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# Perceptions of Teacher Candidates about the Concept of "Education 5.0"
# Öğretmen Adaylarının "Eğitim 5.0" Kavramına İlişkin Algıları

**Sevda KOÇ AKRAN**[1]

## Abstract

The main purpose of this research is to determine the perceptions of teacher candidates about the concept of Education 5.0. The study group of the research based on the phenomenology design consists of 50 teacher candidates studying at the Faculty of Education in Siirt University. A semi-structured interview form developed by the researcher was used as a data collection tool in the research. MAXQDA was preferred in the analysis of the data. The data were subjected to content analysis. At the end of the research, opinions on the definition and purpose of Education 5.0 were obtained. The purpose of Education 5.0 is to provide digital learning. It is to offer a flexible learning environment to the individual. It is to increase the use of technology in society. It is to include the use of robots in education. It is to create e-living spaces. It is emphasized that Education 5.0 is the education of the future. Additionally, it has been determined that Education 5.0 is a human-oriented education, smart society education, education in which technology is used extensively and an education approach in which values cannot be transferred. In addition to Education 5.0, other educational understandings were also included in the study. Education 1.0 is the education of the agricultural community and traditional education is adopted. Education 2.0 is transition education to industrial society and traces of teacher-centered education can be seen. Reflections of traditional education can also be seen in Education 3.0. However, compared to the other two educations, there is a transition to student-centered education here. Education 4.0 is the education of the information society. Technology is used extensively in this education. On the other hand, Education 5.0 adopts an understanding of super-intelligent societies. Artificial intelligence applications and advanced technology are used extensively here.

**Keywords:** Education, Education 5.0, Education 4.0, Education 3.0, Education 2.0, Education 1.0

## Özet

Bu araştırmanın temel amacı, öğretmen adaylarının Eğitim 5.0 kavramı hakkındaki algılarını belirlemektir. Olgubilim desenine dayalı araştırmanın çalışma grubunu, Siirt Üniversitesi, Eğitim Fakültesinde öğrenim gören 50 öğretmen adayı oluşturmaktadır. Araştırmada veri toplama aracı olarak, araştırmacı tarafından geliştirilen yarı yapılandırılmış görüşme formu kullanılmıştır. Verilerin analizinde MAXQDA tercih edilmiştir. Veriler içerik analizine tabi tutulmuştur. Araştırma sonunda Eğitim 5.0 tanımı ve amacına yönelik görüşler elde edilmiştir. Eğitim 5.0'ın amacı dijital öğrenmeyi sağlamaktır. Esnek öğrenme ortamını bireye sunmaktır. Toplumda teknoloji kullanımını artırmaktır. Eğitimde robotların kullanımına yer vermektir. E-yaşam alanlarını oluşturmaktır. Eğitim 5.0'ın geleceğin eğitimi olduğu vurgulanmaktadır. Ayrıca Eğitim 5.0'ın insan odaklı eğitim, akıllı toplum eğitimi, teknolojinin yoğun kullanıldığı eğitim ve değerlerin aktarılamadığı bir eğitim anlayışı olduğu tespit edilmiştir. Araştırmada Eğitim 5.0'ın yanı sıra diğer eğitim anlayışlarına da yer verilmiştir. Eğitim 1.0 tarım toplumunun eğitimidir ve geleneksel eğitim benimsenmektedir. Eğitim 2.0, sanayi toplumuna geçiş eğitimidir ve öğretmen merkezli eğitimin izleri görülmektedir. Eğitim 3.0'da da geleneksel eğitimin yanısmaları görülmektedir. Fakat diğer iki eğitime oranla burada öğrenci merkezli eğitime bir geçiş bulunmaktadır. Eğitim 4.0 ise bilgi toplumunun eğitimidir. Teknoloji bu eğitimde yoğun olarak kullanılmaktadır. Eğitim 5.0 ise süper zeki toplumların olduğu bir anlayışı benimsemektedir. Yapay zekâ uygulamaları ve ileri teknoloji burada yoğun bir şekilde kullanılmaktadır.

**Anahtar Kelimeler:** Eğitim, Eğitim 5.0, Eğitim 4.0, Eğitim 3.0, Eğitim 2.0, Eğitim 1.0

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## INTRODUCTION

Education makes a transition from theoretical knowledge to a practical understanding. Now, technological tools and developments reveal the importance of application. After knowledge becomes meaningful in the human mind, it is expected that learning will be transformed into concrete behavior. Education 5.0 is seen as a reflection of such an expectation in today's education system. Education 5.0 is the blending of theoretical and applied knowledge (Muzira and Bondai, 2020). Education 5.0 develops human capital that can apply the knowledge store to produce technological innovations. It guides the new education policy by using the heritage doctrine and indigenous resources to solve national problems (Dziwa and Postma, 2020).

It is a known fact that the human profiles, education policies and practices that Education 5.0 wants to raise in accordance with today's society are different from other societies. When we look at the past societies, there are many developments that affect every period. These developments enable societies to call them Society 1.0, Society 2.0, Society 3.0, Society 4.0 and Society 5.0 (See Figure 1).

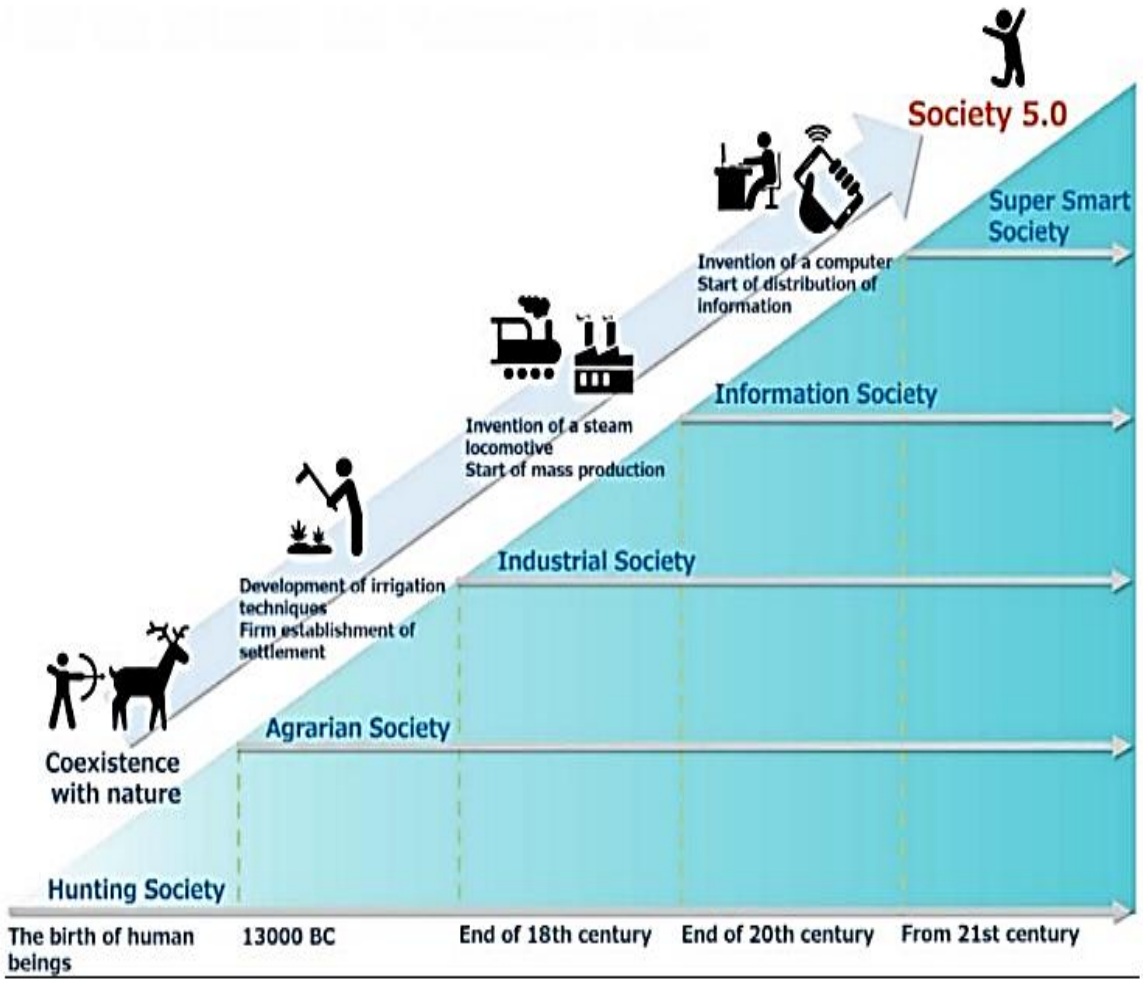



Figure 1. Evolution of societies (Alvarez-Cedillo, Aguilar-Fernandez, Sandoval-Gomez and Alvarez-Sanchez, 2019:695).

