

EXAMINEES' PERCEPTIONS ABOUT AN ONLINE ASSESSMENT
CENTER AND AN ONLINE ASSESSMENT TOOL: A CASE STUDY

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ALİ YILMAZ

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CENTER AND AN ONLINE ASSESSMENT TOOL: A CASE STUDY**

submitted by **ALİ YILMAZ** in partial fulfillment of the requirements for the
degree of **Master of Science in Computer Education and Instructional
Technologies Department, Middle East Technical University** by,

Prof. Dr. Canan ÖZGEN _____
Dean, Graduate School of **Natural and Applied Sciences**

Prof. Dr. M. Yaşar ÖZDEN _____
Head of Department, **Computer Education and Instructional Technologies
Dept., METU**

Prof. Dr. M. Yaşar ÖZDEN _____
Supervisor, **Computer Education and Instructional Technologies Dept.,
METU**

Examining Committee Members:

Prof. Dr. Ata TEZBAŞARAN _____
Educational Sciences Dept., Mersin University

Prof. Dr. M. Yaşar ÖZDEN _____
Computer Education and Instructional Technologies Dept., METU

Assoc. Prof. Dr. M. Settar KOÇAK _____
Physical Education and Sports Dept., METU

Dr. Hasan KARAASLAN _____
Computer Education and Instructional Technologies Dept., METU

Dr. Ömer DELİALİOĞLU _____
Computer Education and Instructional Technologies Dept., METU

Date: 03.09.2007

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last name : Ali YILMAZ

Signature :

ABSTRACT

EXAMINEES' PERCEPTIONS ABOUT AN ONLINE ASSESSMENT CENTER AND AN ONLINE ASSESSMENT TOOL: A CASE STUDY

Yılmaz, Ali

M.S., Department of Computer Education and Instructional Technology

Supervisor: Prof. Dr. M. Yaşar ÖZDEN

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This study investigated the examinees' perceptions about an online assessment tool and an online assessment center. In this study, a computer literacy exam (Bilişim Seviye Tespit Sınavı, BSTS) was delivered in purposively designed environment, an online assessment center, at CEC, METU (Continuing Education Center, Middle East Technical University).

The data were collected from 117 participants through the "User evaluation questionnaire", in depth interviews with 43 examinees and 7 experts. 7 participants and the experts were interviewed individually while the rest 36 participants were interviewed in 6 focus groups (composed of 6 examinees). Descriptive statistics, frequency distributions and comments of participants and experts were used to express the results of the study.

The results showed that the examinees perceived the online assessment tool and the online assessment center suitable for delivering online assessments. However, both participants and experts reported that a few changes could be done to the interface of online assessment tool. They also suggested that the computer literacy assessments be more authentic.

Keywords: Computer literacy assessment, online assessment, computer based assessment, online assessment center.

ÖZ

ÇEVİRİMİÇİ SINAV MERKEZİ VE ÇEVİRİMİÇİ DEĞERLENDİRME ARACI HAKKINDAKİ KULLANICI ALGILARI: DURUM ÇALIŞMASI

Yılmaz, Ali

Yüksek Lisans, Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü
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Bu çalışmada, sınava girenlerin çevrimiçi sınav merkezi ve bir çevrimiçi değerlendirme aracı hakkında algıları araştırılmıştır. Katılımcılar ODTÜ SEM (Orta Doğu Teknik Üniversitesi Sürekli Eğitim Merkezi)'de bir bilgisayar yetkinlik sertifika sınavına (Bilişim Seviye Tespit Sınavı, BSTS) bu amaca yönelik tasarlanmış bir çevrimiçi sınav merkezinde girmişlerdir.

Veriler 117 katılımcı ve 7 uzmandan toplanmıştır. 117 katılımcı "Kullanıcı Değerlendirme Anketi"ni doldurmuş, 117 katılımcının 43'ü ve 7 uzman ile görüşmeler yapılmıştır. Bu görüşmeler, 7 katılımcı ve 7 uzman ile yüz yüze, kalan 36 katılımcı ile odak grup görüşmesi (6 katılımcıdan oluşan) olarak gerçekleştirilmiştir. Araştırma sonuçları betimsel istatistik, frekans dağılımları ve katılımcı ve uzman görüşleri aracılığı ile sunulmuştur.

Araştırma sonuçları göstermiştir ki sınava girenler, çevrimiçi sınavı ve çevrimiçi sınav merkezini sınav vermek için uygun olarak algılamışlardır. Ancak, hem katılımcılar, hem de uzmanlar çevrimiçi sınav aracının kullanıcı arayüzünde değişiklikler yapılmasını önermişlerdir. Ayrıca, Bilişim Seviye Tespit Sınavı'nın da daha gerçekçi olmasını önermişlerdir.

Anahtar Kelimeler: Bilişim seviye tespit sınavı, çevrimiçi sınav, bilgisayar tabanlı sınav, çevrimiçi sınav merkezi.

To my dear wife...

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CHAPTER 1

INTRODUCTION

1.1. Background of the Study

With the decreasing costs and increasing capabilities, use of computers has grown rapidly. As computers become more widely used, the need for computer courses highly emerged. With those in mind, the term computer literacy arose (Neil, 1977). People's perception of computer literacy was different in those days. People, who could write computer programs, were called computer literate, however, with the advents of new technologies and programs, the definition has changed.

There are numerous computer courses around the world. However, the international standard was determined by CEPIS (Council of European Professional Informatics Societies) (Council of European Professional Informatics Societies, 2007). They called the standard as ECDL (European Computer Driving License) for European Countries, ICDL (International Computer Driving License) for others. ECDL Foundation has been continuously developing new standards according to needs.

Many companies are asking for accredited certifications while filling the vacancies. This is because certification is one of the easiest ways to determine one's skills. Certification has become an integral part of professional development. There are three important points making the certification valuable (Shore, 2007):

1. Validity
2. Consistency
3. Fairness

There are various computer certifications in different areas ranging from programming to networking. There are also various certifications for computer literacy. ECDL is one of the most popular and respected computer literacy certification at present. Nevertheless, there should be more alternatives.

With the advance developments in computer technology, computers deliver certification exams. Those assessments are called computer based assessments (Kushwaha and Whitescarver, 1994). There are some researches in literature which are conducted on the comparison of computer based assessments and paper and pencil assessments. Those researches (Russell and Haney, 1997) proved that computer based form is sometimes better than paper-and-pencil.

Fairness is one of the important criteria which make the certification valuable. Announcing the results of an exam fair, the assessment environment must be properly designed. The security precautions should be considered, but, this is not the only point to be considered. Comfort and the roominess must also be considered (Rogers, 2005).

1.2. Purpose of the Study

The computer literacy certification exams can be delivered via computers. When, delivered by the computers, the results would be objective and accurate. As mentioned above, to produce respected exam results, the assessment has to be delivered under a secure environment where examinees cannot cheat.

The purpose of this study is to investigate examinees' perceptions about online assessment tool and online assessment center. The aim is to see if any correction could be made to online assessment tool and online assessment center.

1.3. Research Questions

1. What are the participants' perceptions about an online assessment center?
 - a. What are the participants' perceptions about online assessment center's physical environment?
 - b. What are the participants' perceptions about taking an exam at online assessment center?
2. What are the participants' perceptions about an online assessment tool?
 - a. What are the participants' perceptions about online assessment tool's user interface?
 - b. What are the participants' perceptions about online computer literacy exam?

1.4. Significance of the Study

This research study examined the volunteer examinees' perceptions about an online assessment tool, online computer literacy exams, online assessment center and taking exam at online assessment center. The results of this study will shed the lights on designing an online assessment tool. Moreover, the results of this study will give information when preparing online computer literacy assessment. On the other hand, the results of the study will show alternative ways when building up an online assessment center. The study revealed that there are still many things to do's. The exams assessing computer literacy can be more authentic. The questions could address to a real world problem, and the volunteer examinees could solve the problems on their own ways in the simulation or directly on a computer.

1.5. Definition of Terms

Computer Literacy: In this study, computer literacy is considered as the basic knowledge and skills necessary for use of computers and common applications for accessing, organizing, and presenting data and communication.

Evaluation: Evaluation is the process of examining a subject and rating it based on its important features.

Assessment: Any variety of procedures used to obtain information about individual performance. It includes tests, assignments, observations, homework, portfolios, etc. Assessment answers the question "How well does the individual perform?" (Linn and Gronlund, 1995)

Computer Based Assessment: Any types of assessment delivered by computer.

Online Assessment: Online assessment is a method to assess student learning in an online environment.

Online Assessment Center: A place where computers are available to deliver computer based assessments.

Online Assessment Tool: The computer software prepared to deliver assessments online.

Internet: Network of networks. Internet is the global network that consists of a large collection of interconnected computers around the world.

Examinee: Someone who is tested.

Interface: A program that controls a display for the user (usually on a computer monitor), and allows the user to interact with the system.

Software: Written programs or procedures or rules, and associated documentation pertaining to the operation of a computer system.

Multiple-choice question: A type of question offering several alternative answers, from which the correct one is to be chosen.

Simulation: The technique of representing the real world by a computer program.

CHAPTER 2

LITERATURE REVIEW

In this chapter, review of the literature related to computer literacy, assessment, online assessment, assessment center and summary of the literature will be presented.

2.1. Computer Literacy

We are living in information age. Computers are the driving force of the information age. Today, computers are almost in every part of our life. Computers are so widely used since they make the things much easier and faster. Everybody has to know how to use computers to catch the time. Computers are in every piece of our life. Computers are used in business, education, factories, museums, banks, markets, automobiles, planes, ships, etc. 87.76% of the companies in Turkey use computers (Turkish Statistical Institute, 2005). As a result of this wide use of computers, each individual has to learn how to use computers. Otherwise, people who refuse to learn how to use computers are going to be the digital slaves.

As the computers got involved in our life, the need to learn basic computer skills became mandatory. Courses were developed to teach basic computer skills which are called computer literacy courses. When we search the history of computers, we see that the computer literacy courses show a great parallelism in the advance of computer technology (Hoffman and Blake, 2003).

The very first computer literacy course appeared in 1970s. In those days, computer literacy course topics were about the learning of hardware, software, applications, and implications for society and individuals (Neil, 1977). In 1980s, the PCs (personal computers) come to the stage. PCs made the computers more widely available to the public. In late 80s, word processing, spreadsheets, business and presentation graphics, and file management became the core computer literacy topics (Johnson, 1987). In 90s, the internet arose, and use of internet and ethical issues were discussed (Turk and Wiley, 1997). Since then, computers have been used more widely.

The computer literacy definition has changed with the improvements in computers. In 1976, Nevison said that a person who could write a computer program should be called a computer literate. As Mason and Morrow (2006) indicated, the term computer literacy covered two separate components: awareness and competence.

In 1974, Austing emphasized the awareness by saying “These are the people most often affected by the computers’ impact on society yet who do not have enough knowledge about the computer to understand what is happening to them.” (p. 15). In the 1980s, computer literacy definition shifted from awareness to competence with the occurrence of software packages (Mason and Morrow, 2006).

Mason and Morrow (2006) had been developing two computer literacy courses. One of them considered awareness, and the other one considered competence. The outlines are given below:

The authors are developing a course that will focus on important awareness topics. The course will attempt to cover past, current, and future issues associated with the use of a computer by persons at work and at play. The course topics include but are not limited to:

- *History of computer development*
- *Why/how things developed as they did*
- *Ethics*
- *Security (for government, work place, and personal)*
- *Economic issues (such as RFID tracking, E-commerce, Spam, Cookies)*
- *World Wide Web usage and electronic mail*
- *Legal and current issues*
- *Networks and communication issues*
- *The use of computers in many fields of study varying from medical to visual entertainment*

...

The competence course will focus on gaining and improving competence in the following areas:

- *Use of PC and server application software*
- *Basic knowledge of computer hardware*
- *Internet research tools*

- *Facilities and features associated with integrated software applications*
- *Facilities and features associated with integrated hardware and available tools*
- *Discussions on computer mobility and issues associated with wearable and wireless hardware and the software that drives this new freedom*

(p. 98)

However, today with the advancements, and according to people's needs, other literacy types are observed such as; cyber literacy, technology literacy, IT (Information Technology) literacy. This change is obviously seen in a study conducted in Quinnipiac University in the USA by Hoffman et al. (2005). The research indicated that students learn applications such as word processing, e-mail, etc with family support.

In Turkey, computer literacy training is delivered in two ways: public and private. There are private courses which give certificates after the completion of training. Those private courses are under the control of Turkish Ministry of Education. The public education is delivered through primary, elementary and higher education.

The first computer literacy course was given in Turkey in 1984 (Odabaşı, 1998). Then, the importance of the computers was understood, and investments were done by the Turkish Ministry of Education. Until the end of 1990, the total number of computers in schools reached 5000 all around Turkey (Odabaşı, 1998). Following that, a lot of investments were done on computers by the Turkish Ministry of Education. In 2003, Ministry of Education signed a protocol the Turk

Telecom Company to provide internet connection to all the schools in Turkey (MoE, 2007).

In 1998, Turkish government signed the “Basic Education Program Loan Agreement, First Phase” with the World Bank. This agreement declared that 2834 information technology classrooms would be established in the primary schools (MoE, 2002). That action accelerated the computer literacy education in Turkey. Completing the first phase of the agreement, up the second phase was signed in 2002. This second agreement supported the computer literacy education starting from the 4th grade in primary schools (Projects Coordination Unit, MoE, 2007).

Nowadays, in Turkey, computer literacy courses exists at all levels of education, primary education, elementary education and higher education. In primary education level, the first computer literacy course outline was released in 1998 by Board of Education. With the changing needs, it was revised in 2006. The primary education in Turkey lasts for 8 years. In 2006 primary education computer literacy curriculum, computer literacy course was divided into 8 steps (General Directory of Primary Education, MoE, 2006). The computer literacy topics covered in primary education is listed as a summary below:

- Basic Computer Terminology
- Word Processing
- Image Editing
- Presentation
- Spreadsheets
- Databases
- Creating Web Pages

- Programming
- Internet and Communication

In elementary education in Turkey, it is possible to find a similar outline in computer literacy course (Board of Education, MoE, 2005).

In higher education in Turkey, universities define their computer literacy courses' outline. To illustrate it with, an example, there is a must computer literacy course called IS100, Introduction to Information Technologies and Applications (Informatics Institute, 2007).

In the world, the most common accepted standard for computer literacy is International Computer Driving License (ICDL). In European countries, ICDL is known as ECDL (European Computer Driving License). ICDL is the most available computer literacy certification, available in 146 countries (ECDL Foundation, 2007b).

