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TPACK Survey Development Study for Social Sciences Teachers and Teacher Candidates

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Abstract

The purpose of this research is to develop a scale for analyzing the technological pedagogical and content knowledge (TPACK) and self-efficacy perceptions of the social sciences teachers and teacher candidates. During the development process, an item pool has been generated by evaluating the studies made in the literature. Also, after opinions have been obtained from the experts in scale development, essential revisions have been made in accordance with these opinions. The final version of the scale has been applied to 285 teacher candidates for the validity-reliability study. As the result of the confirmatory factor analysis, 7 factors have been determined related with the scale. The Cronbach Alpha reliability coefficient of the scale has been found as 0.977. In conclusion, it is determined that the scale is valid and reliable for making the study.

Key words: Technological pedagogical and content knowledge (TPACK); Scale development

Introduction

It is known about the activities which are occasionally made in various countries in the world for providing the technological integration. For instance, Portuguese has offered laptop computers and the content of all courses in digital environment to the students with a project which they call MECELLAN. A similar project which is called FATİH Project in Turkey has been implemented. However, countries like Portuguese and Korea have provided various courses and seminars with TPACK model for the imperfections of the teachers and teacher candidates in the education but this system has not been such successful in Turkey. For Turkish context, it is clear that teachers and teacher candidates shall have TPACK skills. During this implementation, some issues must be considered. For example, a teacher who has technological knowledge in high degree has problems in implementing this knowledge by combining it with pedagogy and content knowledge.

It shall be known which subject needs which technology or which teaching strategy is needed to be given with which technology in the teaching any subject (Gündüz & Odabaşı, 2004; Hew & Brush, 2007; Kurt, 2013; Mishra & Koehler, 2006). This study is important in terms of realizing this distinction and in determination of this problem because TPACK model shows distinction from other models which are tried in terms of the competence of the teachers in integration process. The purpose is to bring the competences of the teacher in the desired level as soon as possible by considering the studies which are made in this respect.

Theoretical Framework: TPACK

When considering as historical, it was thought that the basis of the teacher's education was the content knowledge of the teacher. Technology, pedagogy and content knowledge framework has first occurred as the pedagogy and content knowledge which was showed by Shulman (1986). Shulman (1986) tried to explain the education with the complex structure of the pedagogy and content knowledge. He emphasized that the most important qualification of a good teacher should have not only the content knowledge but also the pedagogical knowledge at the same time. Shulman (1986) expressed that the teaching knowledge should be given together with the content knowledge because these are not the concepts which are considered separately from each other (Angeli & Valanides, 2009; Yiğit, 2014). However, Mishra and Koehler (2006) have made this structure more complex by adding technology into this structure with the recent development of the knowledge and technology. Mishra and Koehler (2006) have converted the pedagogy- content knowledge model of Shulman (1986) into a more complex structure as technology-pedagogy-content knowledge, pedagogy-technologic content- content pedagogy- technologic pedagogy and content knowledge by adding technology.

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There are many scales which are developed for measuring the technologic pedagogic and content knowledge self-efficacy of teachers and teacher candidates. These scales are divided into two sections among themselves. First of them is the scales which are developed by researchers. Other one is the adapted forms of these developed scales. First TPACK scale which is developed for collecting data is the scale which is developed by Mishra et al., (2006). TPACK which was then developed by Schmith et al., (2009), was actualized with 124 teacher and teacher candidates. This study forms 7 aspects and 47 items. Another similar study is the scale which was developed by Graham et al., (2010). Şahin (2011) has developed a TPACK scale with 7 dimensions that involves 47 items for analyzing TPACK levels of the teacher candidates.

There are some scales which adopted the scales which have been developed by other researchers into their studies. A scale with 31 items which was adopted by Chai et al., (2010), Landry (2009) has been adopted for mathematics teachers and teacher candidates. A scale with 30 items was adopted for science teachers and teacher candidates by Graham et al., (2009). A scale with 29 items was adopted for computer teachers by Doukakis et al., (2010). A scale with 47 items was developed by Öztürk and Horzum (2011) for determining the TPACK levels of generally all teachers.

