities/individual activities	Handicrafts
	#8	Learning activities/individual activities	Playdough
Curriculum planning specialists	Planners#2, 6, 7, 10, 11, 13, 14	Learning activities/group activities	Playing games
	#2, 7	Learning activities/group activities	Pantomime
	#7, 12	Learning activities/group activities	Creative performances
	#7, 10, 13	Learning activities/group activities	Storytelling
	#12	Learning activities/group activities	Theatrical hymns
	#4	Learning activities/individual activities	Workbooks
	#7	Learning activities/individual activities	Carpentry
	#7	Learning activities/individual activities	Astronomy
	#7	Learning activities/individual activities	Traffic
	#10	Learning activities/individual activities	Painting

According to Table 4, the participants emphasized individual problem-solving curriculum activities such as painting, as well as group activities such as performance, camping, and so on for preschoolers.

Question 5. what are the teaching strategies of problem-solving curriculum for preschoolers?

Table 5 presents the data on problem-solving curriculum teaching strategies for preschoolers:

Table 5. Phrases and description of problem-solving curriculum teaching strategies

Group	Participants	Code	Phrases
Educational psychologists	Psychologist#10	Teaching method/traditional method	Socrates questions and answers
	#4	Teaching method/ attention to age	Based on age
	#3	Teaching method/ teacher's characteristics	s/he should enjoy teaching
	#3	Teaching method/ teacher's characteristics	s/he should wear light clothes
	#3, 4, 7,5,1	Teaching method/ active methods	Games
	#3	Teaching method/ active methods	Pantomime

	#3,4,6,7,2	Teaching method/ active methods	Storytelling
	#4,8	Teaching method/ active methods	Exploratory
	#4,6,7	Teaching method/ active methods	Performance& Theater
	#4	Teaching method/ active methods	Animation
	#1	Teaching method/ active methods	Mixed method
Curriculum specialists	Planner #11	Teaching method/ active methods	Speech
	#2,4,5,12,7	Teaching method/active methods	Exploratory
	#2,6,7	Teaching method/active methods	Searching
	#3,7	Teaching method/active methods	Games
	#4,6,11,7	Teaching method/active methods	Playing roles
	#4,14	Teaching method/active methods	Field trip
	#4,11,7	Teaching method/active methods	Brainstorming
	#5	Teaching method/active methods	Project-based learning
	#5	Teaching method/active methods	Question-based approach
	#6,11,13	Teaching method/active methods	Storytelling
	#7	Teaching method/active methods	Pantomime
	#7	Teaching method/active methods	Activity unit
	#11,7,1	Teaching method/active methods	Participatory
	#11	Teaching method/active methods	Indirect
	#7	Teaching method/active methods	Inductive thinking method

According to table 5, Creative performance, storytelling, inquiry, etc. are some of the active teaching methods that develop problem-solving in children.

Question 6. What are the evaluation methods of problem-solving curriculum for preschoolers?

The opinions of curriculum specialists and educational psychologists, are presented in Table 6:

Table 6. Phrases and descriptions of evaluation methods in problem-solving curriculum

Group	Participants	Code	Phrases
Educational psychologists	Psychologist# 2	Evaluation methods/ evaluation based on personal differences	Evaluation should be based on individual differences
	#2	Evaluation methods/ procedural evaluation	Evaluation should be procedural
	#1	Evaluation methods/evaluation of the program	It can be a weakness of the program
	#4	Evaluation methods/ descriptive methods	Oral form
	#9	Evaluation methods/ descriptive methods	Performance observation before, during, and after teaching
	#10	Evaluation methods/ descriptive methods	Evaluation by parents in real situations of life by observing the child's performance
Curriculum specialists	Planner#4	Evaluation methods/ quantitative evaluation	Standards and standard tests
	#1	Evaluation methods/ descriptive methods	One of the most important tools is observation.
	#2	Evaluation methods/ descriptive methods	self-evaluation
	#2	Evaluation methods/ descriptive methods	Peer-evaluation