In 1995, CEPIS (Council of European Professional Informatics Societies) created a task force to examine how to raise the IT levels in industry throughout the Europe. The work of the CEPIS Task Force was supported by a funding from the European Commission through the ESPRIT research program. As a result, ECDL Foundation was founded in 1997. CEPIS is in charge of the ECDL (Council of European Professional Informatics Societies, 2007). ECDL offers a variety of computer certifications at different levels. The most common one is ECDL/ICDL. ECDL consists of seven major modules which are listed below (ECDL Foundation, 2006):

- Module 1 – Concepts of Information Technology (IT)

- Module 2 – Using the Computer and Managing Files
- Module 3 – Word Processing
- Module 4 – Spreadsheets
- Module 5 – Database
- Module 6 – Presentation
- Module 7 – Information and Communication

2.2. Assessment

Assessment is about making a judgment, identifying the strengths and weaknesses, the good and the bad, and the right and the wrong in some cases (Rust, 2002). It is generally used because people need a ranking when selecting one thing among many others. It can be said that it is a kind of classification.

2.2.1. Purpose of the Assessment

According to the aim, assessment can be grouped in two distinct areas (National Research Council, 2001):

- To assist learning (formative assessment)
- To observe the individual achievement (summative assessment)

The first type of assessment is used to decide on the instruction strategies of day-to-day, month-to-month steps in accordance with the students' progress.

Formative assessment gives a great deal of information about the progress of the

students. According to the progress, instructor can make decisions what to do next. One common way of formative assessment is to give a quiz but other methods can also be applied.

The second type of assessment, summative assessment, is used to determine if the students reached a certain level of competency. Summative assessment is usually conducted at the end of instruction. This assessment can also be carried out to find out the competency level of the students so that the decision about the instruction is given. These assessments are large scale assessments. At the end of each assessment, a letter grade is given.

However, Lambert and Lines (2001) added two more purposes to the list.

- To provide means for selecting by qualification (certification)
- To contribute to the information on which judgments are made concerning the effectiveness or quality of individuals and institutions in the system as a whole (evaluation)

The most important part might be the measuring. The assessment was judged using either of the following ways (Lambert and Lines, 2001):

- Norm referenced
- Criterion referenced

When evaluating an assessment according to norm reference model, the examiner sets the average based on the performance of the volunteer examinees. The grades are relative and directly related with the volunteer examinees. When criterion reference model is used, the evaluation criteria are predetermined.

2.2.2. Key Concepts in Assessment

The results of any assessments must be confident. As Black (1998) states, reliability and validity are the two key concepts in assessment. An assessment is said to be valid when the assessment assesses what it sets out to test. A valid assessment does not necessitate knowledge or skills that are unrelated to what is actually aimed to assess.

The second main concept in assessment is reliability. “*A test will be reliable if the result is exactly the same across all occasions, tasks, observations and settings*” Lambert and Lines (2001, p.11).

Validity and reliability are interconnected. When compared, validity wins in terms of importance. That is there is no point in doing a test that is not valid. Black (1998) explained the importance of interconnection between validity and reliability:

A test giving scores which are reproducible over a wide variety of conditions (i. e. a reliable test) would nevertheless be of no value if the attainment that it measures is irrelevant to (say) the learning being explored, or if that attainment is too narrow an aspect of the whole to be of any significance (i. e. an invalid test). A set of test items which clearly reflect the aims of a course and can be seen to evoke the type of performance that the course aims to promote (i. e. a valid test) is of little value if it turns out that examiners cannot agree on how to mark the outcome, or if a different set of apparently comparable items would produce very different scores with the same pupils on a different occasion (i.e. an unreliable

test). If it turned out that there was no correlation between a test score and the future attainment that it was designed to predict, then it could be that either or both of the reliability and the validity of the test were defective.

(pp. 48-49)

There are other key points in assessment. Those are (Lambert and Lines, 2001):

- Clarity of purpose
- Manageability
- Transparency

Clarity of purpose indicates that the reason why the assessment is being conducted should be clear at the beginning. The examiner should decide whether the assessment is formative or summative.

Manageability is another key point. The assessment should be manageable. It should not load too much administrative work to examiners.

Transparency is informing all the stakeholders (parents, examinees, governors, etc.) about the assessment content, the criteria, and the awards.

2.2.3. Types of Assessment

There are different methods to assess students. There is no correct way. Every other method can be an advantage for some volunteer examinees while it is a

disadvantage for some others. The aim here should be to assess volunteer examinees fairly and without biases. When deciding the assessment method, the aim of assessment should be clearly stated. On the other hand, the expected outcome of the training or education should be taken into consideration. The followings are some common methods for assessments.

2.2.3.1. Essay

Essays are the answers to a question in the form of a continuous prose. Essays give opportunity to the examinee to develop and extend the argument. The examinee has the chance of expressing himself in detail. Essay assessment also gives opportunity to develop capacity to interpret, translate, apply, criticize and evaluate.

In spite of the advantages mentioned above, there are also some limitations. One of them is, it consumes too much time both for the examinee and examiner. It is highly subjective. It is very suitable for plagiarism.

Essays could be very useful when there is enough time and consideration. Essay assessment need to be carefully read and provide feedback to the examinee. However, this is very time consuming.

2.2.3.2. Project

Project is an extended investigation on a topic. Projects can be prepared by individuals or groups. Projects are authentic. The practices are done on real world tasks. Another advantage of projects is that, they capture students' interest since the projects are generally decided both by the teacher and the student. Students feel the responsible for the results of the project. They investigate something and reach a result. Projects give students the feeling of achievement, doing something by themselves.

The main disadvantage of projects is their time consuming in preparation. Sometimes, projects might take too much time to evaluate the projects. They are also subjective. The evaluation process of projects can be problematic. The students sometimes cannot express themselves clearly in projects. And sometimes, the project can be too subjective. However, it is obvious that projects give more freedom to students. Projects let students show their creativity. The last part of the project assessment is presenting the project. It might be one of the most important parts of the project assessment. Everyone is wondering what is prepared. The presenter should explain the critical points of the project so clearly that all the audience can understand.

2.2.3.3. Types of Examination

Examination may take different forms. The most common factors are its being done under time limitation and its being performed in an observed area ensuring the work completed by the students. Although there are different forms of

assessment which is done under different conditions such as take home exams. Rust (2002) explained the different forms of examinations as follows:

- **Seen:** *Where the questions to be answered are given at a pre-specified date beforehand. The intention is to reduce the need for 'question-spotting', to reduce the anxiety, and to increase the emphasis on learning.*
- **Open-book:** *During the exam students have access to specified texts and/or their notes. The intention is to reduce the emphasis on memorizing facts, to reduce anxiety and allows more demanding questions to be set.*
- **Unseen:** *Arguably makes the student revise the whole syllabus because anything may appear on the paper (although in practice may do the opposite as the student may 'question-spot' and gamble on certain topics coming up).*
- **MCQ:** *Objective tests asking multiple-choice questions (MCQ) where the student simply selects from a bank of potential answers. Easy to mark (can be done by a machine or even administered on a computer) and can ensure students revise the complete syllabus. However, it is arguably difficult, if not impossible, to assess higher order skills, and writing good questions is very difficult. If you can find an appropriate US textbook there will probably be a bank of questions which come with it on disk.*
(p. 4)

Examination is done commonly to measure the recognition. But, it can also be useful when measuring analysis, and application skills (Counselling Services – University of Victoria, 2003).

2.2.3.4. Group Work

Bandura (1977) states that: "*Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling: from observing others one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action.*" (p. 22). Social learning theory explains human behavior in terms of continuous reciprocal interaction between cognitive, behavioral, an environmental influences.

Students learn better when they are a part of the action. Researchers indicate that, despite from the subject matter, students working in small groups tend to learn more of what is taught and retain it longer than when the same content is presented in other instructional systems. Students who work in collaborative groups also seem more satisfied with their classes (Chickering and Gamson, 1991).

Different names have been given to this kind of teaching, and there are some characteristics among these: cooperative learning, collaborative learning, collective learning, learning communities, peer teaching, peer learning, reciprocal learning, team learning, study circles, study groups, and work groups. However all

in all, there are three general types of group work: informal learning groups, formal learning groups, and study teams (Johnson, Johnson, and Smith, 1991).

Hackbert (2004) discriminated learning groups under three distinct categories given below:

- *Informal learning groups are ad hoc temporary clustering of students within a single class session. Informal learning groups can be initiated, for example, by asking students to turn to a neighbor and spend two minutes discussing a question you have posed. You can also form groups of three to five to solve a problem or pose a question. You can organize informal groups at any time in a class of any size to check on students' understanding of the material, to give students an opportunity to apply what they are learning, or to provide a change of pace.*
- *Formal learning groups are teams established to complete a specific task, such as perform a lab experiment, write a report, carry out a project, or prepare a position paper. These groups may complete their work in a single class session or over several weeks. Typically, students work together until the task is finished, and their project is graded.*
- *Study teams are long-term groups (usually existing over the course of a semester) with stable membership whose primary responsibility is to provide members with support, encouragement, and assistance in completing course requirements and assignments. Study teams also inform their members about lectures and assignments when someone has missed a session. The larger the class and the more complex the subject matter, the more valuable study teams can be.*

(pp. 39-40)

Group work is a beneficial type of assessment, but one point to consider is there might be parasites in the group. The examiner has to take action about this case. One way could be to make peer evaluation. Another could be asking detailed questions about the group work. The second way is more difficult because the examiner must be totally aware of the group work.

2.2.3.5. Portfolio

A portfolio is a collection of a student's work and related materials that show a student's activities, accomplishments, and achievements in one or more school subjects. The collection should include confirmation of student reflection and self-evaluation, guidelines for selecting the portfolio contents, and criteria for judging the quality of the work. The goal is to assist students to collect portfolios which illustrate their talents, represent their writing capabilities, and tell their stories of school achievement (Venn, 2000).

There are various advantages of portfolio assessment. Some of them are listed below (Venn, 2000):

- *Promoting student self-evaluation, reflection, and critical thinking.*
- *Measuring performance based on genuine samples of student work.*
- *Providing flexibility in measuring how students accomplish their learning goals.*
- *Enabling teachers and students to share the responsibility for setting learning goals and for evaluating progress toward meeting those goals.*

- *Giving students the opportunity to have extensive input into the learning process.*
- *Facilitating cooperative learning activities, including peer evaluation and tutoring, cooperative learning groups, and peer conferencing.*
- *Providing a process for structuring learning in stages.*
- *Providing opportunities for students and teachers to discuss learning goals and the progress toward those goals in structured and unstructured conferences.*
- *Enabling measurement of multiple dimensions of student progress by including different types of data and materials.*

There exist also some disadvantages:

- *Requiring extra time to plan an assessment system and conduct the assessment.*
 - *Gathering all of the necessary data and work samples can make portfolios bulky and difficult to manage.*
 - *Developing a systematic and deliberate management system is difficult, but this step is necessary in order to make portfolios more than a random collection of student work.*
 - *Scoring portfolios involves the extensive use of subjective evaluation procedures such as rating scales and professional judgment, and this limits reliability.*
 - *Scheduling individual portfolio conferences is difficult and the length of each conference may interfere with other instructional activities.*
- (p. 538)

2.2.3.6. Authentic (Performance) Assessment

“A form of assessment in which students are asked to perform real-world tasks that demonstrate meaningful application of essential knowledge and skills”

(Mueller, 2006)

An assessment is called authentic when the performance is assessed. Wiggins (1990) compared authentic assessment with traditional assessment to clearly explain what authenticity meant:

- Authentic assessments require students to be an active participant.
- Authentic assessments enable the students to use various strategies while conventional tests are usually limited to paper-and-pencil, one- answer questions.
- Authentic assessments attend to whether the student can craft polished, thorough and justifiable answers, performances or products. Conventional tests typically only ask the student to select or write correct responses-- irrespective of reasons.
- Authentic assessment achieves validity and reliability by emphasizing and standardizing the appropriate criteria for scoring such (varied) products while traditional testing standardizes objective "items" and, hence, the (one) right answer for each.
- Authentic tasks involve "ill-structured" problems and roles that help students rehearse for the complex ambiguities of the "game". Traditional tests are more like drills.

Authentic assessment might be good to assess students' performance but it is difficult to assess. To overcome this, rubrics are suggested to use. Rubrics are a tool designed to simulate real life activity. It is a formative type of assessment. Students are involved in the assessment process themselves, they also evaluate their peers. (Pickett and Dodge, 2007)

Pickett and Dodge (2007) listed the advantages of using rubrics:

Rubrics,

- *make assessment to be more objective and reliable*
- *focus the teacher to state his/her criteria in clearly*
- *clearly explain the examinees what is expected from them*
- *promote student awareness of about the criteria to use peer assessment*
- *provide functional comment regarding the effectiveness of the instruction*
- *provide standards against which to measure and document progress*

2.2.4. Technology and Assessment

As the computers are making our life easier, they could be used to ease the assessments. Assessing progress and performance are essentials of education and training. However, they are too much time consuming. There are two main tasks in assessment process, preparing the assessment and evaluating (grading) them. If computers could help, life would be easier for the teachers. There are various studies in the USA (United States of America). USA Board of Testing and Assessment conducted a workshop to determine how the technology could be integrated to the assessment.

Gitomer and Bennett (2002) say that enhanced score reporting, automatic item generation, and evidence-centered design applications could help integration technology with assessment and instruction. Clearly, these design, item creation, and reporting tools do not guarantee good assessment, but they can help to reduce the time consumption spent on the preparation of objective assessments.

The recent National Research Council publication ‘Knowing What Students Know’ (2001) asserts that “*Developers of educational curricula and classroom assessments should create tools that will enable teachers to implement high-quality instructional and assessment practices, consistent with modern understanding of how students learn and how such learning can be measured*” (p. 306).

Fletcher (2002) says that e-learning is increasing its emphasis on learner, as opposed to teacher, classroom, or school, productivity. Learners are expected to be self-motivated, self-guided, and self-regulating in the Webbed world of lifelong learning. Such activity benefits the individual seeking to achieve his or her potential, the organizations depending for their success on human competence, and the nations competing in the global marketplace. All these ends are likely to be well served by tools placed in learners’ hands to help them assess progress toward their goals. Technology seems to be the key in developing these assessment tools and making them available anytime and anywhere to those who need them.

Obviously, there is a tremendous amount of work that must be done before available learning systems can adequately meet assessment needs (Russell, 2002). On the other hand, it is clear that automated systems will make teachers’ life easier. Moreover, the assessments will be more valid and reliable with the less effort of examiners.

2.3. Computer Based Assessment

Computer based assessment covers any kind of computer use in the process of assessing knowledge, skills and abilities of individuals (Kushwaha and Whitescarver, 1994).

The origins of computer based testing goes back to the Alfred Binet (1905, cited in Linacre, 2000)'s studies about intelligence tests. Linacre (2000) stated that, Binet realized he could adapt the test to the individual by a trick - rank ordering the questions in terms of simplicity. If the candidate succeeded, Binet proceeded to give successively harder questions until the candidate failed repeatedly. If the candidate failed the initial questions, then Binet would give successively easier questions until the candidate succeeded repeatedly. From the results of these questions, Binet could estimate the examinee's ability level. Binet's method is easy to implement with a computer.