In the present study, the TPACK scale which was developed in consideration of all these studies is more specific and more determinant than the other scales. In literature, there is not a study which measures TPACK levels of social science teachers and teacher candidates only. This study is important in terms of remedying the deficiencies and guiding the practitioners in this respect. Based

The final version of the TPACK scale has been originally developed from the scale of Sahin (2011) and involves 55 items for measuring TPACK levels of social sciences teachers and teacher candidates.

Method

Participants

285 social studies teacher candidates have participated to this study from 4 different universities in Turkey. While 55% of the participants are women, 45% of those are man.

Data Collection Tool

The writing of the scale materials is formed with the contributions of scale development experts and by detail scanning of the literature related with the subject. The literature studies related with the subject has been analyzed in detail from previous years to present. The dimensions of the scales have been formed by the complete comprehension of the theoretical framework of the subject. Accordingly, seven dimensions have been determined in the scale which is issued by the researcher. These are dimensions of technological knowledge (T), pedagogical knowledge (P), of content knowledge (C), of content and pedagogic knowledge (CP), of technology and pedagogical knowledge (TP), of content and technological knowledge (CT), of technological pedagogy and content knowledge (TPACK).

An item pool in seven subscales has been formed after examining the relevant literatures. Items have been formed by benefiting from the expert opinion which was scale development study before formation of this pool. These items which are formed have been given the last status for being adopted to the scale by benefiting from Turkish language experts. The scale which is issued has been formed in the type of five points Likert scale. 1-2-3-4-5 numbers are located across the items of the scales. Respectively, the numbers are given the meaning as; *I do not know, I know in low level, I know in middle level, I know in good level, I know in very good level*. Sixty one items have been formed in the item pool. The developed scale is made on 285 teacher candidates. Validity and reliability studies are made for the obtained data. According to the reliability studies made, the reliability coefficient of Alpha Cronbach of the scale has been found as 0.977. Confirmative factor analysis is made on the obtained data.

Survey Development Process

To increase the content validity of the scale which is developed by the researchers (see: Appendix-1), it is benefitted from the experts who had scale development studies before. Together with the high level of the Alpha reliability coefficients, confirmative factor analyses are made. The confirmative factor analyses are analyzed with AMOS (Analyses of Moment Structures) 16.00 Program. The adaptive index values of factor analysis have

been found as mentioned in Table 1. There are some index types which are confronted regularly in literature. These are χ^2/df, CFI, RMSEA, GFI, AGFI, NFI, NNFI, SRMR indexes (Karademir & Erten, 2013).

Table 1. Criterion references for fit indices of factor analysis

	χ^2 / df	RMR	GFI	CFI	RMSEA
	1.398	**0.038**	**0.853**	**0.918**	**0.050**
Perfect fit	< 3	0 ≤ RMR ≤ 0.05	0.95≤GFI≤1	0.97≤ CFI ≤ 1	0≤ RMSEA ≤ 0.05
Acceptable fit	< 5	0.05 ≤ RMR ≤ 0.10	0.90≤GFI≤0.95 or 0.80≤GFI≤0.89	0.90≤CFI≤0.95 or 0.80≤GFI≤0.89	0.05≤ RMSEA ≤ 0.10

As mentioned in the Table 1, it can be seen that the chi square value is less than 3 and this shows the good adaptation (Marsh & Hocevar, 1988). It can be seen that the chi- square value (1.398) has a good adaptation. GFI value changes between 0 and 1. The closer is the value to 1; it means it is appropriate as such (Eroğlu, 2003). In that case, it shows that the GFI value (0.853) has an acceptable adaptation. CFI gives a value between 0 and 1. To become closer to 1, it shows its adaptation. 0.90 value is accepted as the most convenient value (Eroğlu, 2003). Also, CFI value (0.918) is an acceptable value. It is expected to have RMSEA value close to 0. The values which are equal to 0.05 or less values are accepted as the adopted values (Karademir, 2013). In this case, it can be shown that RMSEA value (0.050) has a good adaptation. Generally those values based on the factor analysis, are good and acceptable.

Results

In this section, the loads and dimensions of the materials which occur before and after the confirmative factor analysis are shown.