	#2	Evaluation methods/ descriptive methods	A checklist or grading scale should be established.
	#4	Evaluation methods/ descriptive methods	Every child should have a file (field observation)
	#5	Evaluation methods/ descriptive methods	Authentic evaluation
	#6,7,10	Assessment methods/ descriptive methods	Documenting observation
	#8	Assessment methods/ descriptive methods	Project

As indicated in table 6, educational psychologists and curriculum planners believed that appropriate evaluation methods in teaching problem-solving techniques to children are descriptive methods such as performing projects, observation, and parents' and instructors' reports.

Question 7. What are the grouping features of the problem-solving curriculum for preschoolers?

Table 7 presents the grouping for preschoolers.

Table 7. Phrases and descriptions of grouping features of the problem-solving curriculum

Group	Participants	Code	Phrases
Educational psychologists	Psychologist#7	Grouping features/ attention to the responsibility	responsible
	#7	Grouping features/ respect for others	Respect the wants of others in the group.
	#1	Grouping features/ attention to ethical traits	Based on their personality
	#2,4,6,8	Grouping features/heterogeneity of the group	Asymmetry
	#6	Grouping features/number of the group members	It should be 3-5 people.
	#3	Grouping features/attention to age	The members of the group should be of the same age
	#1	Grouping features/attention to personal differences	Personal differences
Curriculum specialists	Planner#1	Grouping features/attention to the nature of the problem	The features of a group depend on the problem the child deals with.
	#10	Grouping features/attention to the nature of the problem	Problem-solving is partly individual and partly in a group.
	#2	Grouping features/heterogeneity of the group	Cultures
	#7	Grouping features/heterogeneity of the group	Different interests and abilities
	#14	Grouping features/heterogeneity of the group	Being heterogeneous and mixed.

The important features of preschoolers grouping obtained in the problem-solving curriculum are attention to responsibility, respect for others, attention to ethical traits, attention to the homogeneity of the group, attention to the natures of the group, heterogeneity of the group, number of the group members, attention to gender, attention to age, and attention to personal differences.

Question 8. what are the features of the time of the problem-solving curriculum for preschoolers?

Relying on the opinions of curriculum specialists and educational psychologists, the data on features are presented in Table 8.

Table 8. Phrases and descriptions of features of time in the problem-solving curriculum

Group	Participants	Code	Phrases
Educational psychologists	Psychologist#5, 10	Features of time/length of time for solving a problem	Between 20 to 30 minutes per problem
	#8	Features of time/length of time for solving a problem	Short but consecutive lengths of time
	#1	Features of time/attention to child's readiness	Cognitive development
Curriculum specialists	#11, 12, 13	Features of time/length of time for solving a problem	Short time
	#14	Features of time/attention to child's readiness	Children should be physically and mentally ready to learn.
	#14	Features of time/ attention to age	Time for class should be based on children's age

According to Table 8, curriculum specialists and psychologists stated that preschoolers need about 30 minutes to learn a problem-solving skill, and the time for a class should be based on children's abilities, cognitive development level, and physical and mental readiness.

Question 9. What are the features of space in the problem-solving curriculum for preschool children?

Table 9 presented the space features of the curriculum.

Table 9. Phrases and descriptions of space features of the problem-solving curriculum

Group	Participants	Code	Phrases
Educational psychologists	Psychologist#3,5,6	Place and equipment/ physical features of the place	Colorful
	#3,10	Place and equipment/ physical features of the place	Safe
	#1,4	Place and equipment/ physical features of the place	Natural space
	#6,9	Place and equipment/ physical features of the place	Attractive
	#7,9	Place and equipment/ physical features of the place	Challenging
	#8	Place and equipment/ physical features of the place	Objective
	#10	Place and equipment/ physical features of the place	Being away from stress
Curriculum specialists	Planner #6	Place and equipment/ physical features of the place	Dynamic and rich
	#7	Place and equipment/ physical features of the place	It is possible in any situation or place.
	#6	Place and equipment/ physical features of the place	Childish
	#8	Place and equipment/ physical features of the place	The space should be happy and problematic.
	#3	Place and equipment/ space equipment	Things to play

