

**T.C.
İSTANBUL ÜNİVERSİTESİ
EĞİTİM BİLİMLERİ ENSTİTÜSÜ**

YÜKSEK LİSANS TEZİ

**THE EFFECT OF 21ST CENTURY SKILLS TRAINING ON
FOREIGN LANGUAGE TEACHERS' PERCEPTIONS REGARDING THEIR
EDUCATIONAL TECHNOLOGY AND MATERIALS DEVELOPMENT
COMPETENCIES**

GÖKÇEN YENİ

**YABANCI DİLLER EĞİTİMİ ANABİLİM DALI
İNGİLİZ DİLİ EĞİTİMİ PROGRAMI**

**DR. ÖĞR. ÜYESİ TUNCER CAN
TEZ DANIŞMANI**

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Bu çalışma 05.07.2018 Tarihinde ařağıdaki jüri tarafından
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TEZ JÜRİSİ



Dr. Öğr. Üyesi Tuncer CAN
İstanbul Üniversitesi-Cerrahpařa
Hasan Ali Yücel Eğitim Fakültesi



Dr. Öğr. Üyesi Yasemin ORAL
İstanbul Üniversitesi-Cerrahpařa
Hasan Ali Yücel Eğitim Fakültesi



Dr. Öğr. Üyesi Aynur KESEN MUTLU
Medipol Üniversitesi
Eğitim Fakültesi

PREFACE

21st century has come with a lot of innovations and changes. These innovations and changes have affected education field and technology has the prominent role in the change of Education and Foreign Language Teaching. However, it has been found that technology is not used effectively and today's young people do not have the skills required by the 21st century.

21st century skills, including some skills such as thinking critically, using technology efficiently, finding useful information quickly, and collaborating with others, is a necessity for learners to compete and succeed in today's global workforce. Teachers have the biggest role in order to bring students these skills. Herein, there is a need for teacher training. Teachers should learn what 21st century skills are and how to bring these skills into classroom by creating their own teaching materials through digital technologies.

“One child, one teacher, one book, one pen can change the world.” (Malala Yousafzai) I believe that this thesis will bring a new perspective on teacher training.

Throughout the process of preparing my thesis, I have benefited from the brilliance, generosity, insight, experience and knowledge of many valuable people. I would like to express my gratitude to my thesis advisor Asst. Prof. Dr. Tuncer CAN for his excellent guidance and support during this process. I am indeed proud and fortunate to be supervised by him.

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Last, but not least, I would like to express my deepest love to my family for their unconditional love, support and encouragement.

GÖKÇEN YENİ

ABSTRACT

THE EFFECT OF 21ST CENTURY SKILLS TRAINING ON FOREIGN LANGUAGE TEACHERS' PERCEPTIONS REGARDING THEIR EDUCATIONAL TECHNOLOGY AND MATERIALS DEVELOPMENT COMPETENCIES

This study aims to show whether 21st Century Skills Material Design Teacher Training and Professional Development Program enhance foreign language teachers' perceptions regarding their educational technology and material development competencies. It is worthy of recommendation that teachers should learn what 21st century skills are and how to bring these skills into classroom by creating their own foreign language teaching materials through digital technologies. To that end, an 8-week teacher-training program was held at Istanbul University. Thirty-three English teachers participated in the study. Application-based Educational Technology and Material Development Competencies Scale was conducted as pre-test and post-test before and after 8-week training in order to measure changes of the teachers' perceptions. In addition, teachers' opinions have been obtained through structured interview technique to deepen the parts that are not acquired from quantitative data. Results of the study indicate that this type of strategy training was found useful for developing teachers' perceptions regarding their educational technology and material development competencies on 21st century skills.

Key Words: 21st Century Skills, Material Design, Foreign Language Teaching, Teacher Training

ÖZET

21. YY BECERİLERİ EĞİTİMİNİN YABANCI DİL ÖĞRETMENLERİNİN EĞİTİM TEKNOLOJİSİ VE MATERYAL GELİŞTİRME YETERLİKLERİNE İLİŞKİN ALGILARINA ETKİSİ

Bu çalışma 21. Yüzyıl Becerileri Materyal Tasarımı Öğretmen Eğitimi ve Profesyonel Gelişim Programının, yabancı dil öğretmenlerinin eğitim teknolojisi ve materyal geliştirme yeterliklerine ilişkin algılarını geliştirip geliştirmediğini göstermeyi amaçlamaktadır. Öğretmenlerin 21. yüzyıl becerilerinin neler olduğunu ve bu becerileri dijital teknolojiler aracılığıyla kendi yabancı dil öğretim materyallerini yaratarak nasıl sınıfa kazandıracaklarını öğrenmeleri gerektiği tavsiye edilebilir. Bu amaçla, İstanbul Üniversitesi'nde 8 haftalık bir öğretmen eğitim düzenlenmiştir. Otuz-üç İngilizce Öğretmeni çalışmada yer almıştır. Uygulamaya Dayalı Öğretim Teknolojileri ve Materyal Tasarımı Becerileri Ölçeği öğretmenlerin algılarındaki değişiklikleri ölçmek için, 8 haftalık eğitimden önce ve sonra ön test ve son test olarak uygulanmıştır. Ayrıca, nicel verilerden elde edilemeyen bölümleri derinleştirmek için Yapılandırılmış Görüşme Tekniği ile öğretmenlerin görüşleri alınmıştır. Çalışmanın sonuçları, bu çeşit strateji eğitiminin 21. yüzyıl becerileri üzerine öğretmenlerinin eğitim teknolojisi ve materyal geliştirme yeterliklerine ilişkin algılarını geliştirmede faydalı olduğunu göstermektedir.

Anahtar Kelimeler: 21. Yüzyıl Becerileri, Materyal Tasarımı, Yabancı Dil Öğretimi, Öğretmen Eğitimi

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ABBREVIATIONS

AACTE: The American Association of Colleges for Teacher Education

AR: Augmented Reality

CALL: Computer-assisted Language Learning

CPD: Continuing Professional Development

EPALE: Electronic Platform for Adult Learning in Europe

ICT: Information and Communication Technology

MOOC: Massive Open Online Course

OECD: Organization for Economic Co-operation and Development

PDF: Portable Document Format

PhD: Doctor of Philosophy

P21: Partnership for 21st Century Learning

QR: Quick Response

SLA: Second Language Acquisition

SPSS: Statistical Package for the Social Sciences

TPCK or TPACK: Technological Pedagogical and Content Knowledge

URL: Uniform Resource Locator

VLE: Virtual Learning Environments

VR: Virtual Reality

3D: Three-dimensional

PART I: INTRODUCTION

1.1. STATEMENT OF THE PROBLEM

21st century is a period in which digital technologies are rapidly developing, changing, and spreading. Digital technologies have been positioned in many areas of our lives and have become an indispensable part of it. One of the greatest areas where 21st century digital skills take place is education and training. (Waycott, et al., 2010) Learning is a lifelong process. Thus, there are some human skills that 21st-century individuals should possess in the lifelong learning process; creativity and innovation skill, critical thinking and problem solving skill, communication and collaboration, information literacy, media literacy, ICT literacy, flexibility and adaptability, initiative and self-direction, social and cross-cultural interaction, productivity and accountability, leadership and responsibility skills. (Prensky, 2001) The acquisition of these skills includes not only the students but also other groups such as teachers, leaders, administrators. Therefore, especially teachers must closely follow 21st century skills and use these skills in language teaching. (Ilhan, 2004) They should apply to information and communication technologies (ICT) in education. 3D video, smart board, infographic and presentations, and virtual reality and augmented reality are the most important examples of 21st century digital arts. These technologies provide many benefits such as enriching the education and facilitating the teaching. For this reason, 21st century digital skills must be used in the preparation of foreign language teaching materials. (Tomlinson, 2012) One of the best ways to do this is to educate teachers on a lifelong basis and to renew themselves and their daily practice in this context.

By means of foreign language learning tools created through newly acquired skills, teachers can enable students to relate to current life and language more easily. (Harwood, 2010) Students are exposed to different situations of language and language used in real life, and they may have to communicate verbally to fulfill their linguistic tasks. However, many teachers do not have the detailed knowledge of what these skills are, and cannot use these current language-teaching materials in class. (Demirel and Budak, 2003) In fact, potential of technology in the learning-teaching process is known by all educators.

Yet, this hardly changes teachers' professional and personal lives. Teachers' technology competencies will directly affect the service they offer. (Seferoğlu, 2004) Hence, firstly teachers should be helped to become technology literate and in this regard, their in-service training incompetence should be eliminated.

1.2. PURPOSE/ PROBLEMS AND SUB-QUESTIONS

Purpose of the Study

Today, with the development of technology, there are significant changes in the economy, jobs, and businesses. These changes require some abilities and traits serving teenagers in a time that is changing and developing so rapidly. Thus, preparing a child for the world is not an easy task for any teacher. Students need to be able to think and work creatively in both digital and non-digital environments to survive and succeed. Enhancing their communication and collaboration skills with others are essential not only for their learning but also their mental and emotional health. It is a necessity for them to be able to think critically, find useful information quickly, and use technology effectively. These skills, called 21st century skills, ensure what students need to compete and succeed. Furthermore, many materials have been added to the training process with these skills. Technologies such as smart board, presentation and internet-enabled applications, virtual reality and augmented reality provide a great contribution to the learning process. The use of these current technologies facilitates language teaching. However, foreign language teachers do not have enough knowledge about what 21st century digital skills are and how to use them in language teaching (Ananiadou and Claro, 2009).

Herewith, this research aims to provide foreign language teachers an in-service training involving 21st century skills, to investigate the influence of this teacher training on teachers' perceptions regarding their educational technology and material development competencies on 21st century digital skills.

Problems and Sub-questions

Competent teachers always choose materials by content to ensure the optimal congruence between materials, methodology, learners, goals, target language, and the teacher's personality and teaching style. (Madsen & Bowen 1978) However, most

language teachers continue to use textbooks even though they have adequate equipment to use technology efficiently in their classes. In addition, the study conducted by OECD (Organization for Economic Co-operation and Development) in 2009 shows that some of the 21st century skills are taught separately and there are no assessments policies or teacher training programs specifically targeted to these skills and competencies in Turkey. Such studies and personal experiences have shown that teachers do not have enough knowledge about 21st century skills and they do not use the technology that the age demands. Accordingly, young people cannot access the information quickly, think critically and collaborate with others easily.

Taking into consideration all these problems, the overarching questions this study sights answers are below:

1. What are the 21st century skills that foreign language teachers can use in their lessons?
2. Do foreign language teachers' perceptions on preparing language-teaching materials change when they have in-service training involving 21st century skills?
3. How has 21st century skills teacher training influenced teachers' teaching/classroom practices?

1.3. SIGNIFICANCE OF THE STUDY

Thanks to this research, the teachers have learned how to use digital technologies that are settled in all areas of our lives in a practical way and to improve their competencies in the context of preparing materials for foreign language teaching.

1.4. PREMISES (ASSUMPTIONS)

1. In this research, foreign language teachers who work at public schools in Istanbul were accepted as a sample.
2. It was assumed that the teachers who participated in the study were sincerely involved in the training and interviews they had received.

3. During the teacher training and practice, it has been accepted that the logical levels of teachers are close to each other.
4. The information provided from the sources has been appropriately cited as a reference for the purpose of the study.

1.5. LIMITATIONS

1. The study is limited to 8-week training.
2. The study is limited to 33 teachers working at public schools in Istanbul and voluntarily attending Istanbul Directorate of National Education Language Academy.
3. After 8-week training, there is no access to classroom practice as to whether teachers use 21st century skills in their classroom. The study is limited to communicating to us that they use these skills.

1.6. DEFINITION OF TERMS

21st Century Learning: It is using modern learning tools that allow students locate, acquire, and create knowledge more quickly. 21st century learning helps learners to demonstrate the three C's: creativity, collaboration, and communication.

Augmented Reality: Augmented Reality (AR) is a technology, which gathers real world environment and its contents enriched by computer generated sound, image, graphics and GPS data.

Virtual Reality: Virtual Reality (VR) is the name given to the creation of three-dimensional computer technologies where people can both discover and interact.

Virtual Learning Environments: VLE (Virtual Learning Environments) are computer-generated programs that give users the feeling of being in a virtual environment created by the computer and the opportunity to interact with other people through computer.

360-degree Video: A 360-degree video is created by a camera system that records a scene at 360 degrees from all angles. Users can watch or navigate a 360-degree video as if they were in the video by changing the perspective of a 360-degree video with the gyroscope sensor used by mobile devices or through sliding and rotating motion.

Animation: It is a technique, which creates an illusion of movement by arranging or photographing successive pictures, drawings or objects.

Digital Portfolio: It is a computer-based collection of student performance. A digital portfolio makes classroom learning more accessible for students, teachers, and parents. It helps keep track of student performance and growth.

Distance Education: It is the educational technology used when the student and the teacher are not physically in the same environment.

PART II: LITERATURE REVIEW

2.1. WHAT IS 21ST CENTURY LEARNING?

2.1.1. How Has the World Changed, and What Does This Mean for Education?

The world has changed significantly in the last few decades. Fundamental changes have affected economy, jobs, and businesses. They have started to reshape workplaces and the nature of work. Industrial economy has transformed a service economy, which is driven by knowledge, innovation and creativity. (Madsen and Bowen, 1978) Many jobs in the service sector need high-wage, high-growth, and high-skilled occupations. Technology has helped companies as they have renewed the way they do business.

These fundamental changes in the economy, businesses, and jobs call some new, different skills for individuals. Alterations in society and economic growth demand that young people should be equipped with new skills and competencies, which allow them to actively make a major contribution to economic development (Ananiadou and Claro, 2009). These skills and competencies are called 21st century skills and competencies. They are more related to the needs of social and economic progress. They also help young people to experience the new forms of socialization. Young people must be able to perform creative tasks in order to succeed.

Today, skills like self-regulation, creativity, productivity, and critical thinking seem like such a basic requirement. Young learners need to be able to think critically, solve problems, communicate, collaborate, find useful information quickly, and use technology effectively.

According to P21 (Partnership for 21st Century Skills), for a young learner whose plan is to attend a university, or enter the workforce directly, it is a requirement to be able to think critically, solve problems, communicate, collaborate, find useful information quickly, and use technology effectively. (Greenhill, 2010) These are today's survival skills what learners need to succeed and compete. These are not only for career success, but for personal quality of life as well.

In addition, there are some new skills to master, such as digital media literacy, which emerged due to increasing concerns about privacy, security, and the need for better ways to manage time, people, resources, projects, and the economic necessity to innovate to be globally competitive (White, 2013). Moreover, innovation and creativity are so important to the future success of economy. However, schools spend so little time on developing creativity and innovation skills.

In 2008, Cisco, Intel and Microsoft, which are large technology corporations, started to worry about graduate students. They claimed that students graduate from school and university and then they enter the workforce with skills, which do not prepare them for employment in a digital age. (Griffin and Care, 2014) Individuals have difficulties while finding information quickly, identifying and analyzing it properly. They have an adaptation problem while collaborating and communicating. Therefore, these three large companies approached about a need to focus on 21st century skills because of shifting workplace requirements.

A couple of years ago, four hundred hiring executives of major corporations were asked whether students graduate from school really ready to work or not. The question is very simple but significant. The executives' collective answer was "not really". (Trilling and Fadel, 2012) The study clearly showed that students graduating from secondary schools, technical colleges, and universities are badly lacking in some basic skills and many applied skills:

Oral and written communications

Critical thinking and problem solving

Professionalism and work ethic

Teamwork and collaboration

Working in diverse teams

Applying technology

Leadership and project management

Accordingly, governments should try to properly identify and include the set of skills and competencies in curriculum required to combine them into the educational standards that every student should be able reach by the end of compulsory education. Additionally, cooperation of both economic and social institutions, ranging from companies to higher education institutions, is critical.

As indicated above, teaching students all these skills are essential for both economic survival and success, and assessment is a fundamental factor. (Schraw et al. 2012) Thus, first, it should be known what 21st century skills are.

2.1.2. 21st Century Learning and P21

21st century skills are what students need for life today. They are a series of concepts that use technology safely and effectively. They provide what students need to compete and succeed (Koehler et al. 2011). Along with improving technology, 21st century requires some skills such as professionalism, work ethic, collaboration, critical thinking and problem solving.

Aim of the 21st Century Skills is to make students to be better “problem solvers” and “innovators”. Thus, the Partnership for 21st Century Skills (P21) was founded in 2002. P21’s goal is to facilitate understanding of the role of 21st century skills from the learner to the classroom and policy. Because of the historically decentralized system in the United States, and the fact that required tests do not focus on 21st century skills, the attention to such skills in national discourse and some curriculum documents does not yet translate systematically into classroom practice. (Adamson and Darling-Hammond, 2015)

For the last 20 years, many states have created new methods and materials, related to 21st century skills. Some states have started teacher-training program for these skills. Therefore, P21 has provided a website with resources for educators, policymakers and community members. It has served an opportunity, creating collaborative partnerships among education, business, and community and government leaders. It consists of content knowledge, specific skills, expertise and literacies.

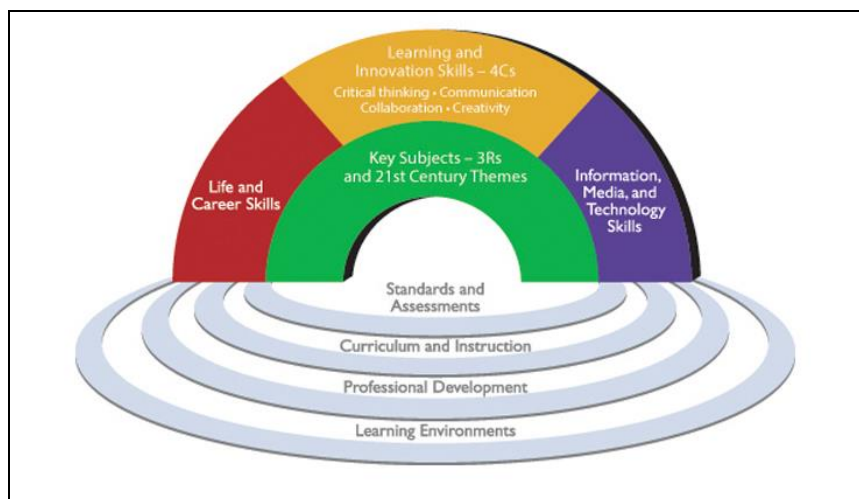


Figure 2-1: 21st Century Knowledge-and-Skills Rainbow [1]

2.2. WHAT ARE THE 21ST CENTURY SKILLS?

2.2.1. Learning and Innovation Skills: Learning to Create Together

Learning and innovation skills increasingly are so essential that they prepare students for the future. They encourage students to think about outside of the box and focus on creativity, critical thinking, communication and collaboration.

2.2.1.1. Critical Thinking and Problem Solving

Critical Thinking is a form of thinking that consists of intellectual processes such as reasoning, analysis and evaluation. Problem solving is a cognitive process for transforming a given situation into a result situation when there is no explicit solution for the problem solver. It is goal-oriented behavior.

Problem solving and critical thinking are a kind of ability that both can use knowledge, beliefs, and arguments to effectively solve problems. They solve many kinds of non-familiar problems in both conventional and innovative ways. They support individuals to make decisions and evaluate the effect that personal actions have on others (Koehler et al. 2011). They are quite significant to all aspects of life, school and work.

Furthermore, these skills are integrated with many other 21st century skills. All 21st century skills complement each other.

In an attempt to acquire the skill of critical thinking and problem solving, students should be able to:

Reason Effectively

The concept of critical thinking and problem solving requires using several types of reasoning such as comparative reasoning, cause-and-effect reasoning, deductive reasoning, or inductive reasoning. Selecting the appropriate type of reasoning depends on the situation.

Use Systems Thinking

Students should analyze how parts of a whole interact with each other in complex situation. They can apply to systems thinking which increases choices to solve a problem by widening learners' thinking and helping learners to utter problems in new and different ways.

Make Judgments and Decisions

Students should follow some phases to make judgement and decisions. First, they should analyze knowledge, beliefs, data, and evaluate alternative points of view. Learners should make connections between information they obtain and use old concepts to create new ideas. Assessing theories and comparison of ideas help them to interpret information. Concluding depends on the best analysis.

Solve Problems

In order to achieve more advanced solutions, non-familiar problems must be solved in both conventional and innovative ways; significant questions must be specified and asked; various opinions must be evaluated (Trilling and Fadel, 2012).

2.2.1.2. Communication and Collaboration

While communication articulates thoughts and ideas effectively using oral and written communication skills in a variety of forms and contexts, Collaboration demonstrates ability to work effectively and respectfully with diverse teams.

They are the ability of individuals to use effectively digital tools to discuss and come to conclusion together. (Koehler et al. 2011) They help students' communication and cooperative learning skills.

Communicate Clearly

Individuals should be able to express their thoughts and ideas effectively by applying to oral, written and nonverbal communication skills in diverse settings. It is important to listen efficiently to sort out meaning, involving information, beliefs and attitudes. Learners should use communication for a variety of purposes in order that enlighten, teach, motivate and encourage. Multiple media and technologies should be utilized and it is essential to communicate effectively in diverse environments.

Collaborate with Others

Diverse teams mean different ideas and attitudes. Individuals should have an ability to work respectfully with others in a diverse team. They must be enthusiastic and helpful in making necessary negotiations to achieve a common goal. Collaborative work indicates taking responsibility and showing value the individual contributions made by each team member (Trilling and Fadel, 2012).

2.2.1.3. Creativity and Innovation

Creativity and innovation is to think outside the box. They use a large variety of idea creation techniques to create new and worthwhile ideas and gather information to find innovative solutions to problems and overcome challenging situations.

Students should be able to:

Think Creatively

Using idea creation techniques such as mind mapping, brainstorming, role-playing helps creativity and innovation. It is important for individuals to create new and worthwhile ideas. Students should define, enhance and evaluate their own ideas so that they can improve and raise creative efforts.

Work Creatively with Others

Working with others requires being open and responsive to new ideas. Cooperation with the group and feedback should be provided into work. Individuals should see failure as an opportunity to learn and retain their creativity for a long time. They should keep originality and creativity in work by adopting new ideas.

Implement Innovations

Students should follow up creative ideas to make a worthwhile contribution to the field in which the innovation will take place (Trilling and Fadel, 2012)

2.2.2. Digital Literacy Skills

As people are in a technology and media-involved environment, it is easy for them to access to an abundance of information. They can follow rapid changes in technology tools. Moreover, they can contribute individually on these changes. To be an active individual in the 21st century, people must be able to create and rewardingly use information, media, and technology.

2.2.2.1. Information Literacy

Information literacy is a set of skills that it can find information and identify it. It evaluates information and its sources critically. Information literacy synthesizes all the sources and determines how to present them according to people needs so that they can use it.

Access and Evaluate Information

Individuals should access information by using sources effectively and treating time efficiently. Evaluation of information needs to be done critically and competently.

Use and Manage Information

It is necessary to produce creative solutions for the issue or problem at hand. By means of variety of sources, information should be used and managed accurately.

Ethical and legal issues must be applied while all this process is going on. (Trilling and Fadel, 2012)

2.2.2.2. Media Literacy

Media Literacy is an indispensable skill to be able to read many types of media. It is a kind of ability to access, analyze, evaluate, and create media. Media Literacy skills can help individuals in terms of developing critical thinking skills, evaluating latest ideas, creating and distributing our own media messages.

Analyze Media

Individuals should realize both how and why media messages are constructed, and for what purposes. People can infer messages differently, and media can affect their beliefs and attitudes. Ethical and legal issues must always be followed in access and use of media.

Create Media Products

The most appropriate media creation tools should be selected according to its features, and the most suitable interpretations should be used effectively in diverse environments (Trilling and Fadel, 2012).

2.2.2.3. ICT Literacy

Information and communication technologies are crucial tools of 21st century. ICT Literacy is the ability to use communication tools and technology. It is the capability of an individual to access, identify and present information to enhance critical thinking.

Apply Technology Effectively

Today, technology is all aspects of human life. It requires people to be a technology literate person who is capable of using digital technology tools and social networks efficiently with the purpose of accessing, managing, evaluating and creating information. These communication and interacting tools should be used appropriately to research and communicate information. It is crucial to apply legal

and ethical issues in the access and use of information technologies (Trilling and Fadel, 2012).

2.2.3. Life and Career Skills

Today's students need teachers who are capable of teaching skills that enrich students' future workplace environment. The Partnership for 21st Century Skills suggests that students should have the opportunity to learn:

2.2.3.1. Flexibility and Adaptability

Students should be able to:

Adapt to change

When students attend a university, or enter the workforce directly, they are expected to adapt to new contexts, roles, accountabilities, and work effectively in changing conditions.

Be flexible

It is normal to be criticized as much as to be praised. It must be open to praise and criticism. As different ideas and beliefs take part in multi-cultural environments, it is necessary to be responsive to this diversity and assess feedbacks effectively (Trilling and Fadel, 2012).

2.2.3.2. Initiative and Self-Direction

Manage goals and time

Individuals should first set short-term and long-term goals, treat the time well, and manage assignments efficiently.

Work independently

Students should be able to observe, describe, prioritize and fulfil tasks without direct oversight.

Be self-directed learners

Learners should approach learning as a lifelong process and overreach their own opportunities to gain proficiency. They should benefit from past experiences to assess future progress (Trilling and Fadel, 2012).

2.2.3.3. Social and Cross-Cultural Interaction

Interact effectively with others

Communication and interaction with others involve respect and professionalism, and learners should know when it is appropriate to listen and when to speak.

Work effectively in diverse teams

Working with others means people from different cultures, different ideas and values. To increase innovation and quality of work, individuals should approach these differences open-mindedly and work effectively with others (Trilling and Fadel, 2012).

2.2.3.4. Productivity and Accountability

Manage projects

Learners should be able to set goals even if they are exposed to obstacles and pressure. They should keep managing work to achieve the intended result.

Produce results

Individuals should manage time efficiently, and work positively and ethically while producing high-quality products. Participating actively is important as much as being punctual and reliable. Each individual should collaborate effectively with others, respect team diversity, and be accountable for results (Trilling and Fadel, 2012).

2.2.3.5. Leadership and Responsibility

Guide and lead others

Individuals should not only guide others but also benefit from strengths of others. Problem-solving skills can be used to influence and inspire others. In addition, ethical behavior should be demonstrated in using influence and power.

Be responsible to others

Learners should act responsibly because working and collaborating with others demand taking responsibility (Trilling and Fadel, 2012)

In the 21st century, every student must learn the essential skills for success. They must be a critical thinker and a problem solver to effectively analyze and evaluate various kinds of ideas and different attitudes. They must be an effective communicator and collaborator to use digital tools to discuss and come to conclusion together. They must be aware of information and media literacy to use information accurately and creatively and to be able to read many types of media. (Wallis and Steptoe, 2006) Thus, teachers should learn 21st century skills, focus on content knowledge and bring the real-world data and tools in the classroom. Students learn best when they actively deal with problems.

To prepare 21st century learners for life, it is also important how is taught not just what is taught. Therefore, it is necessary to prepare current teachers and think of future teachers with equipped documents and resources that allow them to bring 21st century skills into the classrooms in appropriate ways (Koehler et al. 2011).

2.3. TEACHER TRAINING AND PROFESSIONAL DEVELOPMENT PROGRAM ON 21ST CENTURY SKILLS

For the 21st century skills movement to be successful, one must look at what is happening in the world's classrooms. Since teachers are at the forefront, they must have the knowledge and some skills that enable them to be an efficient teacher by teaching 21st century skills. This makes them an effective 21st century teacher. Both new teachers-in-training and current teachers must take part in teacher professional development programs, which provide the learning experiences to prepare teachers to

gather collaborative teaching methods and to use technology and assessments of 21st century skills effectively in their everyday classroom work (Trilling and Fadel, 2012).

One of the teacher training programs was started in China. They formed a new curriculum. The new curriculum, which began in 2001 and gradually expanded to reach all grade levels by 2007, supports emerging a new kind of model learner, one who loves learning, can deal with problems in real-life situations by creativity, and has the ability to be a lifelong learner. Therefore, the new curriculum requires a teacher to be able to make this aim real. (Paine and Fang, 2006) According to Ministry of Education of China (2001), professional development policy has made it a rule for teachers to “receive training before teaching the new curriculum”. Similarly, it is possible to meet the ideas, which argue that teachers should get training about 21st century skills.

On the other hand, Speak Up, the research tool districts use to learn what students, educators, parents and the community must say about education issues, published a report in 2009. In the report, teachers said that by applying technology in the classroom students are more motivated to learn (51%), apply their knowledge to practical problems (30%) and take ownership of their learning (23%). Teachers also reported that by using technology students are developing key 21st century skills including creativity (39%), collaboration (30%) and problem-solving and critical-thinking skills (27%); thus, effectively preparing them for future success in the workplace. (Project Tomorrow, 2010)

Another study is that Organization for Economic Co-operation and Development (OECD) organized a questionnaire study for the teaching and assessment of 21st century skills and competencies in OECD countries. The study was conducted from June to August 2009. The questionnaire was sent to all OECD member countries, including Turkey, via their permanent delegations to the OECD. Although all OECD countries were invited to participate in the questionnaire survey, responses were received from seventeen countries or regions. They asked for information on the following topics:

1. Which 21st century skills are included in current policy guidelines or regulations
2. How they are defined
3. Details on the context that led to their introduction
4. Details on guidelines or regulations for teaching them
5. Impacts on teacher training programs

The findings of the questionnaire survey showed that most countries or regions cover 21st century skills and competencies in their regulations, guidelines or recommendations for compulsory education.

