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A Needs Analysis on the Competences that Students Should Have for Curriculum and Instruction Graduate Programs: A Delphi Study

Eğitim Programları ve Öğretim Yüksek Lisans Program Yeterlilikleri İhtiyaç Analizi: Bir Delphi Çalışması

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Özet

Bu araştırmada Eğitim Programları ve Öğretim yüksek lisans programı mezun yeterliklerine temel oluşturacak bir ihtiyaç analizi çalışması yaparak bu programlardan mezun olacak bireylerin sahip olması gereken yeterlikleri belirlemek amaçlanmaktadır. Araştırmada nitel araştırma yöntemi kullanılmış olup, veriler Delphi tekniği ile toplanmıştır. Delphi sürecinde Eğitim Programları ve Öğretim yüksek lisans programı mezun yeterlikleri konusunda üç turda uzlaşma sağlanmış ve süreç sonlandırılmıştır. Araştırmada amaçlı örnekleme yöntemlerinden ölçüt örnekleme yöntemi kullanılmış ve ölçüt olarak "Eğitim Programları ve Öğretim anabilim dalında öğretim üyesi olmak" ölçütü belirlenmiştir. Araştırmaya katılmayı kabul eden 20 akademisyen ile Delphi paneli kurulmuştur. 1. turda elde edilen nitel verilerin analizinde, içerik analizi yöntemi, 2. ve 3. turda elde edilen nicel verilerin analizinde ise, merkezi yığılma ölçüleri (aritmetik ortalama ve medyan), merkezi dağılım ölçüleri (standart sapma ve çeyrek değerler genişliği) ve uyum yüzdesi hesaplamaları kullanılmıştır. Araştırma sonunda, 11 yeterlik alanı ve bu yeterlik alanlarında yer alan 157 yeterlik tespit edilmiştir.

Anahtar sözcükler: Delphi tekniği, eğitim programları ve öğretim, ihtiyaç analizi, yüksek lisans.

Abstract

The purpose of this study is to conduct a needs analysis study that will form the basis for Curriculum and Instruction graduate programs. It aims to determine the competences that graduate program graduates should have, and to revise the courses and contents taught in graduate programs based on these competences. Designed as a qualitative study, it employs the Delphi technique as its data collection method. The researchers achieved their consensus on the graduation competences of Curriculum and Instruction graduate programs over a series of three rounds, and then concluded it with the Delphi application process. The criteria sampling method was used in the study. The criterion to be used was defined as "being a faculty member in the field of the Department of Curriculum and Instruction". The Delphi panel was formed by 20 academics who agreed to participate in this study. We used content analysis in the analysis of the qualitative data obtained in the first round. We then employed central tendency measures (i.e. arithmetic mean and median), central distribution measures (i.e. standard deviation and interquartile range), and percentage of agreement calculations for the analysis of the quantitative data obtained in the second and third rounds. The study has revealed 11 competence areas comprising 157 sub-competences.

Keywords: Curriculum and instruction, Delphi technique, graduate, needs analysis.

A need can be described as the information necessary to serve a particular purpose, depending on the current situation. Needs are the necessary or useful things that fulfill a defensible purpose based on people's judgments, values, and interactions within a certain context (Stufflebeam, McCormick, Brinkerhoff, & Nelson, 1985).

On the one hand, needs analysis tries to understand what gaps exist between the current situation and the expected or desired outcomes. On the other hand, it reconciles differences of thought amongst the educational stakeholders, the educators, and the society, by helping to prioritize needs (Kaufman & English, 1979). Identifying something as a need and attempting to determine whether or not it is a priority for the person or organization increases the chances of reaching the desired results by improving the current performance (Watkins, Meiers, & Visser, 2012). Needs analysis includes:

- Comparing the current situation with the desired situation,
- Identifying problems,

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- Understanding the behaviors and mechanisms that contribute to the present situation,
- Determining what behaviors and mechanisms can be changed to produce the desired situation, and
- Developing solution strategies and providing support for action (Gupta, 2007).