The society 1.0 structure was shaped by the developments in the living spaces of the most

primitive societies and these societies were known as hunting and gathering societies. When we look at the general structure of these societies, the dominant human type is the "prosthetic person". In this society, which sees man as a being equipped with many prostheses, the objects of the industrial world are like auxiliary prostheses that ensure the adaptation of man to the society in which he/she lives. For example, people go from one place to another by car. It is almost as if the car is a limited natural extension of our body in terms of movement for human beings. It enables people to go further and faster. There is a “civilized person” profile in Society 2.0. The people here adopt an understanding that makes a living through agriculture, that is, produces based on the land. Society 3.0 covers a period dominated by the industrial era. The invention of steam powered machines and production in the factory are among the general characteristics of these societies. In Society 3.0, there is the realistic/rational type of person. The rational man is inspired by an economic approach. He/she pays attention to the distinction between subject and object. In order to be happy, he/she structures his/her interest on the fact of "material". Society 4.0 is expressed as information societies. In this society where robots and artificial intelligence applications are in transition, “computer” is a defining criterion. Because with the computer, “information” was both produced and consumed quickly. In Society 5.0, an understanding arising from the combination of "human" and "technology" is advocated in life from primitive societies to the present day. Here, there is a profile that uses and develops augmented realism, artificial intelligence and advanced robot applications and can use technology at a high level (Salgues, 2018; Büyükuslu, 2020).

In the realization of digital transformation, Society 5.0 guides both the individual and the society (Kocaman Karoğlu, Bal and Çimşir, 2020). Because Society 5.0 is expressed as "Digital Society", "Creative Society" or "Super Intelligent Society". It is possible to see the most basic example of this in Japan. The concept of "Society 5.0" was first introduced by the Japanese government. Under the leadership of Japan, in 2015, the Japanese Government, together with the business federation Keidanren, at the initiative of President Shinzo Abe, established the criteria for Society 5.0. Society 5.0 For Lorenz Granrath, coordinator and research director of the Japan National Center for Science and Technology, and for many researchers, these criteria are to include society within industry. The aim is to build a "super-intelligent society". Therefore, Society 5.0, presented in the 5th Science and Technology Master Plan covering the fiscal years 2016-2021, was approved by the Council of Ministers on January 22, 2016 and inspired by Industry 4.0. It is a society model that was discussed at the Information Technologies Fair CeBIT 2017 held in Hannover, Germany, by Japanese Prime Minister Shinzo Abe. It is a transformation philosophy that emphasizes human and machine, robot interaction. It is a concept that reflects a situation that is simultaneously integrated with networks. It integrates new technologies such as sensor, robot, big data and cloud computing with society. Here, targets are set in order to increase the quality of life in the society and accelerate sustainable economic development (Alvarez-Cedillo, Aguilar-Fernandez, Sandoval-Gomez and Alvarez-Sanchez, 2019; Arı, 2021; Bölükbaşı, 2021).

In the denominations such as Society 1.0, Society 2.0, Society 3.0, Society 4.0 and Society 5.0, developments in the conditions of the day, technological inventions, level of development of the country, literacy, economic and educational etc. dimensions have been effective. When this effect is examined in terms of education, it is seen that there are differences such as transferring the subjects, determining the duties and responsibilities of the teacher, experiencing changes in the attitudes and behaviors of the students, and using technology in teaching environments. Experienced differences shape all teaching activities from basic education to higher education (See Figure 2).

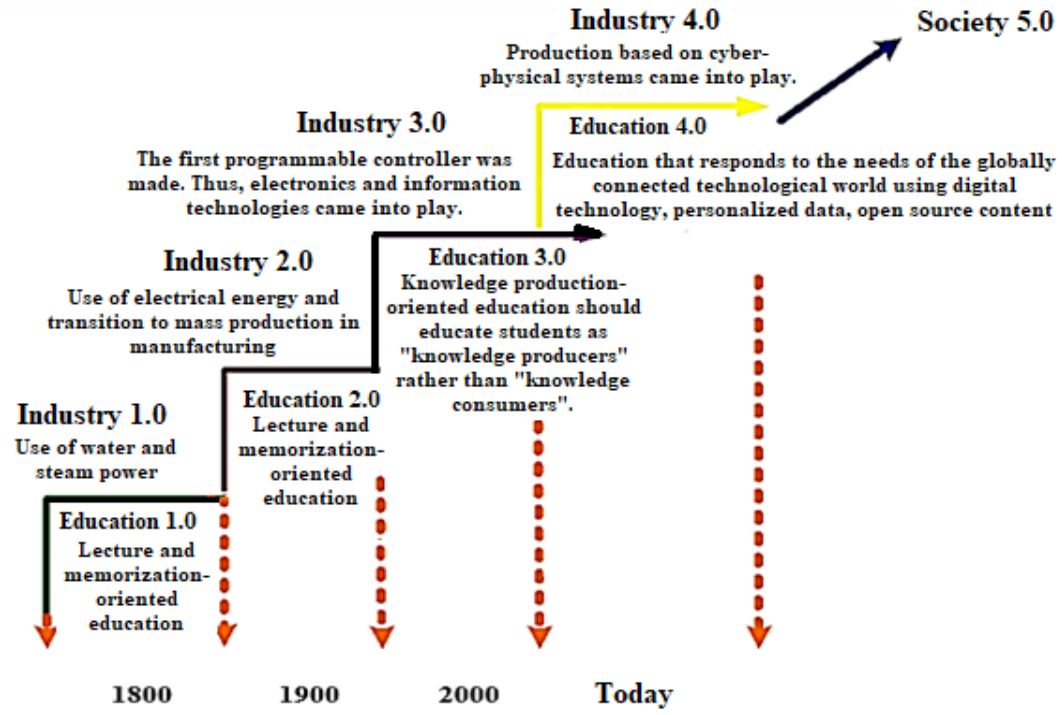



**Figure 2.** *Education-Industrial Revolution relationship* (Kuru-Çetin, Nayir ve Taşkın, 2020:14).

Since the traditional education approach is dominant in Education 1.0, the student memorizes the information here. Essays, assignments, tests and some group works are traditionally done in the classroom. The student is in a passive position. Classroom activities are organized with a teacher-centered educational approach. Traditional education practices such as Education 1.0 continued in Education 2.0. However, in recent years, it has switched to computer and internet-oriented education. In this training, traditional assessment approaches, activities in the classroom environment were limited, and it was aimed to increase cooperation between universities (as well as internationally) and to establish one-to-one communication between students and universities. Here, the teacher became a guide and student activity was provided (Songkram, Chootongchai, Khlaisang and Koraneekij, 2021). In Education 3.0, the "knowledge generation" process is aimed depending on technological tools.

Education 4.0 is structured to meet Industry 4.0 needs. New learning environments, models such as flipped learning, personalization of learning, giving the student the right to choose about learning opportunities, using project-based learning activities, accessing big data (bigdata) for students, ensuring the transition of information from theory to practice (mentoring, going out to the field more with internship experiences) As a result, the change in evaluation criteria is expressed as the changes that come with Education 4.0 (Kuru-Çetin, Nayir and Taşkın, 2020). An education approach focused on innovation and production is being adopted with these changes (Demir, 2018). In Education 5.0, which is a higher perspective, "technology" becomes a key concept. Because today, technology is known as the guiding and determining concept in artificial intelligence and its use in education, health, engineering and many other fields. Now, in many countries of the world, technology is seen as a "must have" title in political issues in the decisions taken to become Society 5.0. For example, in Mexico, Society 5.0 is defined as a human-centered society that enables the creation of systems that integrate cyberspace and physics in economic progress and solving social

problems (Alvarez-Cedillo, Aguilar-Fernandez, Sandoval-Gomez and Alvarez-Sanchez, 2019).

It is desired to reach the Education 5.0 targets at all education levels from basic education to higher education. In these goals, individuals' having high-level thinking skills is among the priority topics. Especially in higher education, individuals need to have creative and critical thinking abilities and the environmental conditions to use these skills. Because the main framework of industrialization and innovations consists of self-directed, collaborative problem solving, critic and innovative individuals (Dziwa and Postma, 2020). Although Education 5.0 aims to raise such individuals suitable for the 21st century, the "economy" factor is seen as one of the biggest obstacles to this. In other words, an institution's physical infrastructure and financial resources cause negative perspectives on Education 5.0. For this reason, many societies today are not ready for Education 5.0. Considering the education and technological infrastructure of societies, it is known that Education 5.0 is in its infancy (Muzira and Bondai, 2020). For example, after Zimbabwe gained full independence in 1980, higher education has focused on three core outcome areas (known as Education 3.0) of teaching, research and community service. As a result of the digital age's expectations from the individual and the direction of the society, they added two more indicators, innovation and industrialization, and created a new doctrine called Education 5.0. Their aim was to raise graduates who could think scientifically and analyze problems objectively in higher education institutions (Dziwa and Postma, 2020). In the 1990s, both the education system and the labor market were regulated in Germany. In the last two decades, the higher education system has made strong progress towards further regionalisation. There have been successful education and training projects supported and financed by private institutions, companies. The strong interactions between workers, employers, the common area and other social stakeholders are a reflection of these supports. These reflections, which have developed as 4.0 in education, are actually seen as steps that facilitate the transition to 5.0 in Education in Germany. Similar progress can be seen in Sweden. A number of structural reforms took place in Sweden in 1992. After 1992, Sweden has been among the countries that show a high level of decentralization and progress in education. In the 2011 Swedish Education Act, education reforms focused more on electoral independence, independent academies and student security. In addition, the definition of profit targets in schools, increasing academic success and improving conditions for academic staff were discussed. Improving these issues in education with the understanding of Education 4.0 has been the main subject of the Swedish education system (Alvarez-Cedillo, Aguilar-Fernandez, Sandoval-Gomez and Alvarez-Sanchez, 2019:695).

