Students' Perceptions towards the Effective Use of Web-Based Learning Platform (WBLP) on their Learning Outcomes

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Submitted to the
Institute of Graduate Studies and Research
in partial fulfillment of the requirements for the degree of

Master of Science
in
Information and Communication Technologies in Education

Eastern Mediterranean University
December 2018
Gazimağusa, North Cyprus

Approval of the Institute of Graduate Studies and Research

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ABSTRACT

Nowadays, computers are the potential deliverers of the educational system, since they can be used for personalizing learning, to design learning according to the learners' knowledge and needs. Educators' attention has overtime been attracted by the development of the internet and internet-based computerized learning (i.e e-learning).

Academic studies in this area have portrayed that the process of obtaining web technology for the purpose of learning and teaching is quickly becoming an important tool in these fields. In accordance with the latest requirements, many institutions and individuals prefer to provide education/training via the Internet and that has sparked a remarkable rate of increase in web-based education institutions. And therefore, there has been a rise in the usage of personal/informal as well as institutional/formal web-based learning platforms. Therefore, the web, with its wide range of functions, has become such a highly invaluable source and the tool to acquire learning, research development that in all honesty without its learning process.

The technological implications and wide use of learning applications of the web that includes a wide array of functions and many unique components are now currently utilized in the development and evaluation of effective web-based learning applications in order to facilitate teaching contents through interactive exercises and multimedia materials.

This research is to analyze the perceptions of Eastern Mediterranean University (EMU) students, who are registered to a course which is given by the School of Computing and Technology through a web-based learning platform

ÖZ

Günümüzde, bilgisayarlar eğitim sisteminin potansiyel sağlayıcısıdır, çünkü öğrenmeyi kişiselleştirmek için, öğrenenlerin bilgisine ve ihtiyaçlarına göre öğrenmeyi tasarlamak için kullanılabilirler. Eğitimcilerin ilgisi, internet ve internet tabanlı bilgisayarlı öğrenmenin (yani e-öğrenmenin) gelişmesiyle son zamanlarda oldukça etkilenmiştir.

Bu alandaki bilimsel çalışmalara göre web teknolojisinin hızlı bir araç haline geldiği gösterilmiştir. Bu araç öğrenim, öğretim ve bilgi elde edinme amacıyla önemli bir destek sunmaktadır.

Yine bu son yıllarda web-tabanlı eğitim uygulamalarının sayısı dikkate değer bir oranda artmaktadır. Ayrıca birçok kurumlar ve bireyler internet üzerinden eğitim veya öğretimi tercih etmektedir.

Bu kapsamda biçimsel web-tabanlı öğrenme platformları kişisel veya resmi olmayan şahıslar tarafından ayrıca kurumlarda yaygın bir şekilde kullanılmaktadır.

Bu nedenle, web tabanlı platform hiç öğrenmeye ihtiyaç duymadan aynı anda çok çeşitli işlevleriyle ve aynı zamanda çok yönlü bir öğrenme, araştırma ve geliştirme kaynak veya araç olarak tanımlanmıştır.

Günümüzde etkileşimli araştırmalar yoluyla öğretim içeriğini sunmakta ve bununla birlikte multimedya materyalleri sık sık web-tabanlı öğrenme uygulamalarının geliştirilmesi ve değerlendirilmesinde kullanmaktadır.

Bu araştırma, Web tabanlı bir öğrenme platform aracılığıyla Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü tarafından verilen bir derse kayıtlı olan Doğu Akdeniz Üniversitesi (DAÜ) öğrencilerinin algılarını analiz etmektir

Anahtar Kelimeler: web-tabanlı öğrenme, uzaktan eğitim uygulamaları, multimedya teknolojileri, öğretim aracı, eğitim sistemi

*I would like to dedicate this effort to my devoted **MOTHER** for supporting me to finish my study and for keeping my spirit up with all the innocence.*

ACKNOWLEDGMENT

I would like to record my gratitude to for Asst. Prof. Dr. Bengi Sonyel her supervision, advice, and guidance from the very early stage of this thesis as well as giving me extraordinary experiences throughout the work.

Above all and the most needed, she provided me with constant encouragement and support in various ways her ideas, experiences, and passions have truly inspired and enrich my growth as a student. Special thanks go to Assoc. Prof. Dr. Ersun İşcioğlu for his crucial contribution to this study. To all my friends, thank you for your understanding and encouragement during the moments of crisis. Your friendship makes my life a wonderful experience. I cannot list all the names here, but you are always on my mind and in my heart.

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LIST OF ABBREVIATIONS

E-learning   Electronic Learning

ICT   Information Communication Technology

WBLP   Web-Based Learning Platform

Chapter 1

INTRODUCTION

1.1 Background of the Study

For teaching purposes, the utilization of technologies available in information communication technology (ICT) advancement has generated interest among many educators (Sivapalan, & Wan Fatimah, 2010)

Information and technological tools and resources that are used in communication, creation, dissemination, and storage of information. This includes (not limited to) computer facilities, World Wide Web (WWW) and Communication Technologies (ICTs) mean the management of information through the broadcaster technologies such as television, telephony, and radio (Hendriks, 1999).

Recently, among the above-mentioned technologies, there has been a rise in attention to computers and WWW to be utilized efficiently and effectively in all levels of education. However, ICT is not only limited to such technologies but also it covers the older requirements (e.g. television, radio, and telephone) in spite of their fading out usage. Before the invention of the internet, television and, the radio has been used since four decades ago in delivering distance and open education (Tinio, 2003).

In developing countries, due to insufficient infrastructure, using the internet and computers is at its early stages. A couple of systems use a combination of technologies

rather than using only one. In some countries, uses radio broadcasting, computers, and the internet simultaneously to provide adequate access to communities living both in urban and rural regions. It is still using pressed materials as well as television and radio broadcasting; online technologies are provided recently though. Moreover "Indira Gandhi National Open University" utilizes print, audio/video, tele-broadcasting, and audio conferencing equipment altogether (Tinio, 2003).

The ICT, in all aspects, is now an important and inevitable part of the education process. It is proven that integrating ICT with the pedagogical system can significantly increase not only students' and educators' technological skills, but also social and cognitive ones which are necessary to respond, a critical and creative manner, the requirements of the society. (Anastasiades & Zaranis, 2016).

Have a closer look at ICT; the most important role in the integration of ICT belongs to educators, in spite of the existence of the variety of policies and frameworks. The attitude of educators to technologies such as computers and web should be studied and developed to succeed in integrating ICT into the pedagogical system. It is experienced that training educators is not an easy process and needs constant effort in a long period of time. It is, therefore desirable to mention to consider this fact does not mean that students do not have any role, but the role of educators is much more important (Anastasiades &Zaranis, 2016).

Moreover, modern educational methods try to provide equal quality of service for all the students including ones who need special attention and ones with a different degree of disabilities. This principle is also true for the application of ICT in education in spite of its fast-changing and development. There are creative approaches and tools to

support both groups in the education environment such as classrooms and laboratories and the aim is to preserve the equal quality of learning as well as student participation no matter of their abilities (Anastasiades & Zaranis, 2016).

The gap is between the skills and knowledge learned in the schools and the emerging demands on the society which is now a big challenge for the educators. In other words, traditional skills to solve problems are just part of the overall skills set that students should learn. Knowing how to do communication, sharing and solving problems in groups are other abilities that students should learn.

The challenge is migrating from the teaching and learning methods were designed in the 20th century to the ones which are suitable for the students of the 21st century. This migration includes applying innovative approaches to concentrate on focus and creative problem solutions.

In this regard, the process of learning cannot be anymore considered as just some instructional formula but should be studied and researched constantly and combines both practical and theoretical aspects of solving problems.

"Electronic learning" (so-called E-Learning) is defined by Paulsen as "the provision of automatic feedback to the student's learning activities in which the learning content is available and accessible online" (Paulsen, 2004).

Although, e-Learning has common features with Computer-Based Training (CBT) and Computer-Aided Teaching (CAT), the major difference in using the internet as the main medium is to provide materials and supervise student's activities. Moreover, in

e-Learning, communications between educator and students are also done via the internet; however, it is considered as a side activity and the main concentration is on the organization and providing proper access.