Curriculum specialists and psychologists believed that the appropriate features of the learning environment for preschoolers include being safe, attractive, challenging, lively, away from tension and stress, etc. According to them, the equipment in the learning setting should have elements such as pictures, poetry, storybooks, and simple tools to provide the children with the chance to solve problems.

Conclusion

Problem-solving skill is one of the most important skills that are very valuable and important to be learned in the early years of life. Preschool is considered an early and important level of learning for children because at this age range not only do children have many potentials, but also their cognitive development, feelings, emotions, and behaviors are directed purposefully, and they are expected to have many competencies in different aspects of individual and social life if they can discover and solve their problems. In this regard, formulating a curriculum focusing on training problem-solving skills in preschool are of great importance. Educational psychologists and curriculum specialists are among scholars in policy-making and formulating a curriculum is one of the programs for the preschool level. Their opinions and policies can be an effective step in the success of human capital in today's and tomorrow's society.

Therefore, one of the findings of the present study was that the goals problem-solving curriculum for preschoolers includes cognitive, attitudinal, and functional goals. In this regard, according to educational specialists' opinions, the attitudinal goals consist of a sense of competence, less anxiety, self-control; cognitive goals are composed of insight, understanding, recognizing, and identifying the problem, self-awareness, etc.; and functional goals are based on goal-setting, selecting the solution, analysis. The curriculum specialists considered the goals to be understanding others, emotions, self-confidence, interpersonal relationships. This finding is in line with the findings of Ebrahimpour Kumale et al., (2018), Weiland et al., (2018), and Mohammadazade (2016). They found that the curriculum focusing on developing the problem-solving skill has the element of goals. Schooner (2019) showed the role of problem-solving skills and critical thinking ability in training technology in Sweden schools with the help of teachers. Rantavuori (2018) successfully states the problem-solving process as a part of professional borderline work from preschool to school.

In justifying these findings, it is said that the cognitive goal of a problem-solving curriculum results in the identification of the problem and providing appropriate solutions, and making decisions in children due to developing the understanding power. An attitudinal goal leads to self-control and self-confidence in children and management of different emotions in dealing with problems, and the functional goal leads to a practical attempt to meet the goal concerning the problem.

Another finding of the present study was the organization and providing a problem-solving curriculum for preschoolers. Therefore, educational psychologists and curriculum specialists considered the content organization to be based on children's age, interests, individual differences, and providing the content based on stories, paintings, animations, tales, etc. This finding is in line with those found by Ebrahimpour Kumale et al., (2018), Schooner (2019), Weiland et al., (2018), and Mohammadzade (2016) who found that a problem-solving curriculum has a content dimension. Lau et al., (2019) found that content brings about motivation and interest in the participants. Kaya et al., (2017) indicated that in content in the form of a game, a situation takes place that children can deal with in real life. Explaining the result, it can be said that content plays an important role in the problem-solving curriculum. Therefore, the variable of content organization, due to attention to children's age, individual differences, and unique performance, and the variable of content presentation, due to motivating the inquiry and problem-solving spirit in preschoolers have been of great consideration.

Therefore, educational psychologists and curriculum specialists considered the features of instructional resources, under similar theories, to be based on creativity, changeability, flexibility, attractiveness, child's interest, variety, being objective, and lively. They also considered types of instructional materials to include books, animations, toys, etc. This finding is consistent with the findings of Ebrahimpour Kumale et al., (2018), and Delfan Azari (2019) who investigated the element of instructional materials and resources in the curriculum. In this regard, Lau et al., (2019) found that the motivation from instructional materials and resources can develop social problem-solving skills. Ghasempour (2017) found that using natural materials such as sand, stones, wood, etc. is effective and helpful for children's learning. Explaining this finding the variable of resources features, due to consistency with children's age and gender, their differences, and the variable of different types of resources such as pottery, playing cards, Lego, puzzles, toys, etc., have been of great importance, due to practicality and variety.