The developments seen from Education 1.0 to Education 5.0 provide us with information about the "learning" of our future generations. It enables teachers, parents and administrators to act together in today's Z generation and all future generations. In the education system, it gives feedback to higher education institutions about the training of teachers and the skills they should have. These skills include “recording and editing audio files, creating visually interesting content, creating interesting presentations, creating digital quizzes, editing and sharing information in digital environments, using blocks and Wikipedia for students, creating digital data graphics and posters, accessing new content and creating attractive presentations” (Kuru-Çetin, Nayir and Taşkın, 2020;14-15). Equipping teachers working in higher education or other education levels with all kinds of "technology"-based skills in the digital cycle means that generations, who are the input and output of the society, receive better education. For this reason, considering the fact that the general structure, education system and individual profile of each society are different from each other, it should not be forgotten that "teachers" are an important educational element among the differences in every period. Their thoughts and expectations about innovations and changes should be taken into account with such a perspective. Especially starting from higher education, which is the first

step of the teaching profession, teacher candidates should be guided to continuously improve themselves in lifelong learning and to perform this profession in the best way. Support should be given in adopting and adapting to innovations with the changing society and education. When he/she is a teacher, learning environments that will use high-level skills such as technology, critical thinking, creative thinking and problem solving should be offered. The opinions of both teachers and teacher candidates should be taken into account for a better learning environment. From this point of view, the perceptions of teacher candidates regarding Education 5.0, where the unlimited possibilities of "technology" are presented to the individual, constitute the problem sentence of this research.

### Purpose of the Research

The sub-problems of this research aimed at determining the perceptions of teacher candidates about the concept of "Education 5.0" are as follows:

- ✓ What is Education 5.0 according to teacher candidates?
- ✓ How is Education 5.0 different from Education 1.0, Education 2.0, Education 3.0 and Education 4.0 according to teacher candidates?

## METHOD

### Research Design

Phenomenology design was used in the study. The phenomenology design is preferred in qualitative studies in order to determine the experiences, perceptions and meanings attributed to a phenomenon by the individual (Onat Kocabıyık, 2015). For this reason, phenomenology design was used in order to determine the perceptions, experiences and meanings attributed to the concept of "Education 5.0" by teacher candidates in the research and the data obtained from it were subjected to content analysis.

### Study Group

The study group of the research consists of 50 teacher candidates studying at Faculty of Education in Siirt University. Demographic information of the participants is given in Table 1.

**Table 1.** *Demographic information of the participants*

| Variables | | f | % |
|---|---|---|---|
| **Gender** | Female | 20 | 40 |
| | Male | 30 | 60 |
| | **TOTAL** | **50** | **100** |
| **Grade** | 2nd Grade | 22 | 44 |
| | 3rd Grade | 16 | 32 |
| | 4th Grade | 12 | 24 |
| | **TOTAL** | **50** | **100** |
| **Department** | Classroom Teaching | 13 | 26 |
| | Elementary Mathematics | 9 | 18 |
| | Turkish Teaching | 6 | 12 |
| | Social Studies Teaching | 5 | 10 |
| | Science Teaching | 4 | 8 |
| | English Teaching | 5 | 10 |
| | Guidance and Psychological Counseling | 8 | 16 |
| | **TOTAL** | **50** | **100** |

As seen in Table 1, 40% of the participants in the study are female and 60% are male. 44% of the research consists of 2nd grade, 32% 3rd grade, 24% 4th grade students. Of these classes, 26% are studying in Classroom Teaching, 18% are studying in Elementary Mathematics Teaching, 12% are studying in Turkish Teaching, 10% are studying in Social Science Teaching, 8% are studying in Science Teaching, 10% are studying in English Teaching and 16% are studying in Guidance and Psychological Counseling.

**Research Instruments and Processes**

Semi-structured interview form and open-ended questionnaire form developed by the researcher were used as data collection tools in the research. Interview is the interviewer's response to the questions asked by the interviewer with his/her feelings and thoughts. The interviewer collects information about the research topic with the information obtained from here. The semi-structured interview has a more flexible structure than the structured interview. Because in semi-structured interviews, additional questions are asked to the predetermined questions, and there is no obligation to ask the questions in a certain order (Bilim, 2015). One of the reasons why semi-structured interview is preferred in the research is that it gives the person the opportunity to express himself/herself, additional questions are asked during the interview and the place of the questions is changed depending on the feelings and thoughts of the interviewer.

Care was taken to ensure that the questions were appropriate for the research purpose while preparing the semi-structured interview form in the research. For this purpose, certain stages have been taken into account. While preparing the interview form, firstly, a literature review was conducted on the subject. A question pool was created within the framework of the literature. There are six questions in the pool. Expert opinion (two faculty members in the Department of Curriculum and Instruction, one Turkish Teacher) was taken regarding the suitability of the questions for the study group. Experts evaluated the questions in the question pool by taking into account the options "Appropriate", "Not Appropriate" and "Needs Correction", and the relevant items were corrected by the researcher. Based on the feedback received from experts, the number of questions was reduced to two. In order to determine whether these questions were understandable and whether the participant was suitable for the group, the interview form was applied to 10 teacher candidates for 30-35 minutes. Interviews with participants were conducted face-to-face in classrooms. During the interviews, the researcher asked questions and noted the answers from the participants.

**Data Analysis**

The MAXQDA qualitative data program was used in the study. Certain stages were taken into account while analyzing the data in the program. According to Creswell, these are as follows (Cited by Dede, 2017). In the first step, data is prepared and organized. In this research, the opinions of the teacher candidates about the concept of Education 5.0 were taken and transferred to the computer environment. The second step is to read and analyze all of the data. All the data obtained about Education 5.0 were carefully read by the researcher and necessary notes were taken. In the third step, data coding was done. While coding here, text and imaginary parts are presented in the same category. In the research, two main categories were created in total, and themes and codes were included under them. In addition, the researcher made the coding process based on the participant's views and using the concepts determined in the literature.

In the fourth step, similar codes are gathered under the same theme. These are considered

important in the interpretation of the findings. In the fifth stage, themes and codes are interpreted in the findings section.

Validity and reliability stages were also included in the analysis of the data. Inclusion of questions in the data collection tool related to Education 5.0 in Validity, and examinations within this framework in the analysis section ensured the validity of the scope. Analysis of the interviews, transferring them in the findings section, and making direct quotations are among the ways to ensure validity. In addition, other methods were also examined to ensure validity. These are internal validity (credibility-validity) and external validity (transferability-reliability). Credibility is associated with the concepts of "internal validity" and "truth value" in the literature (Tutar, 2022). In qualitative research, in order to ensure credibility, either data diversification, description or expert opinion is used. In this research, expert opinion was used to ensure credibility.

External validity (transferability) was examined after internal validity in the research. As it is known, detailed descriptions are included in transferability and concepts, codes and themes can be generalized. In addition, in order to ensure transferability in qualitative research, the researcher is expected to be familiar with the research topic, literature, study population, number of groups and interview duration. Similarly, participants need to be determined through purposeful sampling (Tutar, 2022). Some of the methods to ensure internal validity were used in this research. Among the ways to ensure internal validity are the researcher's mastery of the concept of Education 5.0, the level of readiness being sufficient, being in communication with the study group, the number of groups being appropriate for qualitative research, and the duration of the interview being sufficient depending on the number of questions. In addition, participants' voluntary participation in the research and reaching participants through easily accessible sampling method are seen as other ways to ensure external validity.

Validity is seen as an important concept as well as reliability in research. For this reason, some methods are used to ensure reliability. These are internal reliability, external reliability, transferability, consistency, believability, confirmability, approvability and verifiability. In order to ensure verifiability in the research, coding reliability was checked (Tutar, 2022). Expert opinion was sought here. While getting expert opinion, a code list was first created. Another expert's opinion was taken regarding the code list. Afterwards, the agreement between the coders was checked. Miles and Huberman (2019) reliability formula was used and the reliability was found to be .95. Another method used to ensure reliability in research is consistency. While ensuring consistency, care was taken to structure the findings in a way that reflected the participants' feelings and thoughts. In addition, the research design must be determined correctly as a criterion of reliability. Here, the phenomenological pattern was used in accordance with the purpose of the research. Another method used for reliability is confirmability. In confirmability, the results obtained are verified by the data collected and the situation investigated. However, there is a point that is seen as a limitation of the research when conducting confirmability. Since there are very few studies on Education 5.0, the discussion section is limited to the resources available.