One should keep in mind that "learning" is not the same as "education", but only one component of it. Hence, Web-Based Education (WBE) is much more comprehensive than e-Learning due to providing more types of services. While e-Learning providers mostly concentrate on the content and form of learning materials and content, the companies and institution delivering WBE try to offer a wider variety of "support and educational services". However, in the literature it may be found that WBE and e-Learning are mistakenly used interchangeably as written in (Kaplan-Leiserson, 2000): "E-learning consists of a broader number of processes and applications including and not limited to digital collaborations, virtual classrooms, computer-based learning, and web-based learning". It covers the facilitation in the delivery of information via the internet, intranet/extranet (LAN/WAN), audio and videotape, satellite broadcast, interactive TV, and CD-ROM.

One of the significant and critical challenges in web classrooms is to know the real evaluation of the learning environment and the students' activities. To overcome this issue, it is suggested to periodically ask students to fill out evaluation forms and get a clear insight into the changes happened to their attitudes toward the program during the time. Moreover, there can be some monitoring systems which provide complementary feedbacks showing the acceptance rate of the web classroom. For instance, the system can track the number of online students, a number of logins and logouts, time of being online for each student, amount of contribution of students and so on. All these factors can be used to discover the degree of students' eagerness and

strong and weak points of the system. By using such systems in long run, the comparison between the different runs of the same programs is possible. For example, teachers can compare the exam grades and submitted assignments to find out which runs have been more successful than the others, helping to improve the quality of education service (Devedžic, 2006).

Distance education that can be set up on "point-to-point" or "point-to-multipoint" basis is a kind of planned educational experience to participate in learners who can be distributed all around the world. Distance education can be delivered in form of individual participation, teleseminars, teleconferences, web conferences, electronic classrooms, and so on (Devedžic, 2006).

1.2 Research Questions

The following research questions will be investigated in this research:

1. What are the students' perceptions of the effects of a Web-Based Learning Platform (WBLP) on their learning outcomes based on its learning interface, teaching material, learning tool, and instructional strategy?

2. To what extent the WBLP affect the students' learning outcome regarding their grades?

3. To what extent the WBLP affect the students' learning outcome regarding their gender?

4. To what extent the WBLP affect the students' learning outcome departmentally?

1.3 Problem Statement

Implementing the usage of WBLP in academic institutions has become very common and rapid because it supports the processes of teaching and learning in an extensive manner. Currently, around the world, the most suitable system is tailored for universities to address their needs and other necessities. Despite widespread use of such platforms, all of the learning interface, teaching material, learning tool, and instructional strategy components should be considered in order to give an effective learning process.

1.4 Aim of Study

The aim of this research is to analyze the perceptions of Eastern Mediterranean University (EMU) students, who are registered to a course which is given by the School of Computing and Technology through a web-based learning platform, on the effectiveness of that platform in terms of interaction, communication and ease of access to information, learning and connectivity of students.

1.5 Limitations

This research has been carried out in only one department at Eastern Mediterranean University, School of Computing and Technology. Therefore, considering the reliability and validity of any kind of research as a researcher to be able to manage and apply it for all the department us in Emu would give a wider perspective, more reliable and valid findings as well. However, due to the purpose of this research and the constraints, the researcher has decided to apply it only in one department, with the students of School of Computing and Technology.

Chapter 2

LITERATURE REVIEW

2.1 Web-based Learning

Based on various research and development, academia, the industry as well as technology have adopted the Web-Based E-learning (WEL) after it has extended its capabilities and flexibility in both training and education.

Walk through a typical learning environment on the web which uses some or all of the following properties of learning; learning material presentation, learner assessment, internet recourse, instructional support, and technical support. Nonetheless, limited study conducts and research has developed standard based research criteria and tools of measurement and was also involved in the evaluation of components of web-based learning platforms (Ateş, 2013; Hsu, et al., 2009).

Hsu et al. (2009) proposed a learning platform on the web with an evaluating scale for the determination of web-based learning platforms and design criteria consisting of learning facets that include instructional design, learning theories, interface design, and learning tools.

Recently, the benefits of WWW and the internet have gained a lot of attention to education. These technological tools let students and instructors cooperate and communicate much more effective than before. Not only they are efficiently applicable

in individual practices, but also inherently they support "collaboration, communication, interaction, exchange and, reflection". Although many educational systems have adopted these technologies, still there are needs to discover the complete potential in utilizing of them and how to reach this aim.

2.2 Advantages and Disadvantages of WBLP

To provide a contextualized situation, this research needs to consider a number of advantages and disadvantages of using the web as a learning environment. An example of a Web-based learning environment advantage to be taken into account is the increase in accessibility and the promotion of location independence. This, however, is of no use in a case a learner has not any access to the internet. The manner in which the system is used also determines the advantages and disadvantages of WBLP. When the existing distance learning materials are replaced and learners have internet access, web-based learning becomes an advantage. If there's an intention to continue using the traditional face-to-face classroom-based learning model, while the web-based learning environment is developed for a particular group of learners then this means the time and effort that is incorporated in the development of the web-based environment may no longer be advantageous. Learning can be instantly delivered to almost anywhere connecting to the internet or network, updating and upgrading are simply done and instantly reachable, the whole internet can be used as the companion material for the lectures, Students' activities and progresses feedbacks can be monitored and delivered to the educators to analyze them and communication between formal and informal groups can be established and used. (Jolliffe, et al., 2012).

Technical limitations that are associated with computers and the internet itself pose as disadvantages of using web-based learning.

Internet and computers pose a technical limitation associated with web-based learning and its disadvantages, since materials are static and interactivity is controlled by the forward arrow, many learning environments reflect the early days of computer-based learning and this is fueled by technical limitations, In order to design an effective environment for learning, the materials designer needs to possess knowledge about computer-based learning, Since bandwidth is limited, it creates problems when graphic intense materials are downloaded and Both learners and facilitators need to be provided with training. (Jolliffe, et al., 2012).

2.3 The Relationship Between E-learning and Web-based Learning Systems

Today, web-based learning systems are the un-detachable elements of e-learning frameworks. Recently, much higher education institutions have adopted the latest web-based learning system for their online and e-learning programs (Ngai, et al., 2007). These systems which are delivered by the Internet include Smile (System for Multimedia Integrated Learning), WebCT (Web Course Tools (WebCT), BLS (Blackboard Learning System), and WebCT (Web Course Tools). The new definition of E-Learning emphasizes the role of the Internet and Web-based technologies that can overcome space and time obstacles (Ngai, et al., 2007). These technologies consist of the ones who facilitate communications, conveying knowledge and multimedia, providing virtual collaborative environments and training tools to keep the learning process active and effective. To continuously engage learners in the learning process, active learning is one of the pillars of the new E-Learning definition. To do so, the

student should be asked for doing aimful learning tasks frequently. VLE (Virtual Learning Environment) or WBLS (Web-Based Learning System) is the platform designed for providing a web-based communicative environment which does not put any restriction over the time and location of learners. The platform provides facilities for easy access to the course curriculum, contents, multimedia sharing, discussion rooms, resources and effective instructor's help (Raaij&Schepers, 2008).

2.4 Instructors' Adoption of Web-based Learning Systems

Users' contributions, satisfaction, and attitudes play a major role in an information system's success (Wang & Wang, 2009). Designing, implementing, and maintaining an information system is expensive and is sometimes unsuccessful; however, they are vital for contemporary enterprises (Yuanquan, Jiayin, &Huaying, 2008). As the investment is increasing in e-learning technologies and management systems, user satisfactory becomes a much more important issue. The majority of e-learning technologies' users are students who have the determinants for the success of a specific technology used in e-learning (Teo, Lee, Chai, & Wong, 2009); hence, as it is also shown by studies, those e-learning technologies have been successful who have been accepted and embraced by large group of students (Sanchez-Franco, 2009; Yuen & Ma, 2008). Therefore, institutes who are planning to use effective e-learning technologies in their programs should track the students' satisfaction from the online learning technologies (Wang & Wang, 2009).

