

## Curriculum Design Approaches of Pre-Service Teachers Receiving Pedagogical Formation Training

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### Abstract

The purpose of this study is to determine the curriculum design approach preferences of pre-service teachers who have been receiving pedagogical training. The sample of the study consists of 138 pre-services teachers who took the curriculum development course in pedagogical formation education. In the study, “Teachers’ Curriculum Design Orientations Preference Scale” developed by Baş (2013) was used to determine the pre-service teachers' curriculum design approach preferences. The scale consists of 30 items and 3 factors: subject-centered design, problem-centered design and student-centered design. Research data have been analysed via arithmetic mean, independent samples t-test. As a result of the analyses related to the three sub-dimensions of the scale, the teacher candidates responded to the learner-centered and problem-centered curriculum design approaches at the level of “agree”. The sub-dimension called subject-centered curriculum design approach was found to be at the “undecided” level. According to these results, it can be put forward that the prospective teachers prefer learner-centered and problem-centered curriculum design approaches. In the study, whether the pre-service teachers' curriculum design approach preferences differed according to gender and department was investigated. As a result of the analysis, it was found that teacher candidates' gender and department were not significant variables in their curriculum design approach preferences.

**Keywords:** Education Curriculum, Curriculum Design Approaches, Pedagogical Formation Training

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## INTRODUCTION

Curriculum is defined as the mechanism of learning experiences provided to the learner through planned activities in and out of school (Demirel, 2007). The purpose is to create desired behaviors in the individual through education. In order to achieve this goal, first of all, the desired behaviors in accordance with the cultural structure of the society, economic structure of the state, educational philosophy and educational sociology should be determined. The formation of the desired behaviors can be realized by offering appropriate learning experiences to the individual. The process of preparing effective and productive learning experiences introduces the concept of curriculum. With curriculum, we can reach the desired behaviors systematically and regularly. The word mechanism that Demirel (2007) used in the definition of curriculum refers to the provision of education within a certain plan and order.

It is easier to reach the desired behaviors if the education is progressed within a certain curriculum. However, this raises questions about how to develop or design the curriculum. A curriculum consists of four basic elements; objectives, content, learning experiences and evaluation. The relationship between these four elements in the curriculum is described as curriculum development.

In the curriculum, the element of objectives refers to “Why will individuals learn/be taught?”; the element of content indicates “What will be learned/taught?”; the element of learning experiences refers to “How will students learn/be taught?; and the element of evaluation indicates “How will it be determined to what extent students have learned?” (Görge, 2014). While the process of curriculum development seeks answers to these questions, different approaches and designs emerge in curriculum development depending on which elements are highlighted in the curriculum, because the process of curriculum development is also designing a curriculum.

Curriculum design is the process of determining the elements of a curriculum. Curriculum design is similar to the process in which an architect designs a building and draws a plan. Therefore, a curriculum development specialist should also design the curriculum before starting the curriculum development studies (Demirel, 2007). Although curriculum design has an important role in revealing the main framework of the curriculum, the curricula designed by curriculum designers should meet the needs of the individual, the society and also the subject area (Eryaman, 2010; Ünsal & Korkmaz, 2017). According to Ornstein and Hunkins (1993), when designing a curriculum, philosophy and learning theories should be taken into consideration in order to determine whether the designed curriculum is in accord with the basic beliefs of individuals, what and how they learn, and how they will use the acquired knowledge. When designing a new curriculum, how the connections between the elements are made and how the elements are arranged form the basis of curriculum design. There are four basic questions to be answered in curriculum design: What should be done? What subject matter should be included in the curriculum? What instructional strategies should be used? What measurement tools should be used to evaluate the results of the curriculum? (Ornstein & Hunkins, 1993).

When designing a curriculum, the aforementioned basic questions are taken as basis and answering one question is more important than the others. Therefore, many different designs can be created. However, as stated by Ornstein & Hunkins (1993), all curriculum designs are the modification of three basic designs. These three basic curriculum designs are subject-centered, learner-centered and problem-centered designs.

Subject-centered designs include subject designs, discipline designs, broad field designs and process designs. Learner-centered designs comprise child-centered designs, experience-centered designs, romantic designs and humanistic designs. Problem-centered designs are described as life situations design, Core Design and Social problems-reconstructionist design (Demirel, 2007).