However, there are insufficient specific definitions of these skills and competencies and nearly no clear formative or summative assessment strategies for these skills. Likewise, there are few teacher-training programs which aim the teaching or development of 21st century skills, although there are a number of teacher training initiatives that focus on developing teachers' ICT pedagogical skills, most of them optional.

In the study, Turkey was asked if there is specific coverage of 21st century skills or competencies in the regulations (e.g. curricula, national standards) or guidelines/recommendations for compulsory education in Turkey. If it comes to that, the question about which skills/competencies are covered by these policies was asked. The following were selected as basic skills in the Turkish primary and secondary curriculum:

Critical thinking

Creative thinking

Communication

Research

Problem solving

Decision-making

Information and Communication Technology (ICT)

Subsequently, Turkey was asked to briefly explain (1) the policy context and rationale that led to the introduction of these regulations or guidelines concerning 21st century skills and competencies, (2) if there are regulations or guidelines related to the assessment or evaluation of these competencies/skills and (3) if these regulations or guidelines have an impact on teacher training programs.

In consequence of the study, it was concluded that most of these skills are taught across curricular areas. However, ICT-related ones like media literacy, technology literacy are taught separately. There are no assessments policies or teacher training programs specifically targeted to these skills and competencies in Turkey. (Ananiadou and Claro, 2009)

2.3.1. What Should Be Done for Teacher Training?

Many countries around the world have started extensive reforms of curriculum, instruction, and assessments with the aim of better preparing all children for the higher educational demands of life and work in the 21st century. What are the skills that young people need to be successful in this rapidly changing world and what competencies do teachers need to teach effectively those skills? Things to consider are what teacher preparation programs need to prepare graduates who are ready to teach and use 21st century skills.

It may seem clear that teacher preparation programs should all have one common goal; preparing tomorrow's teachers to work with students. The question is if they are ready to work with the changing needs of today's students. 21st century skills training starts with teacher preparation programs and follows into schools and classrooms. The development of 21st century skills can be supported in a variety of ways.

Concept training should be formed on what 21st century skills are and the possible impact they have on education, the nation, and the world. Teachers need practice how to apply 21st century models in a classroom. Hence, projects must be developed to practice the application of 21st century skills. These models and

projects require assessments to monitor training progress and confirm that future teachers are ready for 21st century. It may seem toilsome to integrate 21st century skills training in education programs, but it is a necessary change that will touch the success of generations to come. (Koehler et al. 2011) Thereby, teachers and students can know more about the world, think outside the box and become smarter about new sources of information. (Wallis and Steptoe, 2006)

On the other hand, today's digital age demands that teachers should be able to teach standard curriculum, and prepare students for the workforce of tomorrow. Preparing students to 21st century starts with a teacher-training program and then transfers into classroom practice. Being able to create an effective 21st century skills training and development program firstly depends on understanding training gaps. This begins by evaluating teachers' current knowledge about 21st century skills. It is an effective start to decide on time and resources. As the training progresses with the teaching of the skills, the process should be analyzed to identify growth. Since technology has an important role on developing and applying 21st century skills, ensuring a tech training and support resource is vital in this process. The aim of an effective 21st century skills training and development program is to prepare teachers to integrate 21st century skills into their classrooms and eventually affect students. (Koehler et al. 2011) Therefore, teachers should firstly become an effective participant and observer in their own classrooms. They inspire their students and open their eyes to the future. They should learn new technologies since technology has been developing and learning is a tool that is not enough. Bringing authentic materials to class will help students learn better. Instead of learning languages, cultures, and communication skills from textbooks, students must learn how to use the tools in their hands. When they are encouraged to view their smart phones or tablets as valuable tools that support knowledge, they can produce creative blogs or movies, communicate and collaborate with others. Collaboration should go beyond sharing documents via e-mail or creating PowerPoint presentations. For collaborative learning, 21st century technology should take its place in the classroom to resemble the real world. It also allows teachers to reach and evaluate results more organized. (Palmer, 2015) One of the most important things that must be done in order to have all of these things is that teachers should keep learning.

In many parts of the world, new frameworks or models have been improved for teachers' competencies. Foremost among them, *Technological Pedagogical Content Knowledge (TPCK or TPACK)*, which is the important work of AACTE's (The American Association of Colleges for Teacher Education) Committee on Innovation and Technology around technology integration in educator preparation programs, comes. TPCK is a framework to understand and define the kinds of knowledge required by a teacher for active integration of technology in all content areas. The TPCK framework, through the *Handbook of Technological Pedagogical Content Knowledge for Educators*, argues that good teaching with technology requires three components: technology, pedagogy, and content. (Greenhill, 2010) Educators need to successfully align technologies with content and pedagogy to use technologies creatively. TPCK supports teachers in grasping the competencies that provide positive learning results for students. It demands from educators to use a range of assessment strategies to evaluate student performance, create environments that support differentiated teaching and learning, and participate actively in learning communities through mentoring or knowledge sharing. In this way, it can be developed a cohesive understanding of the relationship between technologies, pedagogies, and content areas.

In the light of these strategies, 21st century learning environments must be created that will support the teaching and learning of 21st century skill outcomes before teacher preparation programs are designed which are bases of leadership in developing 21st century education and learning strategies. According to AACTE's principles, 21st century learning environments support professional learning communities that allow teachers to collaborate, share best practices and bring 21st century skills into classroom practice and enable students to learn in relevant, real world 21st century contexts. (Kohler and Mishra, 2014) After learning environments are formed, teacher-training programs prepare their graduates to show 21st century knowledge and skills. 21st century professional development helps teachers to be able to create opportunities for including 21st century skills, tools and teaching strategies into their classroom practice and help them decide on which activities they can select. It also shows how a deeper understanding of subject matter can actually enrich critical thinking, problem solving, and other 21st century skills and finally it supports the continuous evaluation of students' 21st century skills development.

While The American Association of Colleges for Teacher Education enables educator preparation programs to teachers for effective integration of technology, Partnership for 21st Century Learning (P21) creates personalized professional development courses that emphasize student-centered teaching around the 4Cs (critical thinking, communication, collaboration, and creativity). These courses emphasize inquiry-based, formative assessment, technology integration, culturally responsive and student-centered teaching strategies. Apart from these, The British Council has Continuing Professional Development (CPD) Framework that for teachers, teacher educators and all those with an interest in and responsibility for the professional development of teachers. It has four stages of development: awareness, understanding, engagement, and integration. Through these four stages, CPD Framework aims to develop an awareness of and proficiency in critical thinking and problem solving, creativity and imagination, citizenship, digital literacy, collaboration and communication, student leadership and personal development. It shows how to select suitable practices and resources for presenting, developing and evaluating their learners' skills. (Council, 2015) In brief, promoting 21st century skills involves demonstrating the value and importance of 21st century skills to and for their learners.

Another considerable step is from Finland. The Finnish government renewed the national curriculum. The current curriculum includes some 21st century skills for teachers, such as learning through peer interaction, helping students take responsibility for their learning, and helping them develop strategies for applying skills in new situations. (Adamson and Darling-Hammond, 2015) It also helps both teachers and students to have the ability to collaborate, increase their learning about, and use of ICT. The curriculum frameworks provide direction for teacher training, professional development and classroom practice.

To summarize all the information given above, 21st century skills training starts with teacher preparation programs. It requires preparing tomorrow's teachers to work with students. When teachers are prepared to work with the changing needs of today's students with the help of 21st century skills teacher training and professional development programs, there is only one thing left; bringing these skills into classroom. Therefore, teachers must know 21st century skills and prepare their own

materials by applying to 21st century skills. Why teachers should prepare their own materials and what they should pay attention to while preparing their own materials is explained in the next section.

2.4. MATERIAL DESIGN

The actual use of materials depends on the different teachers' pedagogical needs and goals. (Katz, 1996) There is no detailed research on how teachers and learners use materials in the classroom. There are a few articles or books written on how to make the most effective use of materials (Tomlinson, 2012). Besides, textbooks are used as a main resource by many teachers. Yet, experts criticize the use of textbooks. A British Council survey (2008), which shows the rate of textbooks usage, revealed that 65% of the teachers always or frequently used a course book and only 6% never did. Another study at conferences in Vietnam, the United Kingdom and Malaysia (Tomlinson 2010) showed that since 92% of the respondents were asked to use a course book, they used it regularly but that 78% of them were negative about the books that were available to them.

Advocates of the textbooks argue that teachers need course books to save time and money. It also provides everything they need in one source. (Tomlinson, 2012) However, global course books do not meet the needs and wants of any students at a particular age and level. Teacher-designed materials can be responsive to these individual needs in the classroom. Howard and Major (2014) think that modern teaching methodology gradually underlines the importance of specifying and teaching to the individual needs of learners.

Teaching materials also play a significant role on many English instructional plans. English language classrooms are diverse places in the sense of individual learners within each context. A teacher can develop materials in which students can associate their language and culture to their second foreign language. Tomlinson (2011) relates commonly agreed principles of SLA (Second Language Acquisition) to the development of language-learning materials. Additionally, teacher-prepared materials offer the opportunity to teachers that they can make decisions about the most appropriate materials and activities for foreign language learners. Hence, Maley (2011) studies on the principles behind ideas for materials development. Kervin &

Derewianka (2011) and Motteram (2011) claim that principles need to be applied on making use of new technologies, principled and effective materials. Tomlinson (2008) suggests ways of applying commonly agreed theories of language acquisition to materials development.

According to language acquisition principals, teachers should help learners to be able to make connections between mother tongue and target language. They should bring real life situations into classroom and apply to authentic materials. Finding the appropriate materials for each topic or each level is not easy. Thus, foreign language teachers must prepare their own materials. What the teachers should consider while preparing the material is explained in the next section.

2.4.1. Preparation and Selection of Teaching Materials

The use of materials in education has a significant role on educational environment as it helps students to reach foreseen objectives more easily. This is so important for an effective education because the factor, which qualifies students, is educational programs. Material use in education facilities perception and learning. It brightens class and arouses curiosity by drawing attention. Furthermore, it shortens time, consolidates knowledge and helps permanence in learning. Use of materials has a significance role on students in terms of permanence in learning. (See Figure 2-2)

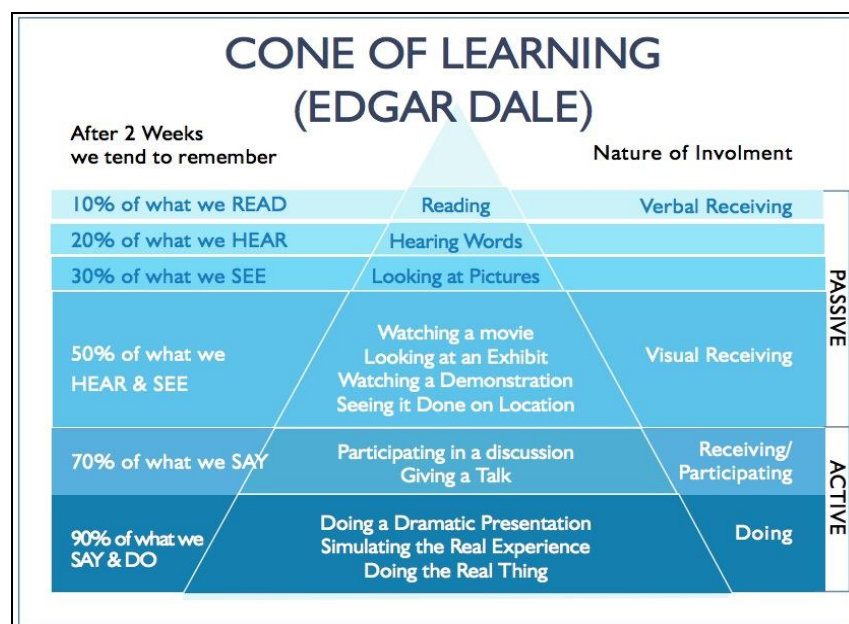


Figure 2-2: Cone of Learning by Edgar Dale [2]

Teaching materials help students to meet the individual needs. Every student has diverse needs and learning styles. According to learning style assumption, all children can learn but not in the same way. (Çelik, 2017) Children learn best in different ways and there is no only one learning approach to adapt all children.

2.4.2. Factors Affecting the Selection of Instructional Materials in Classroom Teaching

Many factors affect the selection of instructional materials. These are instructional objectives, instructional method, student features, teacher features, characteristics of learning environment, materials and equipment, limitations. These factors affect mutually each other and are influenced mutually by each other.

2.4.2.1. Instructional Objectives

Aim is the terminal features that are chosen for students' achievement. Instructional objectives answer the question "why we teach students". Materials and equipment, which are used in teaching, must help learners to reach instructional objectives easily (Çelik, 2017). A tool that is very useful to get an instructional objective cannot be suitable for another objective.

2.4.2.2. Instructional Method

Teacher should apply to different techniques and methods in teaching-learning process. Different instructional methods must be chosen since subjects, objectives and students change. A teacher cannot be successful by using only one method while lecturing and reaching various levels of goals.

2.4.2.3. Student Features

Why is it important to know students? Instructional success depends on knowing students' features like other significant factors. A teacher can choose which behaviors are acquired by students but not student features. Every student has distinctive characteristics, behaviors and learning style. If a teacher gathers information about student features at the beginning of the instruction, it becomes more helpful both for students what should be taught in learning process. Moreover,

learners needs to be motivated, relaxed, positive, and engaged. (Tomlinson, 2008)
They need to achieve deep and multi-dimensional processing of the language.

Table 2-1: Student Features

General Characteristics of Students	Student Input Behaviors	Learning Style
Age Health Reading and listening competency Socio-cultural structure Economic structure	Readiness level Learning speed Learning capacity Study habits Concerns Skills Attitudes Needs Motivation	Visual Learning Auditory Learning Tactical Learning

2.4.2.4. Teacher Features

Teacher is the most important factor in teaching process who is able to manage to choice of method and materials, plan evaluation and determine content. Attitudes, skills and teaching style of a teacher take part prominently in the process. Teacher is the most vital source in the classroom (Çelik, 2017). Thus, a teacher must be understandable, clear and objective. Teachers always should improve themselves and follow innovations in education.

2.4.2.5. Characteristics of Learning Environment

Learning environment is a setting that educational communication and interaction take part in, students interact with each other and teaching-learning activities occur. Learning environment influences learners in terms of some features such as design, color, resource and size of learning setting. (Alkan, 1996) Possibilities in the classroom affect directly every factor that is used in teaching-learning process.

2.4.2.6. Materials and Equipment

Educational tools play a significant role in learning process. They must be suitable for both subject and students' level. Tools must arouse interest of students but be simple, too. Including lots of information of a tool is not good for learners.

Materials and equipment also must be durable and practical. In addition, computerized online applications, CALL (Computer-assisted Language Learning) applications, the Internet, websites and the virtual learning environments could benefit learners with enriched resources and possibilities for language use, creation and practice in language learning. (Can, 2009)

Teachers can apply to CALL materials that have pedagogical advantages. CALL materials help the development of more authentic materials. They also resemble the types of resources especially young learners use in everyday life. Teachers can use educational games that are similar to learners' out-of-class activities. Computer games are useful for learning and literacy development. (White and Reinders, 2010) Furthermore, CALL materials can record and monitor students' behavior and progress and compare their progress with their own goals and other students' goals. (Reinders, 2007) In language acquisition and material development, authenticity is so crucial that such researchers as Bacon and Finneman (1990), Kuo (1993), McGarry (1995), Nuttall (1996), Mishan (2005), Gilmore (2007, 2008) and Rilling and Dantas-Whitney (2009) argue that authenticity has a crucial role on foreign language teaching. Authentic materials can help learning practices in language. They can motivate students and help them to gain a variety of communicative competencies and develop positive approaches towards the learning of a language.

2.4.2.7. Limitations

One of the significant factors affecting the choice of instructional materials is limitations in many areas. Learning environment, class size, allocated time and budget influence the choice of materials (Çelik, 2017). Similarly, skill deficit and lack of knowledge about how to use materials and equipment have an impact on selection of instructional tools.

2.4.3. Factors to Consider When Designing Materials

In order to carry out the educational goals and objectives of the school system, instructional materials must be provided which will enrich and support the curriculum and enhance student learning.

- a. Materials should be learner-centered, open-ended, flexible, authentic, relevant and universal. They should give choices to learners. (Saraceni, 2003)
- b. They should be simple and understandable, but not equipped with many knowledge.
- c. Texts, audio-visual aids in teaching materials should be appropriate for pedagogical features of the students and consistent with students' real lives.
- d. Materials should develop high-level cognitive skills. They should make the input both more easily reached and more attractive. (Islam and Mares, 2003)
- e. Instructional materials should be appropriate for the maturity levels and abilities of the students.
- f. Teacher should prepare materials by taking account of students' feedback and suggestions. (Jolly and Bolitho, 2011)
- g. Materials should be easy to use for both teachers and students.
- h. Materials should be updatable when they need to be used.

2.4.3.1. Factors to Consider When Designing Foreign Language Teaching Materials

- a. English language teaching materials should be contextualized to the curriculum, experiences, and first languages of the learners and topics that provide meaningful, purposeful uses for the target language. (Howard and Major, 2004)
- b. Should be attractive and used to provide motivation and encourage learners to develop learning skills and strategies.
- c. Should stimulate interaction and real communication and be generative in terms of language in order that learners interact with each other as well as they engage in outside of the classroom.
- d. Should be flexible in terms of students' suggestions. They could then choose which materials are suitable to apply them (Maley, 2011)

- e. Should offer learners opportunities to integrate all language skills (listening, speaking, reading, and writing) in an authentic manner.
- f. When designing materials, teachers should apply to authentic spoken and visual texts not just written materials like newspapers or magazines for authenticity. By using authentic materials through communication and collaboration skills, learners can practice on the target language.
- g. English language teaching materials should link to each other and have an organization to develop a progression of skills, understandings and language items and prevent unconnected activities. (Howard and Major, 2004)
- h. English language teaching materials should include new technologies in order to provide media, information and ICT literacy to learners.

Consequently, 21st century skills, which argue that teachers and students should think critically, solve problems creatively, communicate and collaborate to each other easily in today's world, can be acquired with the use of new technologies. Teachers, who have 21st century skills, prepare their own teaching materials by means of CALL materials and technology in order to convey these digital skills to students. One of the biggest supporters of 21st century skills that include some skills such as developing higher-order thinking skills, defining problems, judging information, solving the problems, and drawing appropriate conclusions, and should be presented with technology tools is Constructivist Approach.

2.5. CONSTRUCTIVISM

Constructivism is an understanding of the nature of the information that explains how individuals understand and learn. It is a student-centered approach, which always supports students being active (Loyens, 2007). Individuals try to make sense out of the experiences they experience during interaction with their environment. It is not possible for everyone to learn exactly the same information in the same way, adhering to the textbook and one source, as it is in the traditional approach. Teachers, then, should not be concerned only with what students learn, but teachers should also be interested in how learners learn (Luna Scott, 2015).

As for that fundamental assumption of Constructivism, information is not taken in a passive manner, but is effectively structured by the individual (Birenbaum, 2003) Access to knowledge is an adaptation process that regulates the life of the individual. Internalization is important in accessing information. Individuals cannot internalize information independent of their own learning. Constructivism develops effective learning, critical thinking and problem solving skills. Through active learning, students learn content and process at the same time (Bada and Olusegun, 2015).

The study and all other researches show that in order for students to gain digital skills, teachers must first have these skills. In accordance with Constructivism Theory, student is the one who receives knowledge and teacher is the one who gives it. In this process, information transfer is important for students to be able to assimilate knowledge and construct it from their experiences. (Lunenburg, 2011) In this regard, firstly, a class, which the constructivist approach must possess, should have a number of features. Educational programs offer the whole with parts, emphasizing the basic concepts (deduction). Priority is to learn the basic concept. Other concepts are learned by being associated with this concept. Generally, primary data sources are used. Individual differences are important. There is an understanding of the program that is guided by student problems. Everyone is responsible for his or her own learning. Knowledge becomes permanent when learners actively participate in their learning (Schunk, 2012). Activities should be organized that provide multidimensional thinking, reveal cognitive contradictions, and promote the formation of individual meaning.

In this context, different environments and presentations should be created by using information technologies for the reconstruction of information from different angles as well as written and verbal communication. Learning should be based on problem solving, project, cooperative learning, role-playing / drama and critical thinking. Main topics should be emphasized. The aim here is not to teach the subjects superficially, as it is in the traditional teaching approach, but to enable the students to learn to learn on a limited number of subjects.

Students adapt concepts and skills to new situations. Experience is provided to students to establish cause-effect relationships. Acquiring understanding of

scientific knowledge is important. Students are encouraged to ask questions and try to improve the quality of the questions. Students are encouraged to make predictions for the future and to develop hypotheses. In cognitive theories, objectivity is at the forefront, whereas subjectivity is at the forefront in constructivism. Process-orientated evaluation is essential, not product. Multiple evaluation techniques are used (Jones and Brader-Araje, 2002). As well as traditional assessment and evaluation methods, assessment tools considering all the activities of students such as observation, interview, self-regulation, group evaluation, peer evaluation forms, drawings, posters, mind maps, open ended questions, portfolio, rubrics, attitude scales, project evaluation, check lists are used.

Teachers who adopt a constructivist approach must have some attitudes and behaviors while performing their tasks. They must create real-world environments, focus on realistic approaches to solve real-life problems and provide tools and environments that help students interpret the various perspectives of world. (Duffy and Jonassen, 1991) Herein, objectives of Constructivist Approach and characteristics of 21st Century Skills have overlapped each other. Teachers should support students' ideas and encourage their initiatives. Resources and materials that enable students to interact should be used. Teachers, who support Constructivist Approach, give assignments that improve the students' abilities such as classification, analysis, prediction and creativity. They take into account students' ideas on instructional strategy and content. They encourage students to engage in dialogue with each other and with the teacher and do research by asking open-ended questions to each other (Ko et al. 2014). Furthermore, teachers increase awareness by extending the topic on students' answers. They give the opportunity to think and time to answer the questions asked. They make changes in the teaching strategy to improve students' curiosity. Environments that facilitate and support learning are prepared. Teachers take into account the individual differences of the students. Before commenting on any concept, teachers try to learn the students' prior knowledge of the concept and ensure that students are aware of their own thoughts. They give students time to relate concepts and allow them to use new concepts in different situations. They support students' ability to hypothesize and make alternative interpretations. (Martin G. Brooks and Jacqueline Grennon Brooks, 1993) Thus and

so, learning appears more efficiently in a class where the constructivist approach and digital skills dominate.

Constructivism and technology have brought new learning possibilities for almost all teaching and learning situations, including traditional classroom teaching, distance learning and self-learning. (Tam, 2000) It has important effects on learning for the construction of technology-supported learning environments. Computer-mediated communications and computer-supported collaboration have improved more supportive, collaborative and social learning environments. Students are required to engage actively in numerous kinds of case- based learning environments.

Constructivist Approach states that digital skills create a unique environment in class in terms of both learning and teaching. Through these skills, learners have a chance to work together and collaborate with each other while they are learning and practicing on the language by producing their own projects. Moreover, they learn how to find the real-life solutions to real life problems (Can, 2009).

To summarize all the information given above, Constructivism helps learners transfer skills to the real world, promotes motivation, supports alternative assessment methods, and develops communication, thinking and social skills among learners.

PART III: METHODOLOGY

3.1. RESEARCH MODEL

The research design is Quasi-Experimental Research Design because the participants were not assigned randomly and there was no control group. One group pretest-posttest design was used as a group of teachers was pretested, given a teacher training, then post-tested. To deepen the parts, which are not obtained from quantitative data, qualitative data was collected through structured interview. With the use of pretest, posttest and structured interview, triangulation technique was applied.

3.2. RESEARCH SETTING AND PARTICIPANTS

The participants of the study are the teachers working at public schools in Istanbul and voluntarily attending Istanbul Directorate of National Education Language Academy. The teachers were randomly selected by the Language Academy whose aim is to create vocational development projects for foreign language teachers. The number of teachers who took part in this study is 33. The distribution between sexes was unequal; 30 of the participants were female, and 3 were male.

The teachers attended an 8-week “21st Century Skills and Material Design Teachers’ Training and Professional Development Program”, held on February 10th - March 31st, 2018 at Istanbul University Hasan Ali Yücel Faculty of Education. The university gave permission to the researcher to run the study in computer lab at Istanbul University. At the end of the program, the teachers were given the participation certificate. (See Appendix 4)

3.3. DATA COLLECTION TOOLS

The teachers were given a training that informed about 21st century digital skills and how they could be used effectively in language teaching. Throughout the training, all teachers participated in the training actively and shared what they have learned in education as online, both during training and in their own classes. Briefly stated, with this training, it was aimed that teachers learn 21st century skills, how to

prepare foreign language teaching tools practically and increase their technology literacy.

Before starting teachers' professional development program, *Application-based Educational Technology and Material Development Competencies Scale*, developed by İlhan Varank and Selcen Süheyla Ergün, was applied as a pre-test. (Permission to use the scale was obtained.) 8 weeks later, in order to learn teachers' perceptions regarding their educational technology and materials development competencies, the same scale was applied once again to the teachers as a post-test. In this regard, it has been determined whether the teacher professional development program about 21st century digital skills and preparation of foreign language teaching materials have an influence on teachers' in-service qualifications.

For reliability and validity of the scale, four different analyses (respectively Kaiser-Meyer-Olkin (KMO), Bartlett Sphericity Test, Varimax Factor Analysis and Cronbach Alpha) were used. The result of KMO Test is 0.96, Bartlett's is ($\chi^2=27541.93$; $p < 0.05$). For 39-item scale, Cronbach Alpha internal consistency coefficient was found as 0.95. (Varank and Ergün, 2009)

In all the statements in the survey, respondents were asked to show if they have changes of their educational technology and material development perceptions by marking one of the options among "I do not have", "I am not sure whether I have it or not", "I have" and "I absolutely have". (See Appendix 1 for detail) The scale measured the statements on SPSS (Statistical Package for the Social Sciences 25.0).

In addition, a month after post-test, teachers' opinions were obtained through structured interview technique to deepen the parts, which are not obtained from quantitative data. It is the most important convenience presented by this interview technique to provide more systematic and comparable information because it is maintained in accordance with the pre-prepared interview protocol. Thus, the contribution of 21st century digital skills to teachers' self-efficacy has been measured in more detail. By means of these data collection tools, the perceptions of the teachers before the training have been compared with those after the hands on training.

3.3.1. 21st Century Skills and Material Design Teacher Training and Professional Development Program

8-week teacher training program was held with the teachers of Istanbul Directorate of National Education Language Academy at Istanbul University Hasan Ali Yücel Faculty of Education. Main titles of the 21st Century Skills were divided into 8 weeks. Every week, the theoretical knowledge about each title was given first. Then the applications related to the topic of the week were examined and the materials were prepared together. The topics were explained on the host computer by reflecting on the board via projector. For communication, a group was formed on mobile phone before the training began. Likewise, a group named “21st Century Skills” on Google Classroom by Gmail was created to share the materials that we prepared during the training. Every week, printed documents were provided to the teachers.

Table 3-1: Main Titles of 8-Week Teacher-Training Program

<p style="text-align: center;">1st Week</p> <ul style="list-style-type: none"> • The Emergence of 21st Century Skills • What is 21st Century Learning and P21? • What are the 21st Century Skills? • Necessity of a Teacher Training to Acquire 21st Century Skills • Factors to Consider When Designing Materials 	<p style="text-align: center;">5th Week</p> <p>Information Literacy</p> <p><i>Access and Evaluate Information</i> <i>Use and Manage Information</i></p>
<p style="text-align: center;">2nd Week</p> <p>Critical Thinking And Problem Solving</p> <p><i>Reason Effectively</i> <i>Make Judgements and Decisions</i> <i>Solve Problems</i></p>	<p style="text-align: center;">6th Week</p> <p>Media Literacy</p> <p><i>Analyze Media</i> <i>Create Media Products</i></p>
<p style="text-align: center;">3rd Week</p> <p>Communication and Collaboration</p> <p><i>Communicate Clearly</i> <i>Collaborate with Others</i></p>	<p style="text-align: center;">7th Week</p> <p>ICT Literacy (Information and Communication Technology)</p> <p><i>Apply Technology Effectively</i></p>
<p style="text-align: center;">4th Week</p> <p>Creativity and Innovation</p> <p><i>Think Creatively</i> <i>Work Creatively with Others</i></p>	<p style="text-align: center;">8th Week</p> <p>Life and Career Skills</p> <p><i>Flexibility and Adaptability</i> <i>Initiative and Self-direction</i> <i>Social and Cross-cultural Interaction</i> <i>Productivity and Accountability</i> <i>Leadership and Responsibility</i></p>

3.3.1.1. The First Week

The first week was mainly a theoretical week. Before starting to the training, the scale was applied first. Then, a broad summary of what has been described in the literature review was explained on Prezi (Online Presentation Software). The training began with the explanation of how the 21st century skills emerged.

As the world has changed, companies have changed the way they do business and have reshaped their workplaces. Innovations in economy and business world have affected the nature of work. Technology has helped these innovations and changes. Moreover, some skills such as being able to think critically, solve problems, communicate, collaborate, find useful information quickly, and use technology effectively have turned into a requirement. Since then, these skills and competencies have been called 21st century skills. Afterwards, Partnership for 21st Century Learning (P21) was founded and titles of the 21st Century Skills showed up. Herein, it was mentioned what the 21st Century Skills are.