Needs analysis is an overall analysis of a student group in the process of curriculum preparation to meet their needs (Iwai, Kondo, Lim, Ray, Shimizu, & Brown, 1999). The relevance of curriculum depends on planners's identifying realistic educational needs by following scientific pathways (Oliva, 1988; Saylor, Alexander, & Lewis, 1981; Taba, 1962). It is the first step in the arrangement of courses, and ensures validity for all subsequent course design activities. Information about how to organize a lesson is obtained through it, hence allowing planners to determine the relatively theoretical level of educational needs outside the classroom. This undoubtedly contributes to the realization of a realistic education (Johns, 1991). Since the need for education is continuous, its assessment also requires continuity (Gupta, 2007). Goals that are consistent with training needs help to identify realistic teaching goals (Rogers, Vouters, & Gerard, 1992). Thus, the individual receiving the education becomes happy and performs the required educational activities satisfactorily. Motivation and efficiency increase along with satisfaction (Bureau, 2008).

Universities are multipurpose institutions across all societies that fulfill the basic functions of a combination of cultural, ideological, social, economic, educational, and scientific roles such as production of ideas, application of knowledge, contribution to social development, and training skilled labor (Castells, 2001; 2004). Today, the development of science and technology has increased the need for qualified workers who strive for individual and social development, do research, know their personal capabilities, make intelligent decisions and can think critically (Karagenç, 2003). The need for specialization and people who possess such skill sets has led to a stronger emphasis on universities as the basic units of knowledge delivery and the true capital of economy (Tuzcu, 2003).

Undergraduate education has become the main component of higher education. However, today, graduate education is gaining more strategic value. People nowadays feel that individual and professional development is an ongoing process. Likewise, many undergraduates are not competent enough to become business owners, which therefore lead them to get graduate-level education (Karaman & Bakırcı, 2010). Universities, and in particular postgraduate programs, are generally expected to train the high-quality human resources required for development. For this reason, it is important that they provide the required level of high-quality education at the graduate level as well as the training of the high-quality human resources required by both development and the economy (Aslan, 2007).

Increasing the quality of higher education in Turkey has been more systematic ever since it became involved in the Bologna Process in 2001 (Çalık & Süzen, 2013). In 2009, the Turkish government published the "National Competences Framework for Higher Education of Turkey Interim Report", which set out to determine what knowledge, skills, and competencies students who finish each stage of their education already have, as well as establishing what key curricular outcomes are needed in order to ensure these competences (Yükseköğretim Kurulu, 2009).

In order for its citizens to follow the developments in the world during the current information age, to catch up with the social changes, and to educate open-minded individuals, it is important for Turkey to update the programs implemented by the Council of Higher Education (YÖK), alongside determining what program competences exist within the scope of Bologna (Karaman & Bakırcı, 2010).

In order to find out what educational competences students attending Curriculum and Instruction graduate programs are expected to have, researchers first need to determine the direction the profession is heading towards, and to identify the sectoral expectations from these students.

Thus, in this study, we looked at the proficiency profiles of students studying in Curriculum and Instruction graduate programs, as well as assessing what knowledge, skills, and competences they need to have upon graduation, thus allowing planners to later revise the present coursework and content taught in these graduate programs based on these competences. The researchers hope that the study pioneers such endeavors for other universities' programs, and also hope to establish better coordination between these programs.

Method

Research Design

The qualitative research design was used to find out what competences students of Curriculum and Instruction graduate programs are required to have. Through realistic and holistic gathering of data in the natural environment, the qualitative research aims to reveal how people understand their lives and their world (Merriam, 2009).

Data Collection Method

The Delphi technique was used as the data collection method in the study. The Delphi technique is used to create group

communication process (Scheele, 2002), aiming to reach a unified view of individuals who face different aspects of a problem. The Delphi technique, also referred to as a mediator, is used for reconciliation in a structured and systematic way of gathering information. It is also used in environments where there are differences of opinion about a particular subject, target, situation, or need (Quinn, 1986; Saekman, 1975; Skulmoski, Hartman, & Krahn, 2007; Watkins, et al., 2012).

The Delphi technique is a highly-flexible design that can be shaped around the research problem (Fuller, Henderson, & Bustamante, 2015). One important point to note in this technique is the implementation of sequential surveys in the structure that will enable participants to express their ideas when they are needed (Critcher & Gladstone, 1998). Generally speaking, the third or fourth questionnaire contains the answers that researchers seek, however, some cases of recurrence are nevertheless possible (Keeney, Hasson, & McKenna, 2011). In this study, we used the Delphi process after achieving consensus over a series of three rounds.