In the research, the names of the participants were kept confidential and the codes of S1, S2, S3…..S50 were given to the opinions of the participants.

## FINDINGS / RESULTS

### Opinions of teacher candidates about Education 5.0

Opinions of the participants about Education 5.0 are given in Figure 3.

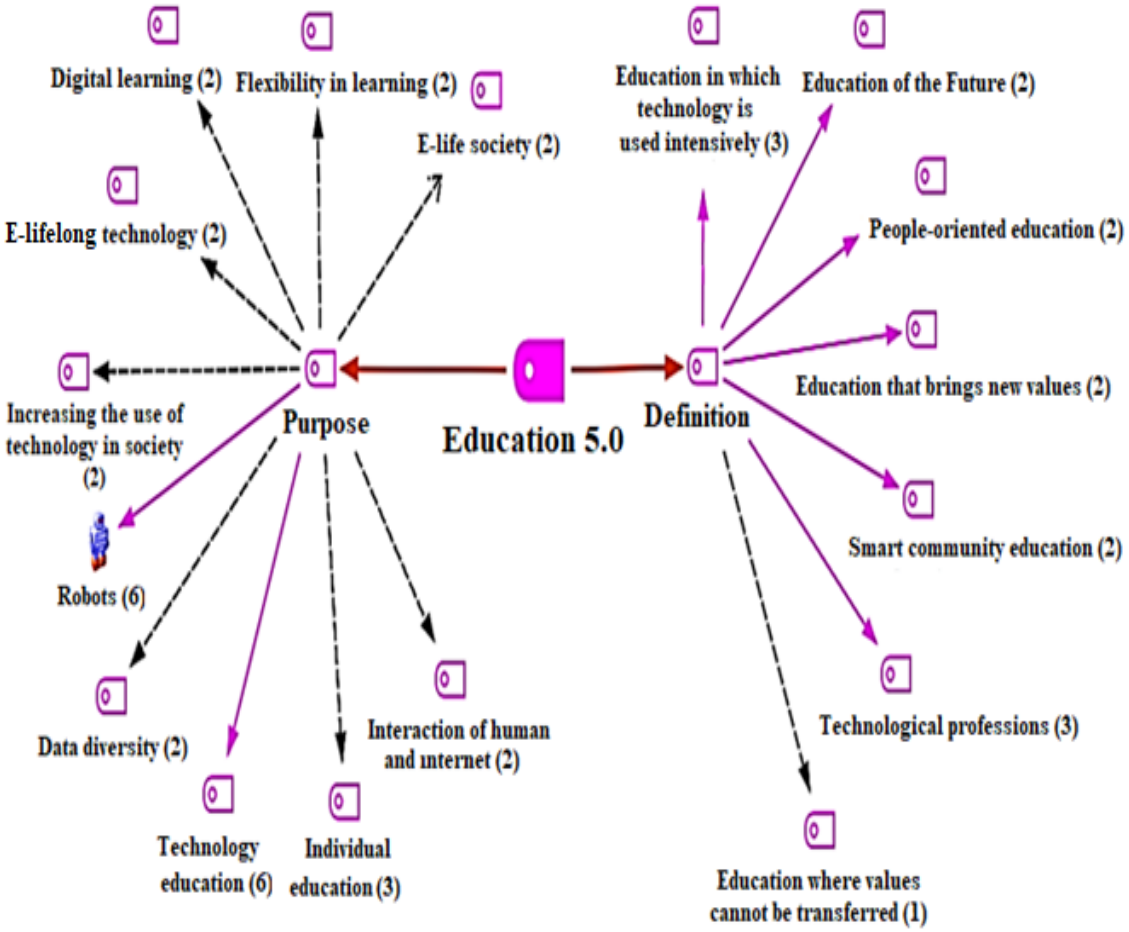



**Figure 3.** *The Code-Theory Model of the Education 5.0 theme*

As can be seen in Figure 3, the participants' views on Education 5.0 are gathered under two themes: purpose and definition. Codes such as “technology education (f=6)”, “robots (f=6)”, “individual education (f=3)”, “interaction of human and internet (f=2)”, “data diversity (f=2)”, “increasing the use of technology in society (f=2)”, “e-lifelong technology (f=2)”, “digital learning (f=2)”, “flexibility in learning (f=2)” and “e-life society (f=2)” are included in the purpose theme. Codes such as “education where technology is used intensively (f=3)”, technological professions (f=3), education of the future (f=2), people-oriented education (f=2)”, “education that brings new values (f=2), “smart community education (f=2)” and “education where values cannot be transferred (f=2)” are included in the definition theme.

Some excerpts from the participants' opinions about Education 5.0 are given below.

S11: The most important feature of this society is the intensive use of technology in education.

S22: …I think that more technological tools are used in this education.

S26:…when we look at the world today, education uses 5.0. This shows how much they

have advanced in technology.

S38: Universities, especially world universities, use robots in their education….

S39:..as far as I know, Japan uses robots in the education system…

S41:…I know that there are robots to assist the teacher….

S42: New professions emerge with Education 5.0. Because technology is developing day by day…

S43: The more technology develops, the more technological professions emerge…

**Opinions of teacher candidates' on the difference of Education 5.0 from Education 1.0, Education 2.0, Education 3.0 and Education 4.0**

The views of the participants on educational comparisons are given in Figure 4.

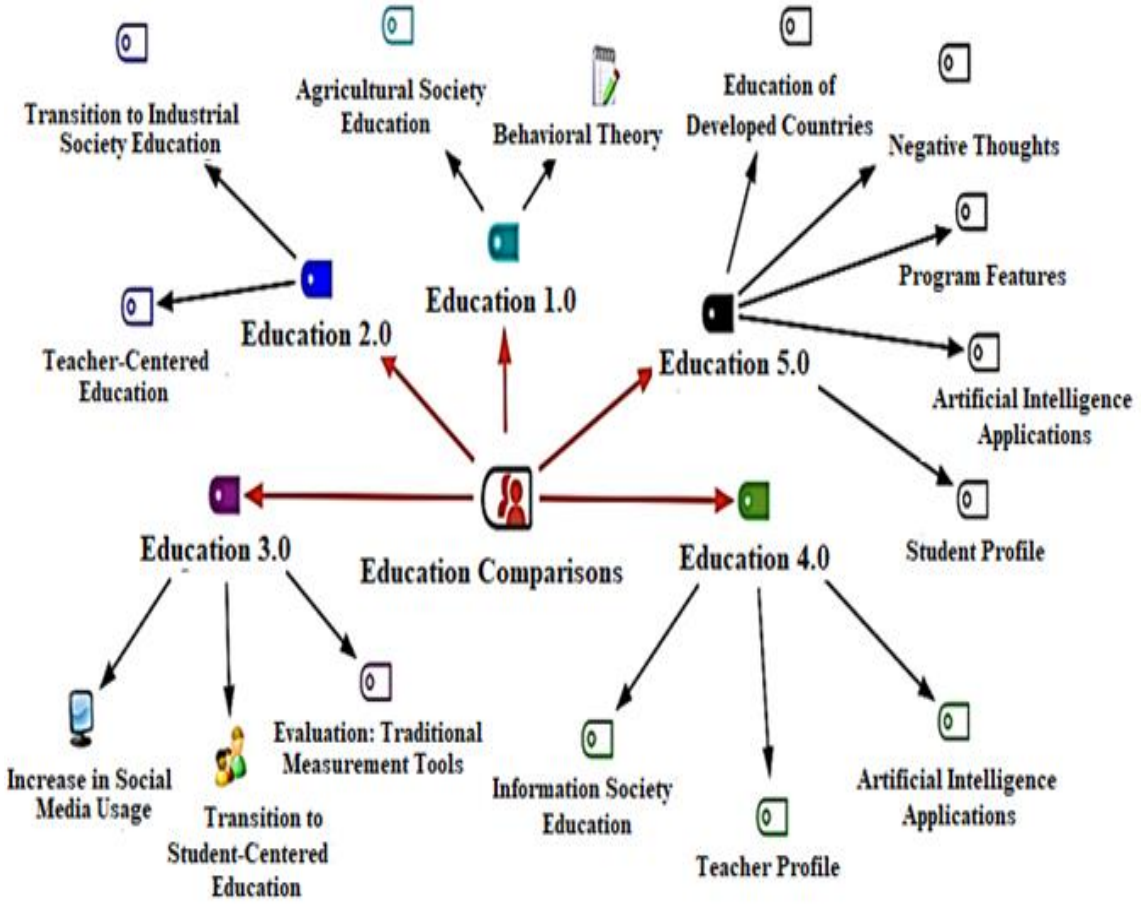



**Figure 4.** *Comparison of the educations- Code-Theory Model*

As seen in Figure 4, the views of the participants on the comparison of education were gathered under five themes as Education 1.0, Education 2.0, Education 3.0, Education 4.0 and Education 5.0. Detailed representations of these themes are shown in Figure 5, Figure 6, Figure 7, Figure 8, Figure 9.