Vale (1977, cited in McBride, 1997) used computers in simulation studies to compare diverse adaptive testing policies. Lord's (1980, cited in Linacre, 2000) Flexilevel testing procedure and its variants, such as Henning's (1987, cited in Linacre, 2000) Step procedure and Lewis and Sheehan's (1990, cited in Linacre, 2000) Testlets, are a modification of Binet's method. These can be easily operated by a computer.

There are many different naming for computer based assessment. Few of them are: Computer aided assessment, computer assisted assessment, technology based/aided/assisted assessment, computer delivered assessment, online assessment. They have slight differences in definitions, but mostly used similarly.

In a broader sense, researchers in this field agree that the term computer aided assessment includes the use of computers to deliver, score and evaluate assignments or examinations, to keep a record of assessment and to provide feedback (Greenberg, 1998; Lingard, 2004; McKenna and Bull, 2000).

Individuals also prefer the use of computer based assessment. In research done by Landry and Hartman (2006), 73% of the participants preferred the use of computer based assessment. A five year study is conducted to compare students' performance when online assessment is used. Results showed that online testing of students' practical skills provides a more accurate measure of student efficacy. (Woit and Mason, 2003).

There are various advantages of using computer based assessment. One of them is the results are consistent and fair when grading hundreds of examinees unlike human (Prior, 2003). On the other hand, self-assessment tools confirmed to be effective ways to support independent learning and it ensured accountability (Williams, Bialac and Liu, 2006). Moreover, computer based assessment reduced the workload of teachers (Amelung, Piotrowski, Rösner, 2006).

Lawson (2002) lists some more benefits of computer based assessment:

- *Availability – examinee is free to take exam whenever he wants*
- *Immediate feedback – as the exam ends, students learn their grades and feedback is given when needed.*

- *Repeated practice – provided a question bank of similar questions has been authored, students can take tests on the same topic repeatedly to develop their skills; and*
- *Anonymity – some students feel more secure giving answers to an inanimate machine than to a human being - there is less embarrassment in giving a foolish answer when it is only the machine that 'knows'.*

2.4. Assessment Center

Students behave differently in diverse instructional environments - sound versus silence, bright versus soft lighting, warm versus cool temperatures, and formal versus informal seating (Dunn and Dunn, 1992). So, the instructional environment should be designed according to individual needs and preferences (Burke and Burke-Samide, 2004).

Key concepts in designing a learning environment are listed below (Rogers, 2005, Burke and Burke-Samide, 2004, Butin, 2000).

- Furniture
- Lighting
- Simplicity
- Sound
- Temperature

Each furniture should be selected considering ergonomics. The desks are the working area, so the height should be average since it is difficult to place

adjustable desks. Chairs should be adjustable so that different people with different heights can adjust the height (Butin, 2000). Research shows that individuals cannot sit still and concentrate for more than 50 minutes in noncushioned chairs (Bullock and Foster-Harrison, 1997).

Another concern should be about the lighting. The natural lighting is the best of all. Fluorescent lighting is recommended (North Carolina State Board of Education, 2003).

Simplicity is another key issue. When the environment is simple, the attention is given to what is being done. The environment should not be very colorful. Light colors show the environment wide. On the other hand, there should not be cables around or too many things to investigate in instructional environments (Rogers, 2005).

Sound plays a very important role in terms of distracters. The environmental sound should be minimized (Burke and Burke-Samide, 2004). If possible, the assessment center should be built where there is low traffic (NCS Pearson, 2007b).

Research on the environmental element of temperature reveals that most students prefer a warm yet comfortable instructional climate. Even a marginal preference for a particular climate had an effect on achievement (Murrain, 1983, cited at Burke and Burke-Samide, 2004).

If the aim of the instructional environment is to assess someone, then the designers have to think about cheating. There are various ways to audit cheating.

One of the most effective ways is to disable examinees see each other, but, when the technology is used in the assessment, alternative ways cheating appear. A research revealed that 79% (among 77 students) said that they observed another student cheating during the assessment (Woit and Mason, 2003). Another study (Schemo, 2001) of 791 undergraduates found that 90% of the students would not report cheating by others, but an observer walking around would distract the examinee. Then, the best solution may be placing cameras.

2.5. Summary of Literature Review

Computer literacy has been on the stage since 1970's around the world. Neil (1977) stated that those who could write a computer program were called as computer literate. With the technological advances, the definition has changed (Hoffman and Blake, 2003). Today, computer literacy is defined as the degree to which individuals are familiar with computer operating systems and applications (Information Technologies Group Center for International Development at Harvard University, 2007). The first computer literacy course was given in Turkey in 1984 (Odabaşı, 1998). In 1998, Turkish Ministry of Education signed an agreement (Basic Education Program Loan Agreement, First Phase) with The World Bank about innovating education in Turkey. With this agreement, 2834 information technology classrooms were established (Projects Coordination Unit, MoE, 2007).

All the training can be assessed to make judgment about the success of the treatment (Rust, 2002). There were various ways of assessments. However, validity and reliability of an assessment are the two main concepts to consider

(Black, 1998). On the other hand, it is clear that assessment has a load on the instructors. At this point, computers come to scene. As Russell (2002) stated, technology can make teachers' life easier. Computer or technology based assessment is the name given to the technology integration.

Computer based assessment can be observed in 1970s with adaptive testing (Vale, 1977, cited in McBride, 1997). Computer based assessment had many advantages with disadvantages (Lawson, 2002). One of the main disadvantages of computer based assessment is its being open to cheating. To prevent cheating, controlled environments, assessment centers, can be built, but while building such places, there are points to consider not only in educational wise but also in industrial wise (Burke and Burke-Semide, 2004, NCS Pearson, 2007b).

CHAPTER 3

METHODOLOGY

In this chapter, the research questions, the design of the study, the IS100MAN assessment tool, the exam questions preparation, the online assessment center, the participants, the instruments, the data collection, the data analysis, the assumptions and the limitations of the study will be presented.

3.1. Research Questions

The purpose of this study was to investigate the examinees' perceptions about online assessment center and an online assessment tool (IS100MAN online assessment tool).

This study tried to answer the following main and sub research questions:

- 1.** What are the examinees' perceptions about an online assessment center?
 - a.** What are the examinees' perceptions about online assessment center's physical environment?

3.3. BSTS

BSTS is an online assessment that is prepared to assess computer competency level. There is only one certification currently planned to be available at METU CEC, basic computer skills certification. BSTS used IS100MAN course tool to deliver exams. BSTS was developed as an alternative to existing computer literacy certifications in Turkey.

IS100MAN was software which was created to deliver courses in English. Yet, the computer competency certification assessment had to be in Turkish. So, the interface of IS100MAN was translated into Turkish. Also, there was need for new questions in Turkish. The new questions were prepared in Turkish by a group of experts for the basic level computer competency certification.

BSTS basic level certificate covered the ECDL/ICDL 4.0 syllabus (ECDL Foundation, 2007a). Topics covered by ECDL/ICDL 4.0 syllabus are given below:

- Concepts of Information Technology (IT)
- Using the Computer and Managing Files
- Word Processing
- Spreadsheets
- Database
- Presentation
- Information and Communication

3.4. IS100MAN

IS100MAN had been used to deliver an online computer literacy course, IS100 (Introduction to Information Technologies and Applications). IS100 was a computer literacy course aimed to make all students at METU gain basic computer skills. The course material was delivered online by the IS100MAN (Informatics Institute, 2007). IS100MAN was capable of both presenting the lecture notes and delivering the assessments. BSTS had used just the assessment capabilities of IS100MAN (Figure 3.1).

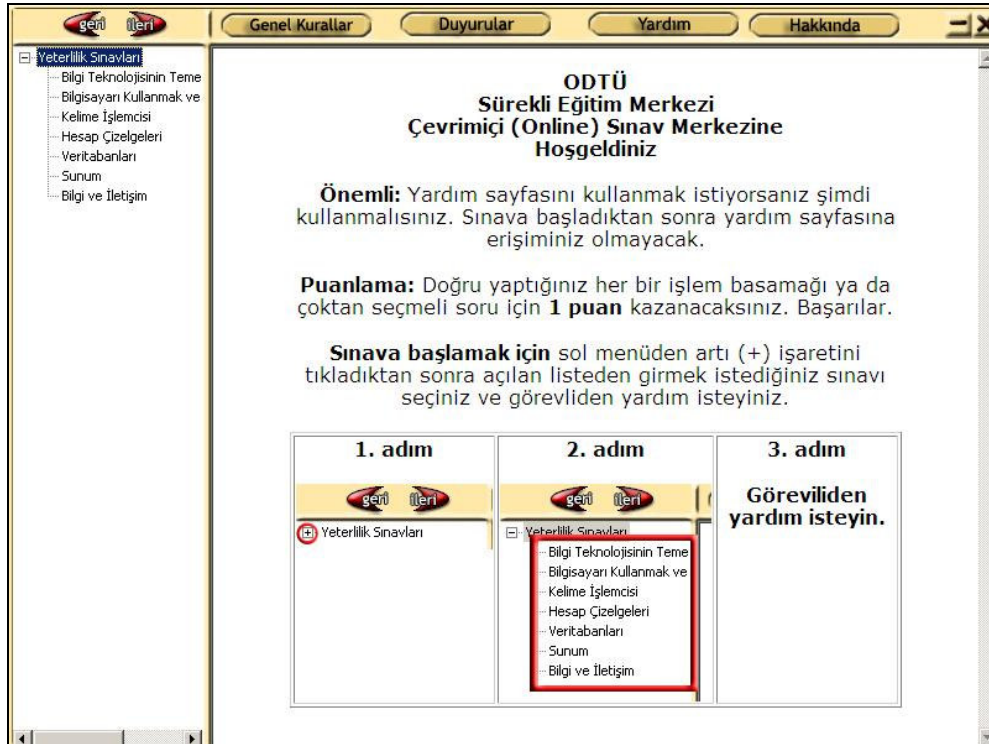


Figure 3.1: IS100MAN's Interface (In Turkish)

3.4.1. The General Appearance

When the IS100MAN was started, a username and a password were asked to authenticate. Authentication was required to keep track of the examinee. After entering the username and password, the examinee faced the screen shown on Figure 3.1. There was a toolbar on the top of the exam interface. This toolbar contained the navigation button, back and forward, and the buttons for the general rules, help, about and announcements.

A menu (Figure 3.2) was placed on the left side of the IS100MAN's interface. Menu had a tree structure and was used to represent the available exams or lecture notes.

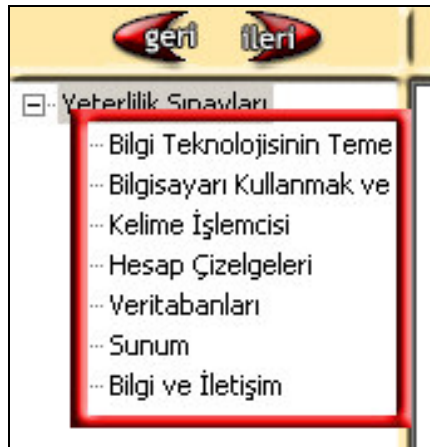


Figure 3.2: The Menu

3.4.1.1. The General Rules (Genel Kurallar) Page

General rules page was the first page displayed when logged on. This page included a notification about the buttons on the top, an informational explanation about the grading policy, and lastly, the procedure to start an exam.

3.4.1.2. The Announcements (Duyurular) Page

The announcements page was to announce everything about the BSTS. It might be an update or a new policy about the exam.

3.4.1.3. The Help (Yardım) Page

The help page was prepared to give information about the use assessment tool and the questions. This page consisted of six parts:

1. How to start an exam
2. Assessment tool interface
3. Multiple-choice questions
4. Simulation questions
5. The active buttons during the exam
6. The results page

The help page included valuable information about exams, tool's interface, and exam questions. This page should be read by the examinee before starting the exam.

3.4.1.4. The About (Hakkında) Page

The about page contained information about the owner of the assessment tool. The contact information could also be found here.

3.4.2. Starting the Exam

The examinee used the left menu (Figure 3.2) to navigate among the available exams. To start an exam, the examinee chose one of the available exams (i.e. Kelime İşlemciler). Then, a log on pop-up is displayed. This second authentication enabled the exam administrator control if the examinee was about to take the intended exam. After the exam administrator confirmed that the examinee was about to take the correct exam, the exam administrator entered the administrator's username and password. Right after entering the administrator's username and password, the exam information screen (Figure 3.3) was displayed.



Figure 3.3: Exam Information Screen

This screen gave very brief information about the exam that the examinee was about to take. When the examinee clicked the “ilerle (forward)” button at the bottom of the information lines, the exam started.

3.4.3. The Exam Page

The exam page was designed as simple as possible. The buttons on the top of the interface were disabled during the exam. Disabling those buttons had both an advantage and a disadvantage. The advantage was, seeing fewer available buttons prevented the examinee from being frustrated. The disadvantage was disabling the examinee to reach those functions (i.e. see help) when s/he wanted to view. As seen on Figure 3.4, the exam screen was very simple.



Figure 3.4: The Exam Screen

The simulation questions were demonstrated on the right side of the screen, under the top bar and next to the menu. Just below this area, simulation questions' directions were presented. This area was pretty much smaller than the area where simulation questions are displayed. In this area, the directions that the examinees were going to follow were presented. The top bar buttons, except next (ileri), minimize and close buttons, were disabled during the exam.

3.5. Exam Questions Preparation

The questions used in this study were prepared in accordance with the ICDL/ECDL 4.0 syllabus (ECDL Foundation, 2007a). The reason for using this syllabus was its being widely accepted basic computer certification. ICDL/ECDL had been accepted by 50 computer societies and 250,000 professionals around the globe as the computer literacy standard (ECDL Foundation, 2007b).

A group of experts prepared the questions. This group consisted of 9 people. 4 of them were master students (one of them is the researcher) at the department of Computer Education and Instructional Technology, 1 of them was a doctoral student at the same department, two of the group members were master students at the Informatics Institute and IS100 course assistants at the same time. And the last member had a degree in foreign language education and helped translation of the questions into Turkish.

Questions in the IS100 course question pool were examined by the expert group. The questions that matched the ICDL/ECDL syllabus's objectives were selected. A measurement and evaluation expert (Prof. Dr. Ata Tezbaşaran) did item

analysis on the selected existing questions to discriminate the nonworking questions. The question preparation group prepared several sample questions and they were examined by the measurement and evaluation expert. According to his suggestions, questions' directions were rewritten. The entire existing questions which had been selected for use in BSTS were renewed for MS Windows XP and MS Office 2003 since they had been prepared for the MS Windows 98 operating system and MS Office 2000.

The IS100MAN supported types of questions: Multiple-choice questions and simulation questions. At the end of question preparation phase, total number of questions reached 539 (Table 3.1). New questions were prepared because the selected existing question did not cover the whole ECDL/ICDL 4.0 syllabus.