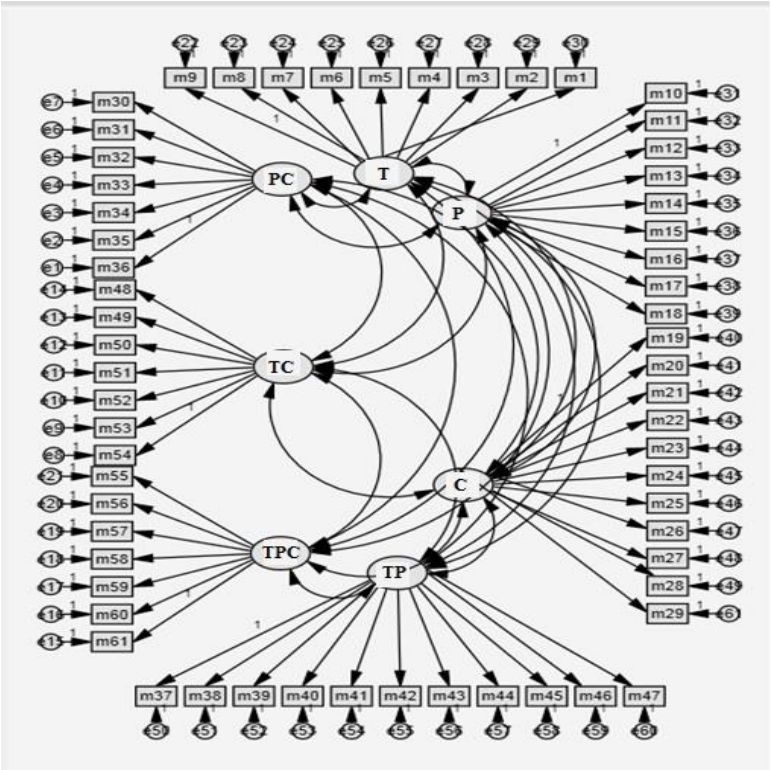

Figure 1. Model before the factor analysis

As it can be understood from Figure 1, TPACK dimension and their relations before the material factor analysis have been given. It consists of a total of 61 items. The dimensions and relations after the material factor analysis are given in Figure 2.