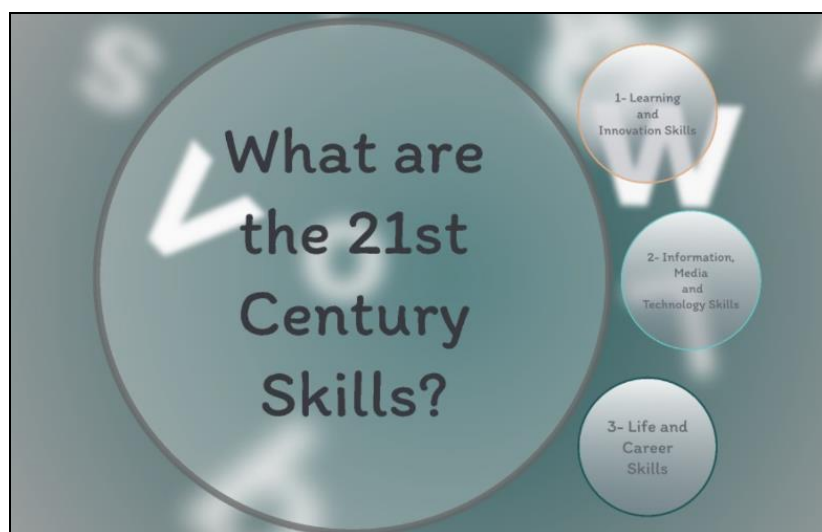


Figure 3- 1: Presentation of 21st Century Skills on Prezi

Young learners and teenagers should have these skills. They must be a critical thinker and a problem solver to effectively analyze and evaluate different beliefs and attitudes. They must be an effective communicator and collaborator to use digital tools to discuss and come to conclusion together. In order that they achieve these skills, teachers must first have them. It is also important how is taught not just what is taught. At this point, the importance of teacher training has been emphasized.

It is necessary to support current teachers and think of future teachers so that they can carry 21st century skills into classroom in appropriate ways. Therefore, teachers must be ready to deal with the changing needs of today's students by means of 21st century skills teacher training and professional development programs.

Finally, it was mentioned the importance of material use and factors that teachers need to consider when preparing materials for an effective education. After the subject of 21st century skills and material design was treated by discussing and sharing of personal experiences, it was shown practically how to use Prezi and everyone prepared one sample presentation.



Figure 3-2: Some sample teaching materials prepared by the teachers on Prezi

3.3.1.2. The Second Week

The theme of Critical Thinking and Problem Solving was explained by using PowerPoint on the second week. Critical Thinking and Problem Solving can use knowledge, beliefs and experiences to solve non-familiar problems in both conventional and innovative ways. They are quite significant to all aspects of human life, school and work. After the theoretical knowledge was given, some activities and online tools, which help acquiring of critical thinking and problem solving skills, were shown.

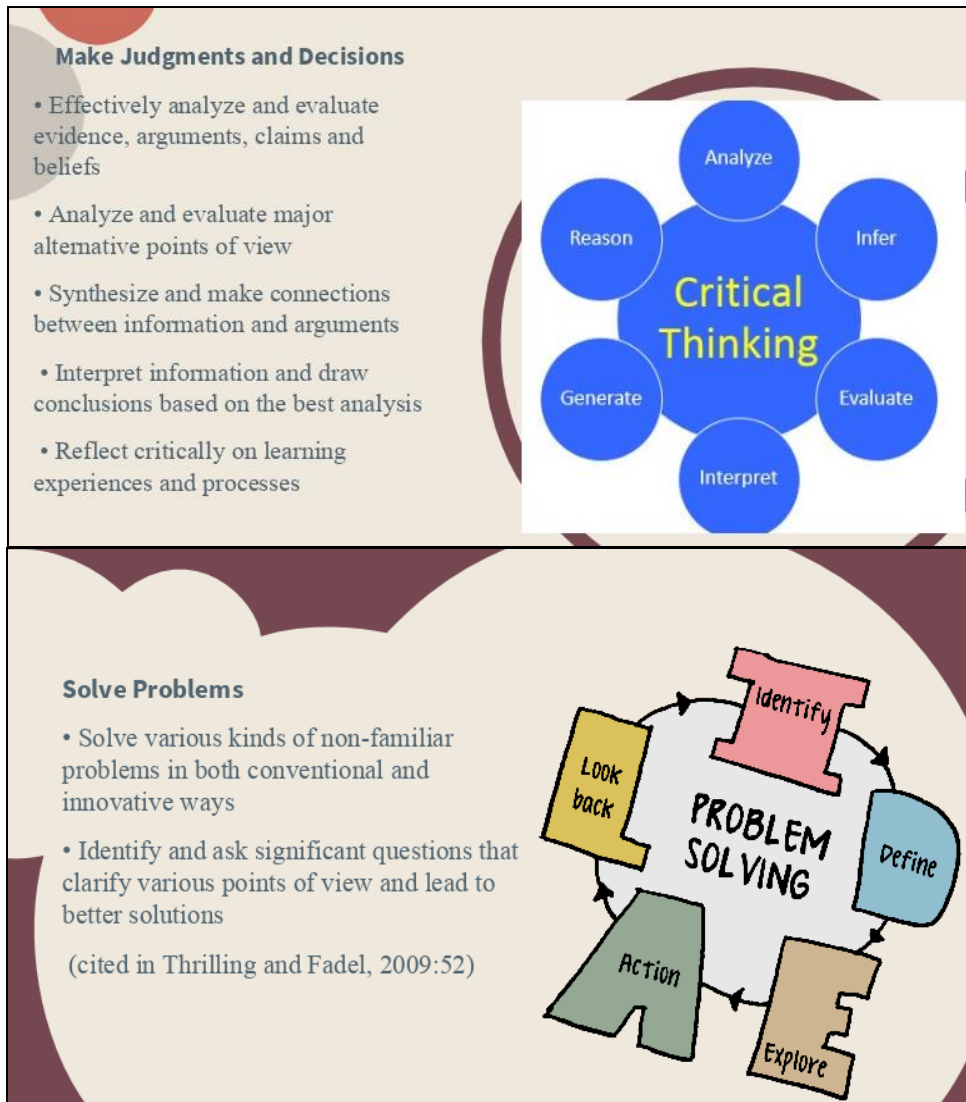


Figure 3-3: Presentation of Critical Thinking and Problem Solving

Critical Thinking

Two different activities were used for critical thinking. First, the teachers watched two videos titled “Well Known Unknown” and “Let Me Go” whose themes are the place of women in society. These videos were created by using Second Life (Virtual Environment), screen recorder program and adding subtitles on the videos. (It was explained in detail on the fourth week how teachers use Second Life and create their own videos.) The aim of video use here is to improve writing and speaking skills of students. After they watch such videos, learners can discuss on the place of women in society and write an argumentative essay about it. Thus, by preparing their own videos teachers help them to improve their critical thinking via speaking and writing activities. Moreover, preparing own videos is advantages that teachers can create videos freely according to topic, level and allocated time.



Figure 3-4: Using Video for Critical Thinking [3]

Secondly, Quizlet, which is for creating your own flashcards and practicing on yours or others', was used for critical thinking. On Quizlet, as a teacher, you can create your own classes but you do not have to add your students one by one. It is linked to Google Classroom. After you create a class on Google Classroom, it gives you a code. Students can join the class by using their own Gmail accounts and this code. When you connect this class to Quizlet, your students can see your flashcards that you share with them. Furthermore, students can create their own flashcards and practice on them through matching, listening and testing activities. It also helps them to add pictures related to words and learn pronunciation of words. In addition, learners can reach many flashcards prepared by others.

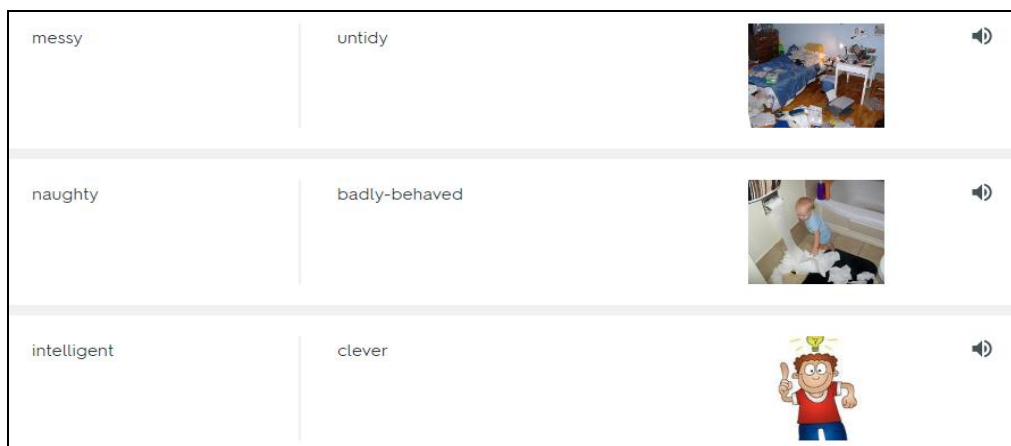


Figure 3-5: An example of “Teaching Adjectives” on Quizlet - 1

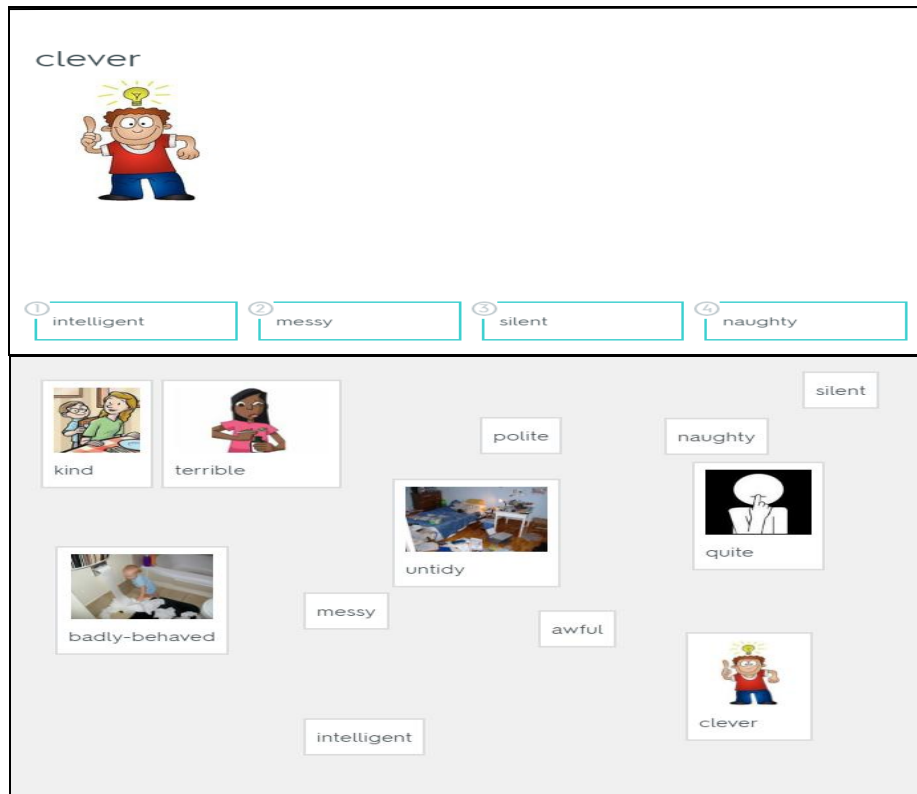


Figure 3-6: An example of “Teaching Adjectives” on Quizlet - 2

Problem Solving

In this part, the teachers learned how to create and use QR Code. There are many “QR Code Creator” websites. After you click one of them, choose the QR Code type: for example, use a URL Code for encoding a link to a Web page of your choice or select text option. Then, enter the information and generate the Code: press the Create QR Code button. Your Code is ready for download. After you download QR Code, scan it by your mobile devices.

Using QR Code is very helpful in education. Teachers can use it on a worksheet for a video link or the answers of worksheet. Moreover, they can organize some games such as “Scavenger Hunt”. In the teacher-training program, after the teachers learned how to create and use QR Code, they played that game.

The researcher created eight QR Codes and wrote a task for each one. Each QR Code gives a clue and says the other task. After the researcher downloaded and printed them, she placed them in different parts of the building and asked the teachers to download a QR Code scanner program on their mobile devices. After they were divided into groups, they started to scan QR Codes in the building. The

group, which gathered the clues, formed the question and answered it within the shortest time, came first.

The question: It is a star-shaped tropical fruit that starts with “c” and is mainly grown in the Philippines. What is it?

The answer: “Carambola”









<p>Hi, your secret duty has started! First, you have to find the next code. Next code is in the class "Vefa 1". Good luck!</p>	<p>Well done! You have found the first code. First clue is "it is". Next code is on the 2nd floor corridor.</p>	<p>Well done! You have found the second code. Second clue is "a star-shaped". Next code is in the class "Vefa 3".</p>	<p>Well done! You have found the third code. Third clue is "tropical fruit". Next code is in the entrance.</p>
<p>1</p> 	<p>2</p> 	<p>3</p> 	<p>4</p> 
<p>Well done! You have found the fourth code. Fourth clue is "that starts with". Next code is in the class "Vefa 2".</p>	<p>Well done! You have found the fifth code. Fifth clue is ["c"]. Next code is in the canteen.</p>	<p>Well done. You have found the sixth code. Sixth clue is "and is mainly grown". Next code is in the security.</p>	<p>Well done! You have found the seventh code. Seventh clue is "in the Philippines". Now, go to your classroom. Put the words together, make a meaningful sentence and find the answer. Good luck!</p>
<p>5</p> 	<p>6</p> 	<p>7</p> 	<p>8</p> 

Figure 3-7: Design of Scavenger Hunt - QR Code Game

3.3.1.3. The Third Week

It is also called “Communication and Collaboration week”. The teachers have learned communicative and collaborative learning tools to prepare something without they do not have to come together, when they or their students need to work together with their pairs or group friends.

The first tool is Google Drive. You should first have a Gmail account to use Google Drive. The teachers who do not have an account created a new one, and then all teachers uploaded any presentation file on Google Drive and shared it with their pairs. Afterwards, they edited the files as if they were not at the same place. Therefore, they could see each other's changes.

The second tool is Zoho Show (Online Presentation Software). It helps teachers to prepare some brochures for school activities, create a blog, excel files or a presentation and share them with others. It is also possible to upload PowerPoint presentations prepared before. Furthermore, Zoho Show gives people a chance to chat while editing files with pairs at the same time.

First teachers signed up the website and prepared a sample presentation. Next, they shared the samples with their pairs. On chat system, they added their friends and told them to make some changes on presentation. In this way, the teachers could prepare a common presentation by sharing their ideas through chatting.

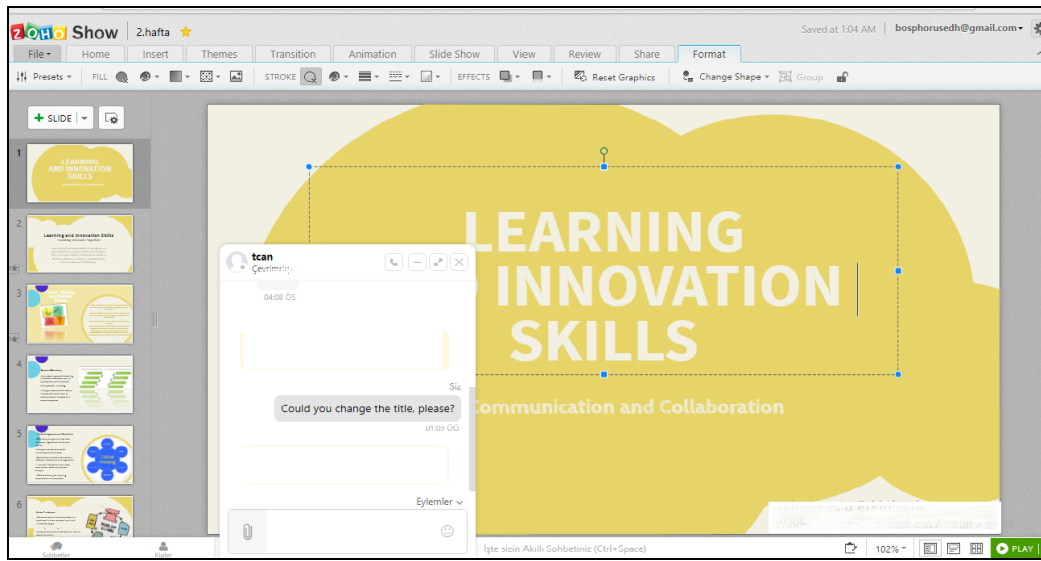


Figure 3-8: Zoho Show (Online Presentation Software)

The last tool is Padlet, which is especially important for collaborative learning. First, teachers signed up on Padlet website. Then, they chose a premade template or went bold with a blank slate and invited their collaborators to add content, comment, like and make edits in real-time. It is also possible to add photos, documents, web links, video, and music to make the text come alive. Padlet provides people to download or share their padlet with classmates and colleagues, friends and family.

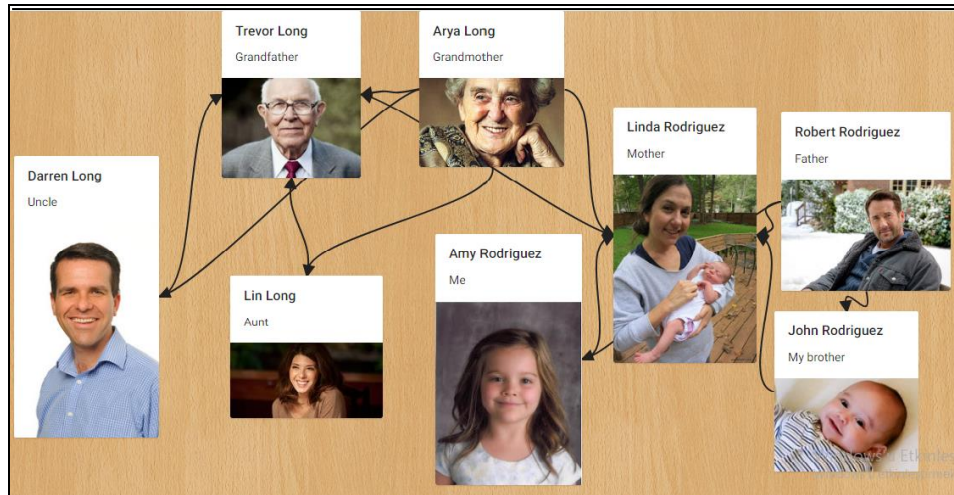


Figure 3-9: An Example of “Family Tree” on Padlet

As an alternative presentation program, teachers learned how to prepare a presentation on Emaze (Online Presentation Software). Emaze has very attractive templates including 3D (three-dimensional) and video templates. To draw attention in class, teachers can use amazing templates via Emaze. In addition, teachers can upload their old presentations and use Emaze templates to edit them again.



Figure 3-10: A sample presentation on Emaze

3.3.1.4. The Fourth Week

Teachers should improve their creativity and innovation skills. They should learn to use any materials or sources in different forms. It is also important for students to acquire this creativity skill. To that end, teachers were taught to prepare their own videos during “Creativity and Innovation” week. Although there are many videos on the internet, it may not always be easy to find an appropriate video in terms of student level, video length or subject. For this reason, it is very useful for them to prepare their own videos. These videos are also a kind of teaching materials that can be used repeatedly for educators.

To create a video, the teachers downloaded Second Life, Bandicam or HyperCam and Windows Movie Maker on their computers. Second Life is a 3D (three-dimensional) virtual world where users can create, connect, and chat with others from around the world using voice and chat options. Bandicam and HyperCam are a screen recorder program that record what you do on the computer. Windows Movie Maker is used to edit videos and add subtitles, music or voice record on them. First, the teachers signed up Second Life, chose their avatars and completed the training part to learn how to wander around in Second Life. Next, they teleported to Istanbul University Virtual Campus.



Figure 3-11: Istanbul University Virtual Campus

The researcher's avatar was waiting for them to make her presentation about the fourth week topic "Creativity and Innovation" in conference hall at Istanbul University Virtual Campus. They came to conference hall and took their seats. The researcher made her PowerPoint presentation that she had prepared and uploaded to Second Life before. In this way, everybody could discuss on creativity and innovation by coming together in a virtual environment via their avatars.

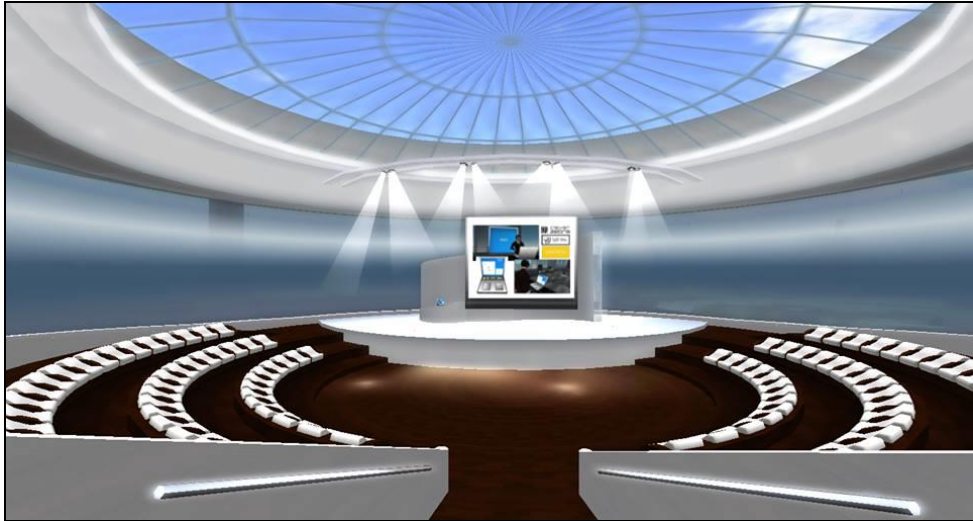


Figure 3-12: Istanbul University Conference Hall



Figure 3-13: The author's avatar and the teachers' avatars during presentation

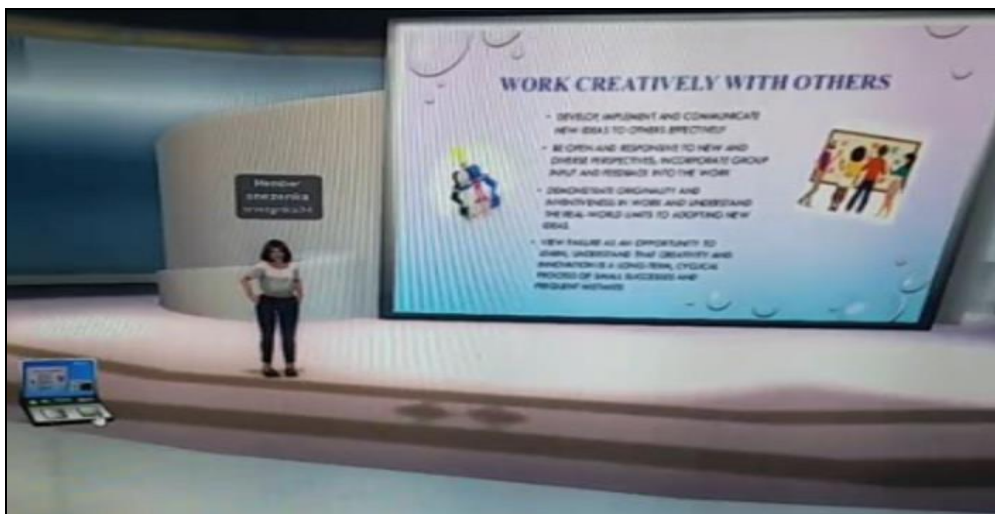


Figure 3-14: Creativity and Innovation Presentation at Istanbul University Virtual Campus

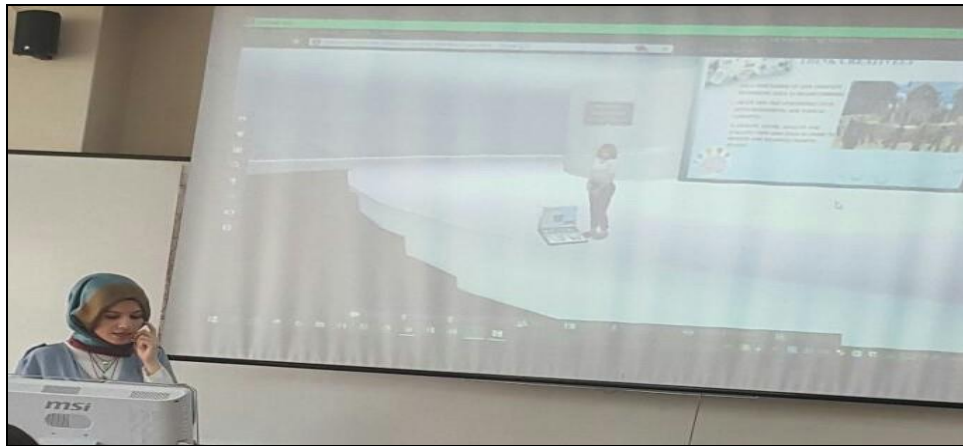


Figure 3-15: The view of Creativity and Innovation Presentation on Board

After the presentation, the teachers teleported an appropriate location which is suitable for their video topics. Herein, they started to use Screen Recorder Program in order to record the places that they wandered around for their videos. These Screen Recorder Programs are very easy to use that include two options “*Start and Pause/Finish*”. Before starting to record the video, teachers determined the area they would record on computer screen.



Figure 3-16: Using Screen Recorder Program to Make a Video

The teachers recorded a video by using Bandicam or HyperCam. Thereafter, they uploaded their videos on Windows Movie Maker to edit them and add subtitles or music on them.

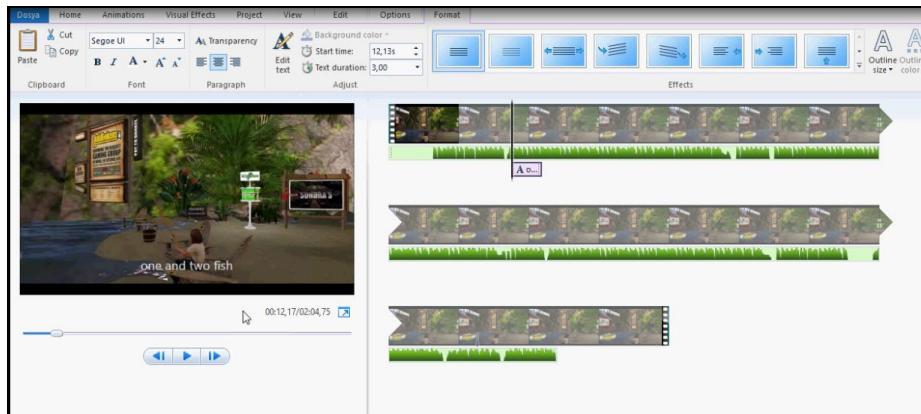


Figure 3-17: How to Use Windows Movie Maker to Edit a Video - 1

First, they added their videos by clicking “add videos and photos”. Next, they added music or recorded narration by using their own voice. They added captions to the places where the lyrics came in on the video. Then, they set the length of time for captions from the “Text duration” section.

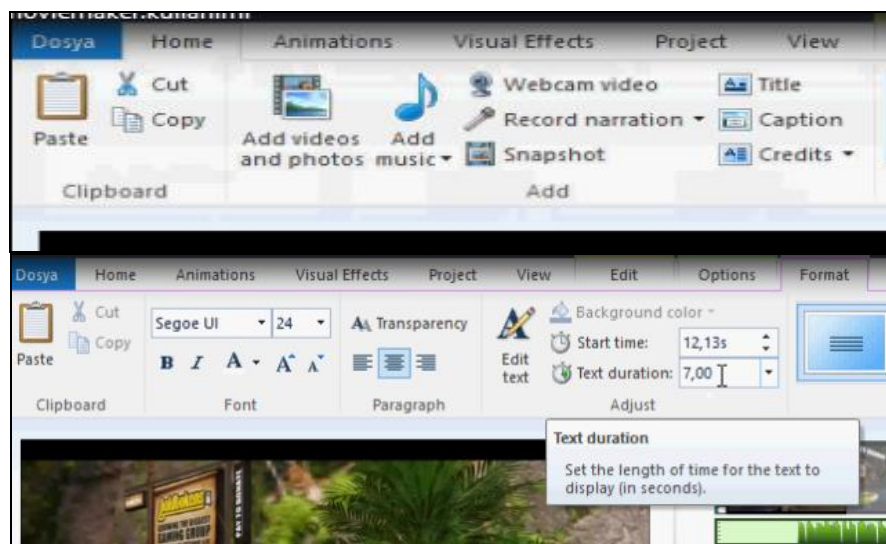


Figure 3-18: How to Use Windows Movie Maker to Edit a Video - 2

Finally, they saved their videos from “Save movie” section on their computers. In the example here, a video with the topic of “Counting the numbers” was made by counting the fish in a lake. Avatar went to a place to catch fish. A song was found on YouTube that counts the numbers by singing like “one and two fish”, “three and four fish”. All these sources were combined through the programs.

Apart from these, *Camtasia Studio*, *Movavi Video Suite*, *Adobe After Effects* and *Adobe Illustrator* can be used for alternative programs in case of encountering a

technical problem. I prepared a few videos and shared them on Google Classroom, explaining how the programs are used and videos are made or edited so that the use of the programs could be forgotten in later use.

3.3.1.5. The Fifth Week

Information literacy is a crucial skill to be able to accurately evaluate information, effectively use, and clearly communicate it in various formats. An information literate person should be able to identify information needs, understand the structure of information, and evaluate information and its sources critically. Augmented Reality and Virtual Reality Tools were explained for information literacy on the fifth week. Before the lesson, teachers were told which applications and videos must be downloaded on their mobile devices.

Augmented Reality

Hp Reveal – Aurasma

Aurasma is the previous name of Hp Reveal. It helps teachers to create their own augmented reality. The teachers created their accounts and followed each other like in social media. They picked their content from Aurasma library or their devices. They took a clear picture of their triggers, but the bar must go green while taking picture. They got their content into position and scaled it. When it was ready, they tapped the arrow and shared it. By using their mobiles phones, they framed tagged images, objects or videos via Viewfinder section in Hp Reveal.