Table 3.1: Total Number of the Questions

Questions	Simulation	Multiple-choice
Existing	207	125
New	169	31
Total	373	156
Grand Total		539

3.5.1. Multiple-Choice Questions

Multiple-choice questions were used to test knowledge (Woolard, 1999) in BSTS. There existed some terminology related to the computer literacy in ICDL/ECDL 4.0 syllabus and they were critical to test. Therefore, multiple-choice questions were used in BSTS. On the other hand, multiple-choice questions were also useful for measuring the exam objectives, which were difficult to measure using simulation questions.

Each multiple-choice question's grade was 1 point. This grading strategy was decided by the measurement and evaluation expert, to determine the questions' difficulty. According to the examinees' answers, the grades of the questions might be changed according to their difficulty level.

3.5.2. Simulation Questions

Simulation questions, as the name indicated, tried to simulate the real life cases. The appearance of the questions was just the same as in the real life. The examinee tried to fulfill the directions by using mouse and the keyboard. IS100MAN let the examinee fulfill the directions only in the given way in directions. This had both an advantage and a disadvantage in terms of examinees' success. The disadvantage was tool's letting just one correct way of completing a task. The advantage was questions' appearance. Due to seeing the real view, examinees could remember the places of the menu items.

Grading strategy of simulation questions had been similar to the multiple-choice questions. Each step was graded for 1 point. After collecting enough data to run statistics, the grading strategy might change.

3.6. Online Assessment Center

Online assessment center (Figure 3.5) was essential for making the BSTS results reliable and secure. 11 examinees could take an assessment simultaneously in the center. While designing the exam center, Pearson Vue (NCS Pearson, Inc.) and Thomson Prometric (Thomson Corporation) standards had been taken into consideration. Pearson Vue has been one of the respected worldwide electronic testing company which was founded to provide clients with an alternative test delivery solution that incorporated state of the art technology and unparalleled service (NCS Pearson, 2007a). Thomson Prometric has been another electronic testing company especially working with ETS (Educational Testing Services) to deliver online tests (Thomson Prometric, 2007a). The standards listed by Pearson Vue and Thomson Prometric are for the exam room listed below:

- Provide an enclosed, professional environment that is clean, comfortable, smoke-free and conducive for testing.
- Provide adequate lighting, ventilation and comfortable seating and work surfaces. Place testing workstations on a clean surface that is approximately four feet (1.2 meters) wide, with no obstructions overhead or underneath.

- Monitor positions should be adjustable in order to allow each candidate to establish a comfortable testing position.
- Room lighting should provide sufficient light for keyboard and erasable noteboard while avoiding screen glare.
- Separate candidates within the testing room. Separate testing stations using walls or privacy partitions, or at least four feet (1.2 meters) of empty space on all sides.
- Provide a clear glass viewing window or wall, video surveillance system or seating for a test administrator within the testing room. Whichever surveillance method is used, it must allow an *unobstructed* view of each candidate within the testing room.
- Provide a quiet testing environment.
- Location of testing area: Place the exam delivery workstations in a dedicated room that can be closed off from the rest of the office space. It should be in a low traffic area away from any training rooms in use, to avoid the sounds of students talking and moving to and from the classroom. Also avoid placing the testing room near an area where people gather, such as a student cafeteria or busy corridor.
- Insulation: Insulate the testing room to minimize noise. In addition to insulated walls, an insulated ceiling will help minimize noise. Using fabriccovered partitions between workstations will create privacy and will also absorb sound.

To meet the standards listed above, the METU CEC did the following:

- Lighting: fluorescent bulbs were used with the white lighting. The bulbs were placed behind the examinee so that the light comes from backwards.
- Ventilation: An air conditioner was mounted on the wall.
- Seating: Chairs were without wheels and nonadjustable.
- Work surfaces: Each work surface was at least 113 cm. The surface was smooth and the color was mat and light (maple was used for the furniture).
- Monitor: LCD monitors were selected so that the examinee can see the screen better and his/her eyes did not get tired. The monitor screen was also adjustable.
- Separating candidates: Wooden walls were placed between the work surfaces so that the examinees neither could see each other's monitor nor each other.
- Test administrator's place: Test administrator could see the examinees behind a window. At the same time, two ip cameras are mounted on the walls of the exam room so that the administrator can view the examinees from the ip cameras. The ip cameras also had the capability to bring the sound. And additionally, the cameras would be recording during the exams.
- Quiet testing environment: The testing center was located at Continuing Education Center at METU. It is located in a silent place away from the city center. Also, the testing room was placed away from the offices in the building.



Figure 3.5: The Online Assessment Center

3.7. Participants

The intended audience was all the adults who wanted to get a basic computer competency certificate (BSTS). The majority of the participants were from the university (mainly from METU) students (Table 3.2). The sampling method used in this study was convenient sampling. The reason for using convenient sampling was the difficulty of encouraging people to come to the online assessment center. One of the main limitations was finding volunteer examinees. As Yıldırım and Şimşek (2005) indicated, this sampling method had been used when the researcher

could not reach the rest of the sample. On the other hand, this method accelerated the research.

Table 3.2: Education Levels of the Participants

Degree	Number	Percentage
High School (Currently University Student except 2)	82	%70
Vocational School	4	%3
University	31	%27
Total	117	%100

The participants were aged between 17 and 47, but the majority was aged between 20 and 23. 57% of the participants were male and 43% of them were female.

3.8. Instruments

User evaluation questionnaire, in depth user interviews and expert interviews were used to investigate the volunteer examinees' perceptions towards online

exam and online assessment center. Each tool used in this study is described briefly as follows:

3.8.1. User evaluation questionnaire

A questionnaire was developed by the researcher for the study. While developing the questionnaire, first, the researcher examined the questionnaire, which was developed by Şanlı (2003) for his master's thesis. Şanlı's questionnaire did not meet the purpose of this study, nevertheless some items were useful. Useful items were selected into the item pool of the user evaluation questionnaire.

After the item pool was formed, peer evaluation was done by three doctoral students from the department of Computer Education and Instructional Technology of METU. According to their suggestions, the improvements and corrections were done. The raw user evaluation questionnaire was delivered to five volunteer examinees to see if there was any item, which was not clear or difficult to understand. Following that, the researcher realized that some of the items were not clear due to the use of some technical terms (i.e. interface, user interface). Those terms were placed with clearer ones.

Next, two test construction experts and six subject area experts examined the questionnaire to assure its accuracy, clarity and validity. According to the feedbacks, some questions were deleted and some positive items converted into negative while some remained.

The final user evaluation questionnaire consisted of two parts and five sub-scales (Appendix A):

- 1. Part 1:** Demographics, prior experiences and online assessment tool
 - a. Sub-scale A:** Previous experiences on online assessment and online courses. Contained 5 items. Type: Checklist
 - b. Sub-scale B:** Online assessment tool evaluation. 8 items. Type: Rating Scale
 - c. Sub-scale C:** Online assessment questions evaluation. Contained 9 items. Type: Rating Scale
- 2. Part 2:** Online assessment center evaluation
 - a. Sub-scale A:** Evaluation of physical placement of the online assessment center. Contained 12 items. Type: Rating Scale
 - b. Sub-scale B:** Perceptions about taking exam in a special environment, online assessment center. Contained 4 items. Type: Rating Scale

A free place was reserved for the volunteer examinees to express their additional ideas. Likert's type five-point scaling method – Strongly agree, Agree, Neutral, Disagree, Strongly disagree – was used in rating scales. The reliability coefficient (Cronbach's Alpha) for the part 1 sub-scales B and C, and part 2 sub-scales A and B were calculated (Table 3.3). As Garson (2007) indicates, an alpha value of 0.70 is widely accepted in social sciences.

Table 3.3: User Evaluation Questionnaire Reliability Statistics

N=117		
Sub-scales	Number of items	Alpha Coefficient
Part 1 Sub-scale B	8	0.72
Part 1 Sub-scale C	9	0.78
Part 2 Sub-scale A	12	0.79
Part 2 Sub-scale B	4	0.68

3.8.2. User interview questions

In depth examinee interviews were to discover the volunteer examinees' perception in more detail. The interview was a semi-structured interview. There were 8 main questions (Appendix B) with sub questions. The first two questions were about the previous computer use and online assessment experiences. The questions 3, 4, 5 and 6 were about the IS100MAN and the BSTS exam questions. And, last two were about the online assessment center.

3.8.3. Expert interview questions

Six questions (Appendix C) were asked in expert interviews to learn experts' opinion about BSTS and online assessment center. Before the questions were directed, the experts took two sample exams at the online assessment center. The first interview question was about the effect of previous experiences. Question 2,

3 and 4 were about the IS100MAN and the BSTS exam questions. The last two questions were about the online assessment center.

3.9. Data Collection

The volunteer examinees were invited to the online assessment center. The pilot exam took about 30-45 minutes. Before starting, the participants signed an agreement undertaking voluntarily participating in the study. Next, the researcher asked 5 questions which were in the part 1 sub-scale A of the user evaluation questionnaire. This checklist was filled by the researcher. Then, the researcher informed the volunteer examinee that the cameras would be recording during the exam. After completing the exam, the user evaluation questionnaire was delivered to the volunteer examinee to fill.

Volunteer examinees' ideas, which were not revealed in the user evaluation questionnaire, were investigated throughout in depth interviews. Interview questions are given in Appendix B. The interviews were conducted after completing the questionnaire with 43 volunteer examinees out of 117. 7 of volunteer examinees were interviewed individually while the others (36 volunteer examinees) were interviewed in 6 focus groups. Each focus group consisted of 6 members.

Lastly, the researcher interviewed with 7 experts to learn their perception of online assessment tool and online assessment center. Expert interview questions are given in Appendix C. Table 3.4 illustrates each research question and the corresponding methodology used to get the relevant response.

Table 3.4: Research Questions and Method of Data Collection

RESEARCH QUESTIONS	DATA COLLECTION
Q.1. What are the examinees' perceptions about an online assessment center?	User Evaluation Questionnaire
	In Depth Interviews with Participants
	Interviews with Experts
Q.2. What are the participants' perceptions about an online assessment tool?	User Evaluation Questionnaire
	In Depth Interviews with Participants
	Interviews with Experts

3.10. Data Analysis

The descriptive statistics of the data was used. For the questionnaire, the mean scores were calculated for overall and sub-scales.

The responds of the examinees were coded before entering into the SPSS. According to the coding, 5 is used for strongly agree, 4 stood for agree, 3 for neutral, 2 for disagree and 1 for strongly disagree. While coding the checklist, the answers of participants saying 'Yes' were represented with 1 and 'No's were represented with 0.

When interpreting the results, perception was stated as negative if the mean score of an item or a sub-scale was below 2.59, as neutral if between 2.60 and 3.39, and as positive if above 3.40 out of 5.

Miles and Huberman (1984, cited in Lancy, 1993) suggested that when a theme or pattern identified in a qualitative data, there was an important point to consider. Therefore, the individual and focus-group interviews were listened carefully and answers were grouped together. The classified data were presented. The following table gives a summary of data types and analysis methods used.

Table 3.5: Research Questions and Method of Data Collection

Method of Analysis	Stages	Description of the Process Used
Quantitative	Coding	Data were coded into SPSS.
	Descriptive Statistics	Descriptive analysis of mean, frequency, percentage, and standard deviation for each item were calculated using SPSS.
	Display	Charts and tables were created.
	Conclusion Drawing	Interpretations were made on the tables and charts developed and then conclusions were drawn.
Qualitative	Coding	Data from the interviews and questionnaires were coded into categories in terms of relevance to the research questions.

Table 3.4: (Cont'd) Research Questions and Method of Data Collection

Ordering and Displaying	Patterns and themes were determined, and data were organized into display.
Conclusion Drawing	Decisions about the meaning of the data were made.

3.11. Assumption

For this study, following assumption was made:

- The participants responded the questions honestly.
- The data were recorded and analyzed accurately.

3.12. Limitations

The following limitations resided in this study:

- The results and conclusions are limited to the case investigated.
- The study was conducted with volunteer participants.

- Majority of the participants were computer literate.
- Most of the participants had taken IS100 course before, so they were familiar with the tool interface.
- Validity is limited to the honesty of the subjects' responses to the instruments used in this study.

CHAPTER 4

RESULTS

In this chapter, detailed statistical results of the participant characteristics, the user evaluation questionnaire, the interviews with the participants and the experts will be presented. The frequency distributions and descriptive statistics were performed by using SPSS 13.

4.1. Characteristics of the Participants

In this part, detailed information about the participants (i.e. gender, age, education level and job) will be given. These demographics were collected through the user evaluation questionnaire. In Figure 4.1 the gender distribution of the participants is presented. Out of 117 participants, 43% were female and 57% were male.

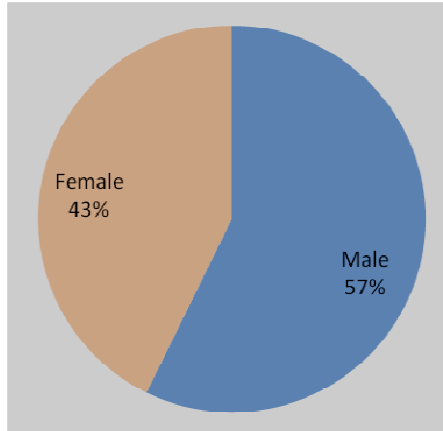


Figure 4.1: The Participants' Gender Distribution

Participants' ages ranged between 17 and 47. The researcher grouped the participants into three age categories, as follows, participants aged between 17 and 19, between 20 and 25, and 26 and older. In Figure 4.2, percentages of the age groups are given.

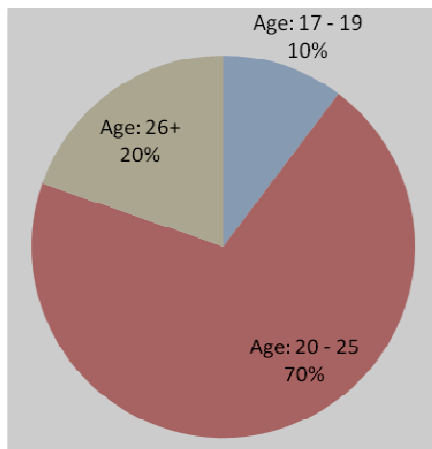


Figure 4.2: The Participants' Age Group Distribution

The next characteristic of the participants' is education level. Education levels of the participants were grouped into 3 categories. Those are:

1. High School Graduate
2. Vocational School Graduate
3. University Graduate

It was mentioned before that most of the participants were the university students (Table 4.1). Only 2 out of 82 high school graduates were not university students. There were no primary school or secondary school graduates among the participants.

Table 4.1: Distribution of the Participants Education Levels (In accordance with last graduated school)

Last Graduated School	Frequency	Percentage
High School Graduate	82	70.1
Vocational School Graduate	4	3.4
University Graduate	31	26.5
Total	117	100.0

And lastly, the jobs of the participants are given in Table 4.2. As mentioned above, most of the participants were undergraduate students.