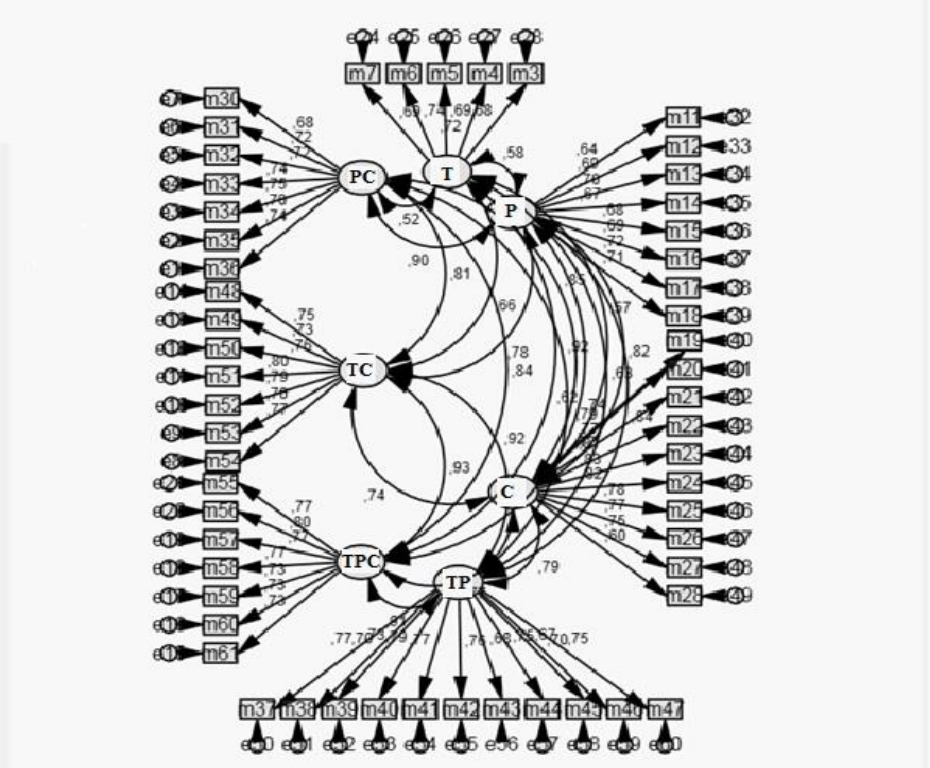

Figure 2. Model after the factor analysis

As understood from Figure 2, 1-2-8-9-10 and 29th items which are not in conformity with the item adaptation index values are removed after the factor analysis. The item number which was 61 in total has decreased to 55 with the removed items.

As understood from the figure, the values in the relation of the technology dimension with the items change between β=0.68 and β=0.74. r is found as 0.58 between the technology and pedagogy dimension. The relation value of the content knowledge dimension with technology has been as r=0.62. The relation level between the technology and technology pedagogy knowledge has been found as r=0.74. The relation level between the technology dimension and technology pedagogy and content knowledge dimension has been found as r=0.62.

The relation level of the pedagogy knowledge with materials changes between β=0.64 and β=0.72. The relation value between pedagogy and technology has been found as r=0.58, with content knowledge r=0.92, pedagogic content knowledge r=0.90 and technology pedagogy and content knowledge has been found as r=0.85.

The relation level of the content knowledge dimension with materials changes between β= 0.60 and β=0.84. The relation level between content information with technological knowledge is r= 0. 62, with pedagogic knowledge r=0.92, with pedagogic content knowledge r=0.85, with technology content r=0.74, technology pedagogy and content knowledge is found as r=0.77.

The relation level of the technology content knowledge dimension with materials changes between β=0.73 and β=0.80. The relation level of technology content knowledge and content knowledge is r= 0. 74, relation level with technology is r=0.66, with pedagogy content r=0.81, between technology pedagogy r=0.92, between technology pedagogy and content knowledge r=0.93.

The relation level of the pedagogic content knowledge with material changes between β=0.68 and β=0.75. The relation level of pedagogy content knowledge with pedagogy is r=0.90, with content knowledge r=0.85, with technology content knowledge r=0.81, technology pedagogy r=0.74, technology pedagogy and content knowledge r=0.84. The relation level of technology pedagogy knowledge dimension changes between β=0.67 and β=0.79. The relation level between technology pedagogy technology content knowledge is r=0.74, with

pedagogy r=0.57, with technology content r=0.92, with pedagogy content r=0.74, between technology pedagogy and content knowledge r=0.91. The relation level of technology pedagogy and content knowledge dimension with materials changes between β=0.73 and β=0.80. The relation level between technology pedagogy and content knowledge technology is r=0.62, pedagogy r=0.85, with content knowledge r=0.77, with technology content r=0.93, with pedagogy content r=0.84, between technology pedagogy r=0.91.

Discussion and Conclusion

The purpose of this study is to develop scale for understanding the technologic pedagogic and content knowledge self-efficacy perception level of the social studies teachers and teacher candidates. When the body of literature is examined, it can be shown many scale development and adaptation studies which are made for examining the TPACK level of the teachers and teacher candidates. However a part of these studies is developed for measuring the level of science, mathematics and computer teachers and teacher candidates and a part of these studies are developed for all the teachers and teacher candidates. This study is developed as more specific for understanding TPACK level of social studies teacher and teacher candidates with a different point of view. The scale has been regulated in seven dimensions as in the other studies (Chai et al., 2010; Landry, 2009; Mishra & Koehler, 2006; Öztürk & Horzum, 2011; Schmith et al., 2009; Şahin, 2011).

The factor loads at the result of the factor analysis are generally between 0.57 and 0.93.These values are accepted as good levels for scale (Green & Salkind, 2005). Similar results are seen is similar studies (Lux, 2011; Öztürk & Horzum, 2011; Schmith et al., 2009; Şahin, 2010). In the result of the analysis, the adaptation index values are found as an acceptable value (Byrne, 1998).