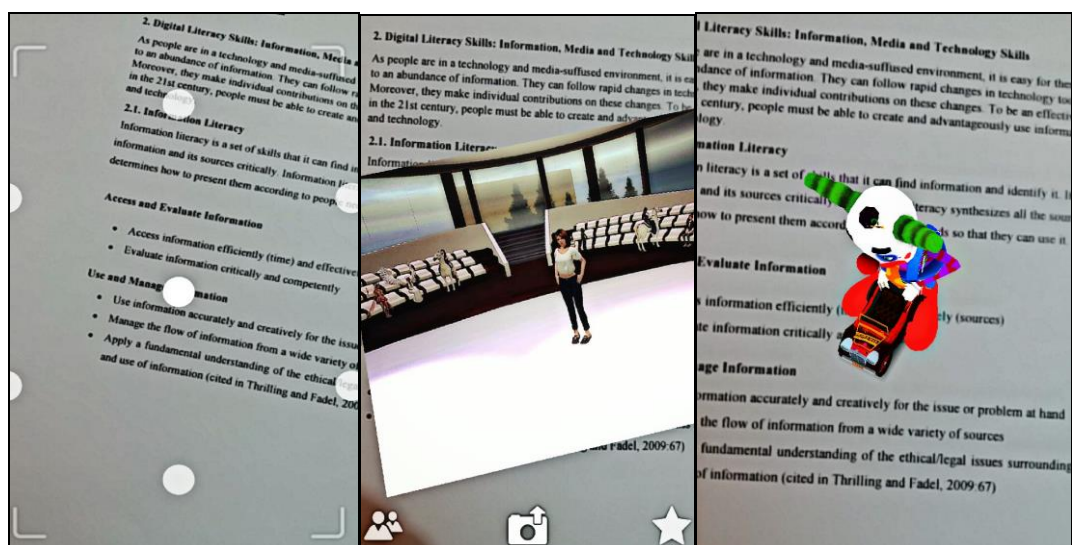


Figure 3-19: An example for Hp Reveal (Aurasma)

As it is seen in Figure 3-18, the weekly written material is the picture of trigger, and the picture from Second Life and 3D clown are the contents. It is possible to choose a 3D object on *Hp Reveal* or you can choose a video or photograph from your own devices. When you point your device to the paper, you see either the picture from Second Life or that 3D clown, but you can choose only one overlay. This example is to show you how to choose a picture or an object from your devices or *Hp Reveal*.

By *Hp Reveal*, teachers can create many teaching materials. For instance, they can teach animals. When students scan the paper with the pictures of the animals, they can see and learn the names of animals. By pointing mobile devices or tablets on the picture, the text “giraffe” appears there. Another example is that teachers can add the videos or progress charts of students on their photographs. When parents attend parent-teacher meeting, they can even use *Hp Reveal* to see what is shared about their children.



Figure 3-20: How to use *Hp Reveal* (Aurasma) in Education [4]

Animal 4D+

Animal 4D+ is a multi-directional augmented reality tool that teaches English Alphabet, some animals names related to each letter of English Alphabet, and how to pronounce these animals' names. Therefore, it is also an auditory tool as well as visual tool. It is both an informative and amusing application that gives chance to

users to take screenshot. To see animals on your mobile devices, first you should have the cards or print animal pictures found on the net.

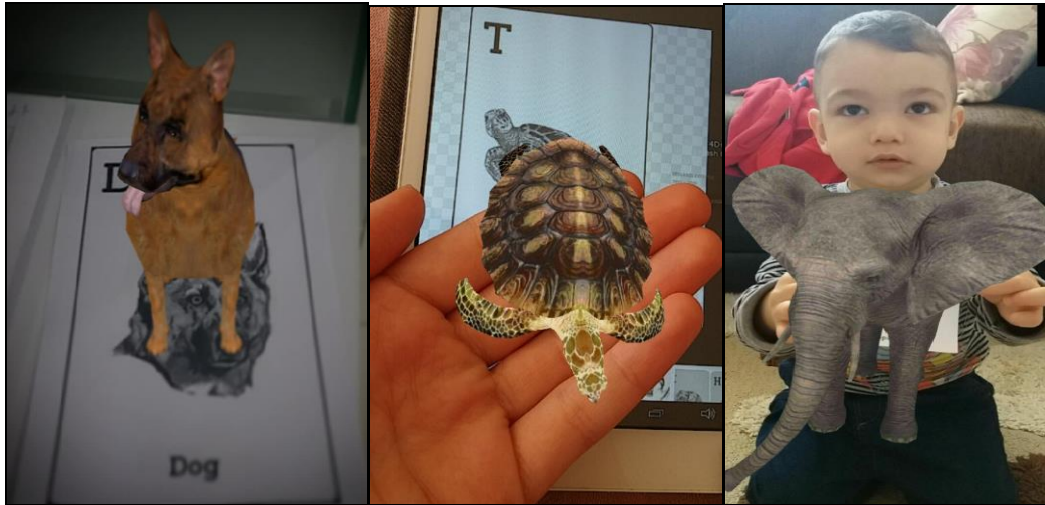


Figure 3-21: Both Informative and Entertaining Application – Animal 4D+

After a while, the application asks you to have serial numbers for cards but you do not have to buy the cards. In application, a part gives users information about animals with their pictures. If you take screenshots of the pictures like in Figure 3-21 and print them, you can use the application freely.



Figure 3-22: An Example to Use Animal 4D+ Freely without Having Animal Cards

Quiver

Quiver is a 3D Augmented Reality coloring application. First, users need to print coloring packs. After they color them, they see their drawing in beautifully hand-animated 3D worlds by using their mobile devices or tablets. Teachers can

apply to this application in order to teach colors, flags, countries, so on. It is very useful especially in elementary schools.

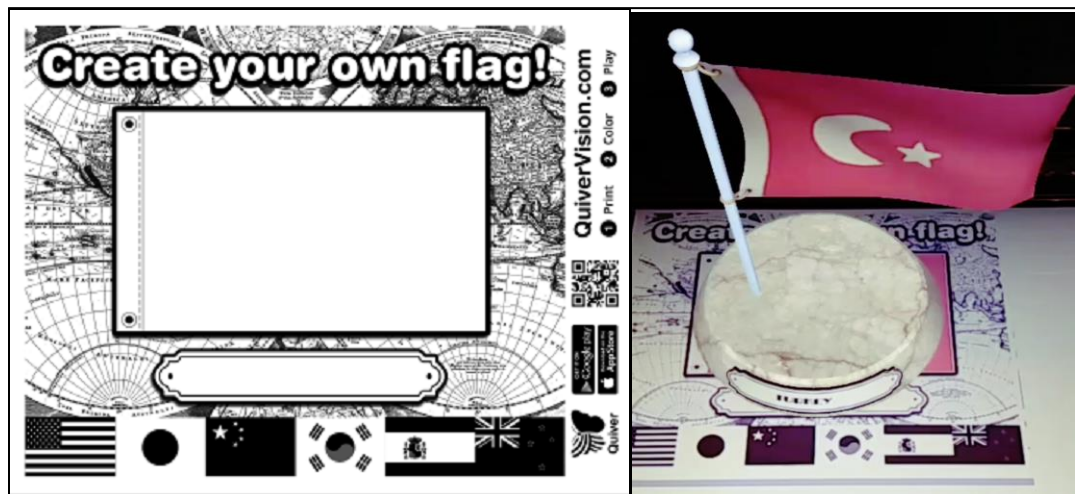


Figure 3-23: An Example of Quiver 3D Augmented Reality Coloring Apps



Figure 3-24: An Example of Quiver 3D Augmented Reality Coloring Apps Prepared by One of the Teachers

Kartoon 3D

Kartoon3D is an enhanced augmented reality application that can be used for dyslexic children. It teaches Turkish, English and German letters, words, numbers (including decimals), and four operations for anyone aged 3 years and over. Kartoon3D played with cards teaches letters, vocabulary, numbers, and mathematical operations with their pronunciation by supporting them with 3D visuals and animations.

To make a word, users should put the letters side by side. For example, when you write “cow” in English, it shows you its Turkish and German meanings on the left corner.

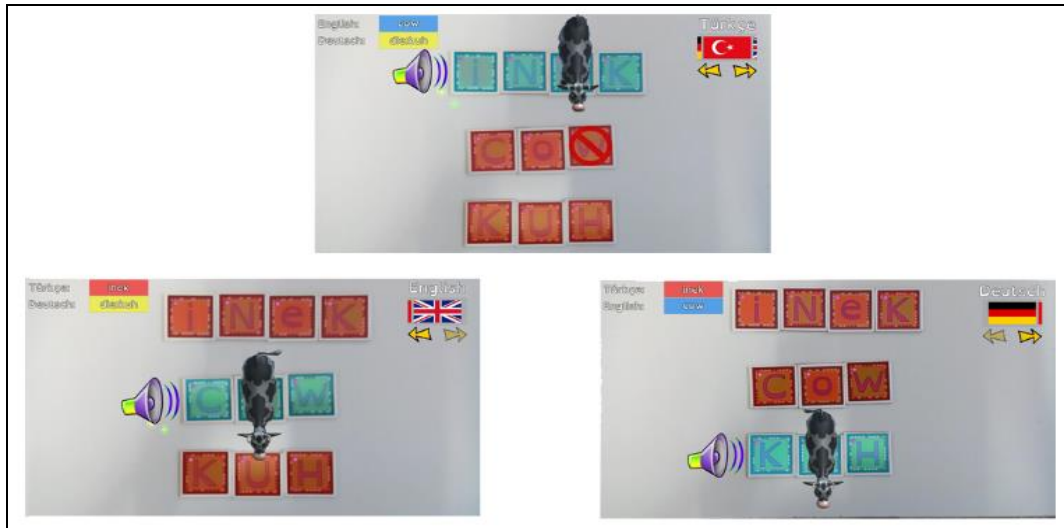


Figure 3-25: An Example by Kartoon 3D Augmented Reality Application [5]

Apart from these, applications of Room Planer Ikea, Amazon, and Houzz can be used to teach topics of “Countable and Uncountable” or wares and furniture. These are alternative augmented reality applications.

Virtual Reality

VR Forest Animals Adventure is a virtual reality application that users can go near to wild animals. First, the teachers started the application, which they had downloaded on their mobile devices; they placed their mobile phones into VR Cardboards (Virtual Reality Glasses) and then visited the jungle animals. In this application, your phone does not need to have gyroscope sensor. (Gyroscope sensor is a feature that allows VR tools or 360-degree videos to move in the same way when the phone is moved.) When you move your head to the left and right or up and down, it is possible to move around in the forest.



Figure 3-26: Virtual Reality Application - VR Forest Animals Adventure [6]

Moreover, the teachers learned how to record what they see while wandering in the forest. “Mobizen” is a screen recorder program for mobile devices. Before they used VR Forest Animals Adventure application, they started Mobizen. When they saw a lion, they said “lion” vocally and Mobizen recorded both display and voice. Thus, teachers could create a video about wild animals for further use.

Another virtual reality activity is watching 360-degree video on YouTube. Teachers can use 360-degree video via VR cardboard/glasses as an instructional material. Teachers or students, whose mobile devices do not have gyroscope sensor, have to download VaRs VR Video Player program to watch a 360-degree video. The only thing they have to do is download a 360-degree video and watch it by VaRs VR Video Player with a VR cardboard.

In the teacher training, 360-degree video was used to teach the topic of “There is/ There are” and “parts of the house”. Teachers were divided into groups and watched a 360-degree real estate virtual video on YouTube via their VR cardboards. Then, they made some sentences, prepared some questions about the house on video, and then asked each other. For instance;

< There are two bedrooms in the house. There is a kitchen. >

< How many bathrooms are there in the house? Is there a living room?>



Figure 3-27: 360-degree Real Estate Virtual Video Can Be Used as an Instructional Material [7]

All in all, it is crucial for learners to use virtual reality as a teaching tool in lessons in terms of bringing authenticity to the classroom. In this way, they can create a connection between real life and topics. It also increases motivation and helps permanence in learning.

3.3.1.6. The Sixth Week

Media Literacy is an essential skill that provides a framework to access, analyze, evaluate and create media. It helps both teachers and learners to develop critical thinking skills and understand the effects of media messages on culture and society. It supports learners to recognize their own point of view, say what they want to say how they want to say it, and understand that their messages have an impact on effective communication.



Figure 3-28: Weekly Presentation - Media Literacy

On the sixth week, the teachers learned how to create an animation and some solutions to technical problems. PowToon and Animatron were preferred as animation programs since they are easier to use and have more options. Likewise, Animaker and GoAnimate were offered as alternative programs and some hints were shared about them.

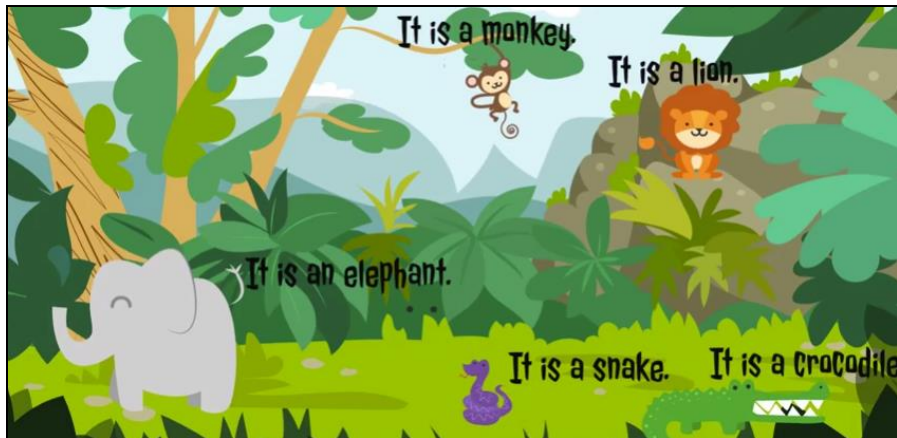


Figure 3-29: A Sample Animation Prepared on Animatron during the Teacher-Training

Generally, animation programs require premium membership to add music or download the animation. Free trial includes just basic templates and features. Since it is not possible to download animations on free trial, the teachers applied to *Bandicam* to record their animation videos and *YouTube* to add background music. After they created the animations, they found a music related to their animation topics. While the music was playing in background, they started both Bandicam and their animation videos. Thus and so, they have both learned to use a paid program free of charge and created their own teaching materials.

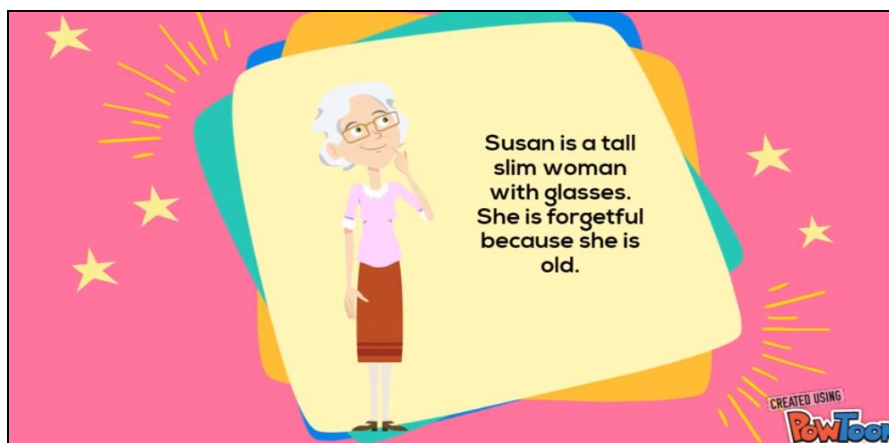


Figure 3-30: A Sample Animation Prepared to Teach "Adjectives" By Using PowToon

3.3.1.6. The Seventh Week

Information and Communication Technology (ICT) is a diverse set of technological tools such as computers, smart boards, tablets, mobile devices, and the Internet that are used to communicate, create, and manage information. In Turkey within the scope of Fatih Project (Increasing Opportunities and Technological Improvement Action Project), The Ministry of Education and Ministry of Transport, Maritime Affairs and Communication provide a laptop computer, a projection device, and a smart board in each class and tablets for students. (Fatih Project) Thus, the teachers were shown some applications and programs used with ICT tools.

Plickers

The tool lets teachers collect real-time formative assessment data without the need for student devices. It is used for quick checks for understanding to know if students understand big concepts.

First, the teachers downloaded the Plickers mobile app on their mobile devices or tablets in order to scan students' responses. They printed out the cards on Plickers website. Each card has a unique number that can be assigned to individual students. Each side of the card represents an answer choice.

Next, they added classes and students through the Plickers website on the *Classes* page. Plickers automatically assigns card numbers to students as teachers enter students' names. Then, they created new questions in *Library* section on the web or on their mobile apps using the "+" icon. They chose from multiple choice or true/false questions.

Finally, they selected the question they wanted to use on the mobile app, tapped the camera icon to scan students' responses, and received instant feedback on their answers. They used the *Live View* tab on the website to display classroom results to students.

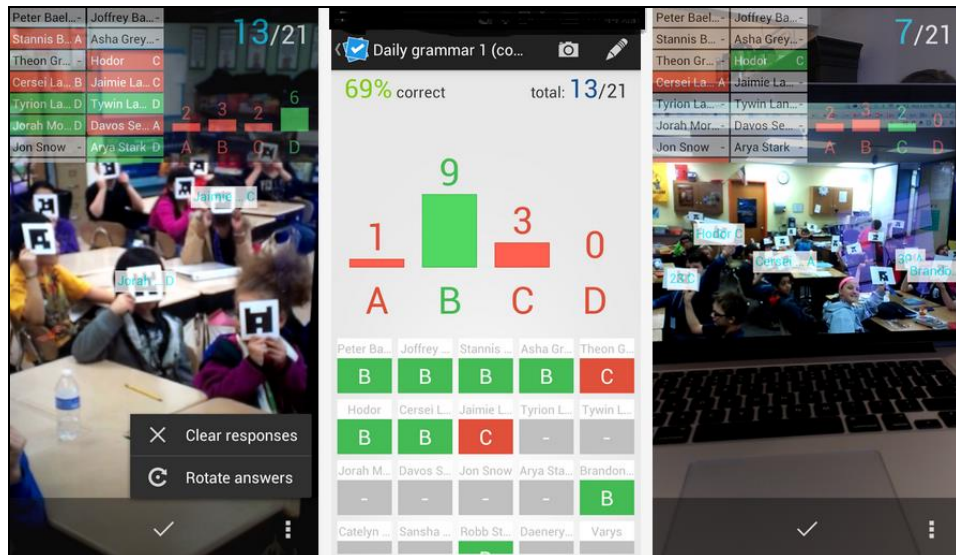


Figure 3-31: How to Use Pickers in Class [8]

To view results, *Scoresheet* section is very useful for teachers to monitor student progress and save time grading. *Question History* also shows them their latest results. Another advantage is that Plickers is very helpful in large classes.



Figure 3-32: An Example of Plickers Activity during the Teacher-Training

Seesaw

Seesaw is a digital portfolio that helps students to independently document their learning, provides a safe place to teach 21st century skills. They can show what they know by using photos, videos, PDFs, drawings, and links. It makes formative assessment easy, as it is immediately accessible to teachers from any device when students add to their *Seesaw Journal*. Teachers can review progress over time.

Moreover, Seesaw includes parents in the learning process. Teachers can send an announcement to all families and so parents can view their child’s progress.

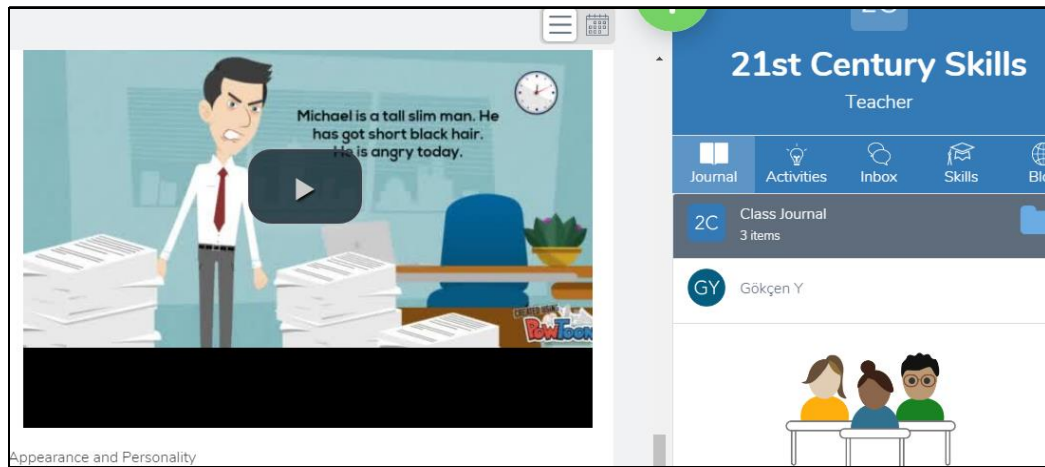


Figure 3-33: Seesaw Activity

First, teachers signed up the system as a student and entered the code that I gave them to join the class. Next, I assigned them to watch the video about “Appearance and Personality” and answer the questions about it. In this way, they learned how to students see assignments and get announcements on Seesaw. Then, they signed up the system as a teacher, created their class and the system gave them a code for each class. They shared an activity from *Activity Library*. When they wanted to share a document from their devices, they went respectively *Share Activity*, *Activity Library*, and *Create New* sections. While creating a new activity, they typed the instructions for their students, added voice instructions, and attached example. In this way, Seesaw supports teachers to create their own activities.

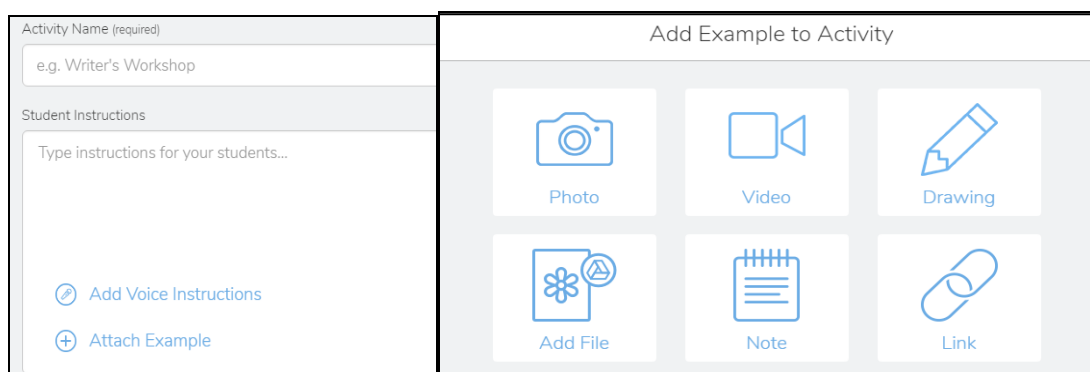


Figure 3- 34: How to Create an Activity on Seesaw

Nearpod

Nearpod brings interactivity into every classroom. Teachers can choose a lesson on *Nearpod Library* and use it or edit it. It also gives a chance to teachers to easily create their lessons, import files or slides and add interactive activities, websites, and videos to keep their students engaged in their learning. In addition, Nearpod provides teachers to get real-time feedback and post-session reports on student comprehension.

Nearpod is also a kind of distance education tool that teachers and learners do not have to come together during the lesson. When the lesson code is shared with students, they connect to live-lesson from anywhere.

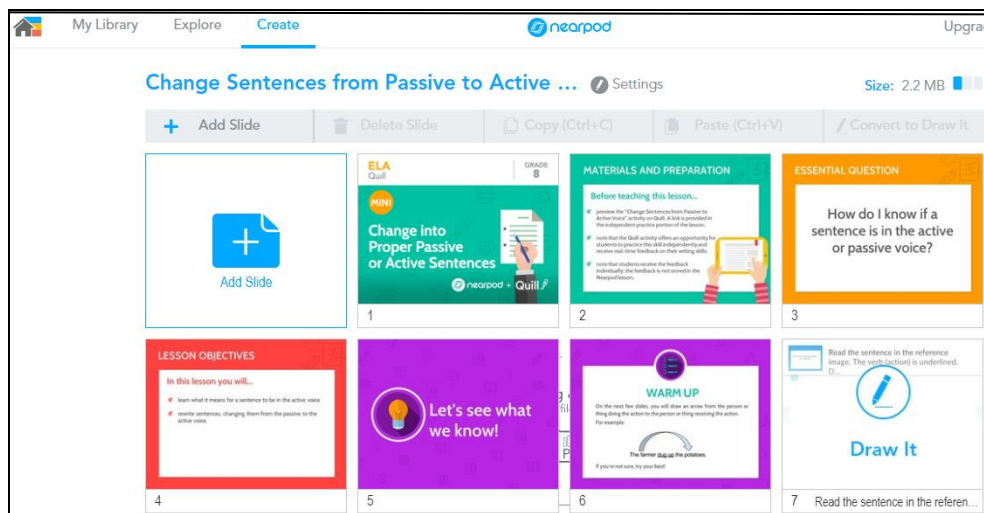


Figure 3-35: How to Create a Lesson on Nearpod

While practicing on Nearpod, I chose the topic “Passive Voice” on *Nearpod Library* and shared the lesson code with the teachers to join live-lesson. When the teachers joined the class, their names showed up on my screen. As I went through the pages, they read the slides and studied on the activities. Which page is open on the teacher’s screen, it shows up on the student’s screen. To make the lesson more attractive, it is possible to add some activities like drawing, collaborative learning activities, quiz, poll, or memory test.

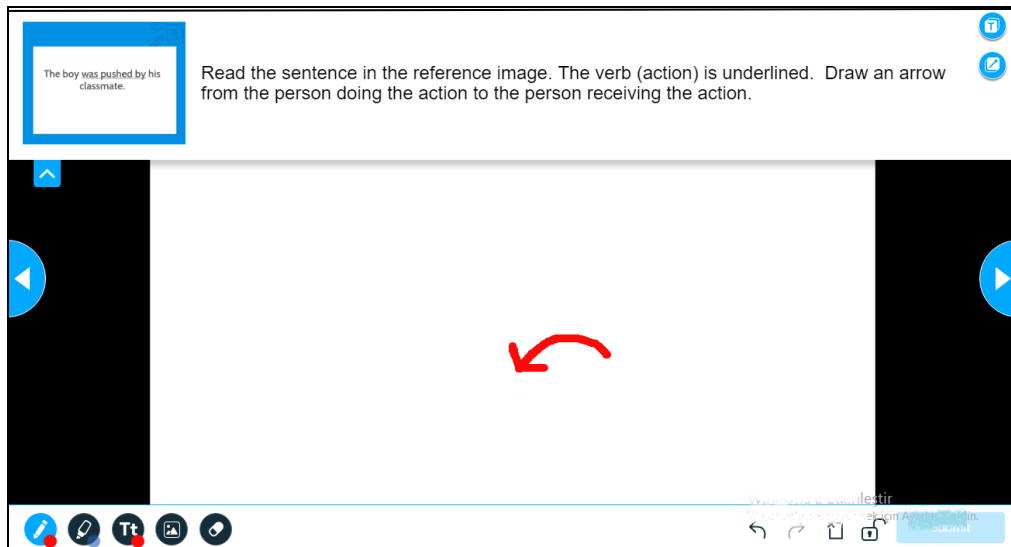


Figure 3-36: Drawing Activity to Teach Passive Voice on Nearpod

When students complete the activities, results appear on teacher’s screen. Students do not see each other’s answers. End of the lesson, Nearpod sends a report for feedback.

Quick Draw

Quick Draw is a touch-screen vocabulary game built with machine learning. It can be played on mobile devices, tablets, or smart boards. It is also possible to draw with a mouse. The game asks learners some words, learners draw, and a neural network tries to guess what they are drawing. This game was made as an example of how learners can use machine learning in fun ways.



Figure 3-37: Vocabulary Game – Quick Draw

WordArt

WordArt is an online word cloud art creator that enables both teachers and learners to create amazing and unique word cloud art. While teaching vocabulary, using WordArt can be enjoyable for students. There is no need to sign up. Users can directly create their own word clouds and download them as PDF or a picture.

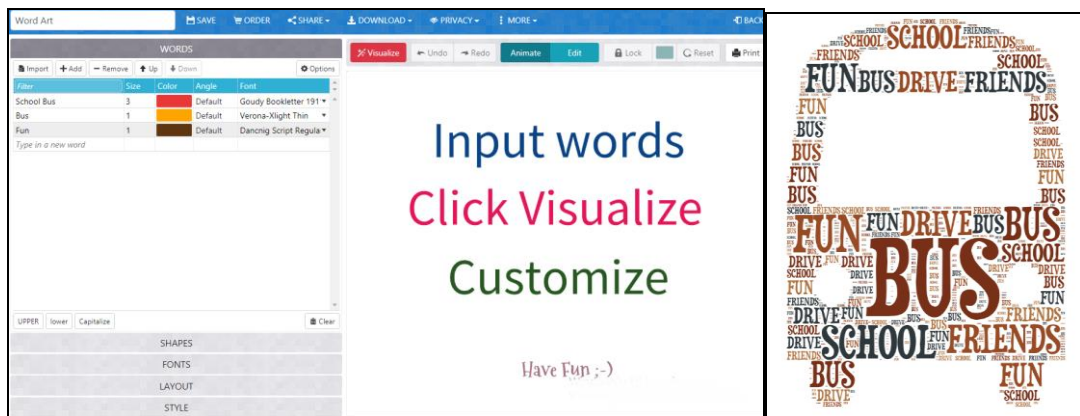


Figure 3-38: An Enjoyable Way of Teaching Vocabulary - WordArt

3.3.1.6. The Eighth Week

For 7 weeks, the teachers have learned how to bring 21st century skills into classroom by applying to technological tools and creating their own materials. The eighth week was all about how teachers improve their life and career skills. First of all, they were explained how they can have these skills.