Table 4.2: Job Distribution of the Participants

Jobs	Frequency	Percentage
Army Officer	8	6.84
Biologist	1	0.85
Businessman	2	1.71
Computer Technical Support Personnel	1	0.85
Engineer	7	5.98
Expert	1	0.85
Graduate Student	5	4.27
Retired	1	0.85
Sales Representative	2	1.71
Secretary	1	0.85
Tourism Related	1	0.85
Undergraduate Student	82	70.09
Unemployed	5	4.27
Total	117	100.00

4.2. User evaluation questionnaire

This questionnaire was the main data source to find out volunteer examinees perceptions about the online assessment center and taking exam in the online

assessment center. In the light of the results the research questions will be answered. The questionnaire consists of two main parts. First Part of the user evaluation questionnaire consisted of three sub-scales and the second part consisted of two sub-scales. The detailed statistical analysis of those four sub-scales is given below.

4.2.1. Examinees' Previous Computer and Online Assessment Experiences

This part of the questionnaire was filled by the researcher. 5 questions were asked to the participants about their previous online assessment and computer usage experiences (Table 4.3).

Table 4.3: Participants' Previous Computer and Online Assessment Experiences

Questions	Frequency		Percentage	
	Yes	No	Yes	No
Q.1 Have you ever taken any online course?	103	14	88.0	12.0
Q.2 Have you ever taken any online assessment (i.e. TOEFL, GRE, IS100, MCSA, CISCO etc.)?	109	8	93.2	6.8
Q.3 Have you ever taken any course related to computers or required to use computers?	111	6	94.9	5.1

Table 4.3: (Cont'd) Participants' Previous Computer and Online Assessment Experiences

Q.4	Have you ever taken any computer based assessment without connecting the internet?	39	78	33.3	66.7
Q.5	Do you have a personal computer?	102	15	87.2	12.8

The first question which was asked to the volunteer examinees was “whether they had ever taken any online courses before”. 88% of the volunteer examinees responded that they had an online course before while 14% of the participants did not have any online experience.

In the 2nd question, the volunteer examinees were asked whether they had ever taken any online assessment (i.e. TOEFL, GRE, IS100, MCSA, CISCO etc.) before. 93% of the participants had taken an online assessment before. Most of them attended to the IS100 course, while a few of them has taken TOEFL, GRE or others.

The 3rd question asked to the volunteer examinees was whether they had ever taken any course which is related to computer programming or a course which required using computers. 94% of the volunteer examinees responded that they had taken such a courses before.

The 4th question was asked to the volunteer examinees if they had ever taken any computer based assessment without connecting the internet. 33% of the participants stated that they had taken a computer based assessment without the internet connection while 66% of them had no such experience.

The last question was about the personal computer ownership. 87% of the participants said that they owned a personal computer.

4.2.2. Examinees' Perceptions about the Online Assessment Center

The second part of the user evaluation questionnaire was used to gather quantitative data about their perceptions of the online assessment center.

Main Research Question 1: What are examinees' perceptions about an online assessment center?

As can be seen from the Table 4.4, the examinees perceived the online assessment center's physical environment fine and suitable (Mean= 4.34). Examinees also perceived taking exam in online assessment center

Table 4.4: Descriptive Statistics of Examinees' Perceptions about Online Assessment Center

N = 117				
Sub-scales	Number of Items	Mean	St. Dev.	Reliability Coefficient
Perceptions About the Online Assessment Center's Physical Environment	12	4.34	0.91	0.79
Perceptions About Taking Exam in the Online Assessment Center	4	3.88	1.10	0.68

4.2.2.1. Examinees' Perceptions about the Online Assessment Center's Physical Environment

The questions in this sub-scale were aimed to investigate the participants' perceptions about the online assessment center's physical environment. 12 items existed in this sub-scale (Table 4.5). The mean score for this sub-scale was found as 4.34. It can be stated that the volunteer examinees have perceived online assessment center fine and appropriate.

Sub-Research Question 1.a: What are participants' perceptions about online assessment center's physical environment?

Table 4.5: Distribution of Responses about the Online Assessment Center's Physical Environment in Percentages

		SA	A	N	D	SD		
	Items	%	%	%	%	%	Mn.	St. Dev.
		(N)	(N)	(N)	(N)	(N)		
Q.1	The lighting was appropriate for taking exam.	65.0 (76)	33.3 (39)	1.7 (2)	0.0 (0)	0.0 (0)	4.63	0.52
Q.2	The work surface allocated for the exam (the desk's surface area between two walls) was appropriate.	65.8 (77)	33.3 (39)	0.0 (0)	0.0 (0)	0.9 (1)	4.63	0.58
Q.3	Air-conditioning was appropriate.	40.2 (47)	48.7 (57)	6.8 (8)	2.6 (3)	1.7 (2)	4.23	0.82
Q.4	The assessment center was silent.	55.6 (65)	37.6 (44)	3.4 (4)	3.4 (4)	0.0 (0)	4.45	0.73
Q.5	The wooden walls between the working surfaces were appropriate for preventing cheating.	43.6 (51)	28.2 (33)	0.9 (1)	12.8 (15)	12.8 (15)	3.71	1.52
Q.6	Settlement was appropriate.	44.4 (52)	46.2 (54)	4.3 (5)	2.6 (3)	2.6 (3)	4.27	0.87
Q.7	The height of the desk was appropriate.	47.9 (56)	48.7 (57)	1.7 (2)	0.9 (1)	0.0 (0)	4.41	0.71
Q.8	The screen of the monitor could be seen easily.	59.0 (69)	40.2 (47)	0.0 (0)	0.0 (0)	0.0 (0)	4.56	0.65
Q.9	The keyboard was appropriate.	48.7 (57)	40.2 (47)	5.1 (6)	3.4 (4)	2.6 (3)	4.29	0.91
Q.10	The mouse was appropriate.	49.6 (58)	42.7 (50)	2.6 (3)	2.6 (3)	2.6 (3)	4.34	0.86
Q.11	The colors used in the assessment center were appropriate.	44.4 (52)	44.4 (52)	7.7 (9)	1.7 (2)	0.9 (1)	4.27	0.86

Table 4.5: (Cont'd) Distribution of Responses about the Online Assessment Center's Physical Environment in Percentages

Q.12	The wooden walls between the work surfaces were appropriate to disable seeing the neighbors' screen.	51.3 (60)	38.5 (45)	0.9 (1)	4.3 (5)	4.3 (5)	4.26	1.08
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In the 1st item, the volunteer examinees were asked whether the lighting was appropriate. 98.3% of the volunteer examinees strongly agreed or agreed with the statement with a mean score of 4.63. It can be concluded that the lighting in the online assessment center was good enough and appropriate.

The 2nd item was about the work surface allocated for the participant for use during the exam. Almost all of the volunteer examinees were strongly agreed (65.8%) or agreed (33.3%) with the statement. The mean score was found to be 4.63. It can be stated that the area allocated for the examinee during the exam was appropriate.

3rd item asked whether the air conditioning was appropriate. 88.9% of the volunteer examinees strongly agreed or agreed with the statement. The mean score was 4.23. It can be said that the air conditioning was appropriate.

The 4th item asked the volunteer examinees whether the online assessment center was a silent place. 93.2% of the participants strongly agreed or agreed with this

item and the mean score was 4.45. So, it can be concluded that the volunteer examinees perceived the online assessment center as a silent place.

The 5th item asked the volunteer examinees whether the wooden walls between the desks were appropriate to prevent cheating. 71.8% of the volunteer examinees strongly agreed or agreed with this item. However 25.6% of the volunteer examinees disagreed or strongly disagreed with this item. The mean score was 3.71.

In the 6th item, the volunteer examinees were asked whether the settlement of the online assessment center was appropriate. 90.6% percent of the volunteer examinees strongly agreed or agreed with the item with a mean score of 4.27. It can be concluded that, the volunteer examinees perceived the settlement of the online assessment center appropriate.

The 7th item asked the volunteer examinees whether the height of the desks were appropriate. 96.6% of the volunteer examinees strongly agreed or agreed with the statement. The mean score was 4.41. It can be said that volunteer examinees perceived the height of the desk as suitable.

In the 8th item, the volunteer examinees were asked whether they could see the screen of the monitor easily. 99.2% of the participants strongly agreed or agreed with the statement. The mean score was 4.56. It can be concluded that the volunteer examinees perceived the monitors suitable to view easily.

The 9th item asked the volunteer examinees whether the keyboard was appropriate. 88.9% of the volunteer examinees strongly agreed or agreed with the

statement. Only 6% of the volunteer examinees found the keyboard unsuitable. The mean score was found to be 4.29.

In the 10th item, the volunteer examinees were asked whether the mouse was appropriate. 92.3% of the volunteer examinees strongly agreed or agreed with the statement. 2.6% of the volunteer examinees were neutral and 5.2% of the volunteer examinees disagreed or strongly disagreed with the item. The mean score was 4.34.

The 11th item asked whether the colors used in the online assessment center were appropriate. 88.8% of the volunteer examinees strongly agreed or agreed with the statement. 7.7% of the volunteer examinees were neutral and 2.6% of the volunteer examinees disagreed or strongly disagreed with the statement. The mean score was found to be 4.27.

The last item of this sub-scale of the use evaluation questionnaire asked whether the wooden walls between the work surfaces were appropriate to disable the examinees to see the neighbors' screen. 89.8% of the volunteer examinees strongly agreed or agreed with the item. The mean score for this item is 4.26. It can be said that the volunteer examinees found the wooden walls good enough to disable to see neighbors' screen.

4.2.2.2. Examinees’ Perceptions about Taking Exam in the Online Assessment Center

The questions in this sub-scale were about the perceptions of volunteer examinees about taking exam in the online assessment center. There existed 4 items (Table 4.6) and the mean score for this sub-scale was 3.88. It can be stated that the volunteer examinees have felt okay about taking exam in the online assessment center.

Sub-Research Question 1.b: What are participants’ perceptions about taking an exam in online assessment center?

Table 4.6: Distribution of Responses about Taking Exam in the Online Assessment Center in Percentages

Items	SA % (N)	A % (N)	N % (N)	D % (N)	SD % (N)	Mn.	St. Dev.
Q.1 I felt comfortable about taking exam in an environment which is separated with wooden walls.	32.5 (38)	45.3 (53)	11.1 (13)	6.0 (7)	5.1 (6)	3.94	1.07
Q.2 Taking exam in online assessment center was not more stressful than taking exam in any other place (i.e. regular classroom, computer lab)	31.6 (37)	47.0 (55)	8.5 (10)	9.4 (11)	3.4 (4)	3.94	1.04

Table 4.6: (Cont'd) Distribution of Responses about Taking Exam in the Online Assessment Center in Percentages

Q.3	Being recorded by the cameras did not make me anxious.	19.7 (23)	44.4 (52)	14.5 (17)	14.5 (17)	6.0 (7)	3.55	1.19
Q.4	I think that the exam results will be fair since the examinees were separated by the wooden walls.	38.5 (45)	48.7 (57)	3.4 (4)	4.3 (5)	5.1 (5)	4.11	1.02

The 1st item asked the volunteer examinees whether if they felt comfortable about taking exam in an environment which is separated with wooden walls. 77.8% of the volunteer examinees strongly agreed or agreed with the statement. 11% of the volunteer examinees were neutral and 11.1% of them disagreed or strongly disagreed with the statement. The mean score for this item was 3.94.

In the 2nd item, the volunteer examinees were asked whether taking exam in the online assessment center was more stressful than taking exam in any other place. 78.6% of the volunteer examinees agreed or strongly agreed with the statement. 8.5% of the volunteer examinees were neutral and 12.8% of them said that taking exam at online assessment center was more stressful taking exam in online assessment center than taking exam in any other place. The mean score was found to be 3.94.

The 3rd item asked the volunteer examinees whether being recorded by the cameras made them anxious. 64.1% of the volunteer examinees were not anxious about being recorded by the cameras during the exam. However, 20.5% of the

volunteer examinees were anxious about being recorded during the exam. The mean score of this item was 3.55.

The 4th items asked the volunteer examinees whether they thought that the exam results would be fair due to using wooden walls to separate the volunteer examinees. 87.2% of the volunteer examinees strongly agreed or agreed with the statement with a mean score of 4.11. It can be said that volunteer examinees perceived the exam results for which the exam is took place in the online assessment center as fair.

4.2.3. Examinees' Perceptions about Online Assessment Tool

This part of the user evaluation questionnaire was aimed to collect quantitative data about examinees perceptions of online assessment center.

Main Research Question 2: What are participants' perceptions about an online assessment tool?

As the quantitative data revealed (Table 4.7), examinees perceived the online assessment tool's user interface fine and suitable. They also perceived the online computer literacy exams suitable.

Table 4.7: Descriptive Statistics of Examinees' Perceptions about Online Assessment Tool

N = 117				
Sub-scales	Number of Items	Mean	St. Dev.	Reliability Coefficient
Perceptions About the Online Assessment Tool's User Interface	8	4.00	1.07	0.72
Perceptions About Online Computer Literacy Exams	9	4.34	0.91	0.78

4.2.3.1. Examinees' Perceptions about Online Assessment Tool's User Interface

There existed 8 items and the mean score for this sub-scale was found to be 4.00. Table 4.8 gives detailed statistical results of the sub-scale.

Sub-Research Question 2.a: What are participants' perceptions about IS100MAN online assessment tool?

Table 4.8: Distribution of Responses about Online Assessment Tool in Percentages

		SA	A	N	D	SD		
		%	%	%	%	%	Mn.	St. Dev.
	Items	(N)	(N)	(N)	(N)	(N)		
Q.1	The first login page, which is seen when the program is run, was clear and simple.	70.9 (83)	23.1 (27)	1.7 (2)	3.4 (4)	0.9 (1)	4.60	0.77
Q.2	The interface of the program was clear and simple.	40.2 (47)	45.3 (53)	6.8 (8)	6.0 (7)	1.7 (2)	4.16	0.92
Q.3	The results screen was clear and simple.	61.5 (72)	23.9 (28)	6.0 (7)	5.1 (6)	0.9 (1)	4.32	1.13
Q.4	The colors on the screen which are seen before starting the exam were harmonious.	16.2 (19)	48.7 (57)	25.6 (30)	5.1 (6)	2.6 (3)	3.66	1.01
Q.5	The colors on the multiple-choice question screens were appropriate to read the questions easily.	24.8 (29)	53.0 (62)	8.5 (10)	12.0 (14)	0.9 (1)	3.86	1.01
Q.6	The colors on the result screen were appropriate to read the displayed content easily.	29.9 (35)	49.6 (58)	6.8 (8)	10.3 (12)	0.9 (1)	3.90	1.12
Q.7	Navigation buttons could be found easily.	28.2 (33)	35.9 (42)	14.5 (17)	16.2 (19)	5.1 (6)	3.67	1.20

Table 4.8: (*Cont'd*) Distribution of Responses about Online Assessment Tool in Percentages

Q.8	I could follow the directions of the questions easily.	29.9 (35)	41.9 (49)	14.5 (17)	12.0 (14)	1.7 (2)	3.86	1.03
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The 1st item asked the volunteer examinees whether the first login page was clear and simple. 94.0% of the volunteer examinees strongly agreed or agreed with the statement. The mean score was 4.60. It can be said that the volunteer examinees perceived the first login page as clear and simple.