For the consistency in the reliability of the scale, Cronbach Alpha internal consistency coefficients are considered. For the integrity of the scale, Cronbach Alpha value has been found as 0.977. This shows that the scale has the highest reliability (Büyüköztürk et al., 2010). The reliability values of the scale formed of seven factors are as follows; 0.887 related with the technology knowledge; 0.916 related with pedagogy knowledge; 0.934 related with content knowledge; 0.925 related with pedagogy content knowledge; 0.846 technology content knowledge; 0.866 technology pedagogy knowledge and 0.965 technology pedagogy content knowledge. When compared with the similar studies, it is seen that the values here have higher reliability (Chai et al., 2010; Graham et al., 2009; Graham et al., 2010; Mishra et al., 2004; Öztürk & Horzum, 2011; Schmith et al., 2009; Şahin, 2011).

This study is a unique scale development study. As the result of this study, a scale with high validity and reliability scores is developed. The obtained scale provides opportunity to us for evaluating and understanding the self- efficacy perceptions of the social studies teachers and teacher candidates regarding their technological, pedagogical and content knowledge. This scale is especially applicable to measure the TPACK levels of the teachers and teacher candidates from subject social sciences area. For this reason, it may be adapted into other subject areas.

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Appendix 1: The English Version of TPACK Scale

Dear Colleague;
This survey is issued for examining the relation between technology, pedagogy and content knowledge of the social studies teacher candidates. Your answers in the questionnaire shall be used for research and your identification and answers shall be definitely kept secret. For this reason, do not hesitate to answer intimately. The numbers at the right side of the page express these: (1) I do not know, (2) I know in low level, (3) I know in middle level, (4) I know in good level, (5) I know in very good level

ITEMS OF TPACK SURVEY

1	Using Office programs (Like Word, Excel, and PowerPoint) …	1	2	3	4	5
2	Communicating through Internet (E-mail, Skype) …	1	2	3	4	5
3	Using data (saving to Flash Memory, CD, DVD) …	1	2	3	4	5
4	Using printer, digital camera and Scanner …	1	2	3	4	5
5	Using the programs of concept maps, drawing graphics (Inspiration, Excel etc.) …	1	2	3	4	5
6	Developing daily, annual and unit plan…	1	2	3	4	5
7	Developing classic (multiple choice test, True-False Test, open ended Question etc) and complementary (Control List, Valuation Scale, Gradational Grading Key, Self-Efficacy Form, Peer Assessment Form etc.) measurement tools …	1	2	3	4	5
8	Evaluating the performance of the teacher with classic and alternative (complementary) measuring tools. …	1	2	3	4	5
9	Implementing the different teaching strategies (Presentation Strategy, Invention Strategy, Research-Analyzing Strategy etc.) …	1	2	3	4	5
10	Implementing different methods (Plain Expression, Case Study, Problem Based Learning, Project based Learning etc.) …	1	2	3	4	5
11	Implementing different teaching techniques (Brain Storming, Six Thinking Hats, Demonstration, Metaphor etc.) …	1	2	3	4	5
12	Learning theory and hypothesis (Constructivist Learning, Multiple Intelligence Theory, Project Based Education etc.)…	1	2	3	4	5
13	How the class management shall be organized and continued in Social Sciences course …	1	2	3	4	5
14	Content Knowledge related with Individual and Society learning domain…	1	2	3	4	5
15	Content Knowledge related with Culture and Heritage learning domain…	1	2	3	4	5
16	Content Knowledge related with Humans, Places and Environment learning domain…	1	2	3	4	5
17	Content Knowledge related with Production, Distribution, Consumption learning domain…	1	2	3	4	5
18	Content Knowledge related with Time, Consistency and Alteration learning domain…	1	2	3	4	5
19	Content Knowledge related with Science, Technology and Society learning domain…	1	2	3	4	5
20	Content Knowledge related with Groups, Institutions and Social Organizations learning domain…	1	2	3	4	5
21	Content Knowledge related with Power, Management and Society learning domain	1	2	3	4	5
22	Content Knowledge related with Global Connections learning domain	1	2	3	4	5
23	Current releases in Social Sciences field (Releases and books)…	1	2	3	4	5
24	Selecting teaching strategies which are convenient to achievements related with Social Studies …	1	2	3	4	5
25	Selecting education models which are convenient to achievements related with Social Studies …	1	2	3	4	5
26	Selecting education techniques which are convenient for teaching achievements related with Social Studies …	1	2	3	4	5
27	Selecting education methods which are convenient for teaching achievements related with Social Studies ……	1	2	3	4	5
28	Selecting alternative /complementary and evaluation tools for evaluating achievements related with Social Studies. …	1	2	3	4	5
29	Preparing daily, annual and unit plan which is convenient to achievements	1	2	3	4	5