Life is a road and on this road, teachers meet many changes and innovations. They should not stop learning because life never stops teaching.



Figure 3-39: Life and Career Skills

A teacher who wants to have life and career skills, improve himself/herself, and share his/her experiences with others, can:

1. Attend a Masters and PhD (Doctor of Philosophy) program.
2. Join online seminars by *Coursera*, *Udemy*, and *Mooc.org* (Massive Open Online Courses).
3. Participate in Erasmus Projects by Turkish National Agency.
4. Prepare projects for eTwinning. (It is a platform for teachers and other staffs working in a school in one of the European countries involved, to communicate, collaborate, develop projects, and share.)
5. Create his/her own online portfolio or blog to share various experiences.
6. Open an English club or create an English corridor in school.

On the other hand, teachers should apply to *Self-Regulated Learning* for themselves and their students. Self-regulated learning has some stages such as task definition, goal setting and planning, performance and assessment. It helps learners to keep their motivations high and manage their own learning environments.

Self-regulated learners set goals for their own learning, and then they regulate and control their own cognition, motivation and behavior (Pintrich, 2000). They manage the time required to achieve this goal. They cooperate with other learners in the learning environment.

Apart from self-regulated learning, teachers should develop their leadership aspects. A good leader must have empathy. To get it, teachers can attend psychodrama activities. Therefore, after all life and career skills were explained clearly, the teachers watched a video about psychodrama, and later joined a live-lesson on Nearpod to learn how to develop empathy.

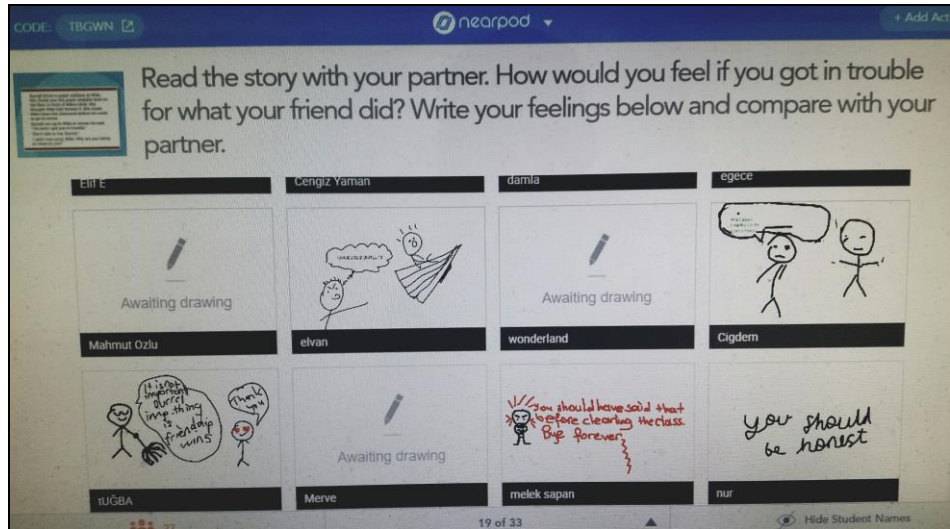


Figure 3-40: An Example of Drawing Activity on Nearpod to Develop Empathy

The training ended with the achievement of the purpose of empathy activity. End of the training, the teachers were given the participation certificate. (See Appendix 4)

Finally, *Application-based Educational Technology and Material Development Competencies Scale* was applied as a post-test in order to see how teachers' perceptions are affected through teacher training.

3.4. ANALYSIS OF DATA

3.4.1. The Results of SPSS

Application-based Educational Technology and Material Development Competencies Scale, applied at the beginning and end of the training as pre-test and post-test, has measured the statements on SPSS. The participants showed if their educational technology and material development perceptions have changed by marking one of the options among "I do not have", "I am not sure whether I have it or not", "I have" and "I absolutely have".

The aim of the 39-item scale is to look at what teachers think and how they perceive their competencies on educational technology and material development because the scale used in the study does not measure the participants' actual

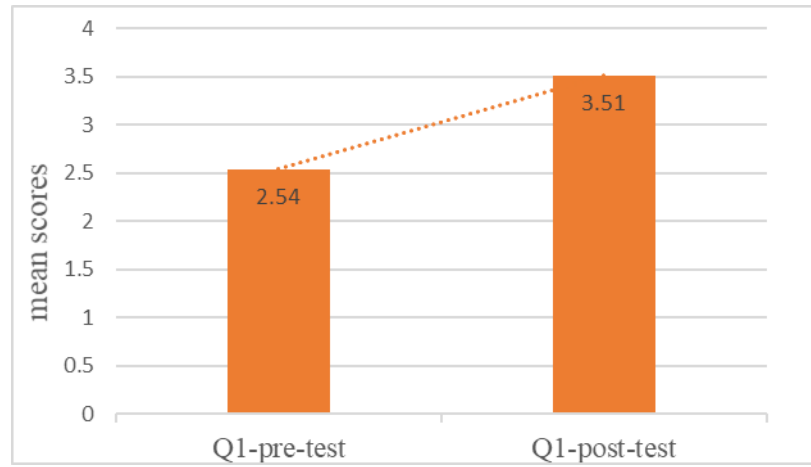
competencies. Thus, the answers given by 33 participants to the 39-item scale on the pre-test and the post-test were compared and 39 means were obtained.

A paired samples t-test was conducted to compare the mean scores of pre-test and post-test of Application-based Educational Technology and Material Development Competencies Scale in order to find out whether the training is helpful in developing learners' perceptions on 21st century skills and material design or not. (See Appendix 3 for detailed answers) The results show that:

Factor 1: Being able to make general analysis, planning, design and evaluation of the course and explain the course

Question 1: “Bir eğitim yazılımını, içinde kullanıldığı dersin amaçlarına (yani kazanımlarına veya hedeflerine) uygunluğu açısından değerlendirebilmek. “

“Being able to evaluate a training software with regards to suitability of course objectives (i.e. in terms of learning outcome or instructional objectives)”

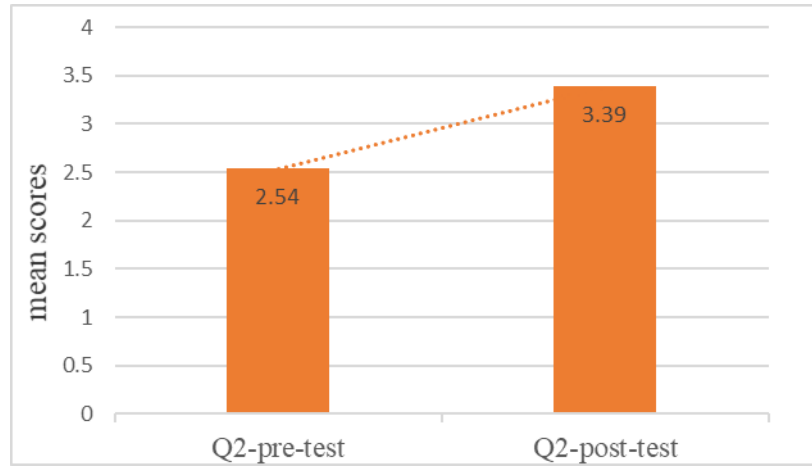


Graphic 3-1: Mean Scores of Pre-test and Post-test Question 1

The findings indicated that there is a statistically significant difference between pre-test Question 1 ($M= 2.54$, $SD=0.71$) and post-test Question 1 ($M= 3.51$, $SD=0.50$) scores with regard to strategy training inventory ($t(32) = -5.662$, $p < 0.01$).

Question 2: “Öğretim materyallerini ve araç-gereçlerini tasarım ilkelerine uygunluğu açısından değerlendirebilmek.”

“Being able to evaluate materials and equipment in terms of suitability of design principles”

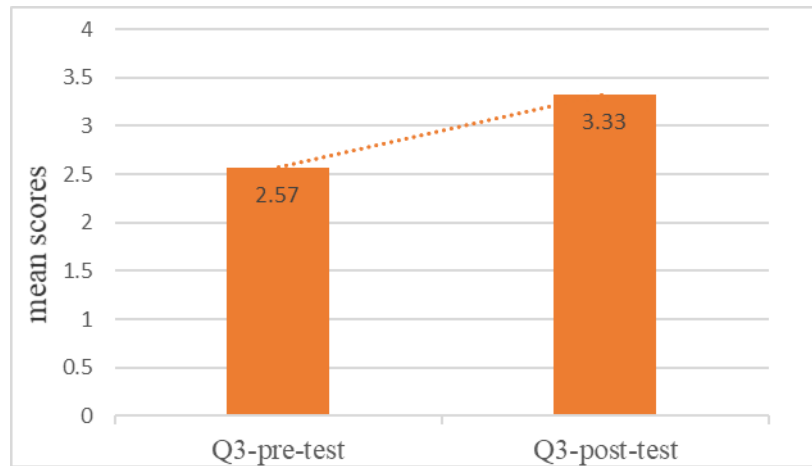


Graphic 3-2: Mean Scores of Pre-test and Post-test Question 2

The findings indicated that there is a statistically significant difference between pre-test Question 2 (M= 2.54, SD= 0.75) and post-test Question 2 (M= 3.39, SD= 0.60) scores with regard to strategy training inventory ($t(32) = -5.188, p < 0.01$).

Question 3: “Bir öğretim materyalinin nasıl değerlendirileceği ile ilgili plan yapabilmek.”

“Being able to form a schedule about how to evaluate teaching materials.”

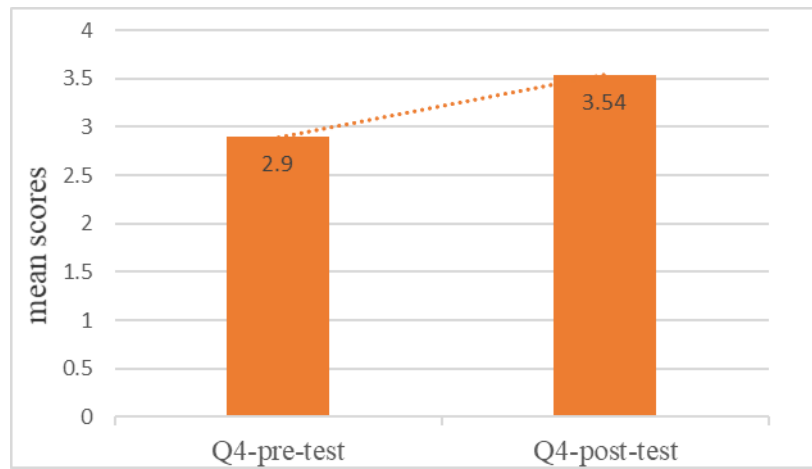


Graphic 3-3: Mean Scores of Pre-test and Post-test Question 3

The findings indicated that there is a statistically significant difference between pre-test Question 3 (M= 2.57, SD=0.83) and post-test Question 3 (M= 3.33, SD=0.64) scores with regard to strategy training inventory ($t(32) = -3.990, p < 0.01$).

Question 4: “Öğretimin temel aşamalarını (giriş etkinlikleri, içerik sunusu, alıştırma, geribildirim, değerlendirme) planlayabilmek.”

“Being able to plan basic stages of education (input activities, presenting content, practice, feedback, evaluation)”

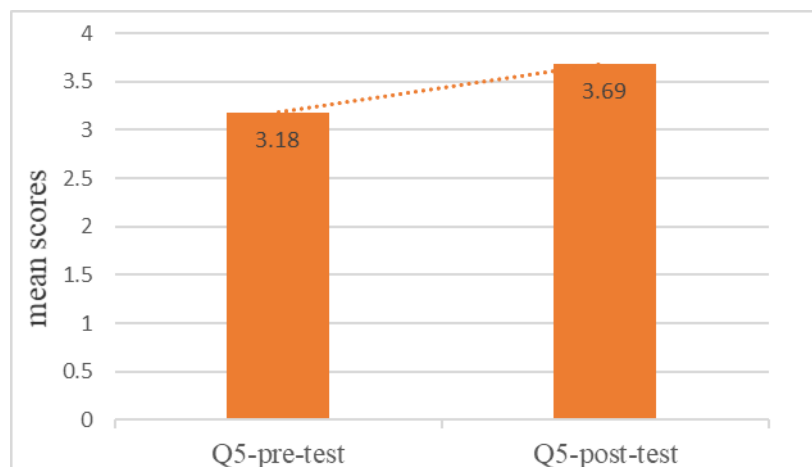


Graphic 3-4: Mean Scores of Pre-test and Post-test Question 4

The findings indicated that there is a statistically significant difference between pre-test Question 4 ($M= 2.90$, $SD=0.72$) and post-test Question 4 ($M= 3.54$, $SD=0.50$) scores with regard to strategy training inventory ($t(32)= -4.084$, $p<0.01$).

Question 5: “Ders ile ilgili planlar (ünitelendirilmiş yıllık plan, günlük plan vb.) yapabilmek.”

“Being able to develop plans related to course (annual plan, daily plan, etc.)”



Graphic 3-5: Mean Scores of Pre-test and Post-test Question 5

The findings indicated that there is a statistically significant difference between pre-test Question 5 (M= 3.18, SD=0.76) and post-test Question 5 (M= 3.69, SD=0.52) scores with regard to strategy training inventory ($t(32) = -2.948, p < 0.01$).

Question 6: “Öğretilecek ders için amaç analizi yapabilmek.”

“Being able to make an objective analysis for the lesson which is taught”



Graphic 3-6: Mean Scores of Pre-test and Post-test Question 6

The findings indicated that there is a statistically significant difference between pre-test Question 6 (M= 3.00, SD=0.79) and post-test Question 6 (M= 3.60, SD=0.65) scores with regard to strategy training inventory ($t(32) = -3.730, p < 0.01$).

Question 7: “Öğreteceğiniz bir derste, kullanım amaçlarına uygun öğretim materyalleri/araç-gereçleri seçebilmek.”

“Being able to choose appropriate materials and equipment for intended purposes”

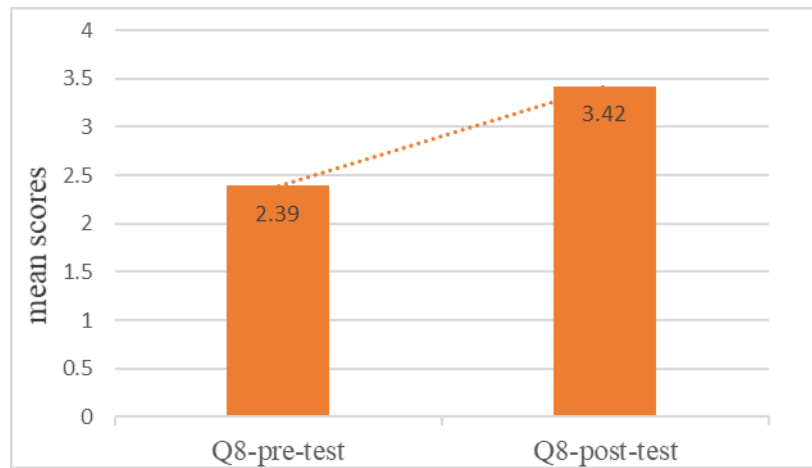


Graphic 3-7: Mean Scores of Pre-test and Post-test Question 7

The findings indicated that there is a statistically significant difference between pre-test Question 7 (M= 3.06, SD=0.74) and post-test Question 7 (M= 3.69, SD=0.52) scores with regard to strategy training inventory ($t(32) = -4.254, p < 0.01$).

Question 8: “Öğretim tasarımında, sistem yaklaşımı sürecini (analiz, tasarım, geliştirme, değerlendirme) kullanarak ders tasarlayabilmek.”

“Being able to design a lesson by using system approach cycle (analysis, design, progress, assessment) in instructional design”



Graphic 3-8: Mean Scores of Pre-test and Post-test Question 8

The findings indicated that there is a statistically significant difference between pre-test Question 8 (M= 2.39, SD=0.60) and post-test Question 8 (M= 3.42, SD=0.66) scores with regard to strategy training inventory ($t(32) = -6.700, p < 0.01$).

Question 9: “Amaç, hedef, davranış analizi yapılmış bir derste, öğretilecek konuları modüllere/parçalara ayırabilmek.”

“Being able to separate subjects into parts/modules in a lesson whose objective and behavior analysis are made.”

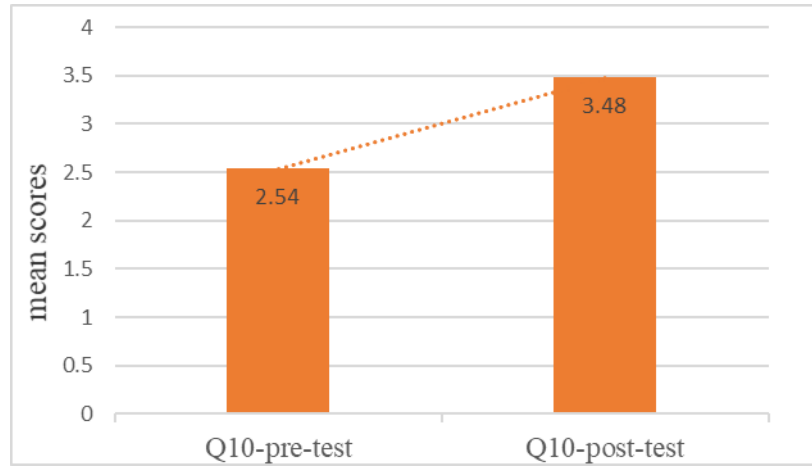


Graphic 3-9: Mean Scores of Pre-test and Post-test Question 9

The findings indicated that there is a statistically significant difference between pre-test Question 9 (M= 2.72, SD=0.57) and post-test Question 9 (M= 3.48, SD=0.66) scores with regard to strategy training inventory ($t(32) = -4.647, p < 0.01$).

Question 10: “Derste kullanılacak herhangi bir öğretim materyalinin işlevselliği, pratikliği vb. boyutlarını değerlendirmek için uygun bir değerlendirme formu geliştirebilmek veya halihazırda var olanlar arasından bir tane seçebilmek.”

“Being able to generate an assessment form to evaluate functionality and practicability of any teaching materials used in class or select one of the existing forms”

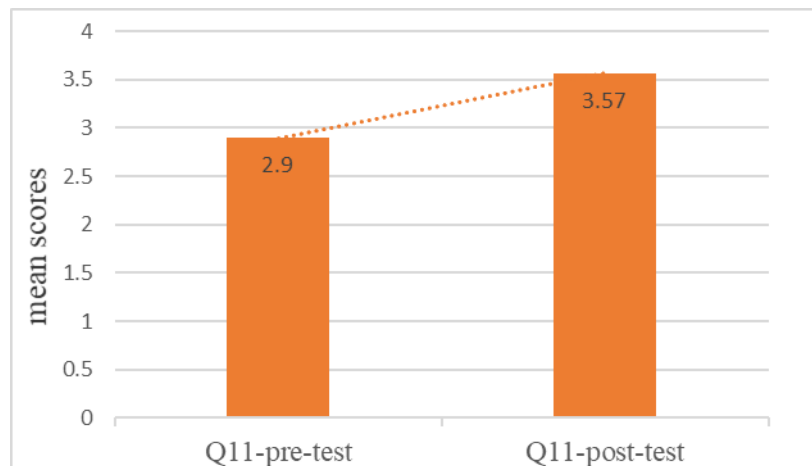


Graphic 3-10: Mean Scores of Pre-test and Post-test Question 10

The findings indicated that there is a statistically significant difference between pre-test Question 10 ($M= 2.54, SD=0.90$) and post-test Question 10 ($M= 3.48, SD=0.56$) scores with regard to strategy training inventory ($t(32)= -4.507, p<0.01$).

Question 11: “Eğitim verilen veya ders anlatılan ortamda (sınıf, lab vb.), eğitimin veya dersin amacına uygun olarak fiziksel düzenlemeler yapabilmek.”

“Being able to make arrangements in accordance with the purpose of course or education in the environment where the course is taught (classroom, laboratory, etc.)”

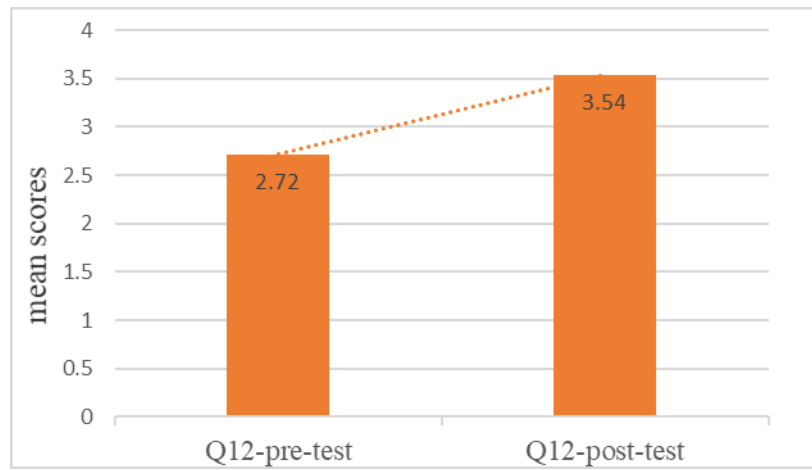


Graphic 3-11: Mean Scores of Pre-test and Post-test Question 11

The findings indicated that there is a statistically significant difference between pre-test Question 11 (M= 2.90, SD=0.72) and post-test Question 11 (M= 3.57, SD=0.56) scores with regard to strategy training inventory (t (32)= -4.485, p<0.01).

Question 12: “Öğretim tasarımı sürecinde, ürün ve süreç değerlendirmesi kullanarak, tasarlanan dersin eksiklerini ve öğretim tasarımının aksayan yönlerini saptayabilmek.”

“Being able to identify the shortcomings of the designed course and the defective aspects of the instructional design using the product and process evaluation in instructional design process”

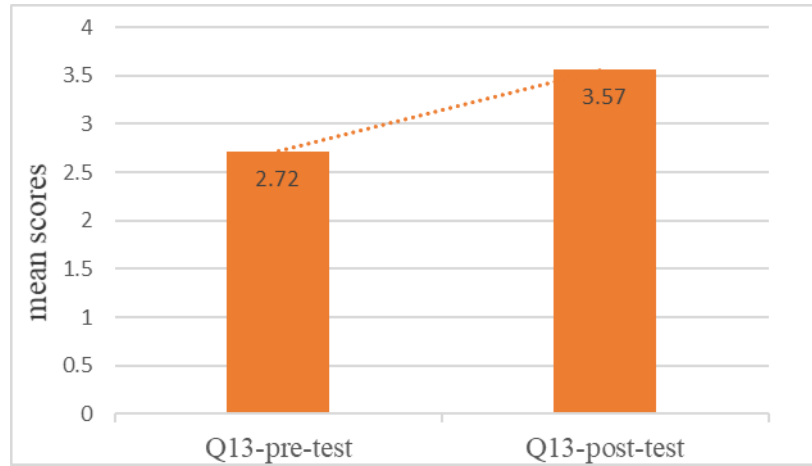


Graphic 3-12: Mean Scores of Pre-test and Post-test Question 12

The findings indicated that there is a statistically significant difference between pre-test Question 12 (M= 2.72, SD=0.67) and post-test Question 12 (M= 3.54, SD=0.61) scores with regard to strategy training inventory (t (32)= -4.945, p<0.01).

Question 13: “Öğrencinin dersteki performansını değerlendirmek için uygun ölçme-değerlendirme araçları geliştirebilmek.”

“Being able to develop appropriate assessment and evaluation tools to assess the performance of the learners”

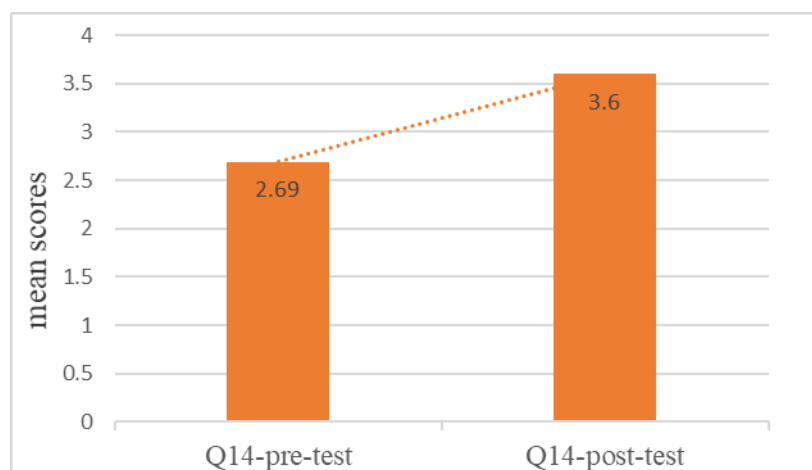


Graphic 3-13: Mean Scores of Pre-test and Post-test Question 13

The findings indicated that there is a statistically significant difference between pre-test Question 13 ($M= 2.72$, $SD=0.76$) and post-test Question 13 ($M= 3.57$, $SD=0.50$) scores with regard to strategy training inventory ($t(32)= -4.712$, $p<0.01$).

Question 14: “Uygun veri toplama araçları kullanarak, dersi daha iyi işleyebilmek amacı ile öğrenciler hakkında (öğrenme stilleri, hazır bulunuşluk düzeyleri, derse karşı tutumları vb.) bilgi toplayabilmek.”

“Being able to collect information about students (learning styles, readiness levels, lesson attitudes etc.) with the aim of teaching the lesson more efficiently by using appropriate data collection tools”

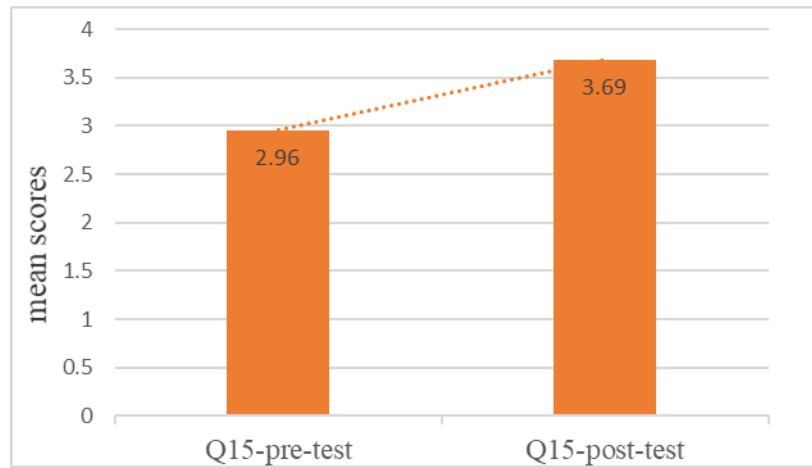


Graphic 3-14: Mean Scores of Pre-test and Post-test Question 14

The findings indicated that there is a statistically significant difference between pre-test Question 14 (M= 2.69, SD=0.72) and post-test Question 14 (M= 3.60, SD=0.49) scores with regard to strategy training inventory (t (32)= -5.329, p<0.01).

Question 15: “Öğretilecek becerinin/konunun amacına uygun ders anlatma tekniklerini kullanarak ders anlatabilmek.”

“Being able to teach the lessone by using suitable lesson techniques for the purpose of the lesson / subject”



Graphic 3-15: Mean Scores of Pre-test and Post-test Question 15

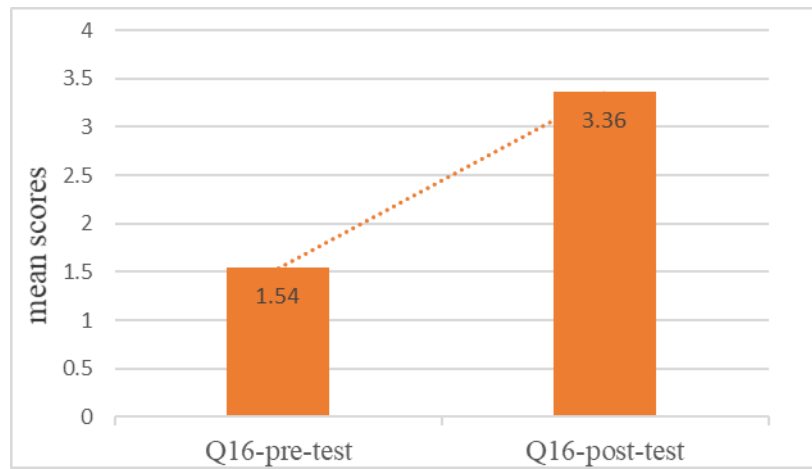
The findings indicated that there is a statistically significant difference between pre-test Question 15 (M= 2.96, SD=0.58) and post-test Question 15 (M= 3.69, SD=0.46) scores with regard to strategy training inventory (t (32)= -5.810, p<0.01).

Factor 2: Being able to use distance education, intelligent tutoring systems and multimedia

Question 16: “Amaçlarına uygun olarak zeki öğretim sistemlerini derste kullanabilmek (zeki öğretim sistemleri, neyi öğreteceğini, kime öğreteceğini ve nasıl öğreteceğini bilen, yapay zekâ tekniklerinden yararlanarak tasarlanmış bilgisayar programlarıdır).”

“Being able to use intelligent tutoring systems in accordance with their purposes (Intelligent tutoring systems are computer programs designed by using

artificial intelligence techniques, knowing what to teach, who to teach, and how to teach.)”