There are some research works on the instructors' acceptance of online and web-based learning technologies (Hu, et al., 2003; Ma, et al., 2005; Pynoo et al., 2011; Sanchez-Franco, 2009; Wang & Wang, 2009; Yuen & Ma, 2008). The research was done by Ma et al.'s (2005) showed that "perceived ease of use" and "perceived usefulness" are

the most two effective factors in adopting computer technologies. In the study conducted by Yuen and Ma (2008), subjective norm, perceived usefulness and, computer self-efficacy were not effective on the motivation for reusing of e-learning technology. However, perceived ease of use was highly positively correlated with that motivation. In another study (Likewise, Wang and Wang, 2009), subjective norm and perceived usefulness were found as an effective factor in instructors' intentions to apply online learning technologies. Wang & Wang (2009) found that in spite of existing studies considering the instructors' adoption of e-learning systems, few studies have monitored the instructors' attitude in using of online e-learning technologies from the viewpoint of user willingness and successfulness of the system used. The studies on technology embracement evaluate the user happiness by the attitudes and intention to apply (Pynoo et al., 2011). In this research, the degree of instructors' adoption of online learning technology is evaluated by the instructors' intentions to continue using the proposed system in case of actual using of it.

2.5 Web Usability

Usability is a concept which is in relation to Human-Computer Interaction (HCI). Preece (1995) looks at usability as the factor which lets the system to be easily learnable and usable; therefore, there is a need to find the elements which are influencing users. Based on the study done by Shield and Kukulska-Hulme (2006), ease, interaction design, and user experience are the 3 main elements of general usability. Ease is the factor of easily learnable and usable; user experience is about the happiness of the user, seeming helpfulness, and the provision of sustenance provided by the monitored system. Therefore, a system that has a good looking interactive design that is easily learnable and usable and provides higher user satisfaction. This type of usability is also influenced by the characteristics of the system. For using e-

learning, Pituch and Lee (2006) introduced a completely mediated model which consists of the internet experience, system functionality, self-efficacy, response, and interactivity. User attributes and system characteristics have influence simultaneously on the apparent simplified usage and apparent usage importance that means usability. Since an e-learning technology sometimes is used as complementary learning mean in classical learning programs and sometimes is used as a mechanism to deliver a complete distance education program, Pituch and Lee considered "use for distance education" and "use for supplementary learning" as significant elements of e-learning technology. In summary, web usability is about the quality and quantity of benefits audiences received from using the target website, by engaging the users to participate in content-rich, hypermedia-based context and, learning programs.

2.6 Related Research

Some researchers have conducted research on matching-mismatching in WBLP using physiological factors as well as cognitive styles, which are based on perspective. One of the newest methods of approach for the development of WBLP is projected on an individual's capability to achieve a higher personalized learning ability, which will provide a positive contribution to instructional design. (Chen, 2010). Among many individual factors assigned to students and learners, the novel styling has been taken to be an imperative academic work (Chen & Macredie, 2010; Chen & Liu, 2011). Aware styling means one person's approach to the process, reception, presenting and sharing information (Witkin, et al., 1977). On the other hand, students with distinctive cognitive styling show unique preference and on the other hand, a typical WBLP personalized systems, which teaches preferences of each cognitive styling team, have an effective impact on student's ability to perform (Mampadi, et al., 2011). Cognitive styling in other words, which plays a significant role, links to the powerful effects of

WBL (Chen, & Macredie, 2004). Consequently, educational requirements and configuration should assimilate with a student's cognitive styling to enhance their performance for learning.

It is good to say that in comparison to the traditional computer-assisted learning system, the WBL will be more attainable, and has the most important positive impacts of the technology of the internet. However, WBLP also can present a number of fundamental hinders for both students and teachers (Chen, & Macredie, 2004). From the discussion above, it is clear that not every student could have gratitude for the value of WBLP. Therefore, personalization should be included in WBLP. Definitely, the first step to personalized WBLP should be to understand a student's behavior in learning as well as an individual's learning factors. As a result, it is a conducive strategy to enhance a well-known personalized WBLP system and also consider different individual features into the account. In fact, the background knowledge of individual student was used for the fundamental design of personalized WBLP systems. (Surjono, & Maltby, 2003).

However, today developments have transferred to better interaction with other individual variation, (Mitchell, et al., 2005; Graf & Liu, 2010). Among these academic studies, it is a matter that cognitive styling is the main and basic property that affects the efficiency of WBLP extremely. To understand this forwarding issue better, consider how students should receive, process, and organize considering information (Riding, & Sadler-Smith, 1992), cognitive styling, which are shown to be a personal attribute in self-learning, are taken to be a stable learning features (Jonassen, & Grabowski, 1993), and learning outputs can be on highest level when the instructional method is as good as desired. also, it can assimilate to a learner's cognitive styling

(Boles, et al., 1999; Plass, et al., 1998; Thomas & McKay, 2010). Nonetheless, other academic studies also presented that learning results are not extremely impacted by matching or mismatching with typical cognitive styling (Massa, & Mayer, 2006).

In addition, a couple of researchers have discussed that student's learning performance could be enhanced while they come across rules that mentioned mismatches with the cognitive styling (Ford, & Chen, 2001; Sadler-Smith, 2001).

In order to deepen our understanding of E-Learning, we will consider another academic study in this field which works with university students and professors in the development of multi-dimensional evaluation criteria for English learning websites. Firstly, let us discuss Web usability in this issue. The foundational idea of usability refers to the academic field of Human-Computer Interaction (HCI).

According to Liu and Hwang study (2011), usability is concerned in automating systems so that they are easy to learn, use and run and that makes it convenient to find out basic factors influencing users.

Additionally, according to Shield and Kukulska-Hulme, (2006), there are 3 main properties of general usability, interaction design, and user experience. The "Ease" consists of the ideas of learning and using easily, on the other hand, "User Experience" refers to learner's satisfaction, helpfulness, great enjoyment, and sufficient support structure provisioned by a system of learning. Therefore, a person who can speculate a typical learning system with a professional interacting model of design should offer usage simplicity and present a good experience for the user. It is convenient to mention that this type of usability could also be negatively impacted by the learning system

properties simply. (Pituch, & Lee, 2006) proposed a novel specific model for e-Learning usage, which was a combination of system response, interactivity, functionality, self-sufficiency, and especially Internet experience. Both, system properties and user settings have affected on this apparent expediency and usability (i.e. ease of use). Additionally, since the system of E-Learning can be used as a well-known additional learning application beside or within traditional classes. And also, E-Learning system can be used as a technique to provide an undependable and stand-alone distance course (i.e. remote-based courses), Pituch and Lee (2006), have discussed both "use for distance education" and "use for supplementary learning," as fundamental and vital factors on E-Learning system. As a matter of fact, web usability will overview the main reason to evaluate people's benefits in the utilization of specific websites, with the main concern being the capability of users to stay connected to the media based programs and its media-based programs and its setting.

In terms of solving problems related to information searching and creating rules that are used by a specialized system to guide students based on their information searching records, a study conducted by Hwang (2011), examined the teachers' behaviors that were experienced in using the information searching system. Since, according to experimental results, an innovative approach is capable of providing accurate constructive suggestions for students, the results of this study indicated that a well-designed web-based system can be more helpful and effective in training on the ability in terms of web-based information searching.

Another study used the information summarizing instruction strategy, to improve students' ability to use keywords and summarize information. For this purpose, a number of approved keywords was provided to 67 elementary school students who

were unsystematically allocated to experimenting as well as control groups, to find a distinction between the two groups in using before and after keywords in the experiment. According to the results, a sizeable distinction was obtained amongst the control and experimental groups. Additionally, after applying the information summarizing instruction strategy, the experimental group got better scores in terms of using the number of keywords adopted, compared to pre-test (Hwang, & Kuo, 2011).

Hediye et al., (2013) made a case study in Iran from 115 university instructors; in this research, they used the integrated model for adapting the learning system of the web to assess the pushing factors in psychology and behavior of the instructors. The data collected was for the analysis of the equation modeling for the inspection of the model of the theory. This research indicates seeming usefulness, simplified usage and provides the system quality that causes an increase in instructors to purposeful usage of learning on the web.

This research shows that the factors of information quality, service quality, subjective norm, and self-efficacy causes an increase in all instructor's apparent usage simplicity in the learning system of the web. The results show that the influence of self-sufficiency has greater factors and illustrate the significance of capability and confidence in instructors in applying the processes of learning on the web. However, according to the finding of some prior studies the self-sufficiency doesn't have any effect on the apparent important usage of learning on the web (Ong et al., 2004; Hsia, &Tseng, 2008; Park's, 2009).

Based on Hadjerrouit, (2010) study, developed the web-based learning resources (WBLR) in school education by the centered approach of the user. Three different

perspectives were evaluated by this approach: school students, school teacher, and trainee teachers. This study first evaluates the requirements that have been met by this approach and then adopt this approach on the project as an active form of research or design-based research. The results of this research show that a user-centered approach is an ideal approach for developing the web-based learning resources in school.