	related with Social Studies courses …					
30	Preparing a course plan including the class/ intramural activities for Social Studies courses …	1	2	3	4	5
31	Technologies which are convenient to teaching approaches/ strategies …	1	2	3	4	5
32	Providing class management while using different education technologies. …	1	2	3	4	5
33	Using technologies which are convenient to different education model and theories …	1	2	3	4	5
34	Using technologies which are convenient to different education strategies….	1	2	3	4	5
35	Using technologies convenient to different education methods …	1	2	3	4	5
36	Using technologies convenient to different education techniques …	1	2	3	4	5
37	Using technologies which shall affect the education in positive manner …	1	2	3	4	5
38	Using technologies which are convenient to classic-alternative measurement and evaluation approaches …	1	2	3	4	5
39	Benefiting from technology by considering the individual differences of the students …	1	2	3	4	5
40	Preparing daily, annual and unit annual plans in computer …	1	2	3	4	5
41	Evaluating the conformance of a new technology to the education …	1	2	3	4	5
42	Education technologies which are convenient to different learning content of the social studies courses …	1	2	3	4	5
43	Selecting technologies which are convenient for enriching the content of social studies course …	1	2	3	4	5
44	Using technologies which are developed by Course Tools Construction Centre while teaching achievements of Social Studies course …	1	2	3	4	5
45	Technologies which shall provide easier access to the targets/ achievements mentioned in the social studies course teaching plan …	1	2	3	4	5
46	Using computer aided technologies which are convenient to different learning content of social studies course …	1	2	3	4	5
47	Using tablet computer and smart board while teaching the different learning content of social studies courses	1	2	3	4	5
48	Developing projects and class activities including the education technologies in social studies course …	1	2	3	4	5
49	Integrating the social studies course content with appropriate technology and formation information …	1	2	3	4	5
50	Selecting appropriate education approaches and contemporary education technologies which shall provide better teaching of social studies course content …	1	2	3	4	5
51	Teaching courses by integrating the social studies learning content with my formation and technological knowledge …	1	2	3	4	5
52	To take the leading to my colleagues about integrating the social studies contend and formation and technological knowledge …	1	2	3	4	5
53	Teaching a social studies subject by using appropriate technologies according to different education theories …	1	2	3	4	5
54	To increase the value of the learning of my students through my formation and technological knowledge while teaching social studies subjects …	1	2	3	4	5
55	To integrate my content, technology and formation knowledge related with social studies course …	1	2	3	4	5

Appendix 2: The Turkish Version of TPACK Scale (Original Form)

Sevgili Öğretmen Adayı;
Bu anket *Sosyal Bilgiler Öğretmen Adaylarının* teknoloji, pedagoji ve alan bilgileri arasındaki ilişkiyi araştırmak için düzenlenmiştir. Ankette vereceğiniz cevaplar araştırma amaçlı kullanılacak olup kimliğiniz ve cevaplarınız kesinlikle gizli tutulacaktır. Bu nedenle içtenlikle cevaplamaktan çekinmeyiniz. Sayfanın sağ tarafındaki rakamlar şunları ifade etmektedir: (*1) Hiç Bilmem, (2) Az Düzeyde Bilirim, (3) Orta Düzeyde Bilirim, (4) İyi Düzeyde Bilirim, (5) Çok İyi Düzeyde Bilirim*