In the 2nd item, the volunteer examinees were asked whether the interface of the program was clear and simple. 85.5% of the volunteer examinees strongly agreed or agreed with the item with a mean score of 4.16. 7.7% of the volunteer examinees disagreed or strongly disagreed with the statement.

The 3rd item asked the volunteer examinees whether the results screen was clear and simple. 85.4% of the students strongly agreed or agreed with the statement. The mean score was found to be 4.32. It can be concluded that the volunteer examinees perceived the results screen simple and clear.

In the 4th item, volunteer examinees were asked whether the colors on screen which were seen before the starting the exam, were harmonious. Only 64.9% of the volunteer examinees strongly agreed or agreed with the statement. 25.6% of the volunteer examinees were neutral. 7.7% of the volunteer examinees strongly disagreed or disagreed with the item. The mean score of this item was 3.66.

The 5th item asked the volunteer examinees whether the colors on the multiple-choice question screens were appropriate to read the questions easily. 24.8% of the volunteer examinees strongly agreed and 53% agreed with the statement. 12.9% of the volunteer examinees strongly disagreed or disagreed with the item. The mean score for this item was 3.86.

In the 6th item, the volunteer examinees were asked whether the colors on the result screen were appropriate to read the displayed content easily. 29.9% of the volunteer examinees strongly agreed with the statement and 49.6% of them agreed with the item. 11.2% of the volunteer examinees strongly disagreed or disagreed with the item. The mean score for this item was 3.90. It can be said that the volunteer examinees thought that the colors on the results screen were alright.

The 7th item asked the volunteer examinees whether they could find the navigation buttons easily. 28.2% of the volunteer examinees strongly agreed with the statement while 35.9% of them agreed. 14.5% of the volunteer examinees were neutral. 21.3% of the volunteer examinees strongly disagreed or disagreed with this item. The mean score was 3.67.

The last item in this subscale asked the volunteer examinees whether s/he could follow the directions of the questions easily. 29.9% of the volunteer examinees strongly agreed with the item while 41.9% agreed. 13.7% of the volunteer examinees strongly disagreed or disagreed with the statement. The mean score was found to be 3.86 for this item.

4.2.3.2. Examinees' Perceptions about Online Computer Literacy Exams

In this sub-scale, questions were about the volunteer examinees' perceptions about online assessments. There existed 9 items and the overall mean score for this sub-scale was 4.34. Table 4.9 gives details about the volunteer examinees' responses.

Sub-Research Question 2.a: What are participants' perceptions about online computer literacy exam?

Table 4.9: Distribution of Responses about Online Computer Literacy Assessments in Percentages

		SA	A	N	D	SD		St.
	Items	%	%	%	%	%	Mn.	Dev.
		(N)	(N)	(N)	(N)	(N)		
Q.1	Multiple-choice questions were appropriate for assessing computer skills and knowledge.	17.9 (21)	61.5 (72)	15.4 (18)	2.6 (3)	2.6 (3)	3.90	0.81
Q.2	The directions of multiple-choice questions were clear to understand.	24.8 (29)	56.4 (66)	10.3 (12)	8.5 (10)	0.0 (0)	3.97	0.84
Q.3	Simulation questions were appropriate for assessing computer skills and knowledge.	19.7 (23)	53.8 (63)	13.7 (16)	12.0 (14)	0.9 (1)	3.79	0.92
Q.4	The directions of simulation questions were clear to understand.	22.2 (26)	57.3 (67)	13.7 (16)	5.1 (6)	1.7 (2)	3.93	0.85

Table 4.9: (*Cont'd*) Distribution of Responses about Online Computer Literacy Assessments in Percentages

Q.5	It was easy to follow the steps in simulation questions.	12.0 (14)	53.0 (62)	8.5 (10)	20.5 (24)	5.1 (6)	3.44	1.18
Q.6	It was good being immediately informed after a wrong step in simulation questions.	20.5 (24)	30.8 (36)	18.8 (22)	16.2 (19)	12.8 (15)	3.27	1.35
Q.7	It was good skipping to the next step automatically after a wrong action in simulation questions.	13.7 (16)	25.6 (30)	10.3 (12)	29.9 (35)	16.2 (19)	2.78	1.45
Q.8	It had a positive effect that the simulation questions looked like the real case.	29.9 (35)	53.8 (63)	11.1 (13)	3.4 (4)	0.9 (1)	4.06	0.87
Q.9	The operation of the assessment tool was smooth.	23.1 (27)	56.4 (66)	7.7 (9)	9.4 (11)	3.4 (4)	3.86	0.99

The first item in this sub-scale asked the volunteer examinees whether the multiple-choice questions were appropriate for assessing computer skills and knowledge. 79.4% of the volunteer examinees strongly agreed or agreed with this statement. 15.4% of the volunteer examinees were neutral and 5.2% of them strongly disagreed or disagreed with the item. The mean score for this item was 3.90. It can be said that the volunteer examinees perceived the multiple-choice questions as appropriate for assessing computer skills and knowledge.

In the 2nd item, the volunteer examinees were asked whether the directions of multiple-choice questions were clear to understand. 81.2% of the volunteer examinees strongly agreed or agreed with the statement. It can be stated that the volunteer examinees thought that the directions of multiple-choice questions were clear to understand. The mean score was found to be 3.97.

The 3rd item asked the volunteer examinees whether the simulation questions were appropriate for assessing computer skills and knowledge. 73.5% of the volunteer examinees strongly agreed or agreed with the statement. 13.7% of the volunteer examinees were neutral and 12.9% of the volunteer examinees strongly disagreed or disagreed with the statement. The mean score for this item was 3.79.

The 4th item asked the volunteer examinees whether the directions of simulation questions were clear to understand. 22.2% of the volunteer examinees strongly agreed while 53.8% agreed with the statement. 13.7% of the volunteer examinees were neutral and 6.8% of them strongly disagreed or disagreed with the item. The mean score for this item was found to be 3.93.

In the 5th item, the volunteer examinees were asked whether it was easy to follow the steps in simulation questions. 65% of the volunteer examinees found following steps in simulation question as easy while 29% of them found it difficult. The mean score was 3.44.

The 6th item asked whether the volunteer examinees found it good being immediately informed after a wrong step in simulation questions. 51.3% of the volunteer examinees strongly agreed or agreed with the statement while 29% of

them strongly disagreed or disagreed. 18% of the volunteer examinees were neutral about the statement. The mean score for this item was 3.27.

The 7th item asked the volunteer examinees whether it was good passing to the next step after a wrong action in simulation questions. 46.1% of the volunteer examinees found it not good passing to the next step automatically after a wrong action. 49.3% of the volunteer examinees found it good. The mean score was 2.78.

The 8th item asked the volunteer examinees whether it had a positive effect that the simulation questions looked like the real case. Most of the volunteer examinees strongly agreed or agreed (83.7%) with the statement with a mean score of 4.06. Table 4.8 gives detailed information about the responses.

In the 9th item, the volunteer examinees were asked whether the operation of the assessment tool was smooth. 79.5% of the volunteer examinees strongly agreed or agreed with the statement with a mean score of 3.86. It can be said that most of the volunteer examinees perceived the operation of the assessment tool as smooth.

4.3. In Depth Interviews with Participants

Interviews were conducted to investigate volunteer examinees' perceptions in depth. 7 volunteer examinees were interviewed individually and six focus groups (6 membered) were formed and interviewed.

8 questions (Appendix B) were asked in the interviews. The first two questions were about the prior experiences. The first question was asked to discover the volunteer examinees' years of computer use and their computer competency levels. The first question was: "How long have you been using computers? And if you are to grade your computer skills, which level would you choose: High Level, Good, Introduction, Insufficient, None." The mean score for the interviewees' years of computer use was found to be 7.18. The frequency distribution of the interviewees' answers is given in the Table 4.10 below:

Table 4.10: Frequency Distribution of the Interviewees' Years of Computer Use

Years of Computer Use	Frequency	Percentage
2	3	6,98
3	2	4,65
4	4	9,30
5	6	13,95
6	7	16,28
7	1	2,33
8	4	9,30
9	7	16,28
10	5	11,63
11	1	2,33
13	1	2,33
15	1	2,33
18	1	2,33

The reported computer competency levels of the interviewees are given in the Table 4.11 below:

Table 4.11: Reported Computer Competency Levels of the Interviewees

Levels	Frequency	Percentage
High Level	4	9,30
Good	27	62,79
Introduction	11	25,58
Insufficient	1	2,33
None	0	0,00
Total	43	100

As can be seen from the Figure 4.4 below, the majority of the interviewees (89%) reported their computer skills as “Good” and “Introduction”.

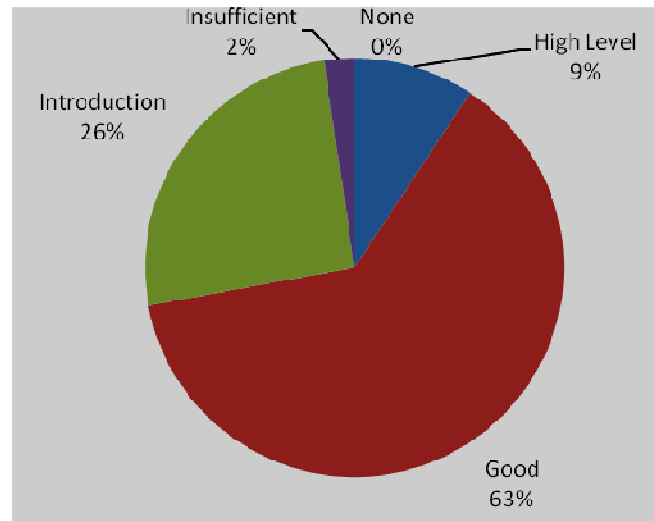


Figure 4.4: Reported Computer Competency Levels

And the last part of the first question was whether the interviewees thought that their prior experiences had any effect to adapt to the online assessment tool. All of the interviewees (100%) thought that their prior experiences helped them to adapt to the assessment tool. When asked to explain how the prior experiences effected, the ones who said yes stated the followings:

- “I did not lose time searching for the keys on the keyboard since I had known the places of the keys.”
- “I comprehended the questions easily.”
- “I am accustomed to using different software. So, it did not take me long to get accustomed.”

- “I took IS100 course before, so I was familiar with the interface of the tool.”
- “Since I had known different ways of the solution, I answered the questions easily.”

The 2nd interview question was “Have you ever taken an online assessment before? If, yes which ones did you take? And if you have taken any online assessment, did it have any effect in this online assessment?”

All 43 of the participants had taken online exam before. The following list gives the online assessments they had taken before:

- IS100
- TOEFL
- GRE
- Various online quizzes and assessment (including only multiple-choice questions)

When the effect of previous online assessment experiences was asked, various answers were reported. They are given in the below list:

- “Since I had taken IS100, I remembered the interface immediately.”
- “The interface is very similar to GRE assessment tool’s interface.”

- “Since I had known the online assessment procedures, I got accustomed easily. For example, I had known to click something to pass to the next question.”
- “Yes, it helped me because I had known where to pay attention when answering the questions.”

The 3rd question asked the interviewees how they found the online assessment tool and whether they had any recommendations to make the online assessment tool better. The volunteer examinees found the operation of the online assessment tool fine but they thought that the design of the interface was not good. One of the participants said that better colors could have been better. Most of the interviewees (70%) complained about the navigation buttons. 30 of 43 participants said that they could not find the “Next (İleri)” button which was required to pass to the next question.

Some more suggestions were made. They are mentioned in the following list:

- “Next button could be bigger or the position of the button could change.”
- “The tool should show the progress; which of the assessments was completed and on which assessment the examinee was at that moment.”
- “I wish I could navigate between the questions. I wish there was a submit button to finalize the question. So that I could recheck the questions.”
- “The interface could be more user-friendly.”
- “I wished to see my mistakes and the correct way to do the questions at the end of the exam.”

- “I have looked for the ‘Next’ button on the right corner of the screen as I got accustomed. It should be placed there.”
- “The directions could be highlighted. I had difficulty following the directions.”

The 4th question was “Did you encounter any problems while answering the multiple-choice questions? Are there any unclear points?” 41 out of 43 participants reported that they did not face any problems. Two of them said that the colors made their eyes tired. They also stated that the colors on the question area could be more contrasted and lighter and a nicer page could be designed. Secondly, all of the participants reported that there were no unclear points.

In the 5th question, the interviewees were asked whether they encountered any problems while answering the simulation questions and whether they had encountered any difficulty following the steps. 16% of the interviewees said that they did not face any problems. However the rest of the interviewees reported that they faced problems in following the steps of simulation questions. Other problems the interviewees encountered were also reported:

- “The main problem is that there is only one true solution of the question in the simulation. There should be alternatives.”
- “I could not know what to do when the warning message saying that ‘wrong answer, passing to the next step’ was on the screen.”
- “I could not do the questions that were done by using the keyboard.”
- “I wished there were one or two more chances to do the questions before passing to the next step.”

- “The simulations were not realistic.”
- “I lost time when entering the text. I could not complete entering the text.”
- “I had problem with the language. I am accustomed to English interface and terminology, so I had difficulty.”

The 6th question was “Do you have any suggestions to make the questions any better? If yes, what can be done?” The suggestions given by the interviewees are listed below:

- “There should be alternative way to solve the problem.”
- “Directions could be clearer.”
- “I wished to go back to revise the questions. There could be a finalize button to submit the question.”
- “A better simulation of the questions could be performed.”
- “There could be 2 or 3 chances to complete the task given in the direction.”
- “I could not learn my mistakes in multiple-choice questions.”

The 7th and 8th questions were about the online assessment center. The 7th question was “What do you think about the settlement of the online assessment center? Is there anything that disturbed you? Do you have any suggestions to make the online assessment center any better?”

All of the 43 interviewees (100%) found the online assessment center’s settlement very well. Some of them even made comments about it which are given below:

- “I liked the wooden walls that separated the examinees.”
- “I think the wooden walls make the results fairer since they prevented cheating.”
- “It is impossible to cheat.”
- “The widest of all the assessment centers I have ever experienced.”
- “Very well and roomy.”
- “Airy.”
- “Ideal.”

Some recommendations were also made for the online assessment center to make it better. One said that the air conditioning could be better. Another interviewee complained about the chairs. He wished to sit on an adjustable chair. Keyboard and the mouse should not be cordless said five of the interviewees. One said the ceiling could be higher. And one said I wished there were a mouse pad.