Study Group

Criterion sampling was used in the research, with the criterion defined as "Being a faculty member in the field of Curriculum and Instruction." The experts selected the participants who were able to answer the research questions (Hatcher & Colton, 2007). The selected people are experts in their respective fields, whose willingness to participate in the research is of great importance for the healthy execution such Delphi studies (Hung, Altschuld, & Lee, 2008; Powell, 2003).

All Turkish universities were examined in order to find the participants for the current study. The researchers then sent invitation letters to 148 professors and lecturers of Curriculum and Instruction. Of these, seven reported that they were busy and thus rejected the invitation, and 121 did not respond. Only 20 people responded, saying that they were willing to participate in the study. A number of scholars have reported that the size of the Delphi panel can vary from a few individuals to hundreds of people (Grisham, 2008; Wiersma & Jurs, 2005), and generally accept that it is appropriate for one to work with five to ten participants if the panel consists of experts from different professions. However, if the panel members have the same profession, the recommended number is 15 to 30 participants (De Villiers & De Villiers, 2005; Loo, 2002; Scheele, 2002). Grime and Wright (2016) state that the ideal group size is between 5 and 20 people; likewise, according to Warner (2014), it should be between 10 and 15 people. For this reason, we found that having 20 participants from 14 different universities in our study was sufficient to form a panel, and thus established our Delphi panel accordingly. Fifteen participants were male whereas five were female. Six of them were full professors, five were associate professors, and nine were assistant professors.

Data Analysis

Content analysis method was used to analyze the qualitative data obtained from the first round. The purpose of the content analysis is to summarize a large amount of data in such a way as to achieve well-supported and interpreted results (DeWalt & DeWalt, 2011). Two researchers coded the data and the then categorized the results under common themes.

Central accumulation (i.e. arithmetic mean and median), central distribution measures (i.e. standard deviation and interquartile range), and percentage of agreement were used to calculate and analyze the quantitative data obtained from the second and third rounds. The second round analysis is shown as an example in ▪▪ Table 1.

Implementation Process

Round 1

For the first phase of the research, we prepared an invitation letter explaining what the scope and purpose of the Delphi study is, how we will use the research results, how the process will work, and what the experts expect.

▪▪ **Table 1.** 2nd round analysis example.

No	Competence areas/Learning outcome	Consensus level	Arithmetic mean	Median	Standard deviation	Interquartile range (IQR)
A	Scientific research and statistics competences					
1	Knows information theories.	60	2.6	3	0.507	1
2	Knows about the origin and fields of science.	66.7	2.6	3	0.487	1
3	Explains the scientific research paradigms.	80	2.8	3	0.414	0
4	Is aware of the importance of scientific research.	100	3	3	0	0
5	Has a scientific perspective.	93.3	2.93	3	0.258	0

The invitation letter contained an open-ended question that we asked the participants to answer. The question was: "Which competences do you think students should have when they graduate from a Master's program in Curriculum and Instruction in order to be successful both in their professional and academic career?"

We e-mailed the letter to 148 academics on March 10, 2017. On April 6, 2017, we sent a second e-mail to all of the potential participants as a reminder. In total, 20 people responded with their answers to our question.

We subjected the answers to the first questionnaire to content analysis, which revealed that there were 11 competence domains and 175 competence items. We then developed a 3-point Likert-type questionnaire consisting of competence areas and items to learn what participants thought about each competency. This questionnaire contains three response expressions, including "suitable" (3), "undecided" (2), and "not suitable" (1). The number of panelists who expressed each competence area, alongside the adequacy of the questionnaire, were both indicated in terms of frequencies. The participants were asked to indicate whether or not they agreed with the competences listed under each competence field. If yes, they then were asked to indicate the level of agreement. We added a "description" column to the questionnaire to allow explanations for the items that the participants did not deem appropriate.

Round 2

We sent the second round questionnaire to the 20 participants on September 12, 2017, followed by a reminder email on October 12, 2017. Fifteen participants answered and returned the questionnaires to us.