TEKNOLOJİ, PEDAGOJİ VE ALAN BİLGİSİ ÖLÇEĞİ

1	Ofis programlarını (Word, Excel ve Powerpoint gibi) kullanmayı…	1	2	3	4	5
2	İnternet yoluyla (E-mail, Skype) iletişim kurmayı…	1	2	3	4	5
3	Veri kaydetmeyi (Flash Bellek, CD, DVD'ye kaydetmek gibi) …	1	2	3	4	5
4	Yazıcı, Dijital kamera ve Tarayıcı kullanmayı…	1	2	3	4	5
5	Kavram haritası, grafik çizme (Inspration, Excel vb.) programlarını kullanmayı…	1	2	3	4	5
6	Günlük, yıllık ve ünitelendirilmiş plan geliştirmeyi…	1	2	3	4	5
7	Klasik (Çoktan Seçmeli Test, Doğru-Yanlış Testi, Açık Uçlu Soru vb.) ve tamamlayıcı (Kontrol Listesi, Dereceleme Ölçeği, Dereceli Puanlama Anahtarı, Öz değerlendirme Formu, Akran Değerlendirme Formu vb.) ölçme araçlarını geliştirmeyi…	1	2	3	4	5
8	Öğrenci performansını klasik ve alternatif (tamamlayıcı) ölçme araçları ile değerlendirmeyi…	1	2	3	4	5
9	Farklı öğretme stratejilerini (Sunuş Stratejisi, Buluş Stratejisi, Araştırma-İnceleme Stratejisi vb.) uygulamayı…	1	2	3	4	5
10	Farklı öğretim yöntemlerini (Düz Anlatım, Örnek Olay, Problem Dayalı Öğrenme, Proje Tabanlı Öğrenme vb.) uygulamayı…	1	2	3	4	5
11	Farklı öğretim tekniklerini (Beyin fırtınası, Altı Şapkalı Düşünme, Gösteri, Metafor vb.) uygulamayı…	1	2	3	4	5
12	Öğrenme teori ve kuramlarını (Yapısalcı Öğrenme, Çoklu Zekâ Teorisi, Proje-tabanlı Öğretim vb.)…	1	2	3	4	5
13	Sosyal Bilgiler dersinde sınıf yönetiminin nasıl organize edeceğini ve sürdürüleceğini…	1	2	3	4	5
14	Birey ve Toplum öğrenme alanıyla ilgili alan bilgisini…	1	2	3	4	5
15	Kültür ve Miras öğrenme alanıyla ilgili alan bilgisini…	1	2	3	4	5
16	İnsanlar, Yerler ve Çevreler öğrenme alanıyla ilgili alan bilgisini…	1	2	3	4	5
17	Üretim, Dağıtım ve Tüketim öğrenme alanıyla ilgili alan bilgisini…	1	2	3	4	5
18	Zaman, Süreklilik ve Değişim öğrenme alanıyla ilgili alan bilgisini…	1	2	3	4	5
19	Bilim, Teknoloji ve Toplum öğrenme alanıyla ilgili alan bilgisini…	1	2	3	4	5
20	Gruplar, Kurumlar ve Sosyal Örgütler öğrenme alanıyla ilgili alan bilgisini…	1	2	3	4	5
21	Güç, Yönetim ve Toplum öğrenme alanıyla ilgili alan bilgisini…	1	2	3	4	5
22	Küresel Bağlantılar öğrenme alanıyla ilgili alan bilgisini…	1	2	3	4	5
23	Sosyal bilgiler alanında çıkan güncel kaynakları (yayın ve kitapları)…	1	2	3	4	5
24	Sosyal Bilgiler dersine ait kazanımlar için uygun öğretme stratejilerini seçmeyi…	1	2	3	4	5
25	Sosyal Bilgiler dersine ait kazanımları öğretmek için uygun öğretim modelleri seçmeyi…	1	2	3	4	5
26	Sosyal Bilgiler dersine ait kazanımları öğretmek için uygun öğretim teknikleri seçmeyi…	1	2	3	4	5
27	Sosyal Bilgiler dersine ait kazanımları öğretmek için uygun öğretim yöntemleri seçmeyi…	1	2	3	4	5
28	Sosyal Bilgiler dersine ait kazanımları değerlendirmek için klasik ve alternatif/tamamlayıcı ölçme ve değerlendirme araçlarını seçmeyi…	1	2	3	4	5
29	Sosyal Bilgiler dersi kazanımlarına uygun günlük, yıllık ve ünitelendirilmiş yıllık plan hazırlamayı…	1	2	3	4	5
30	Sosyal Bilgiler dersi için sınıf/okul içi etkinlikleri içeren bir ders planını rahatlıkla hazırlayabilmeyi…	1	2	3	4	5
31	Öğretme yaklaşımlarına/stratejilerine uygun teknolojileri…	1	2	3	4	5
32	Farklı öğretim teknolojileri kullanırken sınıf yönetimini sağlamayı…	1	2	3	4	5
33	Farklı öğrenme model ve kuramlarına uygun teknolojileri kullanmayı…	1	2	3	4	5
34	Farklı öğretim stratejilerine uygun teknolojileri kullanmayı….	1	2	3	4	5
35	Farklı öğretim yöntemlerine uygun teknolojileri kullanmayı…	1	2	3	4	5
36	Farklı öğretim tekniklerine uygun teknoloji kullanmayı…	1	2	3	4	5