Chiou et al, (2009) used an auto-scoring mechanism to assist the teachers to evaluate problem-solving ability in a web-based learning environment. They proposed this mechanism to 158 instructors and the results conclude that the majority of the instructors accepted this mechanism. According to statistical results, 91% of teachers would like to use this mechanism in their classes and 94% of instructors are willingly recommending this mechanism to their colleagues. However, some of the instructors hesitated to utilize this mechanism in their classes due to the lack of computer-based experience.

Kay et al,. (2009) evaluated teachers' perceptions of using web-based learning tools (WBLT) in middle and secondary schools. They used valid and moderately reliable tools to gain information about student learning, the usability of web-based learning tools, engaging of students, technological issues and providing suggestions for future use. According to teachers evaluations, a web-based learning tool is a useful tool for engaging the students and successful learning about it. However, teachers noted that preparing lessons and searching for web-based learning tools is the need for significant time. However, in this research some technical problems such as the speed of the internet not considered. According to statistical data, 41% of the teachers reported using web-based learning tool it takes time less than 30 minutes, 38% reported between 30 to 60 minutes and 22% reported it to take time more than one hour. The main

suggestion obtained by teachers was spending time on selecting, testing and preparing materials to ensure the prosperous usage of web-based learning.

Wang (2009) developed an integrated model for adopting instructors to web-based learning platform according to some existing literature and empirically theories. This study used the DeLone and Mclean's models that both of them are successful models for analyzing. The data for this study were collected from 268 university instructors and then assessed to verify the theoretical model using equation modeling. According to the finding in this study adaptation of instructors to web-based learning in a different class hierarchy such as elementary school and high schools may not be generalized.

Hsu et al., (2009) developed design criteria and evaluated scale for a web-based learning platform. This study has two phases. In the first phase, Delphi technique and heuristic evaluation were used in the development of criterion for evaluating and expanding web-based learning platforms. In the second phase, they surveyed questionnaire for 40 indicators, used online evaluations and used experts' analysis to developed reliability and validity of the scale. The proposed study was included as provide some example from developing criteria designing of web-based learning platforms, developed trusted and credible potential growth for the evaluation of web-based platform and obtained a foundation for evaluating and guiding the designing of the web-based platforms. As results, the finding of this study can be useful for quality of design of web-based learning platforms make the design criteria of web-based learning effectiveness.

First of all, it is worth to mention that the intention of this academic study is to examine the language equivalence and the validity and reliability of the Turkish version of the

Web-Based Learning Platform Evaluation Scale. The mentioned platform is used in a couple of web-based learning environments considerably. According to this scope, the factor availability based on this scale is evaluated on the foundation of information collection considering to 482 students at 11 Turkish universities. The results of the Exploratory Factor Analysis (EFA) have shown some importance included the 40-item, the four-factor structure of the scale parallels the original scale. In fact, we need to examine whether this structure corresponds to the sample data, first-level Confirmatory Factor Analysis (CFA) was implemented.

The main intention of this academic research is to match the Web-Based Learning Platform Evaluation Scale, developed by(Hsu, et al., 2009), to the Turkish language and test whether it could be presented as a standardized novel, scaled objectively to evaluate the web-based learning platforms. Corresponding to this goal the design factor was conducted after instructing the EFA about the data received from the Turkish students and examining the structure by the CFA. According to this research area, a couple of the main elements such as a translation, a back translation, a pilot study and also a language equivalent study were engaged so that it is convenient to substantiate if the substantial growth and the Turkish growth were equal correspondence languages. Based on the new discovery, it was discovered and proven that the Turkish and English scale are equal to each other. The scale structure of the original one, including of 40 items and four factors, was initially evaluated and examined by the EFA, according to collected information data which are tested on 482 students in some various Turkish universities. These outcomes show that the Turkish version, in connection with instructional strategy, teaching material (learning documents), learning tool and learning interface (teaching devices), accounts for more than half of the total variance (51.80%) (Dag, 2016).

Chapter 3

METHODOLOGY

3.1 Research Design

In this chapter, the research methods used in this study are discussed. The research design, participant's instrument, data collection tools and techniques, validity and reliability. For the sole purpose of making decisions that affect the business, this process is used to collect information and data. The methodologies could incorporate publication research, interviews, surveys, and other research methods, and could also incorporate both present and past information. While quantitative methodologies are excellent in stressing neutral extents and the statistical, mathematical, or numerical evaluation of data collection through polls, qualitative method, or more specifically interviews are a great method to gather deep understanding and asking the exact questions needed for such matters. Therefore researcher has chosen to implement the mix method for this thesis. Complex nature of computer-based application most of the times make it significantly difficult to answer a research question from all the perspective. A researcher with a mixture of questionnaire and interview provides a way to investigate the WBLP from all the aspects and with a smarter insight. As it also emphasized by Johnson et al. (2007), "*Mixed methods research is the type of research in which a researcher or team of researchers combines elements of qualitative and quantitative research approaches for the broad purposes of breadth and depth of understanding and collaboration*". Hence in this thesis, the mix research method is used for collecting the data so to analyze the students' perceptions towards

the effects of a web-based learning platform (WBLP) on their learning outcomes through an evaluation scale proposed by Hu .et. al (2009). The questionnaire will be distributed to the 2nd, 3rd and 4th-year students at EMU who are registered to the School of Computing and Technology and have at least finished one WBLP course. This population sample is suitable to analyze the effectiveness of that platform in terms of interaction, communication, and ease of access to information, learning and connectivity of students. The main motive of this project is to evaluate a comprehensive overview of Web-Based Learning Platform (WBLP) in the context of their experience at of the School of Computing and Technology. This research will introduce a number of critical questions in WBLP and final output of this research will be the answers which can be a practical guide for other researchers in this area and filed.

In this research, the main question was "what is the perception of the students about the effectiveness of the web-based learning platform (WBLP), on students understanding, learning and final grades". In order to carry out this research. The researcher used "mix method approach" (qualitative and quantitative) as stated above to collect the data.

3.2 Data Collection Procedure

In this research, a mixture of qualitative and quantitative methods have been chosen to gather primary data. This data was collected using 40 survey questions for the quantitative part; and five open-ended semi-structured interview questions for the qualitative part of the research.

3.2.1 Quantitative Data Collection: Questionnaire

According to Aliaga and Gunderson (1999), the mentioned quantitative research methodology will be used to identify and interpret events gathering numerical data which is then explained and clarified based on related mathematical and statistical techniques. In many cases, quantitative researchers typically implement their findings on this belief and hypothesis that factual statements and feelings must be segregated. As a matter of fact, the world is a mono reality consisting of facts that could be revealed in many ways. As it can be noticed, that quantitative researchers look for the best position to create correlations between variables and look for and from time to time define the bases of such relationships. In other words, they have created a prominent agreement on general information and preparations of steps that direct other researchers in their particular works, on the other hand, quantitative research can be designed in order to be re-established (Fraenkel, J. R., Wallen, N. E., & Hyun, H. H., 1993). Quantitative research with concluding that, the necessary researcher duty in the quantitative research area is a detached observer and the usual training in the quantitative tradition is the experimentation in which majority quantitative researchers tend to create limited views that transcend the underlying event or specific theme.

It is instructive to consider that more than evaluation of numerical data, this useful quantitative method can use to transfer and interpret investigated challenges that are not in direct existence with statistical formats to a numerical data framework that is needed for numeric analyzing. As an example, you can consider perception and features Aliaga and Gunderson (1999), which can focus on collecting the numerical data using not only the related questionnaires but also another object that will provide by means of the considerable statistical instrument.

Keeping that in mind and researcher will employ quantitative approach in order to statistically investigate and measure student's perceived towards the Effectiveness of a Web-Based Learning Platform (WBLP) on Their Learning Outcomes. The case study here is an Eastern Mediterranean University which is fundamentally different in details with researches which have been done in other universities. More importantly after considering particularly excellent and exhaustive references, previous studies, and also survey instruments which other experts and researcher used in their academic works (Chai et al.. 2010 ; Jang and Tsai , 2013 ; Kazu and Erten , 2014), The significant advantages were found for using this approach, because of several efficient and reasonable factors such as:

- Data analysis can be done more easily

- The research will have a considerable scientific composition

- Data interpretation will be quickly

Consequently, based on objective principles (Denscombe, 2010) it was taken to be imperative since this thesis will be a novel study having to consider that students' apparent perception at Eastern Mediterranean University School of Computing and Technology. For the direct answer of the mentioned research question, in this section using the selected investigating method, web-based learning platform (WBLP) survey instrument will be used academically hopefully gaining the best outputs.