We analyzed the results of the second set with SPSS, whereupon we calculated the arithmetic mean, median, standard deviation, interquartile range, and the median percentages for each item. When Likert-type scales are used, a certain level of consensus needs to be determined. The literature shows that there are Delphi questionnaires using 51%, 55%, 70%, 75% and 80% consensus levels. However, a level of 70% consensus is often the most preferred measure (Hung et al., 2008). A "high degree of consensus" occurs when the standard deviation is between 1 and 2; whereas a "low degree consensus" occurs when the standard deviation is greater than 2 (Sharkey & Sharples, 2001). Quartile values indicate that the width is low, and high is the absence of a consensus (Fiahin, 2001). The median value is considered to be more useful and superior than the other centralized aggregate measures because it is not affected by extreme values in the distribution of the measurement results. As the median value increases, the rate of consensus increases (Gençtürk & Akbaş, 2013).

In this study, we arrived at a compromise regarding the items with a median percentage of 80% or more, a median value greater than 2, a standard deviation value less than 1, and an interquartile range (IQR) value less than 1.

We decided not to send an item, which had an agreement percentage of 6.7% (I3), back to the experts, and removed it from the questionnaire. We developed the third round of questionnaire with 32 items that met the criteria, whereby we included the centralized tendency measures (i.e. arithmetic mean and median), central distribution measures (i.e. standard deviation and interquartile range), and consensus levels for each item in the questionnaire. The instruction in the questionnaire indicates what these statistics mean. The responses of the participants to each item in the second questionnaire were also included in the questionnaire.

Participants were asked to compare the answers they gave to the second questionnaire with the statistics of the group, to review the comments made on each item, to re-examine their decisions, and, if possible, to add new opinions, suggestions, and/or discussions to the questionnaire.

Round 3

The third round of questionnaire was sent to 15 participants on November 28, 2017, followed by a reminder e-mail on December 25th, 2017. A total of 11 participants answered and returned the questionnaires to the researchers.

Similar to the second set, we used SPSS to analyze the results of the third set as well, and likewise calculated the arithmetic mean, median, standard deviation, interquartile range, and the median percentages for each item. We arrived at a consensus on items with 80% or above agreement level, a median greater than 2, a standard deviation of less than 1, and an interquartile range (IQR) value of less than 1.

The analysis of the data revealed that a consensus was reached on 15 out of the 32 items in the third round questionnaire. On the other hand, no consensus was achieved on 17 out of the 32 items, and thus we removed those items (i.e. A1, A2, A35, A48, B12, B14, B15, C6, C18, C21, D7, E2, E4, F2, F7, G13, and G14).

Results

The analysis of the data obtained in the first round yielded 11 competence areas and 175 competence items. In the second round, we removed just one competence item from the questionnaire. In the third round, we removed 17 items that could not be agreed upon. The final version included 11 competence areas and 157 competence items in these competence areas. The competence areas and the specific competences in these areas are as follows:

Table 2. Scientific research and statistics competences.

• Explains scientific research paradigms.
• Is aware of the importance of scientific research.
• Has a scientific perspective.
• Knows basic concepts about scientific research.
• Knows the qualifications a researcher should possess.
• Knows the basic rules to follow in scientific research.
• Learns the systematic nature of the scientific research process.
• Identifies sources of information.
• Knows how to review the literature.
• Knows scientific research patterns.
• Knows scientific research (qualitative-quantitative) methods and techniques.
• Learns methods of producing scientific knowledge.
• Develops an objective attitude towards research methods and techniques.
• Prepares/defends a scientific research proposal.
• Plans scientific research.
• Conducts scientific research (project).
• Prepares a scientific study (article, paper).
• Prepares and presents a Master's thesis.
• Works in harmony with a research team.
• Reflects current developments in scientific research.
• Creates a scientific research problem.

• Has knowledge about research variables.
• Uses variables in research designs.
• Has the ability to form hypotheses.
• Selects the research method in the direction of the research problem.
• Knows the universe and sampling techniques.
• Knows the types, characteristics, advantages and limitations of data collection tools.
• Knows the methods of ensuring validity and reliability in research.
• Knows the data analysis methods.
• Applies the data analysis methods.
• Has basic statistical knowledge.
• Has the ability to prepare measurement tools.
• Tabulates data.
• Has the ability to interpret research findings.
• Has the ability to produce results from the findings.
• Evaluates research results.
• Develops proposals based on the results obtained.
• Reports a survey.
• Applies the writing style rules in scientific studies.
• Writes appropriate bibliographies by following the rules.
• Uses academic writing skills.
• Presents scientific research.
• Evaluates/analyzes completed scientific research.