Subject-centered designs include the organization of instructional activities in which the basic concepts and facts specific to each subject area are emphasized by the subject-matter expert by using subject-matter methods, tools and materials (Burton, 2010). Although the subject-centered design is the most widely used model, it is one of the oldest models (Alcı, 2012). The focus of subject-centered designs, also known as textbook-centered design, is the fact that curriculum gives importance to the content element (Tucker, 2011). Learner-centered designs, in which the effects of the philosophy of Jean Jacques Rousseau who encourages students to express themselves are observed, focus on students' needs and interests (Ornstein, 1982: 406). This is because the purpose of this approach is to reveal the maximum amount of talents in the individual and thus to educate every individual in line with their interests and abilities without any distinction (Doğan, 1997). Problem-centered designs are created to guide learners to research complex problems for their own lives and learning (Pushor & Murphy, 2010). Unlike learner-centered designs, problem-centered designs involve planning curricula before students come to school (Ornstein and Hunkins, 1993). According to Sönmez (2012), it is a design which argues that life is constantly changing so the person should be educated in a way to adapt to this change and lead change. In problem-centered designs, the purpose is to design and develop curricula in order to solve the problems of the society and the individual (Demirel, 2007).

Which design should be used in the curriculum depends on the countries' dominant education philosophy and policy (Eryaman, 2010). However, the important thing here is the predictions and experiences of teachers, who implement these curricula, related to the draft curriculum, because no matter what educational philosophy and curriculum design approach is taken as a basis while creating the curriculum, it is not possible for the teacher to implement the curriculum voluntarily if it does not have unity with the understanding of the teacher, in other words if the teacher believes that the curriculum design will not contribute to the teaching (Cheung and Ng; 2000, Eryaman& Riedler, 2010; Baş; 2013). Research in the literature shows that there is a similarity between teachers' opinions or beliefs about the curriculum and the instructional methods they use in the classroom (Crummey, 2007; Jenkins, 2009; Karakuş, 2006; Yılmaz, Altunkurt & Çokluk, 2011; Wooley, Benjamin & Wooley 2004). In this respect, it is essential that teachers adopt the current curriculum design. In the literature, there are different studies on teachers' curriculum design approaches (Ashour, Khasawneh, Abu-Alruz ve Alsharqawi, 2012; Baş, 2013; Bay, Gündoğdu, Dilekçi, Ozan and Özdemir, 2011; Burul, 2018; Cheung & Ng, 2000; Crummey, 2007; Cheung & Wong, 2002; Eren, 2010; Foil, 2008; Jenkins, 2009; Van Driel, Bulte & Verloop, 2008; Wang, Elicker & McMullen, 2008). However, no research has been found on the opinions of pre-service teachers receiving pedagogical formation training about curriculum design. For the applicability of the curriculum, it is considered important to determine the curriculum design approach that the pre-service teachers who are receiving pedagogical formation training, as well as the teachers in-service, adopt and would like to implement. Therefore, the purpose of this study is to determine the curriculum design approach preferences of pre-service teachers who have been receiving pedagogical training. For this purpose, the following questions were sought in the research:

1. What are the views of pre-service teachers receiving pedagogical formation training about student-centered design factor, learner-centered design factor and problem-centered design factor?
2. Do the curriculum design approach preferences of pre-service teachers receiving pedagogical formation training differ based on
  - a) gender
  - b) department?

## METHODOLOGY

This section presents the research model, data collection tool and data analysis.

### Research Model

The survey model was used in the study to determine the curriculum design preferred by pre-service teachers receiving pedagogical formation training and to determine whether their preferences differed based on gender and department. Survey models are “research approaches that aim to describe a past or present situation as it is” (Karasar, 2015).

### Universe and Sample

The population of the research consisted of the students who have been receiving pedagogical formation training and curriculum development course in the Faculty of Education at Pamukkale University. The entire universe was tried to be reached. A total of 138 teacher candidates were reached. Demographic characteristics of the teacher candidates are presented in Table 1.

**Table 1. Demographic Characteristics of the Pre-service Teachers**

Demographic Characteristics	Value	N	%
Gender	Female	74	54
	Male	64	46
Department	Literature	61	44
	Mathematics	77	56
Total		138	100

According to Table 1, 74 teacher candidates who participated in the research were female and 54 were male. There are 61 (44%) teacher candidates in the Department of Literature and 77 (56%) in the Department of Mathematics.