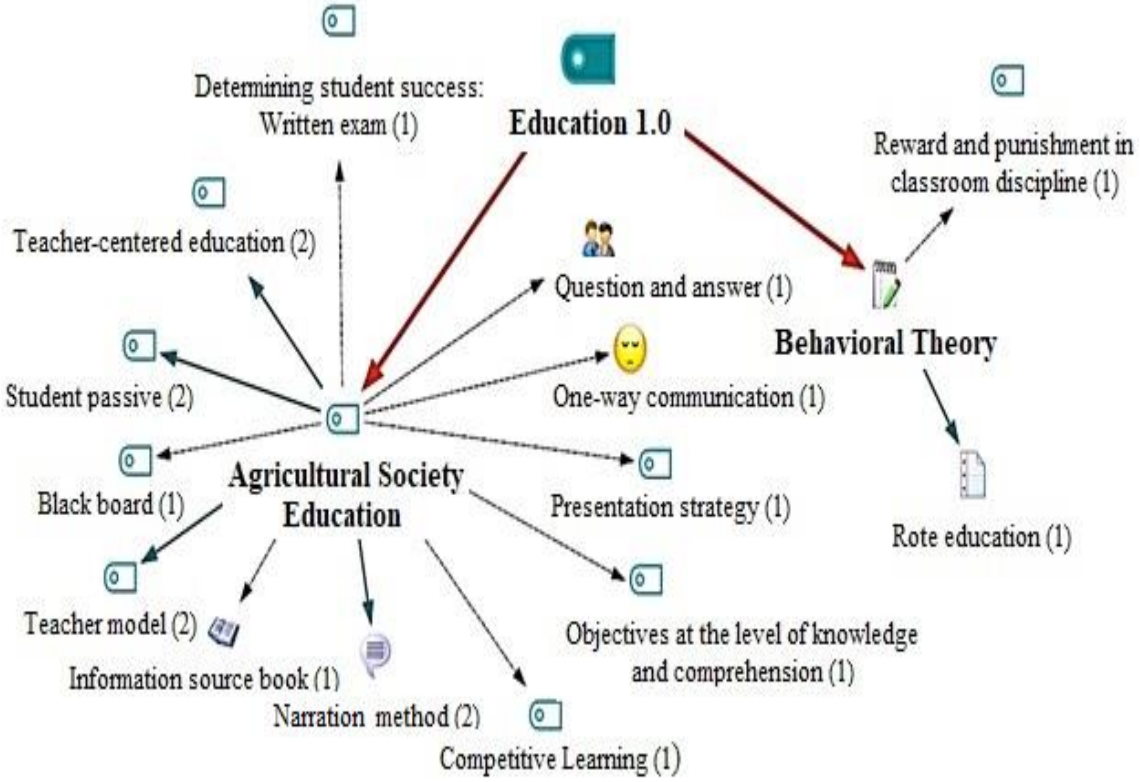



**Figure 5.** *The Code-Theory Model of the Education 1.0 theme*

The Education 1.0 theme is divided into two themes as agricultural society education and behavioral theory. The theme of agricultural society education consist of "narration method (f=2)", "teacher-centered education (f=2)", "student passive (f=2)", "teacher model (f=2)", "determining student success: written exam (f=1"), "blackboard (f= 1)", "information source book (f=1)", "competitive learning (f=1)", "objectives at knowledge and comprehension level (f=1)", "teaching strategy through presentation (f=1)", "one-way communication (f=1)" and "question and answer (f=1)" codes. The theme of behavioral theory includes of "reward and punishment in classroom discipline (f=1) "and "rote learning (f=2)" codes.

Some excerpts from the participants' views on Education 1.0 are given below.

S2: Since technology did not develop in agricultural society, the teacher was always the one who explained the subject.

S5: It is an education in which there is excessive transfer of verbal information.

S6: The teacher was speaking and the student was in the listening position.

S13: The student could not be very active in this education and even remained passive.

S14: The student sees the teacher as the only source of information here.

S44: The student generally took the teacher as a model more.

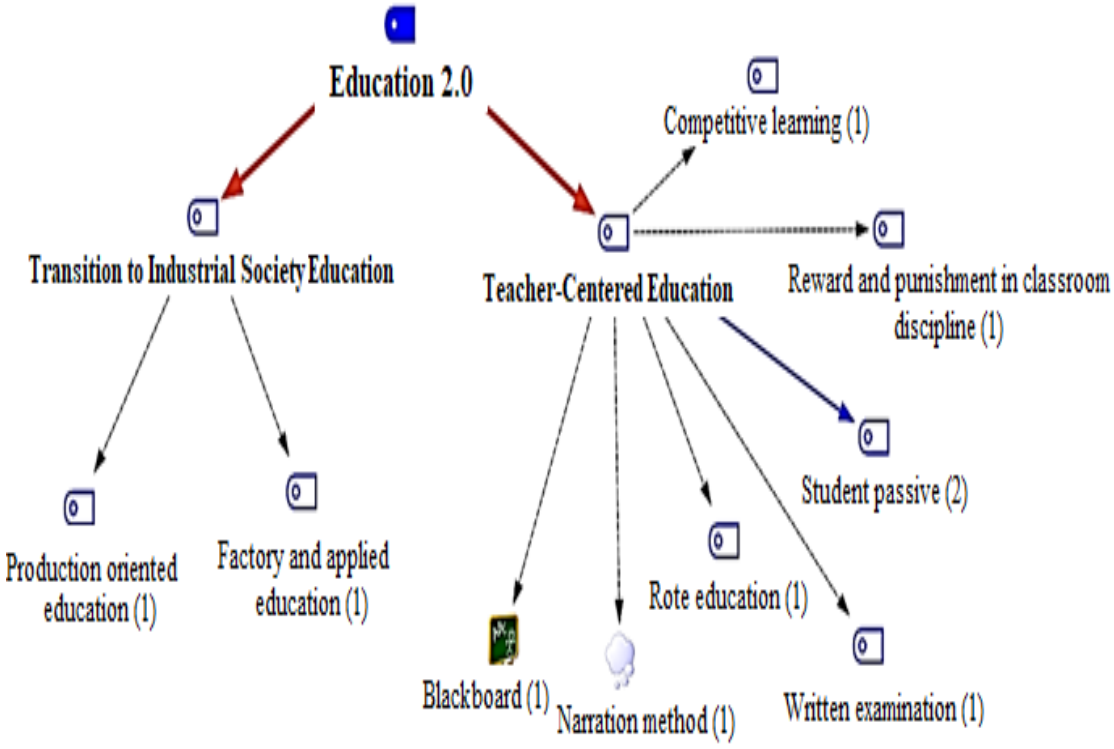



**Figure 6.** *The Code-Theory Model of the Education 2.0 theme*

According to the participants, there are two themes in Education 2.0. These are transition to industrial society education and teacher-centered education. The theme of transition to industrial society education consists of codes such as "production-oriented education (f=1)", "factory and applied education (f=1)". The theme of teacher-centered education consist of "student passive (f=2)", "chalkboard (f=1)", "learning method (f=1)", "rote learning (f=1)", "written exam (f) =1)", "reward and punishment in class discipline (f=1)" codes. From this point of view, it can be said that there is a traditional education approach in Education 2.0.

Some excerpts from the participants' views on Education 2.0 are given below.

S4: There is more teacher-centered education in Education 2.0. In other words, there is a result-oriented understanding, not a process.

S16:….at first glance, I did not understand the difference between this training and Education 5.0. When I have some knowledge, my understanding of education before 2004 comes to mind.

S24: …the student is active in education 5.0, but passive here.

S36: In this education, students memorize information mostly.

S40: ….student cognitive passivity is in question. Whatever is given to us in this education, we get it. We configure.

S48: If I obey the classroom and teacher rules, I will not be punished in this education. But Education 5.0 has a technological environment. You are productive. In Education 2.0, if you cause a discipline problem in the classroom, you will be penalized. You will be rewarded if you follow the rules and do the assigned homework.