Scientific Research and Statistics Competences

In the field of "Scientific Research and Statistics Competences" 48 items of competence were initially determined; four items which were not agreed upon at the end of the 3rd round were removed. As a result, 44 items remained in this competence field ▪ Table 2.

Specific Content Competences

In the field of "Specific Content Competences" 16 competence items were initially identified. We removed the three items that were not agreed upon at the end of the third round, and retained the 13 items in this competence field ▪ Table 3.

Curriculum Development Competencies

In the field of "Curriculum Development Competences" 25 items of the first round analysis were determined. We removed the 3 items that had not reached the 3rd round, which meant that 22 items were retained (▪ Table 4).

Curriculum Evaluation Competences

In the field of "Curriculum Evaluation Competences" 10 items of competence were determined. At the end of the third round,

Table 3. Specific content competences.

• Has specific content knowledge.
• Has an understanding of the basic concepts of educational sciences.
• Comprehends the relations between Curriculum and Instruction and other sub-branches of educational sciences.
• Establishes Curriculum and Instruction's relationship with other disciplines and integrates the field-specific information with information from different disciplines.
• Knows teaching profession knowledge.
• Reads and understands the basic works in the field of Curriculum and Instruction.
• Understands the main ideas in the field of Curriculum and Instruction.
• Knows the literature in the field of Curriculum and Instruction.
• Wants to follow the scientific developments in the field of Curriculum and Instruction.
• Follows current developments/trends in the field of Curriculum and Instruction.
• Analyzes applications and research in the field of Curriculum and Instruction.
• Follows congresses, symposiums, panels and conferences related to the field.
• Knows the curriculum of his/her field.

Table 4. Curriculum development competencies.

• Has knowledge about curriculum development.	• Learns the connections between the elements of curriculum.
• Follows national and international developments in curricula and adapts them to the local conditions.	• Knows the curriculum development process.
• Examines the structural characteristics of curricula applied in different school types.	• Analyzes the designing process of curriculum.
• Describes the purpose and functions of the curriculum development.	• Knows the curriculum development process.
• Describes the basic concepts of curriculum and curriculum development.	• Analyzes the designing process of curriculum.
• Has knowledge about the theoretical foundations of the curriculum development.	• Plans the curriculum development process.
• Identifies training needs, solutions and comments.	• Builds the curriculum development team.
• Knows needs assessment approaches.	• Prepares the curriculum design.
• Knows the techniques of needs assessment.	• Takes individual responsibility for curriculum development work.
• Analyzes/compares curriculum design approaches.	• Performs goal-behavior analysis.
• Selects/explains the appropriate curriculum development model.	• Writes/specifies target-behavior.
	• Comprehends the relationship between learning outcome and content.
	• Has knowledge about content creation approaches.

only one non-agreed-upon item was removed, and as a result, 9 items were retained (Table 5).

Competences in the Learning and Teaching Process

In the field of "Competences in the Learning and Teaching Process" we initially identified 26 competence items. Two items which were not agreed upon at the end of the third round were removed, thus leaving us with 24 items (Table 6).

Competences Regarding Teacher Training

In the field of "Competences in Teacher Training" 13 items were determined in the first round analysis. At the end of the third round, two items were removed, resulting in 11 remaining items (Table 7).

Table 5. Curriculum evaluation competences.

• Knows the curriculum evaluation theories/types.
• Knows the curriculum evaluation models and approaches.
• Explains why there is a need for curriculum evaluation models.
• Prepares a curriculum evaluation plan.
• Pilots the curriculum for evaluation.
• Evaluates curricula.
• Analyzes the relationship between curriculum development and curriculum evaluation in education.
• Examines the curricula of different countries comparatively.
• Interprets reflection of changes to educational policies and curricula.

Table 6. Competences related to learning and teaching process.

• Has pedagogical knowledge.	• Explains the relationship between instructional design and curriculum development.
• Has the ability to apply the curriculum design.	• Makes instructional design suitable to a design model.
• Knows the processes in the classroom.	• Designs the teaching process according to the needs.
• Explains the basic concepts of learning-teaching process.	• Knows the purpose and function of assessment in education.
• Gives examples to establish the relationship between theory and practice.	• Creates the table of specifications.
• Discusses learning theories with learning-teaching principles.	• Prepares and implements test cases.
• Explains teaching principles, methods and strategies.	• Knows the assessment tools used in education.
• Knows the new teaching approaches.	• Selects the appropriate assessment tool.
• Applies teaching principles and methods.	• Develops and uses the appropriate assessment tool.
• Prepares and applies a lesson plan.	• Has the ability to observe student behaviors.
• Knows basic teaching skills.	• Does research on the learning-teaching process.
• Explains instructional design models.	• Follows contemporary and scientific developments on the axis of learning-teaching.