### Data Collection Tool

In the study, “Teachers’ Curriculum Design Orientations Preference Scale” developed by Baş (2013) was used to determine the pre-service teachers' curriculum design approach preferences. The Scale comprised three factors as subject-centered design, problem-centered design, and learner-centered design and consisted of 30 items in total, 10 items in each factor. The scale is a 5 likert-type scale as “strongly disagree” (1), “disagree” (2), “undecided” (3), “agree” (4) and “strongly agree” (5). The Cronbach Alpha internal consistency coefficients of the scale ( $\alpha$ ) are .89 for the subject-centered design factor; .89 for learner-centered design factor; .87 for the problem-centered design factor; and .94 for the overall scale. The reliability coefficients ( $\alpha$ ) for this research were .83 for the subject-centered design factor; .82 for learner-centered design factor; .80 for problem-centered design factor; and .80 for the overall scale.

The maximum score that can be obtained from the scale was 150 and the minimum score was 30. As the score in the factors of the scale increase, the teachers' preferences regarding the related dimension(s) increase as well. The total scores obtained from the scale are divided by the number of items and a judgment can be made about their preferences for curriculum design approaches according to the average scores of the teachers (Baş, 2013).

### Data Analysis

The scale was administered to 138 prospective teachers who took especially the curriculum development course in the pedagogical formation training curriculum. When invalid scales (missing, wrong or empty scales) were omitted, calculations were made with 138 data. Data were analyzed via

SPSS .21 curriculum. Kolmogrov Smirnov test was used to test whether the data showed a normal distribution, and as the scores obtained were higher than  $p > .05$ , it was concluded that the data showed a normal distribution. Arithmetic mean, independent samples t-test and one-way analysis of variance techniques were used for data analysis.

## FINDINGS AND CONCLUSIONS

In this part of the research, research findings are presented.

### The Preferences of the Pre-service Teachers for Learner-Centered Design Factor

The scale has 10 items related to learner-centered design factor. The preferences of the prospective teachers regarding this factor are illustrated in Table 2.

**Table 2: The Analysis Results of the Pre-service Teachers' Preferences for Learner-Centered Design**

Items	N	X	Sd
1- Problem solving method should be used in the lesson most of the time.	138	3.51	.929
2- Students should be more active than the teacher in the lesson.	138	3.61	1.04
3- Students' interests, needs and expectations should be taken into consideration in the lesson.	138	4.24	1.03
6- The element of educational experiences should be emphasized in the curriculum.	138	3.78	.852
7- The important thing in the lesson is that the students construct knowledge and transfer it to their life situations.	138	4.17	.887
8- It is essential that the student makes an effort to learn with his/her own observations and experiences.	138	4.05	1.07
9- It is important to include collaborative studies rather than individual studies in the lesson.	138	3.88	.967
11- Curricula should be organized in a way to respect individual differences.	138	4.23	.873
12- The school should be the life itself rather than the place of preparation for life.	138	3.85	1.11
24- Educational environments where students can perform themselves without pressure and coercion are essential.	138	4.50	.776
Overall Total	138	3.98	6.18

According to Table 2, the mean of the items included in the learner-centered design factor of the scale was found to be 3.98 at "agree" level. The lowest mean belonged to the item "Problem solving method should be used in the lesson most of the time" (X 3.51). The highest mean belonged to the item "Educational environments where students can perform themselves without pressure and coercion are essential." (X 4.50).

### The Preferences of the Pre-service Teachers for Subject-Centered Design Factor

The scale includes 10 items related to the subject-centered design factor. The preferences of the prospective teachers regarding this factor are illustrated in Table 3.

**Table 3: The Analysis Results of the Pre-service Teachers' Preferences for Subject-Centered Design**

Items	N	X	Sd
I14. Learning the subjects should take an important place in the lesson.	138	4.01	.974
I15. Curricula should be arranged according to unchanging universal facts.	138	3.21	1.10
I17. The important thing in the lesson is the transfer of information.	138	3.40	1.25
I18. Individual studies should be included in the lesson rather than group works.	138	3.01	1.03

I20. In the lessons, instead of organizing a different learning path for each subject, a common learning path should be emphasized for all subjects.	138	2.56	1.30
I21. There is no need to reflect the interests and desires of the students in the lesson.	138	1.82	1.14
I23. Students are receptive and memorize information.	138	2.86	1.27
I25. It is important that students specialize in different branches of knowledge.	138	4.31	.801
I28. In the lesson, the teacher should be more active than the students.	138	2.76	1.11
I30. In curricula, content should be further highlighted.	138	3.47	.821
Overall Total	138	3.14	5.65

According to Table 3, the arithmetic mean of the items included in the subject-centered design factor of the scale was found to be 3.14 at “undecided” level. The lowest mean belonged to the item “There is no need to reflect the interests and desires of the students in the lesson” ( $X = 1.82$ ). The highest mean belonged to “It is important that students specialize in different branches of knowledge” ( $X = 4.31$ ).