Another finding was problem-solving curriculum activities for preschoolers in groups or individually. In this regard, educational psychologists and curriculum specialists considered the curriculum group activities to be based on physical pantomime, creative performance, storytelling, and individual curriculum activities to be based on painting, pottery, handicrafts, storytelling by the child, workbooks, carpentry. These results consistent with

the findings of Sun et al., (2020), Cok Ackran (2019), Su John et al., (2018). They argued about group activities and regarded them as effective in responsibility while dealing with problems. Mofidi (2014) found that learning colors by finger painting, learning the alphabet through singing, learning numbers by using Legos, and so on is interesting for children. Explaining the result, it can be said that group activities are considered important due to making more interaction and collaboration among children, making sense of learning, providing learning opportunities, and individual activities are important due to help children make a work, be creative, etc.

Another finding was teaching strategies that consisted of variables of traditional teaching methods, attention to learners, instructor's characteristics, and active teaching methods. Therefore, according to the educational psychologists and curriculum specialists, the variable of traditional teaching methods includes questions and answers, speech, and trial and error; the variable of attention to age includes consistency between teaching methods and children's age; the variable of instructor's characteristics includes patience, acting as a guide and supervisor; the variable of active teaching methods includes using exploratory methods, pantomime, brainstorming, participatory project, inquiry, searching, field trip, creative performance, etc. This result is in line with the findings of Khodabndehloo (2019), and Mohammadzade (2016). Stephen (2014), and Ramani and Brunel (2014) found that problem-solving training depends on the participatory teaching method in children. Explaining the result, it can be said that teaching strategies are other important dimensions of problem-solving curriculum for preschoolers, in which the variable of traditional teaching strategy is important due to interaction and questions and answers between teacher and students, conducting lectures, homework, and learning activities. The variable of instructor's characteristics, due to instructor's attention to children from both individual and instructional dimensions, instructor's clothing, and interaction between teachers and children; the variable of active methods such as exploratory methods, problem-solving, brainstorming, etc. due to being active and efficient; and the variable of age, due to the children's age and learning conditions are the important variables of teaching strategies in the problem-solving curriculum for preschoolers.

Another finding was evaluation methods based on individual and procedural differences, evaluation of the program, quantitative evaluation, and descriptive evaluation. Therefore, evaluation based on individual differences is based on children's differences; procedural evaluation includes students' activities in the process; evaluation of the program includes identifying the strengths and weaknesses; quantitative evaluation includes standard tests; and descriptive evaluation includes using the method of observing children in dealing with the problem, documenting these observations, self-assessment, etc. Fallahian (2017) found different evaluation strategies such as self-assessment, peer-assessment, etc. in problem-solving learning. Dormoshoghlu et al., (2018) found that the information on preschoolers' problem-solving can be achieved by completing evaluation forms by teachers. Justifying the result, it can be said that evaluation is used to identify and assess the pros and cons of children's learning process.

Another finding was grouping features of the problem-solving curriculum for preschoolers. They included the variables of attention to responsibility, respect for others, attention to ethical traits, attention to the homogeneity of the group, attention to the nature of the problem, heterogeneity of the group, number of the group members, attention to gender, attention to age, attention to individual differences from the perspectives of educational psychologists and curriculum specialists. In this regard, the results found by Cok Ackran (2019), Domorshoghlu et al., (2018), and Stephen (2014) showed that learners take responsibility while learning group and participatory problem-solving skills in a group. it can be said that grouping can affect problem-solving skills in preschoolers. Therefore, the following variables were identified as the features of grouping in curriculum with a problem-solving approach for preschoolers: attention to responsibility (creating and developing commitment and responsibility, exploration and problem-solving in children); respect to others (children respect others); attention to ethical features (focusing on children's characteristics and mood); attention to homogeneity of the group (grouping children based on criteria and commonalities such as socioeconomic status, etc.); attention to the nature of the problem (grouping children based on the problem); heterogeneity of the group (focusing on children at any condition and situation); attention to children's gender and age (since they can learn more effectively if they are divided into age and gender groups); and the variable of individual differences (focusing on children's unique differences and characteristics).