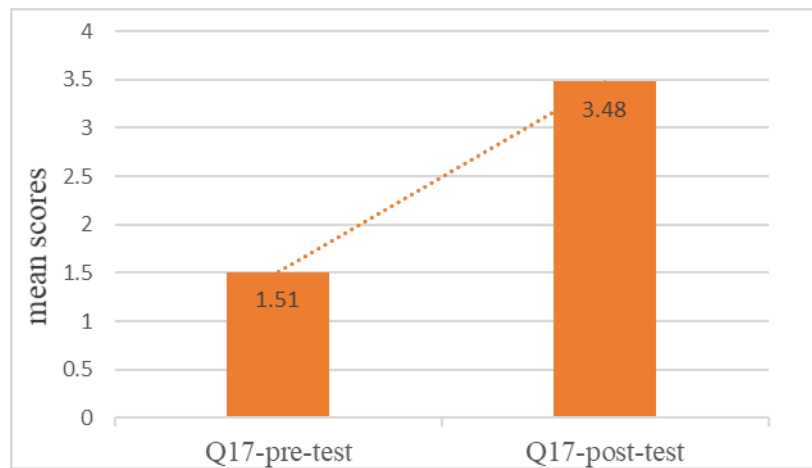


Graphic 3-16: Mean Scores of Pre-test and Post-test Question 16

The findings indicated that there is a statistically significant difference between pre-test Question 16 ($M= 1.54, SD=0.75$) and post-test Question 16 ($M= 3.36, SD=0.65$) scores with regard to strategy training inventory ($t(32)= -10.000, p<0.01$).

Question 17: “İnternet üzerinden yapılabilecek bir uzaktan eğitimi planlayabilmek.”

“Being able to plan a distance education that can be done over the internet”

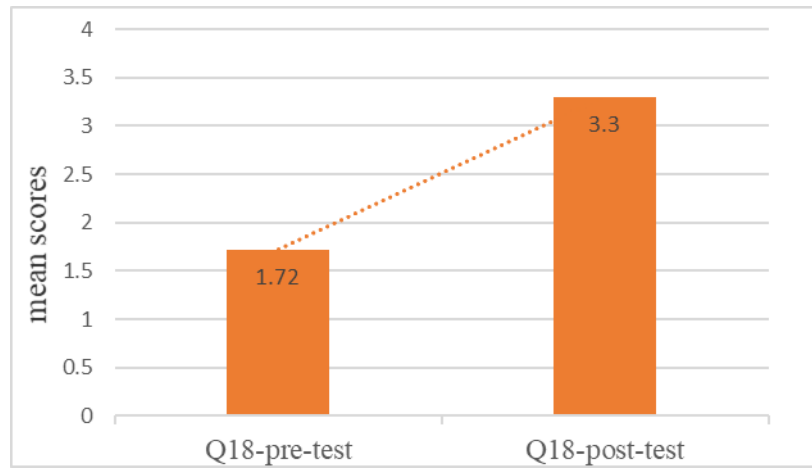


Graphic 3-17: Mean Scores of Pre-test and Post-test Question 17

The findings indicated that there is a statistically significant difference between pre-test Question 17 (M= 1.51, SD=0.61) and post-test Question 17 (M= 3.48, SD=0.50) scores with regard to strategy training inventory (t (32)= -15.538, p<0.01).

Question 18: “İnternet dışındaki ortamları/yöntemleri kullanarak uzaktan eğitim yapabilmek.”

“Being able to make a distance education using media / methods except the Internet.”

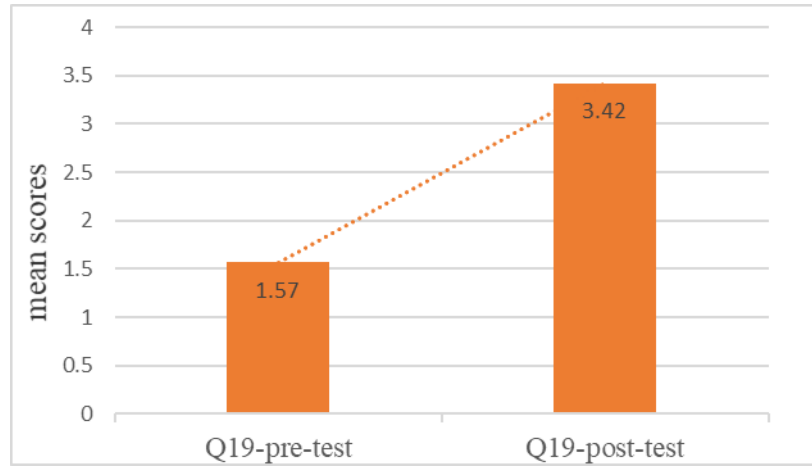


Graphic 3-18: Mean Scores of Pre-test and Post-test Question 18

The findings indicated that there is a statistically significant difference between pre-test Question 18 (M= 1.72, SD=0.76) and post-test Question 18 (M= 3.30, SD=0.63) scores with regard to strategy training inventory (t (32)= -10.031, p<0.01).

Question 19: “İnternet üzerinden uzaktan eğitim verebilmek.”

“Being able to provide a distance education over the Internet.”

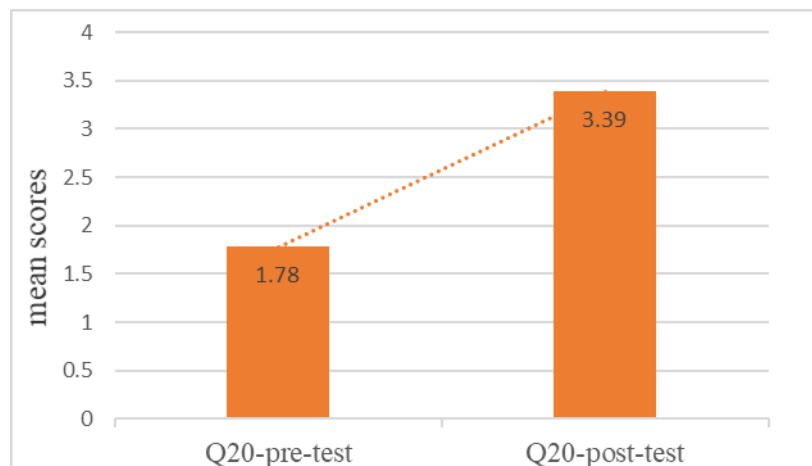


Graphic 3-19: Mean Scores of Pre-test and Post-test Question 19

The findings indicated that there is a statistically significant difference between pre-test Question 19 ($M= 1.57$, $SD=0.70$) and post-test Question 19 ($M= 3.42$, $SD=0.56$) scores with regard to strategy training inventory ($t(32) = -12.737$, $p < 0.01$).

Question 20: “İstenen bir öğretim materyalini bilgisayarda geliştirmek için uygun bir bilgisayar programı seçebilmek.”

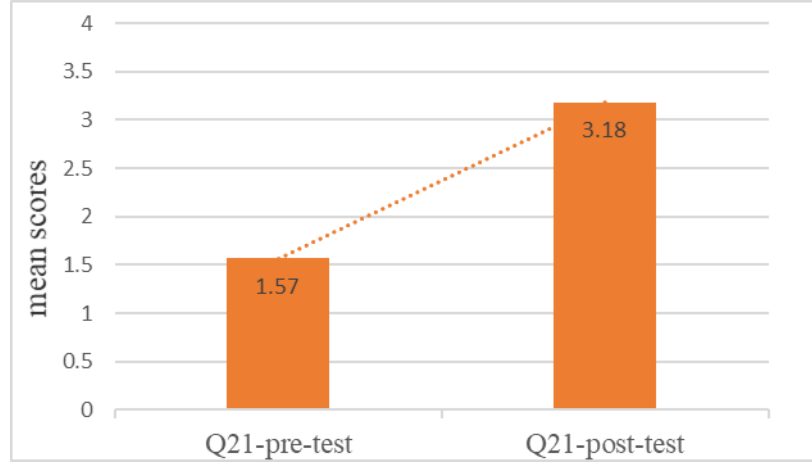
“Being able to choose a suitable computer program to develop a desired teaching material on a computer”



Graphic 3-20: Mean Scores of Pre-test and Post-test Question 20

The findings indicated that there is a statistically significant difference between pre-test Question 20 ($M= 1.78$, $SD=0.69$) and post-test Question 20 ($M= 3.39$, $SD=0.60$) scores with regard to strategy training inventory ($t(32) = -11.158$, $p < 0.01$).

Question 21: “Herhangi bir bilgisayar teknolojisini veya programını kullanarak eğitim amaçlı çoklu ortam (multimedya) yazılımları oluşturabilmek.”
“Being able to create educational multimedia software using any computer technology or program”

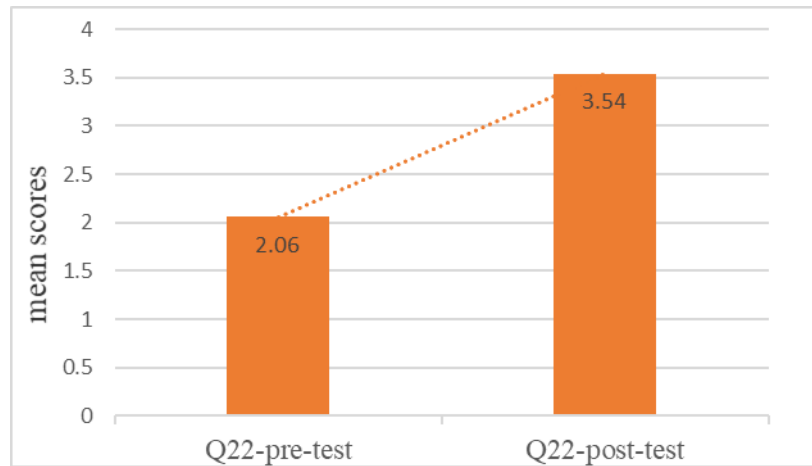


Graphic 3-21: Mean Scores of Pre-test and Post-test Question 21

The findings indicated that there is a statistically significant difference between pre-test Question 21 ($M= 1.57$, $SD=0.79$) and post-test Question 21 ($M= 3.18$, $SD=0.72$) scores with regard to strategy training inventory ($t(32)= -8.480$, $p<0.01$).

Factor 3: Being able to use computer to produce internet and written material in lesson

Question 22: “Bilgisayar yazılımlarını kullanarak (yazı programları, tablolu programları, grafik programları vb.) yazılı materyaller hazırlayabilmek.”
“Being able to prepare written materials using computer software (writing programs, spreadsheet programs, graphics programs, etc.)”

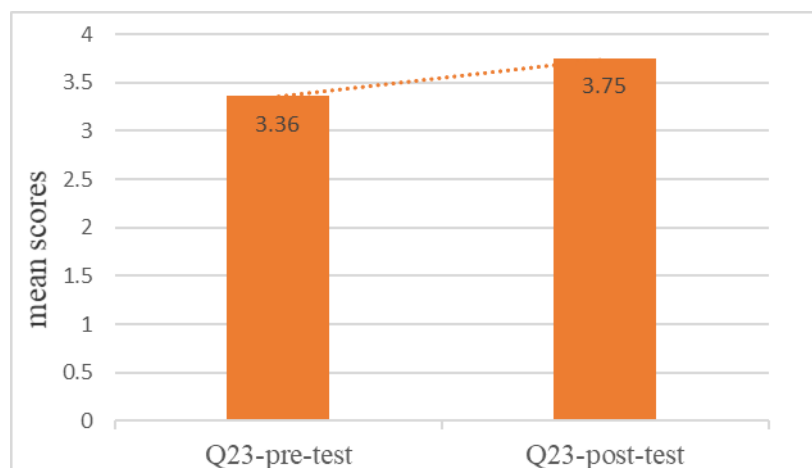


Graphic 3-22: Mean Scores of Pre-test and Post-test Question 22

The findings indicated that there is a statistically significant difference between pre-test Question 22 ($M= 2.06$, $SD=0.86$) and post-test Question 22 ($M= 3.54$, $SD=0.66$) scores with regard to strategy training inventory ($t(32)= -8.015$, $p<0.01$).

Question 23: “İnternette arama motorlarını (Google, Yahoo, AltaVista gibi) kullanabilmek.”

“Being able to use search engines on the Internet (like Google, Yahoo, and AltaVista)”

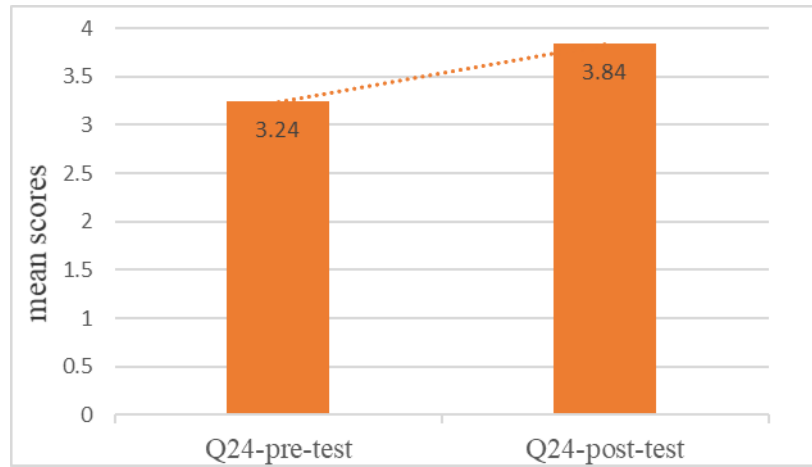


Graphic 3-23: Mean Scores of Pre-test and Post-test Question 23

The findings indicated that there is a statistically significant difference between pre-test Question 23 ($M= 3.36$, $SD=0.54$) and post-test Question 23 ($M= 3.75$, $SD=0.43$) scores with regard to strategy training inventory ($t(32)= -3.028$, $p<0.01$).

Question 24: “Amaçlarına uygun olarak bilgisayarı derste kullanabilmek.”

“Being able to use computer in the lesson in accordance with their purposes”

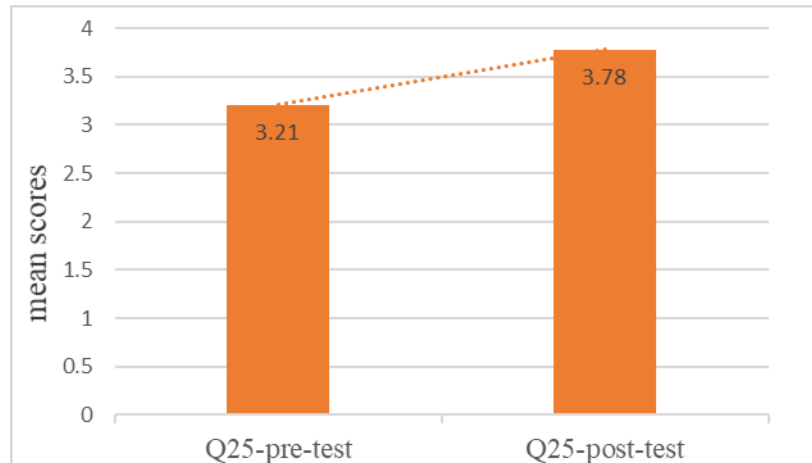


Graphic 3-24: Mean Scores of Pre-test and Post-test Question 24

The findings indicated that there is a statistically significant difference between pre-test Question 24 ($M= 3.24$, $SD=0.66$) and post-test Question 24 ($M= 3.84$, $SD=0.36$) scores with regard to strategy training inventory ($t(32) = -4.211$, $p < 0.01$).

Question 25: “Amaçlarına uygun olarak interneti derste kullanabilmek.”

“Being able to use the Internet in accordance with its purposes”



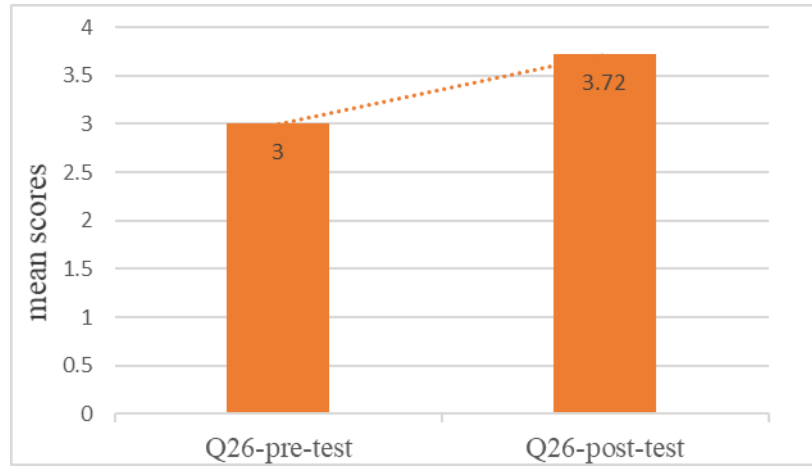
Graphic 3-25: Mean Scores of Pre-test and Post-test Question 25

The findings indicated that there is a statistically significant difference between pre-test Question 25 ($M= 3.21$, $SD=0.64$) and post-test Question 25 ($M=$

3.78, SD=0.41) scores with regard to strategy training inventory ($t(32) = -3.983$, $p < 0.01$).

Question 26: “Amaçlarına uygun olarak iletişim teknolojilerini derste kullanabilmek.”

“Being be able to use communication technologies in accordance with their purposes”



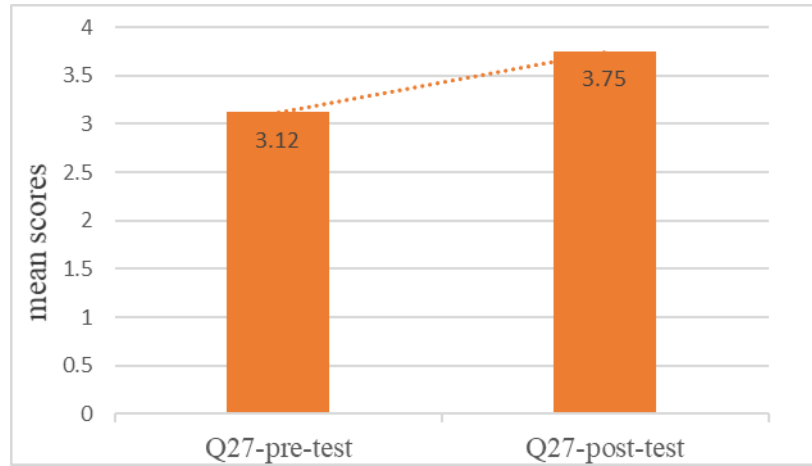
Graphic 3-26: Mean Scores of Pre-test and Post-test Question 26

The findings indicated that there is a statistically significant difference between pre-test Question 26 ($M = 3.00$, $SD = 0.79$) and post-test Question 26 ($M = 3.72$, $SD = 0.45$) scores with regard to strategy training inventory ($t(32) = -4.276$, $p < 0.01$).

Factor 4: Being able to use various tools

Question 27: “Amaçlarına uygun olarak gerçek eşya ve modelleri derste kullanabilmek.”

“Being able to use authentic materials and models in accordance with their purposes”

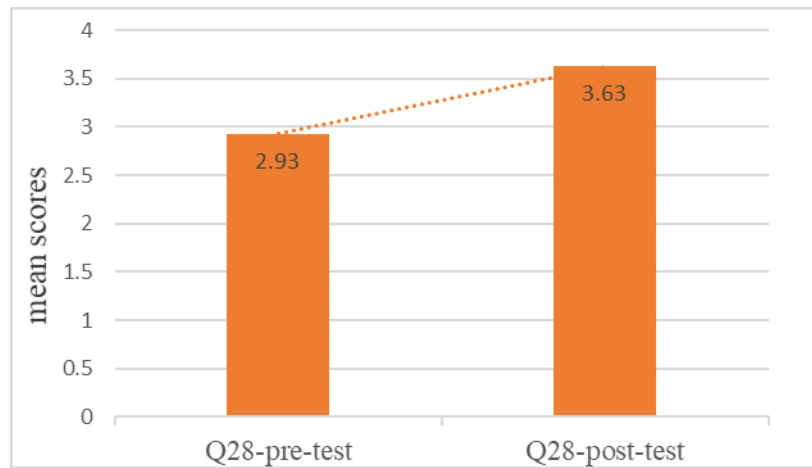


Graphic 3-27: Mean Scores of Pre-test and Post-test Question 27

The findings indicated that there is a statistically significant difference between pre-test Question 27 (M= 3.12, SD=0.73) and post-test Question 27 (M= 3.75, SD=0.43) scores with regard to strategy training inventory ($t(32) = -4.446$, $p < 0.01$).

Question 28: “Amaçlarına uygun olarak gösteri tahtalarını derste kullanabilmek.”

“Being able to use demonstration boards in accordance with their purposes”

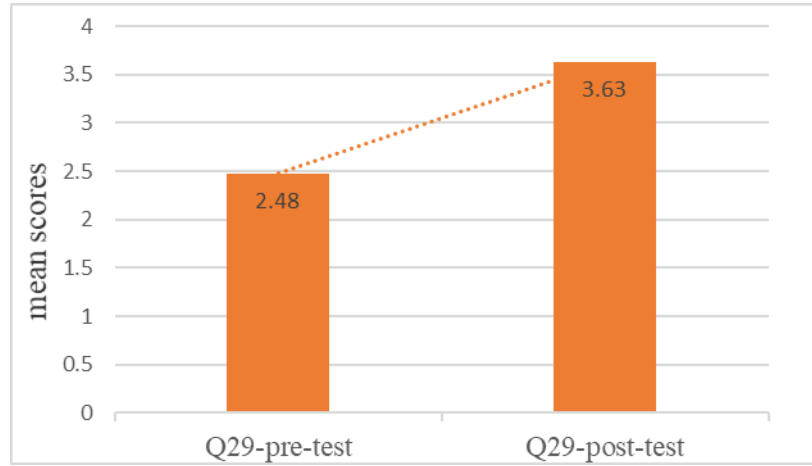


Graphic 3-28: Mean Scores of Pre-test and Post-test Question 28

The findings indicated that there is a statistically significant difference between pre-test Question 28 (M= 2.93, SD=0.78) and post-test Question 28 (M= 3.63, SD=0.54) scores with regard to strategy training inventory ($t(32) = -4.208$, $p < 0.01$).

Question 29: “Amaçlarına uygun olarak grafik materyallerini derste kullanabilmek.”

“Being able to use graphic materials in accordance with their purposes”

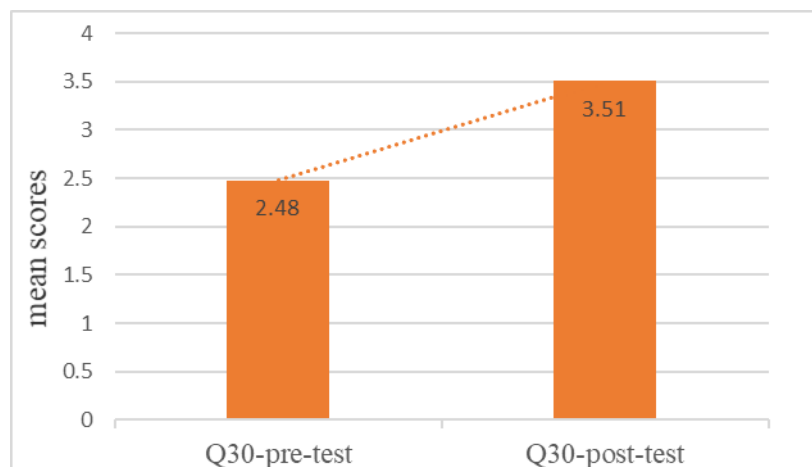


Graphic 3-29: Mean Scores of Pre-test and Post-test Question 29

The findings indicated that there is a statistically significant difference between pre-test Question 29 (M= 2.48, SD=0.97) and post-test Question 29 (M= 3.63, SD=0.54) scores with regard to strategy training inventory ($t(32) = -6.395$, $p < 0.01$).

Question 30: “Amaçlarına uygun olarak kavram, zihin ve bilgi haritalarını derste kullanabilmek.”

“Being able to use concepts, minds and information maps in accordance with their purposes”

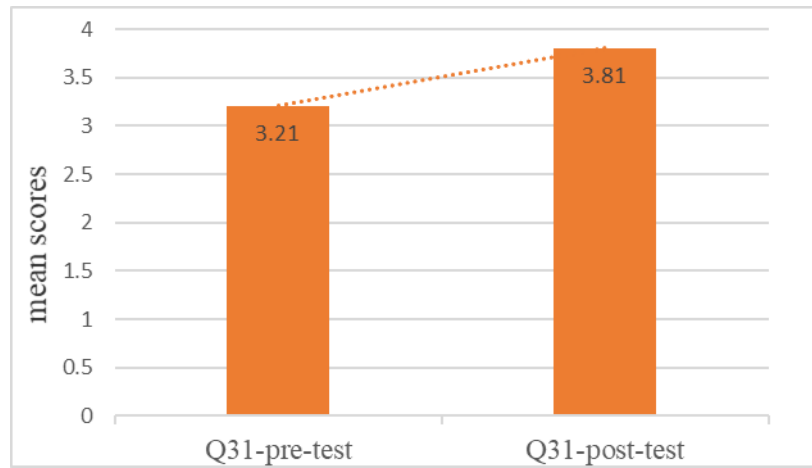


Graphic 3-30: Mean Scores of Pre-test and Post-test Question 30

The findings indicated that there is a statistically significant difference between pre-test Question 30 (M= 2.48, SD=0.83) and post-test Question 30 (M= 3.51, SD=0.61) scores with regard to strategy training inventory (t (32)= -5.831, p<0.01).

Question 31: “Amaçlarına uygun olarak poster, çalışma yaprağı ve bulmaca gibi görsel araçları derste kullanabilmek.”

“Being able to use visual tools such as posters, worksheets and puzzles in accordance with their purposes”

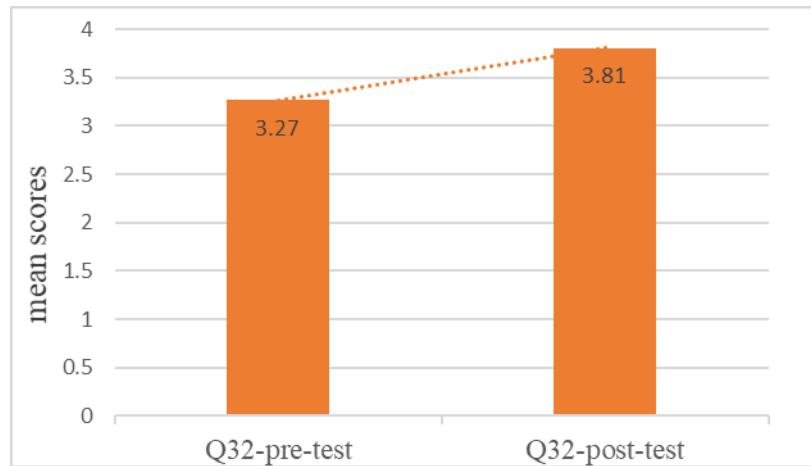


Graphic 3-31: Mean Scores of Pre-test and Post-test Question 31

The findings indicated that there is a statistically significant difference between pre-test Question 31 (M= 3.21, SD=0.69) and post-test Question 31 (M= 3.81, SD=0.39) scores with regard to strategy training inventory (t (32)= -4.417, p<0.01).

Question 32: “Amaçlarına uygun olarak televizyon/videoyu derste kullanabilmek.”

“Being able to use television / video in accordance with their purposes”



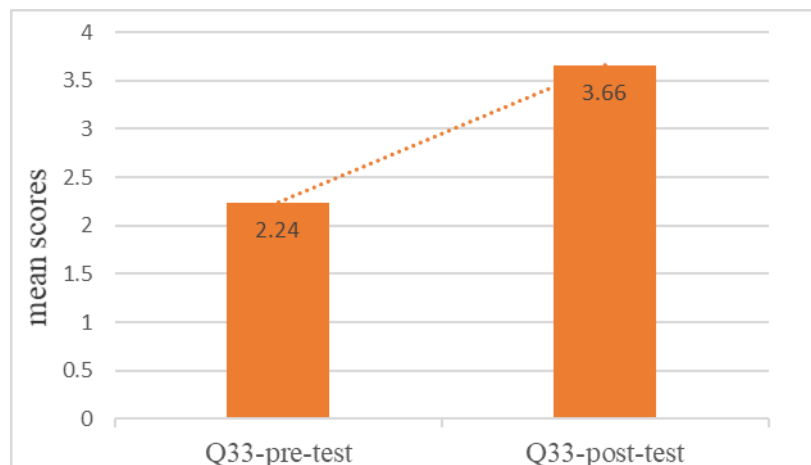
Graphic 3-32: Mean Scores of Pre-test and Post-test Question 32

The findings indicated that there is a statistically significant difference between pre-test Question 32 ($M= 3.27$, $SD=0.62$) and post-test Question 32 ($M= 3.81$, $SD=0.39$) scores with regard to strategy training inventory ($t(32)= -4.406$, $p<0.01$).

Factor 5: Being able to prepare programmed and two-dimensional printed teaching materials

Question 33: “Kavram, zihin ve bilgi haritaları hazırlayabilmek.”