37	Öğrenmeyi olumlu yönde etkileyecek teknolojileri kullanmayı…	1	2	3	4	5
38	Klasik - alternatif ölçme ve değerlendirme yaklaşımlarına uygun teknolojileri kullanmayı…	1	2	3	4	5
39	Öğrencilerin bireysel farklılıklarını dikkate alarak teknolojiden faydalanmayı…	1	2	3	4	5
40	Bilgisayar ortamında günlük, yıllık ve ünitelendirilmiş yıllık plan hazırlamayı…	1	2	3	4	5
41	Yeni bir teknolojinin öğretime uygunluğunu değerlendirmeyi…	1	2	3	4	5
42	Sosyal Bilgiler dersinin farklı öğrenme alanlarına uygun öğretim teknolojilerini…	1	2	3	4	5
43	Sosyal Bilgiler dersinin içeriğini zenginleştirecek uygun teknolojileri seçmeyi…	1	2	3	4	5
44	Sosyal Bilgiler dersinin kazanımlarını öğretirken Ders Aletleri Yapım Merkezi tarafından geliştirilen teknolojileri kullanmayı…	1	2	3	4	5
45	Sosyal Bilgiler dersi öğretim planındaki belirtilen hedef/kazanımlara daha kolay ulaşmayı sağlayacak teknolojileri…	1	2	3	4	5
46	Sosyal Bilgiler dersinin farklı öğrenme alanlarına uygun bilgisayar destekli teknolojileri kullanmayı…	1	2	3	4	5
47	Sosyal Bilgiler dersinin farklı öğrenme alanlarını öğretirken tablet bilgisayar ve akıllı tahta kullanmayı…	1	2	3	4	5
48	Sosyal Bilgiler dersinde öğretim teknolojileri içeren sınıf etkinlik ve projeleri geliştirmeyi…	1	2	3	4	5
49	Sosyal Bilgiler ders içeriğini, uygun teknoloji ve formasyon bilgisi ile bütünleştirmeyi…	1	2	3	4	5
50	Sosyal Bilgiler dersi içeriğini daha iyi öğretmemi sağlayacak çağdaş öğretim teknolojilerini ve uygun öğretim yaklaşımlarını seçmeyi…	1	2	3	4	5
51	Sosyal Bilgiler öğrenme alanlarını, formasyon ve teknoloji bilgim ile bütünleştirerek ders öğretmeyi…	1	2	3	4	5
52	Meslektaşlarıma Sosyal Bilgiler alanı ile formasyon ve teknoloji bilgisinin bütünleştirilmesi konusunda liderlik yapabilmeyi…	1	2	3	4	5
53	Farklı öğrenme kuramlarına göre uygun teknolojiler kullanarak bir Sosyal Bilgiler konusunu öğretmeyi…	1	2	3	4	5
54	Sosyal Bilgiler konularını öğretirken formasyon ve teknoloji bilgim sayesinde öğrencilerimin öğrenmelerinin değerini artırmayı…	1	2	3	4	5
55	Sosyal Bilgiler dersine ait içerik, teknoloji ve formasyon bilgimi başarılı şekilde birleştirmeyi…	1	2	3	4	5