Another finding was features of the time of the problem-solving curriculum for preschoolers, including length of time for teaching, and attention to children's preparedness and age. The result was in line with the findings of Wang (2018), and Weiland et al., (2018) who argued about the sufficient time for doing problem-solving

activities and the time required to do them. To explain the result, it can be said that the time for teaching preschoolers to learn problem-solving skill is of great importance. Therefore, the variable of time allocation should be based on instructional programs. The variable of attention to children's preparedness was considered due to the importance of time allocated for teaching based on children's physical ability and psychological status. The variable of attention to children's age is important because teachers should consider the time for teaching based on children's cognitive development and age conditions to make the learning process effective.

Another finding was related to the space features of the problem-solving curriculum for preschoolers, including the physical features and equipment of the place. This finding is consistent with the findings of Delfan Azari (2019), and Ebrahimpour Kumale et al., (2018) who found that the curriculum based on the problem-solving training has the elements of learning space (place). Thornton and Brandon (2017) and Kwon et al., (2019) found that an appropriate learning space is necessary for children to develop their creativity and participatory problem-solving. Explaining this finding, it can be said that instructional space and place is effective to learn and acquire the problem-solving skill. Therefore, the variables of the features of place and equipment were considered the important variables of features of place in problem-solving curriculum for preschoolers since it is important to use classrooms with adequate lighting, proper cooling, and heating systems, using free space and away from outside disturbances (traffic, noise pollution, etc.), using equipment (tables, benches, etc.) as appropriate for preschoolers and based on up-to-date standards, and using instructional equipment to acquire the problem-solving skill.

In general, it can be concluded that in the curriculum of teaching problem solving to preschool children, having appropriate, appropriate application for teaching problem solving skills, efficient teaching methods for teaching and learning problem solving skills, educational activities for the concept of pre-problem solving by children In elementary school, the use of required educational materials and equipment, appropriate location features to solve appropriate problems, grouping and implementation of optimal evaluation methods are needed to learn as much problem solving skills as possible. Attention is given and this important thing makes the preschool learners pay attention to the meaningfulness and problem solving skills and apply it (problem solving skills) in academic activities and real life.

Finally, the present study had limitations. According to the status of existing health protocols during the COVID-19 pandemic, the implementation of some questionnaires has been associated with considerable time.The way some people answered the questionnaire due to the health stress of the period created the possibility of bias in the research results.Therefore, it is suggested to investigate the elements of the curriculum in other instructional levels and other parts of the country. It is also suggested to investigate the elements of the preschool curriculum with a problem-solving approach based on the opinions of educational specialists such as preschool instructors. In addition, the practical suggestions based on the results include: conducting effective programs for developing the power of creative thinking, brainstorming for learning and acquiring problem-solving skills in children, providing problem-solving training content; using various instructional materials and resources based on children's characteristics, using group and individual learning activities in appropriate situations, using effective and child-based teaching methods, using procedural evaluation methods based on individual differences.

References

Abri, S., Hajyousefi, A., Hajbabayi, H., & Rahgozar, M. (2011). Comparison of Social Development Between 3-6 Years Old Children Who Use Rural Child Care Center Services and Who Don`t. Social Welfare Quarterly; 11 (41) : 343-368.