### The Preferences of the Pre-service Teachers for Problem-Centered Design Factor

The scale consists of 10 items related to the problem-centered design factor. The preferences of the prospective teachers related to this factor are demonstrated in Table 4.

**Table 4: The Analysis Results of the Pre-service Teachers' Preferences for Problem-Centered Design**

Items	N	X	Sd
I4. The school should be a place where democratic processes are alive.	138	4.24	1.04
I5. The school should devote a significant part of the day to problematic studies in order to achieve multidimensional work and to establish interdisciplinary connections.	138	3.99	.955
I10. In schools, common learning experiences that all students must learn should be used as a base.	138	3.94	.961
I13. Community needs and problems should be addressed in the lessons.	138	3.94	.991
I16. Curricula should include real problems related to life.	138	3.94	.941
I19. Students should be encouraged to use the process of problem solving in the lessons.	138	4.10	.882
I22. At school, students should be encouraged to collaborate to find solutions to social problems.	138	4.10	.930
I26. It is essential that students gain social values at school.	138	4.49	.766
I27. Schools and education play a critical role in social change.	138	4.22	.896
I29. Students should acquire the ability to generalize about real life problems at school.	138	3.99	.796
Overall Total	138	4.09	6.38

According to Table 4, the mean of the items in the problem-centered design factor of the scale was found to be 4.09 at “agree” level. According to the answers given by the teacher candidates, the highest mean ( $X = 4.49$ ) belonged to the item “It is essential that students gain social values at school”. The lowest mean ( $X = 3.94$ ) belonged to the items “In schools, common learning experiences that all students must learn should be used as a base”, “Community needs and problems should be addressed in the lessons” and “Curricula should include real problems related to life”. However, when the level of agreement is considered, the items with high and low means had the same level of agreement (agree).

### Findings Related to the Preferences of the Pre-service Teachers for Curriculum Design Approach based on Gender

T-test was performed to determine whether the prospective teachers' preferences for curriculum design approach differed based on the gender variable. The analysis results are presented in Table 5.

**Table 5: T-test Results for Determining the Pre-service Teachers' Preferences for Curriculum Design Approach based on Gender**

Dimensions	Gender	N	X	Sd	t	p
Learner-centered	Female	74	38.98	7.38	1.80	.074*
	Male	64	40.87	4.26		
Subject-centered	Female	74	31.68	6.39	.502	.616*
	Male	64	31.20	4.70		
Problem-centered	Female	74	40.86	6.93	.252	.801*
	Male	64	41.14	5.74		
Total	Female	74	111.54	16.84	.676	.500*
	Male	64	113.21			

Independent samples t-test was conducted to determine the preferences of the male and female teacher candidates for curriculum design approach. According to Table 5, there was no significant difference based on gender in the sub-dimensions of the curriculum design approach orientation scale and overall scale ( $p > .05$ ).

### Findings Related to the Preferences of Pre-service Teachers for Curriculum Design

#### Approach based on Department

The t-test was performed to determine whether the prospective teachers' curriculum design approach preferences differed based on the department they studied. The analysis results are illustrated in Table 6.

**Table 6: T-Test Results for Determining the Pre-service Teachers' Curriculum Design Approach Preferences based on Department**

Dimensions	Department	N	X	Sd	T	p
Learner-centered	Literature	61	39.21	7.11	1.09	.274
	Mathematics	77	40.37	5.33		
Subject-centered	Literature	61	32.01	6.68	1.02	.309
	Mathematics	77	31.02	4.68		
Problem-centered	Literature	61	40.26	7.44	1.19	.233
	Mathematics	77	41.57	5.37		
Total	Literature	61	111.49	17.56		.553
	Mathematics	77	112.97	11.62		

According to Table 6, the department of the teacher candidates did not affect their curriculum design approach preferences. No significant difference was observed in terms of the sub-dimensions of the scale and the overall total.

## DISCUSSION

The present study aimed to determine the curriculum design approach preferences of prospective teachers who were receiving pedagogical formation training. For this purpose, the curriculum design orientation scale was applied. As a result of the analyses related to the three sub-dimensions of the scale, the teacher candidates responded to the learner-centered and problem-centered curriculum design approaches at the level of "agree". The sub-dimension called subject-centered curriculum design approach was found to be at the "undecided" level. According to these results, it can be put forward that the prospective teachers prefer learner-centered and problem-centered curriculum design approaches.