3.2.2 Qualitative Data Collection: Semi-Structured Interview

The interview is one of the best ways to collect data. Based on the interviewer's strategy and research perspective the interview questions could be different. In this research, the researcher has chosen semi-structures interview to have a deeper understanding about the students learning outcomes and personal feelings toward WBLP. The interview is a common way of collecting data directly; hence this

approach will allow the researcher to collect the data from the students who finished their studies and ready to graduate after using this system in their studies.

3.3 Data Analysis

In this research the whole data is being analyzed by quantitative method. By acquiring significant point rate and average mean (considering 0.05 level value spot), and ANOVA test will be used for demographic data variables (such as age and gender) and variables which are related to data changes (such as computer literacy and previous experience with system).

3.4 Participants

This survey population consisted of students who have been taken at least one WBLP course given by the School of Computing and Technology in the academic year of 2017-2018. The survey would like to make the subject of this study individual who are usually in the fields of creation and to think about effective ways of education so that they assist and establish the good connection between technological environments and academic area (Elci, 2012; Mishar and Koehler, 2008). The survey was given to 200 ICT students who hold a bachelor degree in Eastern Mediterranean University, but only 190 students were interested to participate in the research. Furthermore, for the interviews from 200 students, 8 of them volunteered to participate in the semi-structured interviews.

Moreover, according to Table 1, 57.4 percent of the participants were female and 42.6 percent of the population was male.

Table 1: Student's gender demographic characteristics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	109	57.4	57.4	57.4
	Male	81	42.6	42.6	100.0
	Total	190	100.0	100.0	

Table 2 shows that, the participants' age range. According to this table, only 0.5 percent of people were in the range of 35-39 years old. Moreover 1.6 percent of students were 30.34, and 46.3 percent were in the age range of 24-29 and finally, around 51.6 percent of students were between 18-23 years old. Students' age demographic information is shown in the table below:

Table 2: Student's age demographic characteristics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-23	98	51.6	51.6	51.6
	24-29	88	46.3	46.3	97.9
	30-34	3	1.6	1.6	99.5
	35-39	1	.5	.5	100.0
	Total	190	100.0	100.0	

3.5 Data Collection Instrument

The questionnaire will be distributed to the students at EMU who are registered to a at least one WBLP course which is offered by the School of Computing and Technology through a web-based learning platform in order to analyze the effectiveness of that platform in terms of interaction, communication and ease of access to information, learning and connectivity of students. After the data are collected, the data will be analyzed by using SPSS version 24. SPSS is a software program with higher functioning capability in examining data and delivering precise statistics in a defined and graphics format.

3.6 Reliability and Validity

To ensure the accuracy and the reliability of this research, the questionnaire was given to three expertise from the School of Computing and Technology and after receiving their feedback, the researcher applied the questionnaire to all of the 2nd, 3rd and 4th year students whom based on the faculties curriculum have at least finished one course which WBLP is practiced actively by the instructors. Regarding the semi-structured interviews, they were piloted before given to the students. After piloting, the final draft of the semi-structured interviews was given to the rest of both students.

The fact of the matter is surely that internal validity addresses the reasons for the outcomes of the study and helps to reduce other, often unanticipated, reasons for these outcomes. A questionnaire survey was conducted to analyze the reliability and validity of web-based learning.

Chapter 4

FINDINGS AND DISCUSSION

4.1 Research Results

The aim of this research was to investigate the perception of students and their learning outcomes, after using web-based learning platform in Eastern Mediterranean University. A mixed method (qualitative and quantitative) was used for data assessments and in this chapter, the result of data analysis and interviews will be discussed. The researcher has used Statistical Package for Social Sciences software (SPSS) version 24 for analyzing her data.

For Qualitative approach 8 graduate students from the School of Computing and Technology were interviewed about the effect of WBLP on their learning outcomes. This interview aimed to build a better understanding of the relationship between computer literacy level of students, their grades and their understanding of web-based learning platform advantages. In the quantitative approach, the researcher collected 190 surveys from the students on the effectiveness on WBLP.

In this chapter, the result of the questionnaire and interviews will be analyzed and discussed.

4.2 Quantitative Findings

For the quantitative approach, a questionnaire was distributed between third and fourth-year bachelor students in the School of Computing and Technology at Eastern Mediterranean University. The survey includes four demographic characteristics) and 40 qualitative questions asking students' opinions about their experience, opinion, and commitment in the designed web-based learning platform (Appendix A). The data in the demographic part of the questionnaire has been questioned students gender, age, WBLP course grade, computer literacy and whether they had previously experienced a web-based class. The 40 questions are about the presence of different WBLP elements and their delivery quality which are presented in the next sections, and answers are provided through 5-point Likert scale in a way that 1 represents "Strongly Disagree", 2 represents "Disagree", 3 represents "Neutral", 4 represents "Agree", and 5 represents "Strongly Agree". A copy of the distributed questionnaires has been given in Appendix A.

4.3 The Students' Perceptions Towards WBLP

The second part of the questionaries' is focused on student's grade for a "specific" course which was taught by WBLP in Eastern Mediterranean University. According to Table 4, 32.6 percent of students have got A or A- grade for their WBLP course. 36.8 percent of students got B, B- or B+ in their course and 28.4 percent of students got C, C+ or C-. From another hand only 2.1 percent of participant had unsatisfactory D, D- or D+ in their courses. None of the students have got failed or got an F in this course.

Table 3: Students course grade

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	D +D D-	4	2.1	2.1	2.1
	C+ C C-	54	28.4	28.4	30.5
	B +B B -	70	36.8	36.8	67.4
	A A -	62	32.6	32.6	100.0
	Total	190	100.0	100.0	

According to Table 4, around 54.2 percent of participant had experience using WBLP before, while 45.8 percent had never used such system and they were first time users.

Table 4: Students experience with WBLP

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	103	54.2	54.2	54.2
	No	87	45.8	45.8	100.0
	Total	190	100.0	100.0	

Furthermore, based on Table 5, around 59.5 percent of participant had had consider themselves computer literate, while 40.5 percent believed that they are not computer literate.

Table 5: Do you consider yourself computer literate?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	113	59.5	59.5	59.5
	No	77	40.5	40.5	100.0
	Total	190	100.0	100.0	

Table 6 shows the mean and standard deviation on student's perception on the usefulness of the WBLP courses. According to Table 6, "Q6. It applies various learning facilitation medias" had the maximum mean of (M=4.14, SD=3.102).

Moreover "Q33. The teaching material paragraph is clear", "Q8. The presented content is correct in its instructional goal", "Q18. The provides quick error instruction", "Q19. The provides the mechanism to ask for systematic manager help", "Q30. The interface design is creative", "Q31. The teaching material is accurate", "Q34. The teaching material induces learning motivation", "Q3. It assigns evaluation practice for the class", "Q2. It indicates knowledge and techniques to be learned", "Q16. The category is appropriate", "Q40.The interface design is creative" with (M=4.11, SD=1.046), (M=4.11, SD=

0.968), (M=4.08, SD=1.035), (M=4.04, SD=1.09), (M=4.04, SD=1.049), (M=4.04, SD=1.049), (M=4.04, SD=1.076), (M=4.04, SD=1.095), (M=4.03, SD=1.105), (M=4.02, SD=1.084) , (M=4.02, SD=1.031) , (M=4.01, SD=1.057) orderly respected all had a mean more than an average mean (M=3.952) on the table. From other hand, participant were not satisfied learning tools since "Q11. it provides practical learning tools (e.g. online notebook) got the lowest mean of (M=3.77, SD=1.077). On balance we can safely say that, almost all the entire mean in Table 6 is higher than average mean (M=3.952) which shows the interest of the participants about the WBLP

Table 6: Student's perception on the usefulness of the WBLP

Q1.It clearly indicates the instruction goal

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	14	7.4	3.88	1.169
	Disagree	9	4.7		
	Neutral	31	16.3		
	Agree	68	35.8		
	Strongly Agree	68	35.8		
	Total	190	100.0		