Ackerman, S. (2019, Apr 9). The Ultimate Guide to Preschool. Retrieved from at: https://www.scholastic.com/

Brown, C. P., & Lan, Y. C.(2015). A qualitative metasynthesis comparing U.S. teachers' conceptions of school readiness prior to and after the implementation of NCLB. Teaching and Teacher Education; 45: 1–13.

Cheng, S. C., She, H. C., & Huang, L. Y. (2018). The impact of problem-solving instruction on middle school students' physical science learning: Interplays of knowledge, reasoning, and problem solving. EJMSTE; 14(3): 731-743.

Daniel, E. (2016). The Usefulness of Qualitative and Quantitative Approaches and Methods in Researching Problem-Solving Ability in Science Education Curriculum. Journal of Education and Practice; 7(15): 91-100.

Delfan Azari, A., Aliasgari M, Khazaei K, Soleymanpoor, J. (2019). Designing the Curriculum Model Based on the Development of Problem-Solving Skills at the Undergraduate Nursing. Education Strategies in Medical Sciences; 11 (5) :68-76.

Durmuşoğlu Saltalı, N., Arslan, E., & Arslan, C.(2018). Aninvestigation of self – esteem, socio – emotional adaptation and relational problem solving in pre schoolers. European Journal of Education Studies; 2501 – 1111.

Ebrahimpour komeleh, S., Naderi, E., & Seyfe naraghi, M. (2019). Identification and Study of the Optimal Characteristics of Curriculum Elements to Achieve Problem-Solving Skills in Social Studies Course in Primary School. Two Quarterly Journal of Educational and Educational Studies; 6(16): 125-172.

Ebrahimpour Komleh, Samira; Naderi, Ezatullah; Seif Naraghi, Maryam. (2018) Designing and validating the optimal curriculum model with emphasis on developing students' problem-solving skills in elementary social studies in Iran. Quarterly Journal of Educational Leadership and Management, Tenth Year; 3, 9-27.

Fallahian, N., Aram, M. B., Naderi, M., & Ahmadi, A. (2017). Social studies teaching method (especially for primary-teacher education). Tehran: Iran Textbook Publishing Company.

Kaya, M., Tadeu, P., Sahrang, U., Arslan, S., & Demir, S.(2017). An Investigation of Problem Solving Skills in Preschool Education. Sakarya University Journal of Education; 7(3): 498-514.

Kazu, İ. Y., & İş, A.(2018). An Investigation A bout Actualization Levels of Learning Outcomes in Early Childhood Curriculum. Journal of Education and Training Studies; 6, 3.

Khodabndehloo, R., Mehran, G., Mohseni, H., & Rajabi, F. (2019). An analytical study of professional development in preschool education: a review of research conducted over the past 36 years. Quarterly Journal of New Educational Thoughts; 15, (1).

Koc Akran, S., & Gurbuzturk, O.(2019) Effect of Layered Curriculum in Problem Solving Skills of Students in Science and Technology Course. International Journal of Educational Methodology ; 5(1): 135 - 150.

Kwon, K., Song, D., & Sari, A. R.(2019). Different Types of Collaborative Problem-Solving Processes in an Online Environment: Solution Oriented versus Problem Oriented. Journal of Educational Computing Research; 56(8): 1277-1295.

Lau, Y., Fang, L., Cheng, L. J., & Kwong, H. K. D. (2019). Volunteer Motivation, Social Problem Solving, Self-Efficacy, and Mental Health: A Structural Equation Model Approach. Educational Psychology; 39 ,1: 112-132.

Mesrobian, C. (2021, Apr 9). Problem Solving for Preschoolers: 9 Ways to Strengthen Their Skills. Retrieved from at: https://www.rasmussen.edu/

Mofidi, F. (2014). Basics of education in preschool. Tehran: Samat Publications.

Mofidi, F. (2019). Preschool and elementary education. Tehran: Payame Noor University Press.