“Being able to prepare concept, mind and information maps”



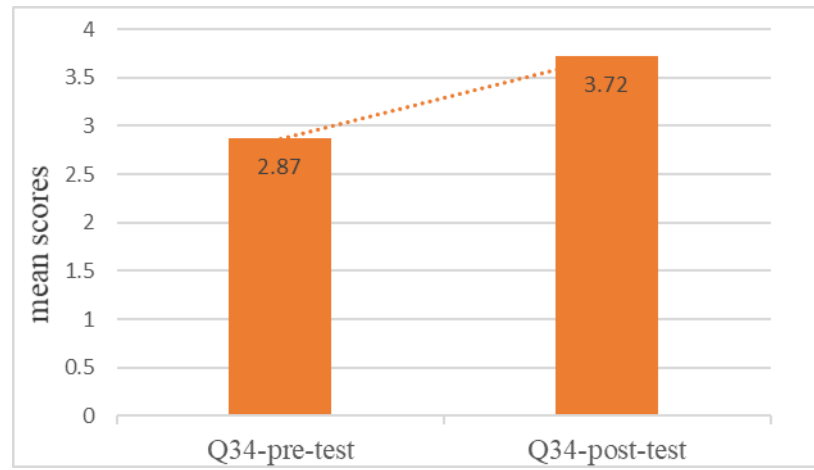
Graphic 3-33: Mean Scores of Pre-test and Post-test Question 33

The findings indicated that there is a statistically significant difference between pre-test Question 33 ($M= 2.24$, $SD=0.83$) and post-test Question 33

(M=3.66, SD=0.54) scores with regard to strategy training inventory ($t(32) = -7.502$, $p < 0.01$).

Question 34: “Poster, çalışma yaprağı ve bulmaca gibi iki boyutlu görsel materyaller hazırlayabilmek.”

“Being able to prepare two-dimensional visual materials such as posters, worksheets and puzzles”

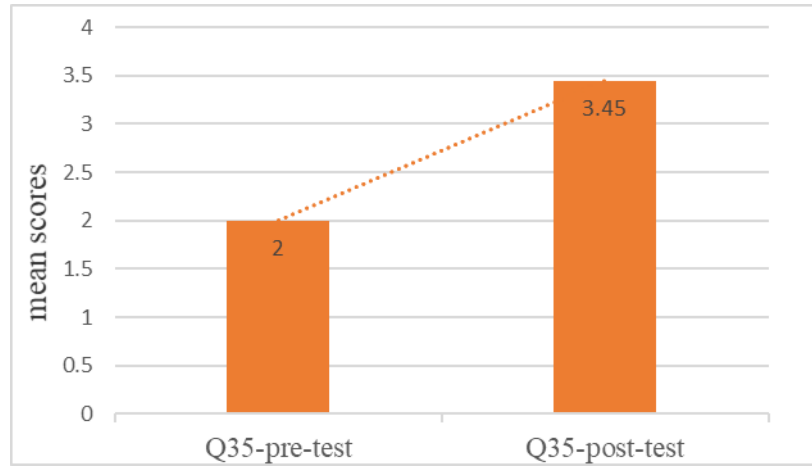


Graphic 3-34: Mean Scores of Pre-test and Post-test Question 34

The findings indicated that there is a statistically significant difference between pre-test Question 34 ($M = 2.87$, $SD = 0.92$) and post-test Question 34 ($M = 3.72$, $SD = 0.45$) scores with regard to strategy training inventory ($t(32) = -4.712$, $p < 0.01$).

Question 35: “Programlı öğretim materyali hazırlayabilmek. (Programlı öğretim bilginin küçük ve anlamlı parçalara ayrılarak belirli bir sıraya göre düzenlenip, öğrencilere sunulan bireysel, kendi kendine öğrenme yöntemidir.)”

“Being able to prepare programmed teaching material (Programmed instruction is individual, self-learning method presented to students by arranging a specific sequence by separating small and meaningful pieces of information.)”

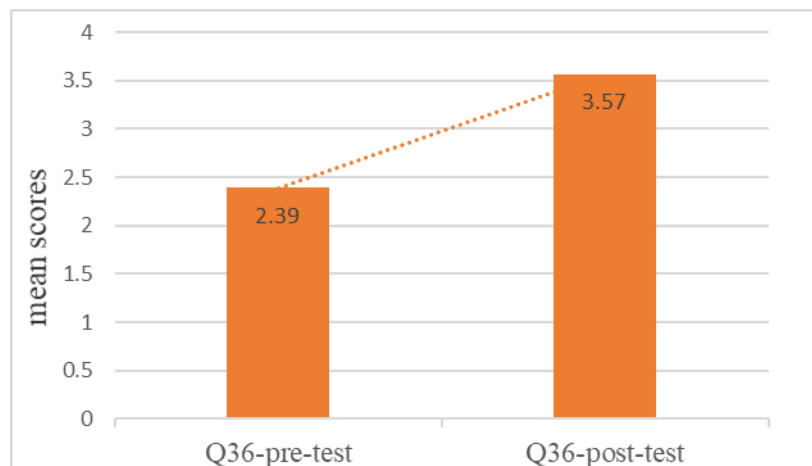


Graphic 3-35: Mean Scores of Pre-test and Post-test Question 35

The findings indicated that there is a statistically significant difference between pre-test Question 35 ($M= 2.00$, $SD=0.75$) and post-test Question 35 ($M= 3.45$, $SD=0.66$) scores with regard to strategy training inventory ($t(32)= -7.111$, $p<0.01$).

Question 36: “Öğretim materyallerini, öğretim materyali tasarım ilkelerinden (oran, renk, bütünlük, yazı, form) yararlanarak hazırlayabilmek.”

“Being able to prepare teaching materials by using design principles (ratio, color, integrity, writing, form) of teaching material”



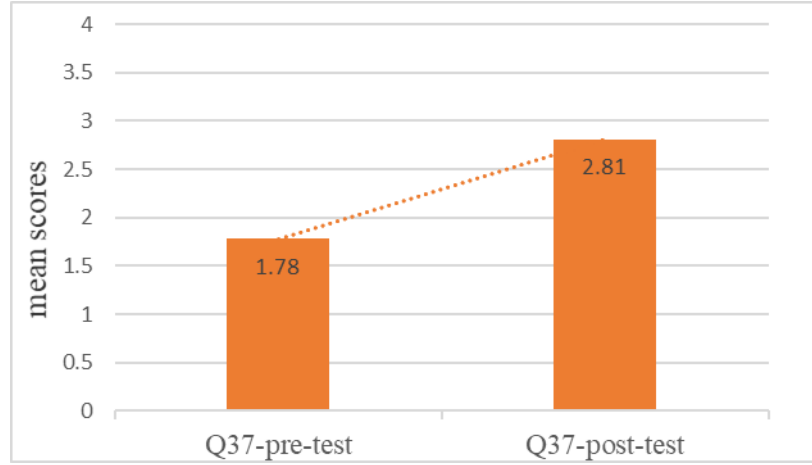
Graphic 3-36: Mean Scores of Pre-test and Post-test Question 36

The findings indicated that there is a statistically significant difference between pre-test Question 36 ($M= 2.39$, $SD=0.86$) and post-test Question 36 ($M= 3.57$, $SD=0.56$) scores with regard to strategy training inventory ($t(32)= -7.143$, $p<0.01$).

Factor 6: Being able to use Overhead Projector and Slide Projector

Question 37: “Tepegöz saydamları hazırlayabilmek.”

“Being able to prepare overhead projector transparencies”

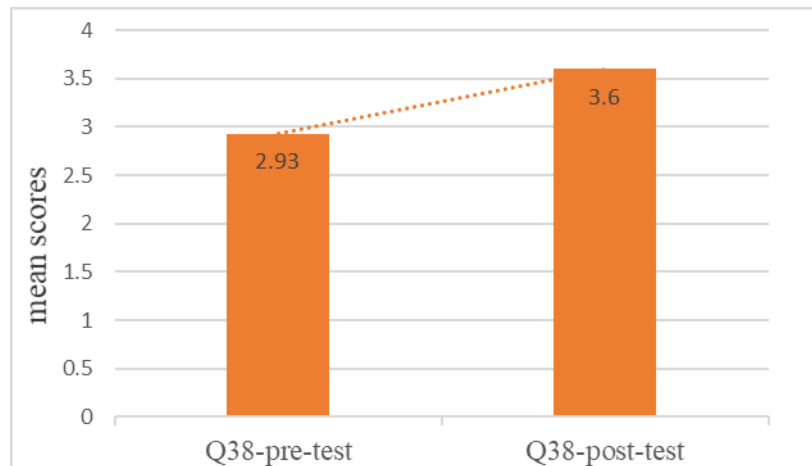


Graphic 3-37: Mean Scores of Pre-test and Post-test Question 37

The findings indicated that there is a statistically significant difference between pre-test Question 37 (M= 1.78, SD=1.08) and post-test Question 37 (M= 2.81, SD=1.04) scores with regard to strategy training inventory ($t(32) = -3.816$, $p < 0.01$).

Question 38: “Amaçlarına uygun olarak slayt projektörünü derste kullanabilmek.”

“Being able to use slide projectors in accordance with their purposes”

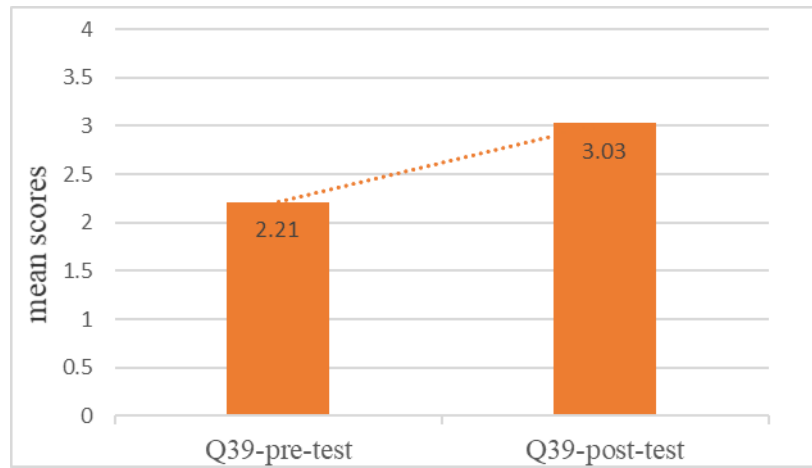


Graphic 3-38: Mean Scores of Pre-test and Post-test Question 38

The findings indicated that there is a statistically significant difference between pre-test Question 38 (M= 2.93, SD=0.96) and post-test Question 38 (M= 3.60, SD=0.65) scores with regard to strategy training inventory ($t(32) = -3.291$, $p < 0.01$).

Question 39: “Amaçlarına uygun olarak tepegözü derste kullanabilmek.”

“Being able to use overhead projector in accordance with their purposes”



Graphic 3-39: Mean Scores of Pre-test and Post-test Question 39

The findings indicated that there is a statistically significant difference between pre-test Question 39 (M= 2.21, SD=1.08) and post-test Question 39 (M= 3.03, SD=1.04) scores with regard to strategy training inventory ($t(32) = -3.300$, $p < 0.01$).

Therefore, it can be said that this type of strategy training was found useful for developing teachers' perceptions regarding their educational technology and material development competencies on 21st century skills in the current study.

3.4.2. Transcripts of Structured Interview

The records of the structured interview technique used to deepen the insufficient parts obtained from the quantitative data have been noted in writing and the analysis of the transcripts has been evaluated independently. As the researcher has structured the questions, transferred the interviews to the text and standardized evaluation guidelines by using coding qualitative data technique, reliability of structured interview has been achieved.

9 questions about experiences of the teachers before-during-after the training were asked through structured interview a month after 8-week training/post-test. The answers were analyzed by using coding qualitative data technique. While coding, the researcher has found some common themes. (See Appendix 2 for detailed answers)

1- What does 21st century learning look like before/after this teacher-training program?

Prior Knowledge

50% of the teachers did not have knowledge about 21st century learning while 25% of them had before and 25% of them noticed an increase in their knowledge.

<...before this teacher-training program, it was a bit far from me but after it, I am more familiar with 21st century learning...>

<Actually I have had info about it but it was not enough and also was not in favour of using technology much. After this program, my thoughts have changed forever...>

<... I was aware of the content... After the program I had the all the qualities that I hope for.>

<I have already known this term... There is no difference...>

2- How have schools successfully transformed their students' learning experiences by incorporating 21st Century Learning into teacher practice, curriculum, assessment, and professional development?

Attitudes of Schools

While 75% of the teachers think that schools have not changed their teaching methods by incorporating 21st Century Learning, the others claim that schools have changed their students' learning experiences by providing smart boards and projectors into classrooms.

<Unfortunately, schools are mostly focusing on the technology...Teachers use web 2.0 tools.... However, 21st century learning is more than using technology...>

<I think schools have not successfully transformed their students' learning experiences... >

<...but I think it will take a long time in state schools to be able to manage such a thing...>

<Schools have changed their students' learning experiences as the world has changed...>

3- Before the teacher professional development program, did you create learning practices, human support and physical environments that will support the teaching and learning of 21st century skill outcomes?

Prior Teaching Practices

All the teachers created learning practices before. However, they do not find them sufficient.

<Yes, I did but I did not see them enough. That's why I wanted to take this training.>

<Yes, I did... it still seems impossible to have a dream lesson for a 40student-class.>

<Since I learnt about 21st century skills, I have been more careful about the way I teach...>

<We practice working with other, being reflective, communicating each other...>

4- Do you know how to support professional learning communities that enable educators to collaborate, share best practices and integrate 21st century skills into classroom practice? (Collaborative learning tools like Padlet, Zoho Show)

Knowledge of Collaborative Learning Tools

During the teacher training, some collaborative learning tools were taught such as Padlet, Zoho Show, Google Drive and QR Code. All the teachers think that they have learned such tools and started to use them in their own classes.

<Yes, I have learnt them in this course... I use especially Padlet in my eTwinning projects.>

<I have learnt some tools... I use Padlet mostly... I have created Padlet... Zoho Show is a very easy tool to use...>

<I use Google Drive and Padlet...>

<Yes, I have learnt some of these collaborative tools... I showed my students how to use Padlet.>

5- Do you know how to support expanded community and international involvement in learning, both face-to-face and online? (Distance education / Nearpod)

Knowledge of Face-to-face and Online Teaching Materials

All the teachers think that they have learned how to do distance education via as Nearpod, Adobe Connect and reach expanded community by means of eTwinning, Turkish National Agency, EPALE, Prezi and Emaze.

<I have learnt some tools to support it...>

<I think Nearpod has many advantages. Prezi is a practical software...>

<Yes, I have learnt to use Nearpod at this training...>

<Yes.>

6- What do you think if both teachers, in-service training, and current teachers need a teacher training on 21st Century Skills and Material Design?

The necessity of the 21st Century Skills and Material Design Teacher Training

All the teachers agree that both teachers, in-service training, and current teachers should definitely need this training on 21st century skills.

<Definitely, they should because most teachers in state schools are not used to using technology in lessons.>

<Current teachers should definitely need this training... in service training teachers will also need it in two years as things change faster...>

<All teachers absolutely need training programs...>

<I think all the teachers need a teacher training on these subjects...>

7- In your classes, have you applied to instructional materials and methods that you have learned in this teacher-training program? If so, could you share your innovative learning practices?

Reflections of the Teacher Training Program into Their Own Classes

During the teacher training, the teachers prepared their own materials about the topics they learned and shared them on Google Classroom. They also sent photographs and videos showing how they used these materials in their own classes.

<I have used “Plickers” to make a revision for my 4th grades... “Quiver” with my 2nd grades to let them talk about animals as well as to revise the colors and action verbs... “Bandicam” for my eTwinning project to record a video...>

<I shared my “Padlet” link so that students can practice listening skills and vocabulary.>

<Yes, I have applied “Plickers” ... I also used “Bandicam” in order to record my presentation on “PowToon”... My students’ “WordArt” experience was nice...>

<Yes, I used “Plickers” to check my students’ knowledge... “Bandicam” and “PowToon” in eTwinning project... “Quiver” for my 5th grades... I made presentations with “Prezi” and “Emaze”...>

8- We expect our students to be passionate, compassionate and thoughtful, and to ensure that students feel valued and included in a collaborative learning environment. How do you prepare your students for 21st century challenges?

Preparing Students for 21st Century Challenges

Whole teachers make an effort to motivate their students. If they have enough time and equipment, they claim that they can use technology more efficiently to prepare their students for 21st century challenges.

<... I mainly focus on making my lessons interesting and enjoyable using different tools including web 2.0 and web 3.0 tools so that the students can be more open to learning of a foreign language... my students benefit from peer learning which makes me prepare activities that include collaborative learning environment...>

<I have them take part in eTwinning projects, be aware of technology, and get used to the technological apps.>

<... I teach Basic English language vocabulary through songs, chants and drama. I want my students to apply their knowledge and skills to their daily routines...>

<... I make them learn 21st century learning skills... I apply a new technique by using technology... they get surprised and admire it... they see how technology can be useful... they ask the name of the applications or programs... >

9- What was the most interesting/useful part that you have learned in this teacher-training program?

The Most Interesting/Useful Part of the Teacher Training Program

100 % of the interviewees think that this teacher-training program was useful for them and they have learned a lot of tools and strategies.

<I have learnt many web 2.0 and 3.0 tools. I have also learnt some strategies that I can use to solve some technical problems...>

<Everything... The things that I learnt in this course were the things that a teacher pay too much money to learn. Also they do not learn in detail in seminars or conferences. We learnt everything in detail... I am now using all the apps in my lessons...>

<... everything was interesting and useful for me... especially “VR glasses” attracted my attention... “Bandicam” is great... I really liked “Prezi” and “Emaze”... I found “Quick Draw” quite enjoyable. I think this training program was totally well-organized and rich in terms of meeting needs and curiosity of the teachers who were seeking the 21st century skills...>

< “Camtasia, Animatron, Word Art, Nearpod” are my favourites. I have learnt to design my own materials... >

PART IV: RESEARCH FINDINGS

With this study, the researcher is able to obtain the results on the evaluation of 21st Century Skills Material Design Teacher Training and Professional Development Program with structured interview specifically designed for this study and a competency scale done by 33 English teachers working at public schools in Istanbul and voluntarily attending Istanbul Directorate of National Education Language Academy. The purpose of the study, in particular, was to provide foreign language teachers an in-service training involving 21st century skills, to investigate the influence of this teacher training on the preparation of foreign language teaching materials for language teaching, and to learn teachers' perceptions on 21st century digital skills.

Application-based Educational Technology and Material Development Competencies Scale was used for this study. The scale was conducted as a pre-test and post-test before and after 8-week training. To learn teachers' perceptions regarding their educational technology and material development competencies on 21st century skills and help them to create their own teaching materials, an 8-week training was held at Istanbul University. Finally, teachers' opinions have been obtained through structured interview technique to deepen the parts that are not obtained from quantitative data.

Specifically three research questions guided this study:

1- What are the 21st century skills that foreign language teachers can use in their lessons?

All essential information about 21st Century Skills was presented to the teachers on the first week. Then, the title of each skill was explained in detail in the other weeks. The teachers learned many activities and technological tools related to each skill. They showed what they have learned by creating their own teaching materials. For further use, printed documents were delivered and materials were shared online.

2- Do foreign language teachers' perceptions on preparing language-teaching materials change when they have in-service training involving 21st century skills?

To learn the effect of 21st Century Skills Material Design Teacher Training and Professional Development Program on teachers' perceptions, both quantitative and qualitative method were used. As it is not possible to measure teachers' competencies in this kind of research, the aim of the 39-item scale is to look at what teachers think, how they perceive their competencies and see if the 8-week teacher-training program has a positive effect on teachers' educational technology and material development perceptions. Thus, 33 participants answered *Application-based Educational Technology and Material Development Competencies Scale* before and after the teacher training. A *paired samples t-test* was conducted to compare the mean scores of pre-test and post-test of the scale. Analysis of data shows that all items of the 39-item scale have an increase.

Accordingly, SPSS results indicate that this type of strategy training was found useful for developing teachers' perceptions regarding their educational technology and material development competencies on 21st century skills in the current study. In addition, the transcripts of structured interview, which are obtained from the teachers, were analyzed by using coding qualitative data technique, and the transcripts prove that the teacher training has a considerable influence on the teachers' perceptions. (See Appendix 2 for detailed answers)

3- How has 21st century skills teacher training influenced teachers' teaching/classroom practices?

Today, being a literate person means more than being able to read and write. Literate individuals use technology deliberately and effectively and can decide which media are most suitable for their communication goals. They also identify information needs, understand the structure of information, and evaluate information and its sources critically through various media and technologies. In this regard, teachers' in-service training incompetence should be eliminated. Thanks to this training, the teachers improved their creativity and created their own materials. They shared the materials they had prepared during the training and their own teaching practices on Google Classroom. In addition, their reflections in structured interview show that 21st century skills teacher training has influenced their teaching/classroom practices because they have started using 21st century digital skills in their own classes.

PART V: DISCUSSION, CONCLUSION AND SUGGESTIONS

The present study was mainly designed to measure whether 21st Century Skills and Material Design Teacher Training and Professional Development Program increases both teachers', in-service training, and current teachers' educational technology and material development competencies. In doing so, occupational experiences and observations, studies conducted by Cisco, Intel, Microsoft and OECD have been considered.

The world has changed significantly and the fundamental changes have influenced education field. This situation has brought a requirement for individuals. They need to think critically, solve problems, communicate, collaborate, find useful information quickly, and use technology efficiently. Technology has helped individuals to acquire these skills. Yet, the rapid evolving technology presents them various tools. Therefore, teachers have a big role in changing education environment. They should be able to evaluate instructional materials and choose the most appropriate tools for learners. They should include today's popular materials such as Augmented Reality, Virtual Reality, and CALL materials with the purpose of providing motivation in class and permanence in learning. Findings of other studies have proved the value of these materials in education (Can and Şimşek, 2015).

On the other hand, Second Language Acquisition requires authenticity. Digital tools aid foreign language teachers to bring real life into classroom. Students should get experience with target language while learning a foreign language. 3D virtual learning environments and 360-degree videos have supported authenticity and conveyed the learning opportunities in the field of foreign language learning (Elia et al, 2017). Today, many schools have smart boards and internet access into classrooms, and great numbers of teachers have smart phones, tablets and personal computers. When teachers are asked how they use technology in their classes, the answer should be more than showing a video on YouTube. There are a lot of computer-based educational programs or applications that can be also downloaded on mobile devices or tablets. In this regard, teachers' awareness should be improved and they must be encouraged to be a technology literate person. This teacher training has been planned in order to bring 21st century skills to the teachers and later to the students through the teachers by using the technology effectively.

Having look at the current study, its interactivity is sound, as the teachers actively have participated in the teacher training; they have had the chance to prepare their own instructional materials. They have also learned how to use a tool they have used for any skill for another skill since all 21st century skills are integrated to each other.

In accordance with the analysis and attitudes of the teachers, qualitative and quantitative data results show that teacher-training programs in Turkey focus mostly on theory. Before the training, the teachers who had marked “I do not have” option on the scale, marked “I have” or “I absolutely have” options after the training. It also proves that there is a need for teacher training for current teachers in Turkey.

Therefore, in order to eliminate this need in foreign language education in Turkey, several recommendations need to be made. First of all, the number of computers, projectors and smart boards in schools should be increased. Language laboratories and material offices should be set up. Fatih Project, which provides computer, smartboard and projection device for schools and tablet for students, should be continued and these opportunities should be provided for every school. For current teachers, in-service training seminars should be organized. They must be encouraged to participate in projects conducted by eTwinning and Turkish National Agency.

As a last point to note, further studies can organize a teacher training for each skill of 21st Century Skills. Each title of these skills includes extensive knowledge. It is possible to find several digital tools and create diverse materials for each skill.

In the current study, there were no technical problems since all teachers have smartphones and weekly lessons were done in a computer lab with internet access, and therefore other researchers have to consider this in order to avoid any technical problems.

As this study is limited to 8-week training, a long-term training can be planned. The teacher training conducted by the researcher can be applied to the whole English teachers to get a deeper view. Planning a teacher training on 21st century skills and material design has never been done in Turkey until now. Similar studies can be done with more participants and different parts of Turkey.

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APPENDICES

Appendix 1: Application-based Educational Technology and Material Development Competencies Scale

Uygulamaya Dayalı Öğretim Teknolojileri ve Materyal Tasarımı Becerileri Ölçeği

1: Sahip değilim 2: Sahip olup olmadığım konusunda kararsızım 3: Sahibim 4: Kesinlikle sahibim

	1	2	3	4
Faktör 1: Dersin Genel Analizi, Planlanması, Tasarımı ve Değerlendirilmesi Yapılabilir ve Ders Anlatılabilir				
1. Bir eğitim yazılımını, içinde kullanıldığı dersin amaçlarına (yani kazanımlarına veya hedeflerine) uygunluğu açısından değerlendirebilmek.	0	0	0	0
2. Öğretim materyallerini ve araç-gereçlerini tasarım ilkelerine uygunluğunu değerlendirebilmek.	0	0	0	0
3. Bir öğretim materyalinin nasıl değerlendirileceği ile ilgili plan yapabilmek.	0	0	0	0
4. Öğretimin temel aşamalarını (giriş etkinliği, içerik sunusu, alıştırma, geribildirim, değerlendirme) planlayabilmek.	0	0	0	0
5. Ders ile ilgili planları (ünitelendirilmiş yıllık plan, günlük plan vb.) yapabilmek.	0	0	0	0
6. Öğretilecek ders için amaç analizi yapabilmek.	0	0	0	0
7. Öğreteceğiniz bir derste, kullanılan amaçlarına uygun öğretim materyalleri/araç-gereçleri seçebilmek.	0	0	0	0
8. Öğretim tasarrımında, sistem yaklaşımı sürecini (analiz →tasarım →geliştirme →değerlendirme) kullanarak ders tasarlayabilmek.	0	0	0	0
9. Amaç, hedef, davranış analizi yapılmış bir derste, öğretilecek konuları modüllere/parçalara ayırabilmek.	0	0	0	0
10. Derste kullanılacak herhangi bir öğretim materyalinin işlevselliği, pratikliği vb. boyutlarını değerlendirme için uygun bir değerlendirme formu geliştirebilmek veya hazırda var olanlar arasından bir tane seçebilmek.	0	0	0	0
11. Eğitim verilen veya anlatılan ortamda (sınıf, lab vb.), eğitimin veya dersin amacına uygun olarak fiziksel düzenlemeler yapabilmek.	0	0	0	0
12. Öğretim tasarrım sürecinde, ortam ve süreç değerlendirmesi kullanarak, tasarlanan dersin eksiklerini ve öğretim tasarrımının aksayan yönlerini sıfırlayabilmek.	0	0	0	0
13. Öğrencinin derste ki performansını değerlendirmek için uygun ölçme-değerlendirme araçları geliştirebilmek.	0	0	0	0
14. Uygun veri toplama araçları kullanarak, derste daha iyi işleyebilmek amacıyla öğrenciler hakkında (öğrenme stilleri, hazır bulunuşluk düzeyleri, derse karşı tutumları vb.) bilgi toplayabilmek.	0	0	0	0
15. Öğretilecek beceri/konunun amacına uygun ders anlatma tekniklerini kullanarak ders anlatılabilmek.	0	0	0	0
Faktör 2: Uzaktan Eğitim, Zeki Öğretim Sistemleri ve Çoklu Ortam Kullanılabilir				
16. Amaçlarına uygun olarak zeki öğretim sistemlerini derste kullanılabilmek (zeki öğretim sistemleri, neyi öğreteceğini, kime öğreteceğini ve nasıl öğreteceğini bilen, yapay zeka tekniklerinden yararlanarak tasarlanmış bilgisayar programlarıdır).	0	0	0	0
17. İnternet üzerinden yapılabilecek bir uzaktan eğitimi planlayabilmek.	0	0	0	0
18. İnternet üzerindeki ortamları/yöntemleri kullanarak uzaktan eğitim verebilmek.	0	0	0	0
19. İnternet üzerinden uzaktan eğitim verebilmek.	0	0	0	0
20. İstenen bir öğretim materyalini bilgisayarda geliştirmek için uygun bir bilgisayar programı seçebilmek.	0	0	0	0
21. Herhangi bir bilgisayar teknolojisi veya programını kullanarak eğitim amaçlı çoklu ortam (multimedya) yazılımları oluşturabilmek.	0	0	0	0
Faktör 3: Derste İnternet ve Yazılı Materyal Üretmek İçin Bilgisayar Kullanılabilir				
22. Bilgisayar yazılımlarını kullanarak (yazı programları, tablolu programlar, grafik programları vb.) yazılı materyaller hazırlayabilmek.	0	0	0	0
23. İnternet te arama motorlarını (google, yahoo, altavista gibi) kullanılabilmek.	0	0	0	0
24. Amaçlarına uygun olarak bilgisayar derste kullanılabilmek.	0	0	0	0
25. Amaçlarına uygun olarak internet derste kullanılabilmek.	0	0	0	0
26. Amaçlarına uygun olarak iletişim teknolojilerini derste kullanılabilmek.	0	0	0	0
Faktör 4: Çeşitli Araç Gereçleri Kullanılabilir				
27. Amaçlarına uygun olarak gerçek esya ve modelleri derste kullanılabilmek.	0	0	0	0
28. Amaçlarına uygun olarak gösteri tablolarını derste kullanılabilmek.	0	0	0	0
29. Amaçlarına uygun olarak grafik materyallerini derste kullanılabilmek.	0	0	0	0
30. Amaçlarına uygun olarak kavram, zihin ve bilgi haritalarını derste kullanılabilmek.	0	0	0	0
31. Amaçlarına uygun olarak poster, çalışma yaprağı ve bulmaca gibi boyutlu görsel araçları derste kullanılabilmek.	0	0	0	0
32. Amaçlarına uygun olarak televizyon/videoyu derste kullanılabilmek.	0	0	0	0
Faktör 5: Program ve İki Boyutlu Basit Öğretim Materyali Hazırlayılabilir				
33. Kavram, zihin ve bilgi haritaları hazırlayabilmek.	0	0	0	0
34. Poster, çalışma yaprağı ve bulmaca gibi iki boyutlu görsel materyaller hazırlayabilmek.	0	0	0	0
35. Programlı öğretim materyali hazırlayabilmek. (Programlı öğrenim biçimi küçük ve anlamlı parçalara ayrılarak belirli bir sıraya göre düzenlenip, öğrencilere sunulan bireysel, kendi kendine öğrenme yöntemidir)	0	0	0	0
36. Öğretim materyallerini, öğretim materyali tasarım ilkelerinden (oran, renk, bütünlük, yazı, form) yararlanarak hazırlayabilmek.	0	0	0	0
Faktör 6: Tepegöz ve Slayt Projeksiyonu Kullanılabilir				
37. Tepegöz saydamları hazırlayabilmek.	0	0	0	0
38. Amaçlarına uygun olarak slayt projeksiyonunu derste kullanılabilmek.	0	0	0	0
39. Amaçlarına uygun olarak tepegöz derste kullanılabilmek.	0	0	0	0

Appendix 2: Questions and Answers of Structured Interview

Structured Interview

Name of Interviewee: Arzu Egin

School Name: Gülsuyu Primary School

1- What does 21st century learning look like before/after this teacher-training program?