The last question asked to the interviewees was whether they got anxious because of taking exam in an online assessment center and how they felt during the exam. All of the 43 interviewees said that they did not become anxious due to taking exam in the online assessment center. On the contrary, they reported that the wooden walls enabled them to concentrate on the exam questions better. They also said that they did not feel anything negative about taking exam in the online assessment center.

4.4. Interviews with Experts

7 experts were interviewed one by one to discover their ideas about online assessment tool and online assessment center. 6 questions (Appendix C) were directed to the experts. The answers are explained below.

The first question asked to the experts was whether the examinees' previous computer use and online assessment experiences would have any effect on examinees' taking online assessment and using online assessment tool. All of the seven experts said that prior experiences would have positive and negative effects both on the taking online assessment and using the online assessment tool. Their comments are grouped below in terms of positive effects and negative effects:

Positive effects:

- Knowing the logic and the procedures of online assessment results in faster adaption
- Comprehending what is meant in the directions
- Previous computer use experiences on the assessed programs (i.e. MS Word) makes the examinee answer the questions easily
- With the help of computer usage habits, the examinee can find the places of the buttons and functions easily
- Previous online assessment experiences would result in faster adaption to the online assessment tool
- Even the interface did not look similar, knowing the structure of the online assessment tool will help to use the online assessment tool easily

Negative effects:

- Habits might direct the examinee into the undesired solutions

- Reading the directions carelessly might result in lost points

The second interview question asked the experts if they thought that there were any defects about the online assessment tool. The experts stated that the interface of the tool was simple but contained design problems. 6 out of 7 experts complained about the place of the “Next” button. They stated that, they had difficulty in finding the “Next” button. Their suggestion was to place the “Next” button adjacent to the question directions. Another suggestion was about the place of the directions window. They said that directions window should be placed on top of the screen. Another point that experts agreed on was that they wished to be able to recheck the questions before finalizing the exam. One of the experts suggested not using red color on the screen since the red indicated warning.

The 3rd and 4th questions were about the BSTS questions. The 3rd question was what they thought about the multiple-choice questions. All of the experts found the multiple-choice questions okay except the colors. Two of the experts suggested using light colors on background and a contrasting color in the question direction and choices. One of the experts suggested using radio buttons instead of check buttons in multiple-choice questions.

The 4th question asked the expert what they thought about the simulation questions. And all the 7 experts said that simulation questions restricted the examinee by just allowing solving the question in accordance with the directions (i.e. using the menu bar). However, in real life, there were alternative ways of doing the same task. So, they wished the simulations were more realistic. Three of the experts stated that the help should be available during the exam. And two of the experts said that the directions of the questions must be highlighted since the question direction area was on bottom right corner of the interface. And one more

thing was the language. They reported that they had difficulty in understanding the directions due to Turkish language. They were accustomed to English terminology and interfaces.

The 5th and 6th questions were about the online assessment center. In the 5th question, the experts were asked whether there were anything, which made them uncomfortable. All of the 7 experts found the online assessment center wide and fine. However, they made some suggestions which are given in the below list:

- “The walls of the building should have a sound isolation.”
- “The chairs’ height should be adjustable.”
- “There should be earphones to isolate the noises which will come from inside of the online assessment center. The other examinees could make noises.”
- “The chairs should have wheels so that the examinee could move the chair easily.”
- “There could be a webcam in each cabinet to track the examinee.”

The 6th question asked the experts whether it would make the volunteer examinees more stressful taking exam in that online assessment center. All of the experts stated that it would not. Furthermore, they said that they would prefer to take exam in such an environment.

At the end of the interview, the researcher asked each expert whether s/he had anything to add. One of the experts said that there should be no login screens. He

wished to directly start the exam when he sat down in front of the computer. He added that the exam administrator should choose which exam the examinee was going to take.

CHAPTER 5

DISCUSSIONS, CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

In this chapter, the discussions on findings, conclusions, implications and recommendations are presented.

5.1. Discussion

The purpose of the study was to investigate the examinees' perceptions about online assessment center and an online assessment tool. The case study was conducted with 117 volunteer examinees and 7 experts. The data was collected through user evaluation questionnaire and interviews with 43 of the participants and 7 experts.

5.1.1. Perceptions about Online Assessment Center

5.1.1.1. Perceptions about online assessment center's physical environment

After taking the exam in the online assessment center, the user evaluation questionnaire was administered to the volunteer examinees to obtain information about their perceptions about the physical environment of the online assessment center. The overall mean score calculated was 4.34 for this sub-scale. It is clearly seen that most of the volunteer examinees have positive perceptions about the physical environment of the online assessment center. In order to understand volunteer examinees' perceptions clearly the interviews were carried out with the participants. The results obtained also showed that they liked to take assessment in such an environment. Both the volunteer examinees and the experts found the online assessment center airy and roomy. In fact, the online assessment center is not so large, it was about 28m² for 11 examinees. The walls were very light yellow, the furniture was maple, the lighting was just as needed and the wooden walls did not reach the ceiling.

Volunteer examinees did not complain anything about the online assessment center but they made some suggestions. As Bullock and Foster-Harrison (1997) stated, three of the volunteer examinees suggested:

- To place sound isolation material on the walls so that the outside sourced noise would not disturb the examinees.
- To change the chairs with the wheeled ones so that volunteer examinees could move freely without making any noise.

- To change the chairs with adjustable ones so that examinees could adjust the height

Moreover, experts found the online assessment center suitable for delivering online assessments. All 7 of them stated that there was nothing uncomfortable. But, they also made some suggestions similar to the volunteer examinees. Two of the experts suggested that the chairs should be wheeled and adjustable. A study conducted by Veltri, Banning and Davies (2006) revealed that students cannot concentrate in inappropriately and uncomfortable environments. In addition, one expert said there should be sound isolation on the walls. Wall sound isolation is required to block the noise that might come from the outside (NCS Pearson, 2007b).

In the questionnaire, 9th and 10th questions were about the mouse and keyboard. 88.9% of the participants perceived the keyboard as suitable and 92.3% perceived the mouse as suitable. On the contrary, 6% of the participants did not find the keyboard suitable, and 5.2% did not find the mouse. In depth interviews revealed that the examinees did not trust the wireless mouse and keyboard would operate without problems. They added, if it was a real case, they would not prefer using wireless mouse and keyboard during the exam. Also, one of the experts said that he did not trust the wireless mouse and keyboard since they did not operate well normally. He added that, during the exam in online assessment center, he did not encounter any problems with the operation of mouse or keyboard.

Items 5 and 12 were about the function of wooden walls. Most of the examinees (71.8%) agreed that the walls would prevent cheating. In the same way, 89.8% of the participants reported the wooden walls blocked the neighbors screen. In depth interviews showed that volunteer examinees liked the wooden walls and they

thought that they were good for fairness. Also the experts stated similar arguments about the wooden walls.

5.1.1.2. Perceptions about taking exam in online assessment center

In the user evaluation questionnaire, the volunteer examinees also depicted their perception about taking exam in online assessment center. The mean score for taking exam in online assessment center was 3.88 and this score showed that taking exam in online assessment center was perceived as comfortable and fair. The reason for not being anxious might be that the exam was just a pilot exam. There were no carrot or stick. This was expressed by most of the volunteer examinees at the end of the exam to the researcher.

Most of the students (77.8%) stated that wooden walls were not disturbing. Only 22.2% were indecisive about that. The mean score was 3.94. Moreover, according to the interview results and comments on the questionnaires showed that the volunteer examinees found the wooden walls useful for ensuring security. In addition to that, they reported that those wooden walls increased their concentration during the exam. Most of the participants said that they would like to take all of their exams in environments similar to online assessment center. All of the experts said that they did not think that the online assessment center would make the volunteer examinees anxious. They said that volunteer examinees could be anxious for taking an online exam but the online assessment center itself has no effect. Also experts stated that the wooden blocks created a special working place for the examinee. Since there were no distracters, concentrating on the exam was easier.

More than half of the volunteer examinees (64.1%) perceived the cameras were essential for security and they did not feel anxious due to recording cameras (M=3.55). Moreover, they perceived the online assessment center served more fair results due to wooden walls (M=4.11). The interviews confirmed that the participants were not distracted by the cameras. Even some of the interviewees stated that they had forgotten about the cameras. In addition to that, experts agreed that the cameras were essential to provide security. Moreover, being recorded by cameras was better than being observed by an observer walking around.

5.1.2. Perceptions about online assessment tool

5.1.2.1. Perceptions about online assessment tool's user interface

More than half of the volunteer examinees (M=4.00) perceived that the online assessment tool was good and suitable for the assessment. In general; the interface of an assessment tool should be as simple as possible (Dantin, 2005) to make the examinee concentrate on the exam. However, some problems were reported about the interface design of the online assessment tool during the interview and in the comments part of the user evaluation questionnaire. A considerable number of the participants (35.9%) could not find the navigation buttons (M=3.67). The remaining (64.1%) could find. The high percentage of ease of finding the navigation button could be due to taking the IS100 course before. 65.8% had taken IS100 course. The navigation buttons were placed on the upper left corner. The interviewees reported that they had serious difficulties in finding the "Next" button to pass to the next question. During the exam, most of the volunteer examinees asked the researcher the place of the "Next" button. In addition to that,

5 out of the 7 experts reported negative comments about the place of “Next” button. They said that it should be placed next to the question or on the bottom right corner. The place of the navigation buttons might be changed so that the users can easily find them (Jones, 1989).

The second critique was about the colors used on the interface and multiple-choice questions. In the interviews, the volunteer examinees suggested to change the colors used on the interface. They said that more appealing colors could be used on the interface. The interviewees also complained about the colors of the multiple-choice questions. They said that more contrasting but light colors should be used for the multiple-choice questions. Similar findings were also reported in the literature (Ambler, 2004; Cooper and Reimann, 2003). The experts also agreed with those comments. They said that the interface of the online assessment tool should be redesigned. While redesigning, the placement of the navigation buttons and colors used had to be judged. But they all agreed with the simplicity of the interface. The simplicity provided aesthetic and functional benefits (Mullet and Sano, 1995).

14.5% of the participants were neutral about following the direction of the questions and 13.7% disagreed. In the interviews, the difficulty in following the directions was also emphasized. In addition, the experts stated that the directions should be on the top of the screen so that the attention is gained. May be the most important part of an assessment is its directions. If directions could not be read easily, the examinee faced difficulty and lost time (Dantin, 2005).

10 participants wished to be informed about their progress, which exam they were taking. This feature might be added to the assessment tool. As Jones (1989) indicated that it is good to inform the user about where they are.

5.1.2.2. Perceptions about online computer literacy exams

In the last part of the questionnaire, the volunteer examinees depicted their perception about the online computer literacy exam. Most of the volunteer examinees reported in the questionnaire that the exams suitable to assess the computer skills (M=4.34).

79.4% of the participants perceived the multiple-choice questions suitable and 73.5% of them found the simulation questions suitable for assessing computer literacy. On the contrary, in depth interviews covered that they wished the simulations were more authentic. As Wiggins (1990) mentioned, authentic type of examination had many advantage over the traditional. The problem which the interviewees encountered was they had only one chance of clicking in each step. They reported they knew how to do the task but they could not do it in the simulation. This might be due to the participants' lack of knowledge about computer terminology or attention. Because, some of the interviewees reported that the directions were clear enough to understand which way to choose for the solution. On the contrary, the experts also found it problematic of solving the simulation questions only in one way. They also reported that they had difficulty about the language. Some of them even said that the directions were not clear. In fact, the directions were clear saying "print the document using the standard tools bar". If a little more explanation were given, then the questions would be too easy.

In addition to that, 46.1% of the volunteer examinees reported in the user evaluation questionnaire that they found it bad skipping to the next step automatically after the wrong action. In the interviews, they stated that they wished they had 1 or 2 more chances to try before skipping. That would make the online assessment tool more authentic. Similarly experts also suggested that the

simulations were more authentic. Jerrard (1993) stated that when writing a computer program, the degree of real process should always be questioned.

29% of the volunteer examinees perceived being informed immediately after a wrong action as bad while 18.8% were undecided ($M=2.78$). They reported in the interviews that viewing a pop up saying “You did an incorrect action!” demotivated them. Both in the in depth interviews and in the user evaluation questionnaires’ comments they wished to be informed at the end of the exam and have a detailed feedback. Also, two of the experts agreed with the interviewees’ argument.

5.2. Conclusions

Starting with the first research question, “What are the examinees’ perceptions about the online assessment center” the questionnaire and the interviews showed that

- They liked the physical layout of online assessment center.
- They found the online assessment center suitable for delivering online assessment.
- They reported a few changes could be done but they were not fatal.
- They perceived taking exam in online assessment center fine. Moreover, they wanted to take all their exams in such an environments.
- They were not anxious about taking exam in online assessment center.

- The precautions for stopping cheating are perceived as good by the examinees.
- The volunteer examinees reported that the precaution such as cameras and wooden walls required for fairness of exam.

For the second research question stated that “What are examinees’ perceptions about the online assessment tool”, the questionnaire and the interviews revealed that

- The examinees perceived the assessment tool simple and easy to use.
- They complained about the navigation buttons on the user interface. They recommended changing the place or increasing the size of the buttons.
- The volunteer examinees and experts also said that the color choices of the assessment tool were not suitable. They recommended changing the color used in the user interface.
- The volunteer examinees complained about the questions having only one correct way for the answer. They wished the simulation questions were more authentic.
- They were not very happy with the warning message and skipping to the next step. They wanted to have 1 or 2 more chances to find the correct answer.

5.3. Implications for Practice

From the results of this study, following suggestions are made for developing an online assessment center or online assessment tool.

1. *The online assessment center should guarantee the fairness of the results.*

The fair results can be ensured with various security precautions. The very first one is placing security cameras in the center to record during the exam. The second could be placing wooden walls to separate the examinees so that they cannot see each other. But the wooden walls should not reach the ceiling. Walls reaching the ceiling make the center suffocating. Another security issue is the exam administrator. An administrator should be watching the exam.

2. *The online assessment center should be airy and roomy.* There are many design considerations when building up an online assessment center. One of them is colors to use. Light colors should be chosen. The ventilation is another important point. The adequate ventilation has to be supported. The next point to consider can be the wooden separation walls. They should reach the ceiling.

3. *The online assessment center should be silent during the exam.* While choosing computers, the ones with the lowest fan noise should be preferred. The online assessment center's building should be preferable not too close to the city center. The walls of the center should be sound isolated with special materials. The floor should be covered with plastic material or carpet to lessen the noise.

4. *Monitors should be adjustable and easy to view.* The selection about the monitor is also another important point. The monitor should be adjustable so that the examinees can adjust according to their best view. Also, their screen should not glare due to lights.
5. *Adjustable chairs give the examinee to adjust the height and roam easily.* The height of the participants will of course vary. Since it is very difficult to adjust the height of the desks, the chairs should be adjustable.
6. *Tool's interface could be as simple as possible.* Using less buttons will prevent the examinee to be frustrated during the exam. Placing just the relevant button on the suitable places will help the examinee adapt to the tool easily.
7. *Navigation buttons could be placed next to the directions or on the bottom right corner of the screen.* Placing the navigation button next to the directions will enable the examinees find the button easily which will prevent them losing time.
8. *The interface should be astatically appealing.* The screen view of the assessment tool should be nice. The colors used on the screen should be light colors, which make reading and viewing easy.