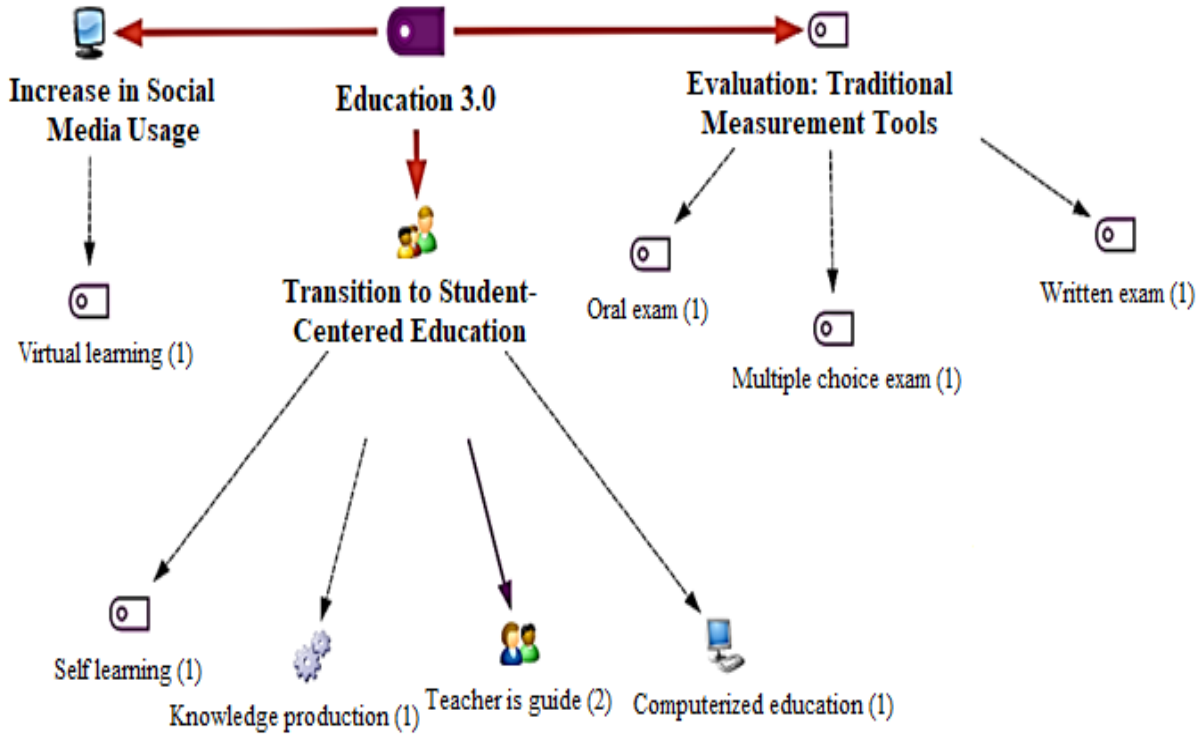



**Figure 7.** *The Code-Theory Model of the Education 3.0 theme*

As seen in Figure 7, three themes were created in the analysis of the participants' views on Education 3.0 according to the Code Theory Model. These are "increase in social media usage", "transition to student-centered education and "evuluation: traditional measurement tools". “Virtual learning (f=1)" code is in the theme of increase in social media usage and also there are codes such as "teacher is guide (f=2)", "self-learning (f=1)", "knowledge production (f=1)" and "computerized education (f=1)" in the theme of transition to student-centered education. It is seen that there are "oral exam (f=1)", "multiple choice exam (f=1)" and "written exam (f=1)" codes in the theme of evaluation: traditional measurement tools.

Some excerpts from the participants' views on Education 3.0 are given below.

S8: Students learn in virtual environments with the development of technology.

S12: The only source of information for the teacher is decreasing in this education. Teacher guidance is now being talked about….

S31: The teacher guides the student in the formation of knowledge….

S34: …in some courses, for example, there are oral exams in language classes…

S46:…The multiple-choice exam, which is the most used exam and our favorite exam, was still used today.

S50:…Written exam was used in language lessons. In fact, the traces of traditional education still continue.

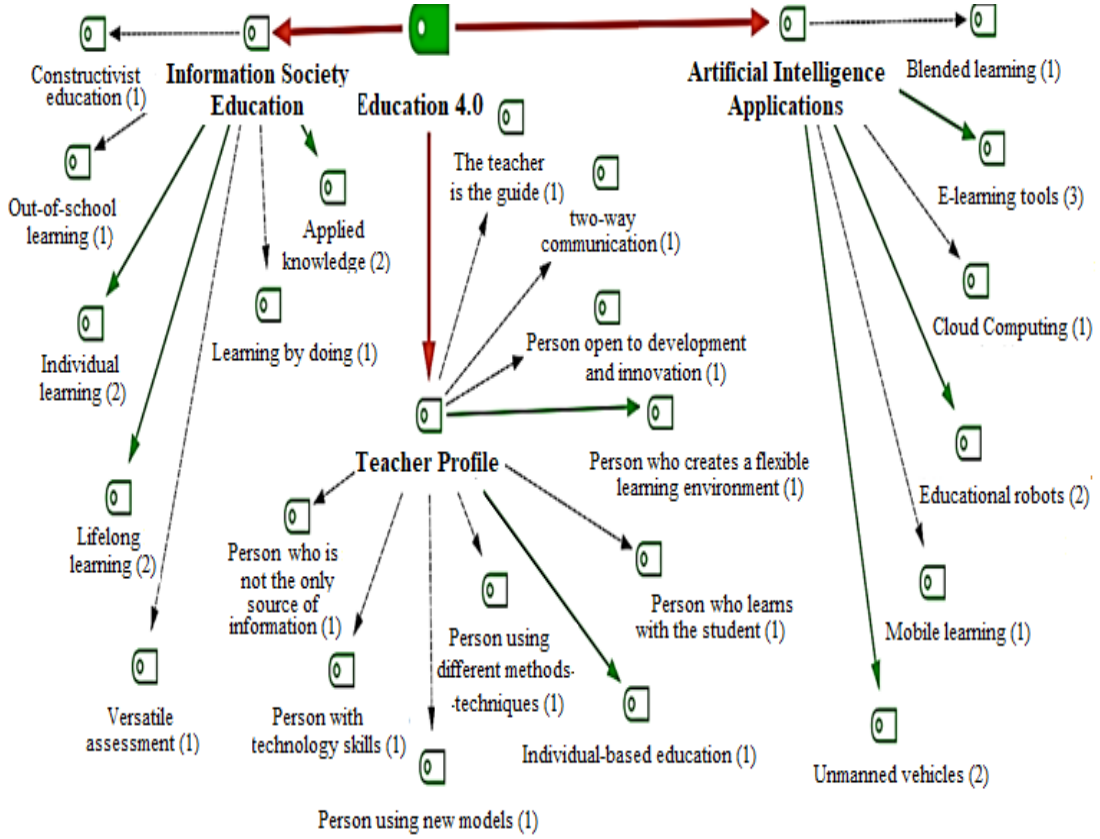



**Figure 8.** *The Code-Theory Model of the Education 4.0 theme*

As seen in Figure 8, three themes were created based on the opinions of the participants on Education 4.0. These are information society education, teacher profile and artificial intelligence applications. The theme of information society education consist of codes such as "applied knowledge (f=2)", "individual learning (f=2)", "lifelong learning (f=2)", "constructivist education (f=1)", "out-of-school learning ( f=1)", "versatile assessment (f=1)" and "learning by doing (f=1)". In the theme of teacher profile there are codes such as "individual-based education (f=2)", "person who creates a flexible learning environment (f=2)", "teacher guide (f=1)", "two-way communication (f=1)", "person open to development and innovation (f=1)", "person who learns with the student (f=1)", "person using different methods-techniques (f=1)", "person using new models (f=1)", "person with technology skills (f=) 1)" and "person who is not the only source of information (f=1)". In the theme of artificial intelligence applications there are codes such as "e-learning tools (f=3)", "educational robots (f=2)", "unmanned vehicles (f=2)", "blended learning (f=1)", "cloud computing (f=1)" and "mobile learning (f=1)".

Some excerpts from the participants' views on Education 4.0 are given below.

S1: In the past, the information was based on memorization, now applied information is given with this education.

S3: In an advanced society, there is understanding of education of the previous e-society, and in this respect, more applied knowledge is given.

S19: There is this education approach in individual teaching as well as group teaching.

S21: Learning does not happen only in a certain time period. It's life-long…

S25:…we learn new information and behaviors. Because we are learning with technological tools.

S27: There is a flexible learning environment….