Although learner-centered curriculum design approaches are based on progressive educational philosophy, they have become widespread in the early years of the 20th century with teachers placing learners at the center of curriculum development (Orstein & Hunkins, 1993). It can be argued that the pre-service teachers who are the sample of this research have knowledge about curriculum design approaches since they have taken the philosophy of education as a subject and curriculum development as a separate course during the pedagogical formation training. For this reason, it can be stated that the pre-service teachers responded to the approaches that are most suitable for today's technology age and that are close to the goal of raising individuals who learn how to learn at "agree" level. This is because the learner-centered curriculum design is regarded as a model which is concerned with the knowledge that the learner has acquired in the personal and social world and with how the learner perceives reality in addition to being a model in which the individual creates knowledge by making sense out of it and constructs it through personal experiences (Mulengeki, Lukinda, Ogandiek & Mgogo, 2013). Problem-centered curriculum designs are based on the philosophy of progression and reconstruction and are built on the problems of society and individuals (Orstein & Hunkins, 1993). In this sense, problem-centered designs are contemporary approaches like learner-centered designs. As a result of this research, it can be suggested that the fact that the teacher candidates responded to problem-centered curriculum designs at the level of "agree" shows that they are aware that education is the way to solve social problems. This is because problem-centered curriculum designs aim to develop people's problem solving skills related to daily life through education (Tucker, 2011). Therefore, according to the results of the research, it can be stated that the pre-service teachers prefer designs that put the learner in the center and give particular importance to problems of the learner and society as the curriculum design approach that can be effective today. The findings of this research are in line with the findings of Karaman and Bakaç, 2018; Ünsal & Korkmaz, 2017; Maden, Durukan & Akbaş, 2011; Bulut, 2008; and Tekbıyık & Akdeniz, 2008. Similarly, as a result of their study on the relationship between teachers' curriculum design approach preferences and the philosophy they adopt, Uygun and Kozikoğlu (2018) have found that teachers prefer learner-centered design approaches the most.

The pre-service teachers responded to the items related to subject-centered curriculum design approaches at the level of "undecided". When the averages of the items were considered, the lowest mean belonged to the item "There is no need to reflect the interests and desires of the students in the lesson" at the level of "disagree". It can be put forward that the teacher candidates do not adopt teacher-centered approaches and believe that student interests and desires are effective in learning. On the other hand, the highest mean belonged to the item "It is important that students specialize in different branches of knowledge" at the level of "agree", which shows that pre-service teachers care about students' in-depth learning of the subjects. As a result, it can be claimed that the pre-service teachers are aware of the importance of taking students' interests and desires into consideration during the lesson and think that students need to have comprehensive knowledge of the subjects. In subject-centered designs, students' mastery of the subjects is sought (Ellis, 2015), but this design also has some limitations, such as its inadequacy to identify students' interests and needs (Henson, 2015). As a result of this research, it can be put forward that the pre-service teachers stated this limitation of subject-centered designs. The findings of the present study show similarity with those of Burul, 2018; Ünsal & Korkmaz, 2017; Duru & Korkmaz, 2010; Kesten & Özdemir, 2010; Orbeyi & Güven, 2008; and Erdoğan, 2007.

In the study, whether the pre-service teachers' curriculum design approach preferences differed according to gender and department was investigated. As a result of the analysis, it was found that teacher candidates' gender and department were not significant variables in their curriculum design approach preferences. In most of the studies conducted in the literature, no significant difference is revealed in terms of gender variable (Burul, 2018; Kaya and Öner, 2017; Ünsal and Korkmaz, 2017; Aygören and Saraçoğlu, 2015; Bay et al., 2012; Bulut, 2008; Cheung and Wong, 2002). In the studies conducted by Karaman & Bakaç (2018) and Jenkins (2009), it has been concluded that female teachers prefer learner-centered approach more than male teachers in curriculum design approaches. The basis of these differences may stem from the differences in the sample group (research was conducted with teachers).

## Suggestions

As the preferences of pre-service teachers in subject-centered designs are at the level of “undecided”, pre-service teachers can be given more comprehensive information on curriculum design approaches through examples and the time allocated to curriculum development course can be increased in this context.

Different variables that may affect the curriculum design approach preferences of pre-service teachers can be studied.

Qualitative studies including individual or focus group interviews can be conducted to determine curriculum design approach preferences.

This research is limited to pre-service teachers who have been receiving pedagogical formation training. A study can be conducted with a large sample including teachers, faculty members and prospective teachers, and curriculum design approach preferences can be compared.

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