Q2.It indicates knowledge and techniques to be learned

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	11	5.8	4.02	1.084
	Disagree	8	4.2		

		Frequency	Percent	Mean	SD
	Neutral	19	10.0		
	Agree	80	42.1		
	Strongly Agree	72	37.9		
	Total	190	100.0		

Q3.It assigns evaluation practice for the class

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	8	4.2		
	Disagree	15	7.9		
	Neutral	20	10.5	4.03	1.105
	Agree	68	35.8		
	Strongly Agree	79	41.6		
	Total	190	100.0		

Q4.It provides frequently Asked Question(FAQ)

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	8	4.2		
	Disagree	14	7.4		
	Neutral	40	21.1	3.86	1.104
	Agree	62	32.6		
	Strongly Agree	66	34.7		
	Total	190	100.0		

Q5.It provides cases and situations to improve student' Understanding

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	5	2.6		
	Disagree	20	10.5		
	Neutral	28	14.7	3.95	1.095
	Agree	63	33.2		
	Strongly Agree	74	38.9		
	Total	190	100.0		

Q6.It applies various learning facilitation medias

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	7	3.7		
	Disagree	12	6.3		
	Neutral	35	18.4		
	Agree	67	35.3	4.14	3.102
	Strongly Agree	67	35.3		
	44	1	.5		
	Total	189	99.5		
Missing	System	1	.5		
Total		190	100.0		

Q7.It applies novel and challenging strategies to increase motivation

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	7	3.7	3.87	1.105

		Frequency	Percent	Mean	SD
	Disagree	16	8.4		
	Neutral	39	20.5		
	Agree	60	31.6		
	Strongly Agree	68	35.8		
	Total	190	100.0		

Q8.The presented content is correct in its instructional goal

		Frequency	Percent	Mean	SD
	Strongly Disagree	5	2.6		
	Disagree	5	2.6		
Valid	Neutral	35	18.4	4.10	.968
	Agree	66	34.7		
	Strongly Agree	79	41.6		
	Total	190	100.0		

Q9.It effectively integrates learners ' past learning experience and knowledge

		Frequency	Percent	Mean	SD
	Strongly Disagree	8	4.2		
	Disagree	14	7.4		
Valid	Neutral	26	13.7	3.98	1.101
	Agree	67	35.3		
	Strongly Agree	74	38.9		
	Total	189	99.5		
Missing	System	1	.5		
Total		190	100.0		

Q10.The provides learner communication and interaction opportunities (e.g. online discussion)

		Frequency	Percent	Mean	SD
	Strongly Disagree	7	3.7		
	Disagree	8	4.2		
Valid	Neutral	41	21.6	3.96	1.043
	Agree	64	33.7		
	Strongly Agree	70	36.8		
	Total	190	100.0		

Q11.The provides practical learning tools (e.g. online notebook)

		Frequency	Percent	Mean	SD
	Strongly Disagree	6	3.2		
	Disagree	19	10.0		
Valid	Neutral	43	22.6	3.77	1.077
	Agree	66	34.7		
	Strongly Agree	56	29.5		
	Total	190	100.0		

Q12.The provides search functions

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	9	4.7	3.83	1.171

	Frequency	Percent		
Disagree	23	12.1		
Neutral	26	13.7		
Agree	66	34.7		
Strongly Agree	66	34.7		
Total	190	100.0		

Q13.The provides related software for downloading

		Frequency	Percent	Mean	SD
	Strongly Disagree	7	3.7		
	Disagree	23	12.1		
Valid	Neutral	23	12.1	3.89	1.138
	Agree	68	35.8		
	Strongly Agree	69	36.3		
	Total	190	100.0		

Q14.The provides learning records

		Frequency	Percent	Mean	SD
	Strongly Disagree	7	3.7		
	Disagree	18	9.5		
Valid	Neutral	34	17.9	3.87	1.107
	Agree	65	34.2		
	Strongly Agree	66	34.7		
	Total	190	100.0		

Q15.The menu linkage displays normally

		Frequency	Percent	Mean	SD
	Strongly Disagree	8	4.2		
	Disagree	14	7.4		
Valid	Neutral	32	16.8	3.89	1.084
	Agree	72	37.9		
	Strongly Agree	64	33.7		
	Total	190	100.0		

Q16.The category is appropriate

		Frequency	Percent	Mean	SD
	Strongly Disagree	6	3.2		
	Disagree	10	5.3		
Valid	Neutral	33	17.4	4.02	1.031
	Agree	67	35.3		
	Strongly Agree	74	38.9		
	Total	190	100.0		

Q17.The provides learner process management

		Frequency	Percent	Mean	SD
	Strongly Disagree	6	3.2		
Valid	Disagree	17	8.9	3.91	1.058
	Neutral	28	14.7		

		Frequency	Percent		
	Agree	76	40.0		
	Strongly Agree	63	33.2		
	Total	190	100.0		

Q18.The provides quick error instruction

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	5	2.6		
	Disagree	12	6.3		
	Neutral	28	14.7		
	Agree	62	32.6	4.08	1.035
	Strongly Agree	83	43.7		
	Total	190	100.0		

Q19.The provides the mechanism to ask for systematic manager help

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	5	2.6		
	Disagree	18	9.5		
	Neutral	25	13.2		
	Agree	59	31.1	4.04	1.090
	Strongly Agree	83	43.7		
	Total	190	100.0		

Q20.The navigation is clear and easily understood

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	10	5.3		
	Disagree	19	10.0		
	Neutral	25	13.2		
	Agree	69	36.3	3.86	1.160
	Strongly Agree	67	35.3		
	Total	190	100.0		

Q21.The texts can be clearly read

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	13	6.8		
	Disagree	9	4.7		
	Neutral	36	18.9		
	Agree	66	34.7	3.85	1.153
	Strongly Agree	65	34.2		
	Total	189	99.5		
Missing	System	1	.5		
Total		190	100.0		

Q22.The words frequently convey information

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	11	5.8		
	Disagree	17	8.9	3.88	1.166
	Neutral	23	12.1		

		Frequency	Percent		
	Agree	70	36.8		
	Strongly Agree	67	35.3		
	Total	188	98.9		
Missing	System	2	1.1		
Total		190	100.0		

Q23.The images clearly communicate information

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	12	6.3		
	Disagree	17	8.9		
	Neutral	30	15.8	3.82	1.183
	Agree	66	34.7		
	Strongly Agree	65	34.2		
	Total	190	100.0		

Q24.The graphics and text complement and support comprehension improvement

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	7	3.7		
	Disagree	17	8.9		
	Neutral	37	19.5	3.92	1.139
	Agree	51	26.8		
	Strongly Agree	77	40.5		
	Total	189	99.5		
Missing	System	1	.5		
Total		190	100.0		

Q25.The animation design clearly communicates information

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	2	1.1		
	Disagree	23	12.1		
	Neutral	26	13.7	3.93	1.029
	Agree	74	38.9		
	Strongly Agree	65	34.2		
	Total	190	100.0		

Q26.The animation design increases learning desire

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	4	2.1		
	Disagree	20	10.5		
	Neutral	34	17.9	3.96	1.098
	Agree	54	28.4		
	Strongly Agree	78	41.1		
	Total	190	100.0		

Q27.The video quality is clear and good

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	3	1.6	3.92	1.107

		Frequency	Percent	Mean	SD
	Disagree	25	13.2		
	Neutral	31	16.3		
	Agree	56	29.5		
	Strongly Agree	75	39.5		
	Total	190	100.0		

Q28.The video transmission is smooth and does not lag

		Frequency	Percent	Mean	SD
	Strongly Disagree	4	2.1		
	Disagree	17	8.9		
Valid	Neutral	34	17.9	3.98	1.066
	Agree	58	30.5		
	Strongly Agree	77	40.5		
	Total	190	100.0		

Q29.The interface design is pleasing and artistic

		Frequency	Percent	Mean	SD
	Strongly Disagree	4	2.1		
	Disagree	21	11.1		
Valid	Neutral	24	12.6	3.97	1.071
	Agree	68	35.8		
	Strongly Agree	72	37.9		
	Total	189	99.5		
Missing	System	1	.5		
Total		190	100.0		

Q30.The interface design is creative

		Frequency	Percent	Mean	SD
	Strongly Disagree	3	1.6		
	Disagree	19	10.0		
Valid	Neutral	25	13.2	4.04	1.049
	Agree	63	33.2		
	Strongly Agree	79	41.6		
	Total	189	99.5		
Missing	System	1	.5		
Total		190	100.0		