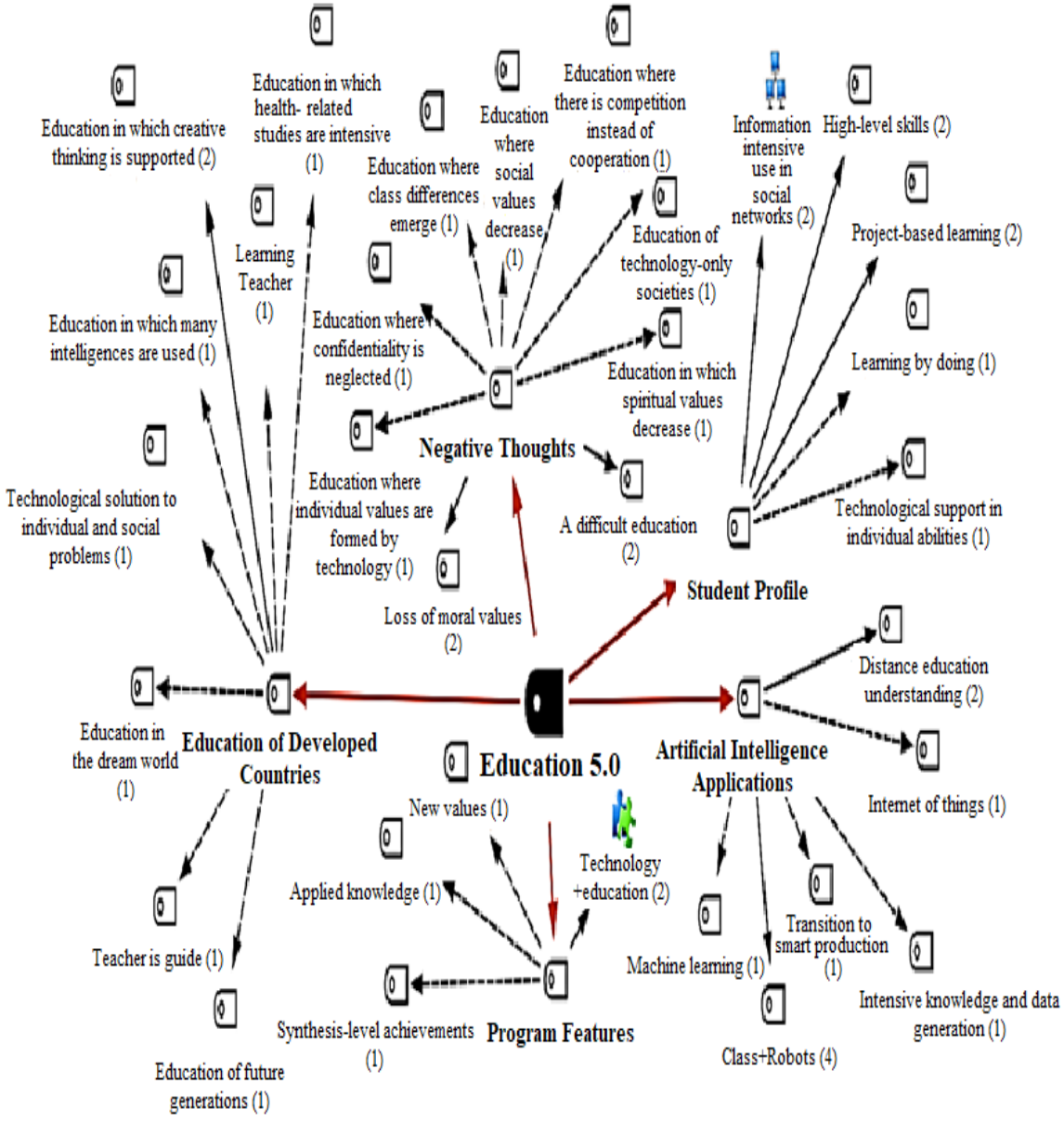
S29: We always do learning. We are not tied to just one time.

S32: There is no similar learning path in Education 4.0…

S35: Learning does not take place only in the classroom. There are e-learning environments outside the classroom.

S37:..technological tools are used in the course teaching process.

S45:… e-learning tools are used a lot…




**Şekil 9.** *The Code-Theory Model of the Education 5.0 theme*

As can be seen in Figure 9, five themes have been created based on the views of the participants on education 5.0. These are "Education of Developed Countries", "Program Features",

"Negative Thoughts", "Student Profile" and "Artificial Intelligence Applications". The theme of education of developed countries consist of codes such as "education in which creative thought is supported (f=2)", "education where health -related studies are carried out intensively (f=1)", "learning teacher (f=1)", "education using many intelligence (f=1)", "technological solution to individual and social problems (f=1)", "education in the dream world (f=1)", "teacher s guide (f=1)" and "education of future generations (f=1)".

The theme of program features consist of codes such as "Technology+Education (f =2), "New Values (f=1)", "Applied knowledge (f=1)" and Synthesis-level achievements (f=1)".

The theme of negative thoughts consist of codes such as "The loss of moral values (f=2), "A difficult education (f=2)", "Education where individual values are formed with technology (f = 1)", "Education where privacy is neglected (f = 1)", "Education where class differences emerge (f = 1)", "Education where social values decrease (f=1)", "Educaton where there is competition instead of cooperation (f=1)", " Education of Technology-only Societies (f=1)" and "Education in which spiritual values decrease (f=1)".

In the student profile theme "intensive use of information in social networks (f = 2)", "high-level skills (f=2)", "project-based learning (f=2)", "learning by doing and experiencing (f=1)", "technological support in individual abilities (f=1)" codes are seen.

In the theme of artificial intelligence applications, "class + robots (f=4)", "distance education understanding (f=2)", "internet of things (f=1)", "intensive knowledge and data generation (f=1)", "transition to smart production (f=1)" and "machine learning (f=1)" codes are included.

Some excerpts from the participants' views on Education 5.0 are given below.

S7: Different technologies are used in this education. This situation develops our creativity.

S9:…creativeness develops in every aspect. There are robots and high-end technology.

S10: As a whole, technology influences education.

S15: Technology and education are intertwined….

S17: Children learn many behaviors through technology. This situation causes them to remain unfamiliar with values….

S18: Currently, students have a general profile. That's because they use technology too often...

S20: Students access information through social networks and consume this information quickly.

S23: Although it is not used extensively in our country, there is an education system in which robots are used in the classroom.

S28: Perhaps the education of the understanding of society that we do not exist in. Because here, robots are used as resources to assist the teacher.

S30:…it is the expected class model. I would like to grow up in such an education.

S33:…I think it is very nice to use robots in education alongside teachers. Where the teacher cannot reach, support is received from robots…

## DISCUSSION, CONCLUSION, RECOMMENDATIONS

In the research, participants were asked about their opinions on Education 5.0. Based on these views, two themes were created. These are purpose and definition. In the purpose theme, the most emphasis was placed on technology, education and robots. Apart from these views, the aims of Education 5.0 include individual education, interaction of people and the internet, data diversity, increasing the use of technology in society, e-lifelong technology, digital learning, flexibility in learning, and e-life society. The definition theme includes education where technology is used extensively, technological professions, education of the future, human-oriented education, education that brings new values, smart society education and education where values cannot be transferred. Considering the perceptions towards Education 5.0, it is seen that positive opinions are in the majority in the research. According to the participants, Education 5.0 is a concept that young people are more interested in than older people. Because young people see this education as the education of the future. He/she thinks that learning with this education will be at the center of education. The individual transfers the acquired values to the new professions they will perform in the future. In other words, the individual is more open to innovations and changes with Education 5.0. In Education 5.0, objectives such as digital learning, e-lifelong technology, flexibility in learning, getting support from robots, data diversity, individual education, human and internet interaction are the reflections of these changes. As a result of these reflections, the individual has high-level thinking skills at certain levels of education. It is possible to see the most concrete examples of this in higher education. Individuals who can think creatively, think critically, produce quick solutions to problems and make self-assessment are raised with Education 5.0, which is among the aims of higher education. According to Dziwa and Postma (2020), Education 5.0 reverses challenging economic and technological tools for these purposes and makes them available to the individual. On the other hand, existing approaches, models, methods, techniques for learning in societies continue to be largely teacher-centered, reduce the student to a passive role and fail to provide him/her with high-level skills (Watson, Watson and Reigeluth, 2013).

The research examined the participants' opinions on the difference between Education 5.0 and Education 1.0, Education 2.0, Education 3.0 and Education 4.0. Education 1.0 was examined first in the comments. The Education 1.0 theme is divided into two themes: agricultural society education and behavioural theory. In agricultural society education, opinions such as narrative method, teacher-centered education, student passive, teacher model, determination of student success (written exam, blackboard, information source book, competitive learning, targets at the level of knowledge and comprehension, teaching strategy through presentation, one-way communication, questions and answers) were included. In the behavioural theory theme, there are rewards and punishment in classroom discipline, and memorization education views. As can be seen, the participants were knowledgeable about Education 1.0. Kuru-Çetin, Nayir and Taşkın, (2020) stated in their study that school administrators do not have knowledge about the changes in the historical process and the industry concepts of industry 1.0, 2.0, 3.0 and 4.0 and society 5.0. This result shows that new generations have access to a lot of information thanks to technology, organize the information and structure the information instead of memorizing it. According to Demir, İlhan and Kalaycı (2019), in Education 1.0, teachers mostly prefer the narrative method. In other words, a traditional education approach is used extensively. It is possible to see this situation from basic education to every stage of higher education. For example, there is the concept of university 1.0 in higher education. In this concept, universities are seen as a social institution that is

responsible for educational services and first emerged in the Middle Ages. Universities with this understanding, convey information to students, prepare students for professional life in line with current conditions, and contribute to the development of students' abilities. At the same time, educational institutions mainly gave importance to religious education. An approach to education that included memorization and classroom discipline prevailed during this period.