Technological Competences

In the field of "Technological Competences" 15 competence items were determined. By the end of the 3rd round, two non-agreed-upon items were removed, which left us with 13 items (■ Table 8).

Competences Related to Social Skills

In the field of "Competences Related to Social Skills" 6 competence items were identified for the first round analysis. No other items were agreed upon in the following rounds. Ultimately, six items were included (■ Table 9).

Competences Related to Language Skills

In the field of "Competences Related to Language Skills" 3 competence items were identified in the first round. One item with 6.7% consensus was removed from the questionnaire in the 2nd round (I3), thus leaving us with two items (■ Table 10).

Competences Regarding Values

In the field of "Competences Regarding Values" 6 competence items were identified in the first round, with no disagreements in the following rounds. 6 items were ultimately included in the list (■ Table 11).

Personal Competences

In the field of "Personal Competences" 7 competence items were initially identified. We found no disagreement in the other rounds, and hence included all of them in the list (■ Table 12).

Discussion & Conclusion

We conducted this study in order to find out what competences the students of Curriculum and Instruction graduate programs ought to have upon graduation, and to help planners to revise coursework and program content accordingly. We ultimately established that there were 11 competence areas and 175 competences based on the shared opinions of the panelists. These areas of competence included:

- "Competences for Scientific Research and Statistics"
- "Specific Content Competences",
- "Competences for Curriculum Development"
- "Competences Related to Learning and Teaching Process"
- "Curriculum Evaluation Competences"
- "Competences Related to Teacher Training"
- "Technological Competences"
- "Personal Competences"
- "Competences Related to Social Skills"
- "Competences Related to Language Skills"

■ Table 7. Competencies related to teacher training.

- Has knowledge of teacher training.
- Develops realistic plans to build teacher competences.
- Knows the historical bases of the Turkish teacher training system.
- Compares teacher training systems of the world countries.
- Develops an opinion on the competences teachers should have.
- Analyzes teacher training problems on a country-by-country and global context.
- Organizes teaching activities for teacher candidates and practitioners.
- Guides prospective teachers and practitioners.
- Demonstrates concrete model behaviors for teacher candidates in the planning and implementation of lessons.
- Establishes constructive and fruitful relationships with all stakeholders working on the field of teacher education.
- Analyzes the curriculum-teacher link.

■ Table 8. Technological competences.

- Learns the importance of information and communication technologies.
- Knows information and communication technologies.
- Uses instructional technologies in education.
- Uses software and internet based technologies related to the field.
- Uses information communication technologies in the research process.
- Uses Office programs effectively.
- Produces scientific written texts in electronic environment.
- Has media and computer literacy.
- Follows technological developments.
- Becomes technology literate.
- Knows and uses databases.
- Uses information and communication technologies in the instructional design process.
- Knows the positive and negative effects of developing technologies on human behavior.

■ Table 9. Competences related to social skills.

- Has social skills (networking, effective communication, entrepreneurship, etc.).
- Knows the communication process.
- Uses communication skills correctly and effectively.
- Can effectively work as part of a team.
- Cooperates with colleagues.
- Has the ability to work with others on national and international projects.

■ Table 10. Competences related to language skills.

- Uses Turkish language as a spoken and written communication language properly and accurately.
- Uses a foreign language (English) properly as a spoken and written communication language.

Table 11. Competences related to values.

- Facilitates the development of behavior contributing to national interests.
- Wants to contribute to the development of national and world peace.
- Becomes a role-model for other people in terms of human values.
- Is sensitive to the problems in society and feel responsible for producing solutions to these problems.
- Respects scientific research and researchers.
- Internalizes the ethical rules in scientific studies.

Table 12. Personal competences.

- Uses high-level thinking (analysis, synthesis and evaluation) skills.
- Updates knowledge constantly.
- Has the ability to learn how to learn.
- Has high curiosity.
- Becomes a role model in learning to learn.
- Acts as a role model for teachers and practitioners in terms of professionalism and humanitarianism.
- Provides scientific guidance to employees.