Q31.The teaching material is accurate

		Frequency	Percent	Mean	SD
	Strongly Disagree	3	1.6		
	Disagree	18	9.5		
Valid	Neutral	34	17.9	4.04	1.076
	Agree	49	25.8		
	Strongly Agree	86	45.3		
	Total	190	100.0		

Q32.The teaching material is objective

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	5	2.6	3.99	1.113
	Disagree	20	10.5		
	Neutral	27	14.2		
	Agree	56	29.5		
	Strongly Agree	81	42.6		
	Total	189	99.5		
Missing	System	1	.5		
Total		190	100.0		

Q33.The teaching material paragraph is clear

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	5	2.6	4.11	1.046
	Disagree	12	6.3		
	Neutral	28	14.7		
	Agree	57	30.0		
	Strongly Agree	88	46.3		
	Total	190	100.0		

Q34.The teaching material induces learning motivation

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	6	3.2	4.04	1.095
	Disagree	15	7.9		
	Neutral	29	15.3		
	Agree	56	29.5		
	Strongly Agree	84	44.2		
	Total	190	100.0		

Q35.The teaching material scheme is appropriate and materials correlate

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	9	4.7	3.95	1.130
	Disagree	15	7.9		
	Neutral	27	14.2		
	Agree	65	34.2		
	Strongly Agree	74	38.9		
	Total	190	100.0		

Q36.The teaching material quantity is appropriate and meet learners 'needs

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	6	3.2	3.94	1.030
	Disagree	13	6.8		
	Neutral	31	16.3		
	Agree	76	40.0		
	Strongly Agree	64	33.7		
	Total	190	100.0		

Q37.The teaching material quality is appropriate and meets learner's capabilities

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	9	4.7	3.83	1.142
	Disagree	15	7.9		
	Neutral	43	22.6		
	Agree	55	28.9		
	Strongly Agree	68	35.8		
	Total	190	100.0		

Q38.The teaching material unit topic is clear and definite

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	7	3.7	3.96	1.076
	Disagree	11	5.8		
	Neutral	38	20.0		
	Agree	60	31.6		
	Strongly Agree	74	38.9		
	Total	190	100.0		

Q39.The teaching material organizational structure is clear and systematic

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	4	2.1	3.99	1.054
	Disagree	17	8.9		
	Neutral	31	16.3		
	Agree	63	33.2		
	Strongly Agree	75	39.5		
	Total	190	100.0		

Q40.The interface design is creative

		Frequency	Percent	Mean	SD
Valid	Strongly Disagree	6	3.2	4.01	1.057
	Disagree	11	5.8		
	Neutral	36	18.9		
	Agree	60	31.6		
	Strongly Agree	77	40.5		
	Total	190	100.0		

Average Mean= 3.952   Average SD=1.142

4.3.1 Participants' Perceptions of WBLP Effects on Students' Learning Outcomes Regarding Their Age

According to Table 7 results, the age range of (18-23) with number of (N-98) , and (24-29) age range with (N=88) shown the most interest about WBLP, this can be linked to the fact that students in these age range are already born as digital natives and are

grown up to be familiar with computerized online systems. On the contrary student in the age range of (35-39) with an insignificant amount of (N=3) and age range of (30-34) with near to nothing amount of (N=1) have lowest interest to the WBLP and online courses which can be linked to their interest and bond with traditional classroom learning ways. The age range of (45+) and (40-45) did not appear in the analysis table since there were no students in these age ranges. Since our sample was chosen from bachelor degree students, the absence of these age ranges is not un-expectable. This result can be proven by closer look at the average mean and standard deviation of this table. Considering average mean (M=3.0686, SD=0.9721) the age group of (18-23) in all of the questions had higher amount of mean than other age groups. Moreover age group of (18-23) in question Q3, Q30, Q31, Q32, Q33 and Q34 with (M=4.30, SD=0.911), (M=4.30, SD=0.948), (M=4.31, SD=0.978), (M=4.31, SD=0.957), (M=4.34, SD=0.908), (M=4.31, SD=0.935) were all had significantly higher mean than an average mean (M=3.0686) in the table.

Table 7 also displays F-statistic and sig (p-value) based on age range of the participants. Considering the fact that from the 40 items in the list almost all of them showed a p-value bellow the $P < 0.05$; It indicate that there is dramatically considerable difference between perception of participants toward WBLP based on their age. This issue is statistically tested with ANOVA test shown in Table 7. As it can be seen based on the One-Way ANOVA test only Q6 has a p-value higher than 0.05 (Q6: $F (0.684) = 7.888$, $p = .0.563$)). However almost all other questions used for measurement of students learning outcomes, had significant values below the p value point ($p < 0.05$). This result indicate that age difference has a significant effect on the students perception of WBLP and clearly not all the age group levels have the same attitude

towards WBLP functionality and design for improving their learning experience. Full

ANOVA table can be found in appendix D.

Table 7: Participants' perceptions of WBLP effects on students' learning outcomes regarding their age

		N	Mean	SD	F	Between and Within Groups (P value
Q1.It clearly indicates the instruction goal	18-23	98	**4.13**	.970	5.536376	.001
	24-29	88	3.66	1.294		
	30-34	3	3.00	.000		
	35-39	1	1.00	.		
	Total	190	3.88	1.169		
Q2.It indicates knowledge and techniques to be learned	18-23	98	**4.27**	.819	8.362	0.000
	24-29	88	3.84	1.212		
	30-34	3	2.33	1.155		
	35-39	1	1.00	.		
	Total	190	4.02	1.084		
Q3.It assigns evaluation practice for the class	18-23	98	**4.30**	.911	8.799	.000
	24-29	88	3.82	1.180		
	30-34	3	2.33	.577		
	35-39	1	1.00	.		
	Total	190	4.03	1.105		
Q4.It provides frequently Asked Question(FAQ)	18-23	98	**4.06**	.961	5.331	.002
	24-29	88	3.72	1.184		
	30-34	3	2.67	.577		
	35-39	1	1.00	.		
	Total	190	3.86	1.104		
Q5.It provides cases and situations to improve student' understanding	18-23	98	**4.17**	1.005	7.188	.000
	24-29	88	3.80	1.095		
	30-34	3	2.33	.577		
	35-39	1	1.00	.		
	Total	190	3.95	1.095		
Q6.It applies various learning facilitation medias	18-23	98	**4.06**	1.003	.684	.563
	24-29	87	4.32	4.434		
	30-34	3	2.67	.577		
	35-39	1	1.00	.		
	Total	189	**4.14**	3.102		
	18-23	98	4.08	1.022	6.364	.000
	24-29	88	3.73	1.111		

Q7.It applies novel and challenging strategies to increase motivation	30-34	3	2.33	.577		
	35-39	1	1.00	.		
	Total	190	3.87	1.105		
Q8.The presented content is correct in its instructional goal	18-23	98	**4.22**	.891	5.082	.002
	24-29	88	4.02	.971		
	30-34	3	3.33	1.528		
	35-39	1	1.00	.		
	Total	190	4.10	.968		
Q9.It effectively integrates learners ' past learning experience and knowledge	18-23	98	**4.22**	.914	5.539	.001
	24-29	87	3.77	1.217		
	30-34	3	2.67	.577		
	35-39	1	2.00	.		
	Total	189	3.98	1.101		
Q10.The provides learner communication and interaction opportunities (e.g. online discussion)	18-23	98	**4.07**	.977	4.260	.006
	24-29	88	3.91	1.057		
	30-34	3	2.33	1.155		
	35-39	1	2.00	.		
	Total	190	3.96	1.043		
Q11.The provides practical learning tools (e.g. online notebook)	18-23	98	**4.06**	1.034	6.560	.000
	24-29	88	3.51	1.039		
	30-34	3	2.67	.577		
	35-39	1	2.00	.		
	Total	190	3.77	1.077		
Q12.The provides search functions	18-23	98	**4.13**	.970	7.627	.000
	24-29	88	3.57	1.258		
	30-34	3	2.00	1.000		
	35-39	1	2.00	.		
	Total	190	3.83	1.171		
Q13.The provides related software for downloading	18-23	98	**4.21**	.955	9.100	.000
	24-29	88	3.61	1.188		
	30-34	3	2.00	1.000		
	35-39	1	2.00	.		
	Total	190	3.89	1.138		
Q14.The provides learning records	18-23	98	**4.13**	1.012	4.954	.002
	24-29	88	3.63	1.148		
	30-34	3	2.67	.577		
	35-39	1	3.00	.		
	Total	190	3.87	1.107		
Q15.The menu linkage displays normally	18-23	98	**4.12**	.911	4.941	.003
	24-29	88	3.70	1.195		
	30-34	3	2.67	.577		
	35-39	1	2.00	.		