Mohammadzadeh, Z. (2016). A comparative study of life skills in the philosophy program for children and the thinking and lifestyle curriculum. Master Thesis, Faculty of Psychology, Kharazmi University.

Morin, A. (2021, Apr, 9). How to Teach Kids Problem-Solving Skills.retrieved from at: https://www.verywellfamily.com/

Mousavi, S. (2018). The process of empowering problem solving in children through the combination of different areas of knowledge (application of a project approach in preschool). Master Thesis in Social Sciences. Bahonar University of Kerman.

Nadian, S. (2016). The effectiveness of problem-solving training on critical thinking and academic motivation of elementary school girls in District 9 of Tehran. Master Thesis, Faculty of Educational Sciences and Psychology, Islamic Azad University, Central Tehran Branch.

Naseri, M. M. (2011). Change for a better life: Features and objectives of the social education curriculum. Journal of Educational Guidance Development) Social Science Education Special Issue; 16(7): 34-37.

Ngang, T. K., Nair, S., & Prachak, B. (2014). Developing instruments to measure thinking skills and problem solving skills among Malaysian primary school pupils. Procedia-Social and Behavioral Sciences; 116: 3760 – 3764.

Qasempour Moghadam, H. (2017). Basics and elements of the Waldorf school curriculum in Germany. Journal of Research in Curriculum Planning; 2(27): 7-1.

Ramani, G.B; & Brownell, C.A. (2014). Preschoolers' cooperative problem solving: Integrating play and problem solving. Journal of Early Childhood Research; 12(1): 92– 108.

Rantavuori, L.(2018). The problem-solving process as part of professionals' boundary work in preschool to school transition. International Journal of Early Years Education; 26(4): 422-435.

Rock, A. (2021, Apr 9). What Kids Learn in Preschool. Retrieved from at: https://www.verywellfamily.com/

Salsabili, N. (2006). Application of problem solving approach in designing and compiling a social studies curriculum Tips. Curriculum Studies Quarterly; 3: 10-67.

Schooner, P.(2019). Design, system, value: The role of problem-solving and critical thinking capabilities in technology education, as perceived by teachers. Linkoping University, Sweden.

Stephen, E. (2014). Think: Rethinking challenging behavior using collaborative problem solving. Available in: www.cherrycreekschools.org.cpd [Date of access: 16 December 2018]

Sue John, M., Sibuma, B., Wunnava, S., Anggoro, F., & Dubosarsky, M. (2018). An Iterative Participatory Approach to Developing an Early Childhood Problem-based STEM Curriculum. European Journal of STEM Education; 3(3): 2468-4368.

Sun, C., Shute, V. J., Stewart, A., Yonehiro, J., Duran, N., & D'Mello, S.(2020) Towards a generalized competency model of collaborative problem solving. Computers & Education; 143.

Thornton, L., & Brunton, P. (2017). Understanding the Reggio Approach: Early Years Education in Practice. Translation by Aida Mohammadi. Tehran: Institute for the Study of the History of Children's Literature.

Wang, Hung-chun.(2018, Apr 13). Title: Fostering Learner Creativity in the English L2 Classroom: Application of the Creative Problem-Solving Model. Retrieved from at: https://doi.org/10.1016/j.tsc.2018.11.005. Reference: TSC 536.

Weiland, C., McCormick, M., Mattera, S., Maier, M., & Morris, P. (2018, Apr 13). Preschool Curricula and Professional Development Features for Getting to High-Quality Implementation at Scale: A Comparative Review Across Five Trials. Retrieved from at: https://doi.org/10.1177/2332858418757735

Zamani, N., Hassanzadeh, S., Shokohi Yekta, M., & Ghobari Bonab, B. (2019). Compilation of preschool children 's readiness test: a review of the psychometric properties of the introductory version. Child Mental Health Quarterly; 6(2).

Zhang, H. (2019). The Facilitative Effects of Ambiguous Figures on Creative Solution. Journal of Creative Behavior; 53(1): 44-51.