It was expected that those graduating from graduate school should have adequate scientific research and statistics competencies to be able to successfully conduct scientific research. Turkish graduate students do not have adequate scientific research competence in order to identify problems, to conduct literature review, data collection, and data analysis, to use statistical analysis software, to interpret and discuss their findings within an appropriate theoretical framework, or to report their findings in a clear and comprehensible manner (Büyüköztürk & Köklü, 1999; Karasar, 1984). The Delphi panelists emphasized that it is important for graduate students to gain proficiency both in scientific research process and in analyzing the data they collect.

In the "Specific Content Competences" dimension, graduates were expected to master basic concepts and literature on Curriculum and Instruction, and to follow current scientific developments. In "Competences Related to Curriculum Development", competences included knowing what aims and functions were, alongside understanding the theoretical foundations and basic concepts of curriculum development, identifying needs, and designing the curriculum. Graduates are expected to have mastered the theories behind the program development, as well as having the ability to design a curriculum in practice.

Regarding the "Curriculum Evaluation Competences", graduates are expected to have the ability to know the basic concepts of curriculum evaluation, evaluation models, and approaches, as well as the ability to effectively evaluate a curriculum. Since the evaluation process involves determining what the goals of a curriculum are and what level of behavior they expect to change (Tyler, 1949), graduates need to possess sound curriculum evaluation and development skills.

In the "Competences Related to Learning and Teaching Process" dimension, competences included students' knowing the basic concepts related to the teaching and learning process, having mastery of teaching principles, methods and

strategies, implementing the program effectively, and implementing the measurement and evaluation processes appropriately. A curriculum specialist must have these competences in order to plan for teaching, use the developmental characteristics of the students (in order to reach the level of the students they teach), utilize various methods, techniques and materials (to enable them to learn), put the students into learning environment effectively, and manage their class effectively (Kara & Sağlam, 2014). Graduates are also expected to know about teacher training systems, have knowledge about teacher competences, organize teaching activities for teacher candidates, and guide them.

Regarding "Technological Competences", graduates are expected to define ICT, follow technological developments, use ICT in scientific research and instructional design processes. In graduate programs, approaches to integrate technological, pedagogical and field knowledge into the teaching and learning process and to be able to use technology in combination with the field and pedagogy are not limited to only the lessons related to technology (Gözütok, Alkın, & Ulubey, 2010; Mishra & Koehler, 2006). Niess (2008) also states that teachers need to be able to effectively use the 21st century technologies, taking into account student needs and classroom conditions to support their learning.

Regarding "Competences Related to Social Skills", graduates are also expected to have effective communication, teamwork, and cooperation skills. The aim of the training is to help students improve their skills for personal and social inclusion, as well as their academic skills and professional development. When people lack social skills, they have social and emotional problems, and struggle to cope with the difficulties they have with relatives (Şahin, 2001).

Regarding "Competences Related to Language Skills", graduates are expected to use their mother tongue and a foreign language effectively both verbally and in writing. Research on lectures reveals that Turkish scientific resources are inadequate, underlining the need for writers to be literate

in at least one foreign language (Karaman & Bakırcı, 2010). Many suggest that students need to improve their foreign language skills by investing at least one year into language learning, and that planners should include academic reading courses among foreign language electives (Gömleksiz & Yıldırım, 2013; Gözütok et al., 2010; Ottekin Demirbolat, 2005; Sezgin, Kavgacı, & Kılınç, 2011).

Curriculum and Instruction graduate programs are expected to equip their graduates with the competencies that comply with ethical principles in the scientific research process, with the sensitivity to the problems in society, making their students feel responsible for producing solutions to these problems, and willing to contribute to the development of national and global peace.

Regarding "Personal Competencies", graduates are expected to use high-level thinking skills and have the ability to learn. Gözütok et al. (2010) emphasize that the students in Curriculum and Instruction departments have insufficient communication, research, and inquiry skills, that they lack the ability to properly access information, and that they do not have the interest in life-long learning, suggesting that all of these critical skills should be developed and honed.

Based on the results, we can make the following suggestions:

- Researchers can support and expand upon this study using different data collection tools.
- In terms of Bologna process integration, each university should have its own graduate program in mind.
- Curriculum designers should restructure the C&I program courses according to the competences determined in this study.

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