5.4. Recommendations for Future Research

There is a continuous need for further research to make the computer literacy assessment tool more effective. Some recommendations are listed below for those who want to conduct a similar research:

- The study could be conducted with more participants.
- The similar research should be repeated in a real life conditions.
- The questions of the computer literacy exam should be checked in terms of reliability and validity.
- The assessment tool supported only two types of questions, multiple-choice and simulation. Different type of question support can be added to the tool.
- The tool used in this system should be developed having such properties i.e., an agent that keeps track of the actions of the examinee in a real environment.
- The tool should keep detailed information about the answer of the examinees so that statistics could be run to calculate reliability and validity.

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APPENDIX A: USER EVALUATION QUESTIONNAIRE

GÖNÜLLÜ KATILIM FORMU

Bu çalışma, Orta Doğu Teknik Üniversitesi'nde görevli Prof. Dr. M. Yaşar ÖZDEN danışmanlığında, Araş. Gör. Ali YILMAZ tarafından hazırlanan bir yüksek lisans (master) tezi çalışmasıdır. Çalışmanın amacı, katılımcıların çevrimiçi (online) sınav sistemi ve çevrimiçi sınav merkezine yönelik tutum ve eğilimleriyle ilgili bilgi toplamaktır. Katılımcılardan çevrimiçi sınav merkezinde sınava girmeleri ve sınav sonucunda anket doldurmaları beklenmektedir. Katılımcılardan bazılarıyla mülakat da yapılacaktır. Bu sürecin yaklaşık 30–45 dakika arasında sürmesi beklenmektedir. Çalışmaya katılım tamamıyla gönüllülük temelinde olmalıdır. Ankette, sizden kimlik belirleyici hiçbir bilgi istenmemektedir. Cevaplarınız tamamıyla gizli tutulacak ve sadece araştırmacılar tarafından değerlendirilecektir; elde edilecek bilgiler bilimsel yayımlarda kullanılacaktır.

Anket, genel olarak kişisel rahatsızlık verecek soruları içermemektedir. Ancak, katılım sırasında sorulardan ya da herhangi başka bir nedenden ötürü kendinizi rahatsız hissederseniz cevaplama işini yarıda bırakıp çıkmakta serbestsiniz. Böyle bir durumda anketi uygulayan kişiye, anketi tamamlamadığınızı söylemek yeterli olacaktır. Anket sonunda, bu çalışmayla ilgili sorularınız cevaplanacaktır. Bu çalışmaya katıldığınız için şimdiden teşekkür ederiz. Çalışma hakkında daha fazla bilgi almak için araştırma görevlisi Ali YILMAZ (ODTÜ Sürekli Eğitim Merkezi; Oda: 109; Tel: 210 3540; E-posta: yilmaza@metu.edu.tr) ile iletişim kurabilirsiniz.

Bu çalışmaya tamamen gönüllü olarak katılıyorum ve istediğim zaman yarıda kesip çıkabileceğimi biliyorum. Verdiğim bilgilerin bilimsel amaçlı yayımlarda kullanılmasını kabul ediyorum. (Formu doldurup imzaladıktan sonra uygulayıcıya geri veriniz).

Ad, Soyad
İmza

Tarih
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KULLANICI DEĞERLENDİRME ANKETİ

BÖLÜM 1

Kişisel Bilgiler

Cinsiyet : Bay Bayan

Yaş :

Eğitim durumu: İlkokul Orta Okul Lise Yüksekokul Üniversite

Yüksekokul ya da üniversite öğrencisi / mezunu ise

Bölümü :

Yaptığı iş :

A. Geçmiş Deneyimler

Lütfen şimdi soracağım, geçmiş bilgisayar deneyimlerinize ait soruları cevaplayınız.		Evet	Hayır
1	İnternet üzerinden çevrimiçi (online) ders(ler) aldınız mı ya da alıyor musunuz?		
2	Daha önce çevrimiçi (online) sınava (TOEFL, GRE, IS100, CCNA, MCSA, vb. herhangi başka bir çevrimiçi sınav) girdiniz mi ya da çevrimiçi anket doldurdunuz mu?		
3	Şu ana kadar, bilgisayar ile ilgili ya da bilgisayar kullanmayı gerektiren bir ders aldınız mı?		
4	Daha önce bilgisayar kullanarak, internete bağlanmadan (hazırlık sınavı alma gibi) sınava girdiniz mi / sınav oldunuz mu?		
5	Bilgisayarınız var mı?		

Anket devam ediyor, lütfen
sayfayı çeviriniz →→

B. Çevrimiçi (Online) Değerlendirme Aracı Hakkında

Aşağıda çevrimiçi değerlendirme aracının arayüzü ve işleyişi ile ilgili ifadeler bulunmaktadır. Lütfen bu ifadeler hakkındaki düşüncelerinizi en iyi ifade eden kutucuğu işaretleyiniz (☑)

		Kesinlikle Katılmıyorum	Katılmıyorum	Kararsızım	Katılmıyorum	Kesinlikle Katılmıyorum
1	Sınav programı ilk açıldığında gelen, kullanıcı adının ve şifrenin girildiği pencere <u>anlaşılır ve basitti.</u>					
2	Sınav programının genel görünümü (<i>arayüzü</i>) <u>anlaşılır ve basitti.</u>					
3	Sınav sonuç ekranı <u>anlaşılır ve basitti.</u>					
4	Sınav almaya başlamadan önce görünen ekrandaki renkler <u>uyumsuzdu.</u>					
5	Çoktan seçmeli soruların bulunduğu penceredeki renkler, soruların okunabilmesi için <u>uygun değildi.</u>					
6	Sınav sonuç ekranındaki renkler, sınav sonucunu bildiren yazıların okunabilmesi için <u>uygun değildi.</u>					
7	Dolaşım (İleri, geri, yardım) düğmeleri kolayca <u>bulunabiliyordu.</u>					
8	Soruların yönergeleri sorunsuz <u>takip edilebiliyordu.</u>					

Çevrimiçi (online) değerlendirme aracı ile ilgili yukarıda bahsedilmeyen ancak eklemek istediğiniz unsurlar varsa lütfen anketin sonunda ayrılan alana yazınız.

Anket devam ediyor, lütfen sayfaı çeviriniz →→

C. Çevrimiçi (Online) Sınavlar Hakkında

Aşağıda çevrimiçi sınav soruları ile ilgili ifadeler bulunmaktadır. Bu ifadelerden görüşünüzü en iyi yansıtan seçeneği işaretleyiniz (☑)

		Kesinlikle Katılıyorum	Katılıyorum	Kararsızım	Katılmıyorum	Kesinlikle Katılmıyorum
1	Çoktan seçmeli sorular temel bilgisayar bilgi/becerilerini ölçmek için <u>uygundu</u> .					
2	Çoktan seçmeli soruların yönergeleri <u>anlaşıldı</u> .					
3	Uygulama soruları temel bilgisayar bilgi/becerilerini ölçmek için <u>uygundu</u> .					
4	Uygulama sorularındaki yönergeler <u>anlaşıldı</u> .					
5	Uygulama sorularında basamakları takip etmede <u>zorluk çektim</u> .					
6	Uygulama sorularında hatalı işlem yapıldığında anında uyarıda bulunması <u>uygun değildi</u> .					
7	Uygulama sorularında, hatalı bir işlem yapıldığında bir sonraki adıma geçilmesini <u>uygun değildi</u> .					
8	Sınavda uygulama sorularındaki benzetimlerle (simülasyon), gerçek görünümün (arayüz) benzeyişi <u>olumluydu</u> .					
9	Genel olarak sınavın yapısı ve işleyişi <u>akıcı değildi</u> .					

Çevrimiçi sınav soruları hakkında **eklemek istediğiniz** bir şey varsa lütfen anketin sonunda ayrılan alana yazınız.

Anket devam ediyor, lütfen
sayfayı çeviriniz →→

2. BÖLÜM

A. Sınav Merkezinin Fiziksel Yapısı Hakkında

Aşağıda sınav yapmak için tasarlanan bir ortam ile ilgili ifadeler bulunmaktadır. Lütfen bu ifadelerden sizce en uygun olan seçeneği işaretleyiniz (☑)

		Kesinlikle Katlıyorum	Katlıyorum	Kararsızım	Katılmıyorum	Kesinlikle Katılmıyorum
1	Işıklandırma sınav olmak için <u>uygundu</u> .					
2	Sınav için ayrılan alan (iki paravan arasında kalan alan) <u>uygundu</u> .					
3	Havalandırma <u>uygun değildi</u> .					
4	<u>Gürültülü</u> bir ortamdı.					
5	Bölmelerin aralarında bulunan tahta ayraçlar yandakinden kopya çekilmemesi için <u>uygundu</u> .					
6	Oturma düzeni <u>uygun değildi</u> .					
7	Masa yüksekliği <u>uygundu</u> .					
8	Bilgisayar ekranı rahatça <u>görülebiliyordu</u> .					
9	Klavye sınav için <u>uygun değildi</u> .					
10	Fare sınav için <u>uygun değildi</u> .					
11	Sınav salonunda kullanılan renkler <u>uygun değildi</u> .					
12	Bölmelerin arasındaki tahta ayraçların yüksekliği yandaki bilgisayarın ekranının görünmemesi için <u>uygundu</u> .					

Sınav merkezinin fiziksel yapısı ile ilgili önerileriniz ya da eklemek istedikleriniz varsa lütfen anketin sonunda ayrılan alana yazınız.

Anket devam ediyor, lütfen
sayfayı çeviriniz →→

B. Sınav Merkezinde Sınava Girmek Hakkında

Aşağıda sınav merkezinde sınav alırken yaşanabilecek durumlar sıralanmıştır. Lütfen sizin hissettiklerinizi en iyi ifade eden kutucuğu işaretleyiniz (☑)

		Kesinlikle Katılıyorum	Katılıyorum	Kararsızım	Katılmıyorum	Kesinlikle Katılmıyorum
1	Tahta ayraçlarla bölünmüş bölmelerde sınava girmek rahatsızlık vericiydi .					
2	Sınav merkezinde sınava girmek diğer ortamlarda (sınıf, laboratuvar vb.) sınava girmekten daha stresliydi .					
3	Kameralarla izleniyor olmak rahatsızlık verici değildi .					
4	Bölmelerin olduğu bir ortamda sınava girildiği için sınav sonuçlarının adaletli olduğunu düşünüyorum.					

Sınav alırken **hissettiğiniz ve yukarıda bahsedilmeyen** bir şeyler varsa lütfen anketin sonunda ayrılan alana yazınız.

Anket devam ediyor, lütfen
sayfayı çeviriniz →→

Ekleme İstedikleriniz

Bölüm 1. B. Çevrimiçi (Online) Değerlendirme Aracı Hakkında

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Bölüm 1. C. Çevrimiçi (Online) Sınavlar Hakkında

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**Anket devam ediyor, lütfen
sayfayı çeviriniz →→**

Bölüm 2. A. Sınav Merkezinin Fiziksel Yapısı Hakkında

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Bölüm 2. B. Sınav Merkezinde Sınava Girmek Hakkında

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Anket soruları burada bitiyor. Çalışmaya katılımınız için teşekkür ederim.

APPENDIX B: PARTICIPANT INTERVIEW QUESTIONS

KATILIMCI MÜLAKAT SORULARI

1. Kaç yıldır bilgisayar kullanıyorsunuz? Eğer bilgisayar becerilerinizi

İleri Seviye | İyi | Giriş | Yetersiz | Hiç Bilmiyorum

olarak derecelendirecek olsanız kendinizi nasıl nitelendirirdiniz? Sizce geçmiş bilgisayar kullanma deneyimlerinizin burada ki çevrimiçi (online) sınav aracına adapte olmanıza bir faydası oldu mu? Evetse ne yönde faydası oldu? Hayırsa neden olmadı?

2. Daha önce hiç çevrimiçi (online) sınav aldınız mı? Evetse, hangi çevrimiçi (online) sınavları aldınız? Almış olduğunuz çevrimiçi (online) sınavların, buradaki çevrimiçi sınavı alırken etkisi oldu mu?
3. Çevrimiçi (online) sınav aracını nasıl buldunuz? Aracın geliştirilmesi için önermek istediğiniz bir şey var mı?
4. Çoktan seçmeli sorularda herhangi bir sorun yaşadınız mı? Anlayamadığınız bir bölüm oldu mu?

5. Uygulama sorularında herhangi bir sorun yaşadınız mı? Takip etmekte zorlandığınız, canınızı sıkan bir bölüm var mıydı?
6. Sorulara herhangi bir iyileştirme yapılabilir mi? Ne yapılabilir?
7. Sınav merkezinin yerleşimi hakkında ne düşünüyorsunuz? Çevrimiçi sınav alırken sizi rahatsız eden bir şey oldu mu? Sınav merkezini daha iyi hale getirmek için öneriniz var mı?
8. Sınav merkezinde sınav almaktan rahatsız oldunuz mu? Sınavı alırken neler hissettiniz? Bu hislerinize böyle bir sınav merkezinde sınavı alıyor olmanızın etkisi var mıydı?

Çevrimiçi (online) sınav, sınav soruları ve sınav merkezi ile ilgili, bahsetmediğimiz ancak sizin aklınıza gelen, eklemek istediğiniz bir şey var mı?

APPENDIX C: EXPERT INTERVIEW QUESTIONS

UZMAN MÜLAKAT SORULARI

1. Katılımcıların geçmiş bilgisayar kullanma ve çevrimiçi sınav alma deneyimlerinin, çevrimiçi sınavı alırlarken ve çevrimiçi sınav aracını kullanırlarken etkisi olmuş mudur? Cevabınız evet ise, nasıl etkisi olmuştur? Hayır ise, neden olmamıştır?
2. Çevrimiçi (online) sınav aracında eksik ya da hatalı olduğunu düşündüğünüz bir unsur var mı? Varsa, nedir? Bu eksiklik / hata konusunda ne yapılabilir?
3. Çoktan seçmeli sorular hakkında ne düşünüyorsunuz?
4. Uygulama soruları hakkında ne düşünüyorsunuz?
5. Çevrimiçi sınav merkezinde sizi rahatsız eden bir unsur var mı? Varsa nedir? Neden rahatsız oldunuz?

6. Byle bir ortamda sınav almak, sınav girenler zerinde baskı yaratabilir ya da rahatsız edebilir mi? Cevabınız evet ise, neden?

evrimii sınav aracı, sınav soruları ve sınav merkezi ile ilgili, bahsetmediđimiz ancak sizin eklemek istediđiniz bir Őey var mı?