When looking at Education 2.0, there are two themes. These are education for transition to industrial society and teacher-centered education. While the theme of transition to industrial society education includes production-oriented education, factory and applied education, in the teacher-centered education theme, the views of student passive, blackboard, narrative method, rote learning, written exam, reward and punishment in classroom discipline are in the majority. As it is known, in the education of industrial societies, students are mentally passive. In this understanding of education in business life, human labor is needed to provide production in factories. According to Akıncı Çötok (2006), there is a large amount of manpower in blue-collar workers. Factories are seen as symbols of society. Here, information becomes a public identity. In the educational approach, a single type of individual is raised. Individual goals are kept in the background. Schools are seen as places where cultural heritage is transmitted. For this reason, schools are autonomous and have a hierarchical structure with strict rules. Gültekin (2020) states that in societies where this understanding of education is adopted, the education of the masses is not taken into consideration and repetition and memorization are included in education.

In the research, three themes were created based on the participants' opinions on Education 3.0. These are the increase in the use of social media, the transition to student-centered education and evaluation: traditional measurement tools. It has been concluded that there is virtual learning, transition to student-centered education, teacher guide, self-learning, knowledge production and computerized education views in the theme of social media use. In the theme of evaluation: traditional measurement tools, there are opinions about oral exam, multiple choice exam and written exam. In other words, participants in the research see Education 3.0 as a phase of the transition from traditional education to contemporary education. Unlike Education 1.0 and Education 2.0, in this approach to education, the student gradually becomes the center of education. There is learning by doing instead of trial and error. According to Demir, İlhan and Kalaycı (2019), the use of technology increases with this education and learning environments diversify with the influence of technology. For example, universities are seen as entrepreneurship and technology transfer centers in this education.

When we look at Education 4.0, it can be seen that there are three themes in line with the participant opinions: information society education, teacher profile and artificial intelligence applications. In the theme of information society education, emphasis is placed on applied knowledge, individual learning, lifelong learning, constructivist education, out-of-school learning, multifaceted evaluation and learning by doing. In teacher profile theme, It has been concluded that there is individual-based education, a flexible learning environment is created, the teacher is a guide, two-way communication is provided, there is openness to developments and innovations, learning takes place with the student, different methods-techniques and new models are used, technology skills are developed and the teacher is not the only source of information. In the theme of artificial intelligence applications, it is seen that there are e-learning tools, educational robots are used, unmanned vehicles are used, blended learning is used, there are education concepts such as cloud computing and mobile learning is preferred.

Looking at Education 4.0, it is seen that there is information society education. There are also artificial intelligence applications here. There are studies that support this view. According to Akben and Avşar (2018), Industry 4.0 effects are seen in Education 4.0. Components such as learning robots, data diversity, virtual reality, three-dimensional printers, smart factories, internet of things and internet services have come to the fore with Industry 4.0. Today, these components are used by individuals at different rates in Society 5.0. For example, 66.6% of the world's population uses mobile phones, 59.5% uses the internet and 53.6% uses social media. In Türkiye, this situation does not change much. While 79% of individuals between the ages of 16-74 use the internet, this rate is 90.7% when internet access is taken into account from home. When these ratios are considered, it is seen that it is not possible to gain behaviors away from technology in the education understanding of Society 5.0 (Yaraş and Kanatli-Ozturk, 2022).

In the research, it is seen that the teacher profile in Education 4.0 is different in Education 1.0, Education 2.0 and Education 3.0. Since it is a learner-centered understanding of education, teachers are in the position of guides. Although he/she is not the only source of information, the teacher carries out some learning in the process together with the student. The main reason for this is “technology”. Because, as in Education 5.0, technology appears as an “indispensable” element in Education 4.0 as well. Education 3.0 has some differences and similarities from Education 5.0 and Education 4.0. There are reflections of student-centered education in both Education 4.0 and Education 3.0. However, the student-centered approach in Education 3.0 is undergoing a transition period. There are still traces of traditional education. Traditional measurement tools are used in the evaluations. Similar features are also seen in Education 2.0. Contrary to Education 4.0, the educational understanding of the industrial society is dominant. There is a teacher-centered education here. The teacher is an important source of information. The student is in a passive position in the education and education process. Education 1.0 is agricultural society education. Here, the reward is punishment and the teacher is an important source of information too. Türkiye has encountered and implemented many of these educational approaches. For example, as in every country, Education 4.0 is one of the issues on Turkey's agenda. It is emphasized that although children in Turkey have high-level skills in using digital technology, they are not ready to develop information literacy and digital competence. However, the building block of Education 4.0 is technology. Equipping Z and future generations with the skills to use technology ensures the formation of "Super Intelligent Societies". Here, scientists and other stakeholders related to education have great responsibilities. The work of scientists in universities, the technological inventions of new generations, their work on projects are seen as important steps for the future of society. For this reason, the basic components of University 4.0 are innovative management and leadership (international, industry cooperation, research and development, digital literacy, accreditation, etc.), lifelong learning (flexibility and openness, talent, personal development, social learning, guidance, measurement and assessment, digital pedagogy, etc.), support services (data security, big data, accessibility, learning material production, etc.). Council of Higher Education (CoHE) has made some applications in order to implement the components and to plan the education in this direction. One of them is the opening of doctoral programs in the fields of artificial intelligence, data mining, big data and robotics. In 2019 Higher Education Institutions Exam (YKS) preferences, students were admitted to the departments that focus on "technology" (artificial intelligence engineering, software development, information security technology, agriculture and trade management, etc.). On the other hand, in line with the objectives of Education 4.0 in the 2023 Education Vision, Ministry of National Education

(MEB) drew attention to 21st century skills, competence-based education, educational data warehouse, data-based management, e-portfolio, experience-based learning, design-based workshops, etc. (Konca, 2021). As can be seen, not every society is fully ready for Education 5.0. Education systems and practices have not taken advanced steps in this regard. The effects and applications of Education 4.0 are still visible.

Based on participant opinions about Education 5.0, five themes were reached. These are the education in developed countries, program features, negative thoughts, student profile and artificial intelligence applications. In the theme of education in developed countries, it is seen that emphasis is placed on education in which creative thinking is supported, education in which health-related studies are intensively carried out, the teacher who learns, education in which many intelligences are used, technological solutions to individual and social problems, education in the world of imagination, education in which the teacher is the guide, and the education of future generations. In the theme of program features, it was concluded that technology and education were used together, new values emerged, applied information was included, and new, original thoughts were formed. In the research, there are both positive and negative opinions about Education 5.0. According to the participants, some moral values are lost in Education 5.0. Considering the general structure of society, it is seen as an education that is difficult to implement. With the development of technology, privacy is not protected in this education. A competitive understanding is emerging among individuals. Social media addiction is among the general profiles of individuals who receive education with this understanding. On the other hand, individuals raised with Education 5.0 use their high-level skills a lot. At the same time, He/she uses contemporary models (such as the project-based learning model). He/she prefers artificial intelligence applications in the educational environment. In other words, Education 5.0 advocates a human-centered society. In Education 5.0, which is the educational approach of Society 5.0, which offers advanced technology to the use of the individual, change of opinion, geopolitical change, economic change and technological change occur (Alvarez-Cedillo, Aguilar-Fernandez, Sandoval-Gomez and Alvarez-Sanchez, 2019). According to Köksal (2021), technology is the indicator of the development level of societies. With the use of Web 5.0 tools, technology is no longer a threat but is seen as a process that makes the individual's life easier.

As a result, teacher candidates mostly have positive opinions about Education 5.0. When comparing Education 5.0 with other education approaches, different perspectives attract attention. In other words, the practices and characteristics of each educational concept in its period were emphasized by the prospective teachers.

**SUGGESTİONS**

Qualitative method was used in the research. It can be done in mixed studies.

Student profiles and technological tools usage skills of Education 5.0 can be researched.

The contribution of technological tools in Education 5.0 to student success can be investigated.

Research can be conducted to identify teacher profiles in Education 5.0.

Teachers' opinions about Education 5.0 can be consulted.

Teacher and student opinions regarding the suitability of curriculum for Education 5.0 can be discussed comparatively.

Teacher opinions can be consulted regarding the suitability of the technologies included

in Education 5.0 for classroom application conditions.

**Ethics Committee Permission Information**

Name of the committee that made the ethical evaluation: Siirt University Ethics Committee

Date of ethical evaluation decision: 03.05.2023

Ethics assessment document issue number: 602

***Disclosure statement***

No potential conflict of interest was reported by the author(s).

**Statement of Researchers' Contribution Rates**

The entire study was conducted by the sole author of the study.

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