21st century learning looked as if all the learners should get some parts of their education through technological items and programs apart from a teacher's classical teaching methods. Before the teacher-training program, it was a bit far from me but after it, I am more familiar with 21st century learning and I know that it is really a part of my job.

2- How have schools successfully transformed their students' learning experiences by incorporating 21st Century Learning into teacher practice, curriculum, assessment, and professional development?

Schools have changed their students' learning experiences as the world has changed at the same time. People access the information easily and this has affected the education system. Now classrooms have smart boards or projections and students have computers and internet at their homes. Teachers can give homework or assign tasks via internet. The students can prepare homework like shooting a video or preparing presentations without any need of paper.

3- Before the teacher professional development program, did you create learning practices, human support and physical environments that will support the teaching and learning of 21st century skill outcomes?

Yes, I did but I did not see them enough. That's why I wanted to take this training.

4- Do you know how to support professional learning communities that enable educators to collaborate, share best practices and integrate 21st century skills into classroom practice? (Collaborative learning tools like Padlet, Zoho Show)

Yes, I know some of these collaborative tools. For example, I showed my students how to use Padlet.

5- Do you know how to support expanded community and international involvement in learning, both face-to-face and online? (Distance education / Nearpod)
Yes, I have learnt to use Nearpod at this training but I have not used it.

6- What do you think if both teachers, in-service training, and current teachers need a teacher training on 21st Century Skills and Material Design?
I think all the teachers need a teacher training on these subjects because new applications or programs always come out and it is wonderful to know which ones are the most appropriate ones for education.

7- In your classes, have you applied to instructional materials and methods that you have learned in this teacher-training program? If so, could you share your innovative learning practices?
Yes, I have applied Plickers in my classes. I told my students that they would have a test. They thought that they were going to have a classical one but it was not. They liked it a lot. They also liked the individuality when they saw their names on the screen. I also used Bandicam in order to record my presentation on PowToon. My students' Wordart experience was nice, too. They created their own word clouds by using target vocabulary.

8- We expect our students to be passionate, compassionate and thoughtful, and to ensure that students feel valued and included in a collaborative learning environment. How do you prepare your students for 21st century challenges?

I work in a primary school. Therefore, I try to teach everything in the school. It is difficult for me to connect students outside the school. However, I make them learn 21st century learning skills. Whenever I apply a new technique by using technology in the classroom, they get surprised and admire it as the lesson is combined with fun and they see how technology can be useful for their lessons. They ask the name of the applications or programs and wonder what the next one will be.

9- What was the most interesting/useful part that you have learned in this teacher-training program?

Nearly everything was interesting and useful for me but I can say that especially VR glasses attracted my attention and I will definitely make use of them in my lessons. Bandicam is great for recording the videos that we cannot download. I really liked Prezi and Emaze as they are unlike slides and much more effective. Maybe as I am a primary school teacher I found QuickDraw quite enjoyable :) I think this training program was totally well-organized and rich in terms of meeting needs and curiosity of the teachers who were seeking the 21st century skills. Thank you for everything you taught and for your kindness.

Structured Interview

Name of Interviewee: Damla Bahadır

School Name: Ümraniye Nurettin Topçu Primary School

1- What does 21st century learning look like before/after this teacher-training program?

I have already known this term and I have had some lessons about it for several times. There is no difference between what I have already known and what I have seen in this teacher-training program.

2- How have schools successfully transformed their students' learning experiences by incorporating 21st Century Learning into teacher practice, curriculum, assessment, and professional development?

Unfortunately, the schools are mostly focusing on the technology out of this term. The teachers use web 2.0 tools while planning their lessons or while creating their activities. However, 21st century learning is more than using technology. We, as teachers, should let our students cooperate with both each other and with the teacher during the lesson. We should let our students create something using web 2.0 tools instead of just presenting the information using it.

3- Before the teacher professional development program, did you create learning practices, human support and physical environments that will support the teaching and learning of 21st century skill outcomes?

Since I learnt about 21st century skills, I have been more careful about the way I teach. I try my best to let my students benefit from the current learning environment as efficiently as possible in terms of the learning outcomes of this century.

4- Do you know how to support professional learning communities that enable educators to collaborate, share best practices and integrate 21st century skills into classroom practice? (Collaborative learning tools like Padlet, Zoho Show)

I have learnt some tools but for me social media especially Facebook are easier to use in terms of sharing practices and collaborate. I use Padlet mostly to let my students contribute to the topic so I have created Padlet. I have never been in need of using tools like Zoho Show. If I were so, Zoho Show is a very easy tool to use. For older students it is both enjoyable and applicable.

5- Do you know how to support expanded community and international involvement in learning, both face-to-face and online? (Distance education / Nearpod)

I have learnt some tools to support it but I have not used them as my students are primary level ones and it is not very feasible to use such applications with them. I do not think I am good at this topic.

6- What do you think if both teachers, in-service training, and current teachers need a teacher training on 21st Century Skills and Material Design?

I think the in-service training teachers have already had their trainings on the topic but the current teachers should definitely need this training. It is for sure that the in service-training teachers will also need it in two years as things change faster than ever.

7- In your classes, have you applied to instructional materials and methods that you have learned in this teacher-training program? If so, could you share your innovative learning practices?

I have used Plickers to make a revision for my fourth graders. I have also used Quiver with my second graders to let them talk about animals as well as to revise the colors and action verbs. Apart from that, I have used Bandicam for my e-twinning project to record a video that cannot be downloaded.

8- We expect our students to be passionate, compassionate and thoughtful, and to ensure that students feel valued and included in a collaborative learning environment. How do you prepare your students for 21st century challenges?

As I work in a primary school, I mainly focus on making my lessons interesting and enjoyable using different tools including web 2.0 and web 3.0 tools so that the students can be more open to learning a foreign language and they can develop positive attitudes towards different cultures. While planning my lessons I give importance to let my students benefit from peer learning which makes me prepare activities that include collaborative learning environment. For example, I prefer letting my students work in groups and I like using information gap activities. I also give importance to let my students personalize the information in the lesson , I think which makes them feel valued, by letting them add something personal to their works like naming a monster or creating their own monsters.

9- What was the most interesting/useful part that you have learned in this teacher-training program?

I have learnt many web 2.0 and web 3.0 tools. I have also learnt some strategies that I can use to solve some technical problems that I may encounter while using these tools.

Structured Interview

Name of Interviewee: Zeliha ÇİÇEK

School Name: Mehmet Akif Ersoy Middle School

1- What does 21st century learning look like before/after this teacher-training program?

Actually, I have had the info about it but it was not enough and also was not in favor of using technology much. After this program, my thoughts have changed forever.

Because there is a world that is ready to teach a language effectively and in a more fun way.

2- How have schools successfully transformed their students' learning experiences by incorporating 21st Century Learning into teacher practice, curriculum, assessment, and professional development?

For speaking generally, private schools have been doing it successfully. They think that students need to be good enough at the field of technology .But I think it will take a long time in state schools to be able to manage such a thing. Opportunities change everything.

3- Before the teacher professional development program, did you create learning practices, human support and physical environments that will support the teaching and learning of 21st century skill outcomes?

Yes I did. However, when the students are not ready for such a thing your lesson becomes a mess unfortunately. For example, if every teacher use technology in his / her lesson the students will get used to it and they will get used to that system. Nevertheless, to be honest still seems impossible to have a dream lesson for a- 40 student class.

4- Do you know how to support professional learning communities that enable educators to collaborate, share best practices and integrate 21st century skills into classroom practice? (Collaborative learning tools like Padlet, Zoho Show)

Yes. I have learnt them in this course and they are very useful. I use especially Padlet in my eTwinning projects.

5- Do you know how to support expanded community and international involvement in learning, both face-to-face and online? (Distance education / Nearpod)

Yes.

6- What do you think if both teachers, in-service training, and current teachers need a teacher training on 21st Century Skills and Material Design?

Definitely, they should because most teacher in state schools are not used to using technology in lessons.

7- In your classes, have you applied to instructional materials and methods that you have learned in this teacher-training program? If so, could you share your innovative learning practices?

Yes, I used Plickers to check my students' knowledge about scientists. It was great.

I used Bandicam, PowToon in my eTwinning project.

I use PowToon mostly for presentation in my lessons.

I used Quiver for 5th grades.

I made presentations with Prezi and used one of them in a presentation I did to my colleagues.

I used Emaze (I prepared my last lesson with it)

8- We expect our students to be passionate, compassionate and thoughtful, and to ensure that students feel valued and included in a collaborative learning environment. How do you prepare your students for 21st century challenges?

I have them take part in eTwinning projects, be aware of technology, and get used to the technological apps.

9- What was the most interesting/useful part that you have learned in this teacher-training program?

Everything. Our Instructor Gökçen was great. The things that I learnt in this course were the things that a teacher should pay too much money to learn. In addition, they do not learn in detail in seminars or conferences. We learnt everything in detail, which was important. Moreover, I think it was the best program I have ever had because I am now easily using all the apps in my lessons. Thanks a lot. Everything was great.

Structured Interview

Name of Interviewee: Elif ELGİN

School Name: Pendik Merkez İlkokulu

1- What does 21st century learning look like before/after this teacher-training program?

Before the program, I completed "Competences for 21st Century Schools" online course on the School Education Gateway Teacher Academy so I was aware of the

content and had some expectations. After the program I had the all the qualities that I hoped for.

2- How have schools successfully transformed their students' learning experiences by incorporating 21st Century Learning into teacher practice, curriculum, assessment, and professional development?

I think schools have not successfully transformed the students' learning experiences. Mostly we still have teacher-centered classes. I do my best to use formative assessment methods but it is really hard to pay closer attention to 300+ students.

3- Before the teacher professional development program, did you create learning practices, human support and physical environments that will support the teaching and learning of 21st century skill outcomes?

We practice working with others, being reflective, communicating each other. I want them to work collaboratively but as they are second graders, they may have different needs, perspectives. They easily get distracted.

4- Do you know how to support professional learning communities that enable educators to collaborate, share best practices and integrate 21st century skills into classroom practice? (Collaborative learning tools like Padlet, Zoho Show)

I use Google Drive and Padlet to share links and documents.

5- Do you know how to support expanded community and international involvement in learning, both face-to-face and online? (Distance education / Nearpod)

I used to know adobe connect but now I think Nearpod has many advantages. Prezi is a practical software to design and share presentations.

6- What do you think if both teachers, in-service training, and current teachers need a teacher training on 21st Century Skills and Material Design?

All teachers absolutely need training programs but most of them need motivation. They ask me why I attend a course on Saturdays.

7- In your classes, have you applied to instructional materials and methods that you have learned in this teacher-training program? If so, could you share your innovative learning practices?

<https://padlet.com/1Elif/u6sqibppvaob> I share my Padlet link so that students can practice listening skills, vocabulary.

8- We expect our students to be passionate, compassionate and thoughtful, and to ensure that students feel valued and included in a collaborative learning environment.

How do you prepare your students for 21st century challenges?

I have just two hours for a class in a week. I teach Basic English Language vocabulary through songs, chants and drama. I want my students to apply their knowledge, skills to their daily routines. We have learner- and teacher-led classroom environment. They are supported by teacher guidance and responsible for their own learning, encouraged to be active.

9- What was the most interesting/useful part that you have learned in this teacher-training program?

Camtasia, Animatron, Wordart, Nearpod are my favorites. I have learnt to design my own materials and my special thanks to Miss Gökçen for her guidance and patience.

Appendix 3: SPSS Results of The Scale

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Q1PRETEST	2.5455	33	.71111	.12379
	Q1POSTTEST	3.5152	33	.50752	.08835
Pair 2	Q2PRETEST	2.5455	33	.75378	.13122
	Q2POSTTEST	3.3939	33	.60927	.10606
Pair 3	Q3PRETEST	2.5758	33	.83030	.14454
	Q3POSTTEST	3.3333	33	.64550	.11237
Pair 4	Q4PRETEST	2.9091	33	.72300	.12586
	Q4POSTTEST	3.5455	33	.50565	.08802
Pair 5	Q5PRETEST	3.1818	33	.76871	.13381
	Q5POSTTEST	3.6970	33	.52944	.09216
Pair 6	Q6PRETEST	3.0000	33	.79057	.13762
	Q6POSTTEST	3.6061	33	.65857	.11464
Pair 7	Q7PRETEST	3.0606	33	.74747	.13012
	Q7POSTTEST	3.6970	33	.52944	.09216
Pair 8	Q8PRETEST	2.3939	33	.60927	.10606
	Q8POSTTEST	3.4242	33	.66287	.11539
Pair 9	Q9PRETEST	2.7273	33	.57406	.09993
	Q9POSTTEST	3.4848	33	.66714	.11613
Pair 10	Q10PRETEST	2.5455	33	.90453	.15746
	Q10POSTTEST	3.4848	33	.56575	.09848
Pair 11	Q11PRETEST	2.9091	33	.72300	.12586
	Q11POSTTEST	3.5758	33	.56071	.09761
Pair 12	Q12PRETEST	2.7273	33	.67420	.11736
	Q12POSTTEST	3.5455	33	.61699	.10740
Pair 13	Q13PRETEST	2.7273	33	.76128	.13252
	Q13POSTTEST	3.5758	33	.50189	.08737
Pair 14	Q14PRETEST	2.6970	33	.72822	.12677
	Q14POSTTEST	3.6061	33	.49620	.08638
Pair 15	Q15PRETEST	2.9697	33	.58549	.10192
	Q15POSTTEST	3.6970	33	.46669	.08124
Pair 16	Q16PRETEST	1.5455	33	.75378	.13122
	Q16POSTTEST	3.3636	33	.65279	.11364
Pair 17	Q17PRETEST	1.5152	33	.61853	.10767
	Q17POSTTEST	3.4848	33	.50752	.08835
Pair 18	Q18PRETEST	1.7273	33	.76128	.13252
	Q18POSTTEST	3.3030	33	.63663	.11082

Pair 19	Q19PRETEST	1.5758	33	.70844	.12332
	Q19POSTTEST	3.4242	33	.56071	.09761
Pair 20	Q20PRETEST	1.7879	33	.69631	.12121
	Q20POSTTEST	3.3939	33	.60927	.10606
Pair 21	Q21PRETEST	1.5758	33	.79177	.13783
	Q21POSTTEST	3.1818	33	.72692	.12654
Pair 22	Q22PRETEST	2.0606	33	.86384	.15037
	Q22POSTTEST	3.5455	33	.66572	.11589
Pair 23	Q23PRETEST	3.3636	33	.54876	.09553
	Q23POSTTEST	3.7576	33	.43519	.07576
Pair 24	Q24PRETEST	3.2424	33	.66287	.11539
	Q24POSTTEST	3.8485	33	.36411	.06338
Pair 25	Q25PRETEST	3.2121	33	.64988	.11313
	Q25POSTTEST	3.7879	33	.41515	.07227
Pair 26	Q26PRETEST	3.0000	33	.79057	.13762
	Q26POSTTEST	3.7273	33	.45227	.07873
Pair 27	Q27PRETEST	3.1212	33	.73983	.12879
	Q27POSTTEST	3.7576	33	.43519	.07576
Pair 28	Q28PRETEST	2.9394	33	.78817	.13720
	Q28POSTTEST	3.6364	33	.54876	.09553
Pair 29	Q29PRETEST	2.4848	33	.97215	.16923
	Q29POSTTEST	3.6364	33	.54876	.09553
Pair 30	Q30PRETEST	2.4848	33	.83371	.14513
	Q30POSTTEST	3.5152	33	.61853	.10767
Pair 31	Q31PRETEST	3.2121	33	.69631	.12121
	Q31POSTTEST	3.8182	33	.39167	.06818
Pair 32	Q32PRETEST	3.2727	33	.62614	.10900
	Q32POSTTEST	3.8182	33	.39167	.06818
Pair 33	Q33PRETEST	2.2424	33	.83030	.14454
	Q33POSTTEST	3.6667	33	.54006	.09401
Pair 34	Q34PRETEST	2.8788	33	.92728	.16142
	Q34POSTTEST	3.7273	33	.45227	.07873
Pair 35	Q35PRETEST	2.0000	33	.75000	.13056
	Q35POSTTEST	3.4545	33	.66572	.11589
Pair 36	Q36PRETEST	2.3939	33	.86384	.15037
	Q36POSTTEST	3.5758	33	.56071	.09761
Pair 37	Q37PRETEST	1.7879	33	1.08275	.18848
	Q37POSTTEST	2.8182	33	1.04447	.18182
Pair 38	Q38PRETEST	2.9394	33	.96629	.16821
	Q38POSTTEST	3.6061	33	.65857	.11464

Pair 39	Q39PRETEST	2.2121	33	1.08275	.18848
	Q39POSTTEST	3.0303	33	1.04537	.18198

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Q1PRETEST	2.5455	33	.71111	.12379
	Q1POSTTEST	3.5152	33	.50752	.08835
Pair 2	Q2PRETEST	2.5455	33	.75378	.13122
	Q2POSTTEST	3.3939	33	.60927	.10606
Pair 3	Q3PRETEST	2.5758	33	.83030	.14454
	Q3POSTTEST	3.3333	33	.64550	.11237
Pair 4	Q4PRETEST	2.9091	33	.72300	.12586
	Q4POSTTEST	3.5455	33	.50565	.08802
Pair 5	Q5PRETEST	3.1818	33	.76871	.13381
	Q5POSTTEST	3.6970	33	.52944	.09216
Pair 6	Q6PRETEST	3.0000	33	.79057	.13762
	Q6POSTTEST	3.6061	33	.65857	.11464
Pair 7	Q7PRETEST	3.0606	33	.74747	.13012
	Q7POSTTEST	3.6970	33	.52944	.09216
Pair 8	Q8PRETEST	2.3939	33	.60927	.10606
	Q8POSTTEST	3.4242	33	.66287	.11539
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	Q10POSTTEST	3.4848	33	.56575	.09848
Pair 11	Q11PRETEST	2.9091	33	.72300	.12586
	Q11POSTTEST	3.5758	33	.56071	.09761
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	Q12POSTTEST	3.5455	33	.61699	.10740
Pair 13	Q13PRETEST	2.7273	33	.76128	.13252
	Q13POSTTEST	3.5758	33	.50189	.08737
Pair 14	Q14PRETEST	2.6970	33	.72822	.12677
	Q14POSTTEST	3.6061	33	.49620	.08638
Pair 15	Q15PRETEST	2.9697	33	.58549	.10192
	Q15POSTTEST	3.6970	33	.46669	.08124
Pair 16	Q16PRETEST	1.5455	33	.75378	.13122
	Q16POSTTEST	3.3636	33	.65279	.11364
Pair 17	Q17PRETEST	1.5152	33	.61853	.10767
	Q17POSTTEST	3.4848	33	.50752	.08835

Pair 18	Q18PRETEST	1.7273	33	.76128	.13252
	Q18POSTTEST	3.3030	33	.63663	.11082
Pair 19	Q19PRETEST	1.5758	33	.70844	.12332
	Q19POSTTESTT	3.4242	33	.56071	.09761
Pair 20	Q20PRETEST	1.7879	33	.69631	.12121
	Q20POSTTEST	3.3939	33	.60927	.10606
Pair 21	Q21PRETEST	1.5758	33	.79177	.13783
	Q21POSTTEST	3.1818	33	.72692	.12654
Pair 22	Q22PRETEST	2.0606	33	.86384	.15037
	Q22POSTTEST	3.5455	33	.66572	.11589
Pair 23	Q23PRETEST	3.3636	33	.54876	.09553
	Q23POSTTEST	3.7576	33	.43519	.07576
Pair 24	Q24PRETEST	3.2424	33	.66287	.11539
	Q24POSTTEST	3.8485	33	.36411	.06338
Pair 25	Q25PRETEST	3.2121	33	.64988	.11313
	Q25POSTTEST	3.7879	33	.41515	.07227
Pair 26	Q26PRETEST	3.0000	33	.79057	.13762
	Q26POSTTEST	3.7273	33	.45227	.07873
Pair 27	Q27PRETEST	3.1212	33	.73983	.12879
	Q27POSTTEST	3.7576	33	.43519	.07576
Pair 28	Q28PRETEST	2.9394	33	.78817	.13720
	Q28POSTTEST	3.6364	33	.54876	.09553
Pair 29	Q29PRETEST	2.4848	33	.97215	.16923
	Q29POSTTEST	3.6364	33	.54876	.09553
Pair 30	Q30PRETEST	2.4848	33	.83371	.14513
	Q30POSTTEST	3.5152	33	.61853	.10767
Pair 31	Q31PRETEST	3.2121	33	.69631	.12121
	Q31POSTTEST	3.8182	33	.39167	.06818
Pair 32	Q32PRETEST	3.2727	33	.62614	.10900
	Q32POSTTEST	3.8182	33	.39167	.06818
Pair 33	Q33PRETEST	2.2424	33	.83030	.14454
	Q33POSTTEST	3.6667	33	.54006	.09401
Pair 34	Q34PRETEST	2.8788	33	.92728	.16142
	Q34POSTTEST	3.7273	33	.45227	.07873
Pair 35	Q35PRETEST	2.0000	33	.75000	.13056
	Q35POSTTEST	3.4545	33	.66572	.11589
Pair 36	Q36PRETEST	2.3939	33	.86384	.15037
	Q36POSTTEST	3.5758	33	.56071	.09761
Pair 37	Q37PRETEST	1.7879	33	1.08275	.18848
	Q37POSTTEST	2.8182	33	1.04447	.18182

Pair 38	Q38PRETEST	2.9394	33	.96629	.16821
	Q38POSTTEST	3.6061	33	.65857	.11464
Pair 39	Q39PRETEST	2.2121	33	1.08275	.18848
	Q39POSTTEST	3.0303	33	1.04537	.18198

Paired Samples Test

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	Q1PRETEST - Q1POSTTEST	-.96970	.98377	.17125	-1.31853	-.62087	-5.662	32	.000
Pair 2	Q2PRETEST - Q2POSTTEST	-.84848	.93946	.16354	-1.18160	-.51537	-5.188	32	.000
Pair 3	Q3PRETEST - Q3POSTTEST	-.75758	1.09059	.18985	-1.14428	-.37087	-3.990	32	.000
Pair 4	Q4PRETEST - Q4POSTTEST	-.63636	.89506	.15581	-.95374	-.31899	-4.084	32	.000
Pair 5	Q5PRETEST - Q5POSTTEST	-.51515	1.00378	.17474	-.87108	-.15923	-2.948	32	.006
Pair 6	Q6PRETEST - Q6POSTTEST	-.60606	.93339	.16248	-.93703	-.27510	-3.730	32	.001
Pair 7	Q7PRETEST - Q7POSTTEST	-.63636	.85944	.14961	-.94111	-.33162	-4.254	32	.000
Pair 8	Q8PRETEST - Q8POSTTEST	-1.03030	.88335	.15377	-1.34352	-.71708	-6.700	32	.000
Pair 9	Q9PRETEST - Q9POSTTEST	-.75758	.93643	.16301	-1.08962	-.42553	-4.647	32	.000
Pair 10	Q10PRETEST - Q10POSTTEST	-.93939	1.19738	.20844	-1.36397	-.51482	-4.507	32	.000
Pair 11	Q11PRETEST - Q11POSTTEST	-.66667	.85391	.14865	-.96945	-.36388	-4.485	32	.000
Pair 12	Q12PRETEST - Q12POSTTEST	-.81818	.95048	.16546	-1.15521	-.48116	-4.945	32	.000
Pair 13	Q13PRETEST - Q13POSTTEST	-.84848	1.03444	.18007	-1.21528	-.48169	-4.712	32	.000
Pair 14	Q14PRETEST - Q14POSTTEST	-.90909	.97991	.17058	-1.25655	-.56163	-5.329	32	.000

Pair 15	Q15PRETEST - Q15POSTTEST	-.72727	.71906	.12517	-.98224	-.47231	-5.810	32	.000
Pair 16	Q16PRETEST - Q16POSTTEST	-1.81818	1.04447	.18182	-2.18853	-1.44783	-10.000	32	.000
Pair 17	Q17PRETEST - Q17POSTTEST	-1.96970	.72822	.12677	-2.22791	-1.71148	-15.538	32	.000
Pair 18	Q18PRETEST - Q18POSTTEST	-1.57576	.90244	.15709	-1.89575	-1.25577	-10.031	32	.000
Pair 19	Q19PRETEST - Q19POSTTEST	-1.84848	.83371	.14513	-2.14411	-1.55286	-12.737	32	.000
Pair 20	Q20PRETEST - Q20POSTTEST	-1.60606	.82687	.14394	-1.89926	-1.31287	-11.158	32	.000
Pair 21	Q21PRETEST - Q21POSTTEST	-1.60606	1.08799	.18939	-1.99184	-1.22028	-8.480	32	.000
Pair 22	Q22PRETEST - Q22POSTTEST	-1.48485	1.06423	.18526	-1.86221	-1.10749	-8.015	32	.000
Pair 23	Q23PRETEST - Q23POSTTEST	-.39394	.74747	.13012	-.65898	-.12890	-3.028	32	.005
Pair 24	Q24PRETEST - Q24POSTTEST	-.60606	.82687	.14394	-.89926	-.31287	-4.211	32	.000
Pair 25	Q25PRETEST - Q25POSTTEST	-.57576	.83030	.14454	-.87017	-.28135	-3.983	32	.000
Pair 26	Q26PRETEST - Q26POSTTEST	-.72727	.97701	.17008	-1.07370	-.38084	-4.276	32	.000
Pair 27	Q27PRETEST - Q27POSTTEST	-.63636	.82228	.14314	-.92793	-.34480	-4.446	32	.000
Pair 28	Q28PRETEST - Q28POSTTEST	-.69697	.95147	.16563	-1.03435	-.35959	-4.208	32	.000
Pair 29	Q29PRETEST - Q29POSTTEST	-1.15152	1.03444	.18007	-1.51831	-.78472	-6.395	32	.000
Pair 30	Q30PRETEST - Q30POSTTEST	-1.03030	1.01504	.17670	-1.39022	-.67039	-5.831	32	.000
Pair 31	Q31PRETEST - Q31POSTTEST	-.60606	.78817	.13720	-.88553	-.32659	-4.417	32	.000
Pair 32	Q32PRETEST - Q32POSTTEST	-.54545	.71111	.12379	-.79760	-.29330	-4.406	32	.000
Pair 33	Q33PRETEST - Q33POSTTEST	-1.42424	1.09059	.18985	-1.81095	-1.03753	-7.502	32	.000
Pair 34	Q34PRETEST - Q34POSTTEST	-.84848	1.03444	.18007	-1.21528	-.48169	-4.712	32	.000
Pair 35	Q35PRETEST - Q35POSTTEST	-1.45455	1.17502	.20455	-1.87119	-1.03790	-7.111	32	.000

Pair 36	Q36PRETEST - Q36POSTTEST	-1.18182	.95048	.16546	-1.51884	-.84479	-7.143	32	.000
Pair 37	Q37PRETEST - Q37POSTTEST	-1.03030	1.55090	.26998	-1.58023	-.48038	-3.816	32	.001
Pair 38	Q38PRETEST - Q38POSTTEST	-.66667	1.16369	.20257	-1.07929	-.25404	-3.291	32	.002
Pair 39	Q39PRETEST - Q39POSTTEST	-.81818	1.42422	.24793	-1.32319	-.31317	-3.300	32	.002

Appendix 4: Participation Certificate

ISTANBUL UNIVERSITY

Certificate

of Participation

This is to certify that _____

_____ has successfully completed a 24-hour "21st Century Skills and Material Design Teachers' Professional Development Programme", held on February 10^m – March 31st, 2018 at Istanbul University Hasan Ali Yücel Faculty of Education.

Congratulations

Asst. Prof. Dr. Tuncer CAN
Istanbul University
Hasan Ali Yücel Faculty of Education
English Language Teaching Department

MA. St. Gökçen YENİ
Istanbul University
Hasan Ali Yücel Faculty of Education
English Language Teaching Department

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RESUME

The Author was born on April 19, 1992 in Amasya, Turkey. She studied in Amasya till university education. After her English love in middle school, she chose foreign language department in high school.

She placed in University Entrance Exam in 2010 and became one of the first thousand students in Turkey. After she studied on English Language Teaching in Konya, she worked as a lecturer at a private university in Istanbul. Therewithal, she attended a master's program at Istanbul University since she has a thirst for knowledge. She has been still teaching English in a language school and giving training and counseling to those who are curious to learn 21st Century Skills and create their own teaching materials.

The author has a strong desire to learn and aims to do doctorate in the same field. As she is inquisitive and has an inquiring mind, she wants to continue learning and teaching throughout her life.

Her hill quote is “Never stop learning, because life never stops teaching.”