	Total	190	3.89	1.084		
Q16.The category is appropriate	18-23	98	**4.27**	.880	7.658	.000
	24-29	88	3.82	1.078		
	30-34	3	2.33	1.155		
	35-39	1	2.00	.		
	Total	190	4.02	1.031		
Q17.The provides learner process management	18-23	98	**4.13**	.949	6.672	.000
	24-29	88	3.74	1.088		
	30-34	3	2.67	.577		
	35-39	1	1.00	.		
	Total	190	3.91	1.058		
Q18.The provides quick error instruction	18-23	98	**4.28**	.939	4.192	.007
	24-29	88	3.93	1.091		
	30-34	3	2.67	.577		
	35-39	1	3.00	.		
	Total	190	4.08	1.035		
Q19.The provides the mechanism to ask for systematic manager help	18-23	98	**4.27**	.990	6.260	.000
	24-29	88	3.86	1.106		
	30-34	3	2.33	1.155		
	35-39	1	2.00	.		
	Total	190	4.04	1.090		
Q20.The navigation is clear and easily understood	18-23	98	**4.10**	1.020	5.104	.002
	24-29	88	3.67	1.229		
	30-34	3	2.33	1.155		
	35-39	1	2.00	.		
	Total	190	3.86	1.160		
Q21.The texts can be clearly read	18-23	98	**4.10**	.979	7.639	.000
	24-29	87	3.67	1.217		
	30-34	3	2.00	1.000		
	35-39	1	1.00	.		
	Total	189	3.85	1.153		
Q22.The words frequently convey information	18-23	96	**4.11**	.983	6.237	.000
	24-29	88	3.70	1.261		
	30-34	3	2.33	.577		
	35-39	1	1.00	.		
	Total	188	3.88	1.166		
Q23.The images clearly communicate information	18-23	98	**4.08**	.927	6.222	.000
	24-29	88	3.60	1.335		
	30-34	3	2.00	1.000		
	35-39	1	2.00	.		
	Total	190	3.82	1.183		
	18-23	97	**4.11**	.999	5.432	.001

Q24.The graphics and text complement and support comprehension improvement	24-29	88	3.80	1.205		
	30-34	3	2.00	1.000		
	35-39	1	2.00	.		
	Total	189	3.92	1.139		
Q25.The animation design clearly communicates information	18-23	98	**4.16**	.927	6.715	.000
	24-29	88	3.75	1.053		
	30-34	3	2.33	.577		
	35-39	1	2.00	.		
	Total	190	3.93	1.029		
Q26.The animation design increases learning desire	18-23	98	**4.29**	.942	9.976	.000
	24-29	88	3.67	1.122		
	30-34	3	2.67	.577		
	35-39	1	1.00	.		
	Total	190	3.96	1.098		
Q27.The video quality is clear and good	18-23	98	**4.22**	.958	7.163	.000
	24-29	88	3.65	1.165		
	30-34	3	2.67	.577		
	35-39	1	2.00	.		
	Total	190	3.92	1.107		
Q28.The video transmission is smooth and does not lag	18-23	98	**4.28**	.961	7.527	.000
	24-29	88	3.73	1.080		
	30-34	3	2.67	.577		
	35-39	1	2.00	.		
	Total	190	3.98	1.066		
Q29.The interface design is pleasing and artistic	18-23	98	**4.22**	.958	7.053	.000
	24-29	87	3.76	1.099		
	30-34	3	2.33	.577		
	35-39	1	2.00	.		
	Total	189	3.97	1.071		
Q30.The interface design is creative	18-23	97	**4.30**	.948	7.833	.000
	24-29	88	3.83	1.053		
	30-34	3	2.33	.577		
	35-39	1	2.00	.		
	Total	189	4.04	1.049		
Q31.The teaching material is accurate	18-23	98	**4.31**	.978	6.105	.001
	24-29	88	3.80	1.105		
	30-34	3	3.00	.000		
	35-39	1	2.00	.		
	Total	190	4.04	1.076		
Q32.The teaching material is objective	18-23	98	**4.31**	.957	6.846	.000
	24-29	87	3.70	1.182		
	30-34	3	2.67	.577		

	35-39	1	3.00	.		
	Total	189	3.99	1.113		
Q33.The teaching material paragraph is clear	18-23	98	**4.34**	.908	5.090	.002
	24-29	88	3.92	1.127		
	30-34	3	2.67	.577		
	35-39	1	3.00	.		
	Total	190	4.11	1.046		
Q34.The teaching material induces learning motivation	18-23	98	**4.31**	.935	6.509	.000
	24-29	88	3.81	1.173		
	30-34	3	2.67	.577		
	35-39	1	2.00	.		
	Total	190	4.04	1.095		
Q35.The teaching material scheme is appropriate and materials correlate	18-23	98	**4.16**	1.002	5.758	.001
	24-29	88	3.78	1.189		
	30-34	3	2.67	.577		
	35-39	1	1.00	.		
	Total	190	3.95	1.130		
Q36.The teaching material quantity is appropriate and meets learners 'needs	18-23	98	**4.13**	.949	3.783	.011
	24-29	88	3.78	1.077		
	30-34	3	2.67	.577		
	35-39	1	3.00	.		
	Total	190	3.94	1.030		
Q37.The teaching material quality is appropriate and meets learner's capabilities	18-23	98	**4.17**	.995	8.785	.000
	24-29	88	3.52	1.164		
	30-34	3	2.00	1.000		
	35-39	1	3.00	.		
	Total	190	3.83	1.142		
Q38.The teaching material unit topic is clear and definite	18-23	98	**4.24**	.942	6.343	.000
	24-29	88	3.70	1.136		
	30-34	3	3.00	.000		
	35-39	1	2.00	.		
	Total	190	3.96	1.076		
Q39.The teaching material organizational structure is clear and systematic	18-23	98	**4.15**	1.019	4.512	.004
	24-29	88	3.86	1.019		
	30-34	3	3.33	1.528		
	35-39	1	1.00	.		
	Total	190	3.99	1.054		
Q40.The interface design is creative	18-23	98	**4.15**	1.009	3.991	.009
	24-29	88	3.89	1.055		
	30-34	3	3.67	1.155		
	35-39	1	1.00	.		
	Total	190	4.01	1.057		

Average Mean = 3.068625   Significant *point = p<0.05.*   Average SD= 0.97215

4.3.2 Participants' Perceptions of WBLP Effects on Students' Learning Outcomes Regarding Their Gender

As it is shown in Table 8, the number of females (N=109) is higher than male (N=81) however the mean and SD are in narrow competition. However overall male students were more interested in the design of WBLP and the quality of teaching materials than female students. With a closer look at the average mean and standard deviation of this table. Considering average mean (M=3.959, SD=1.159) in question Q6, Q34 and Q33 with (M=4.51, SD=4.592), (M=4.20, SD=1.065), (M=4.16, SD=0.993) were the Male population with significantly higher mean than an average mean (M=3.0686) in the table. However considering the rest of the table, the competition between male population and female population are tight and it is possible to say that gender does not have a strong effect on the perception of participants toward WBLP.

Table 8 also shows F-statistic and sig (p-value) based on genders of the participants. Considering the fact that from the 40 items in the list none showed a p-value below the significant value of P<0.05; It indicate that there is no considerable difference between perception of participants toward WBLP based on their gender.This issue is statistically tested with ANOVA test; shown in Table 8. As it can be seen based on the One-Way ANOVA test. Full ANOVA table can be found in appendix D.

Table 8: Participants' perceptions of WBLP effects on students' learning outcomes regarding their gender

		N	Mean	SD	F	Between and Within Groups (P value
Q1.It clearly indicates the instruction goal	Female	109	3.92	1.180	.276	.600
	Male	81	3.83	1.160		
	Total	190	3.88	1.169		
Q2.It indicates knowledge and techniques to be learned	Female	109	4.03	1.067	.009	.924
	Male	81	4.01	1.112		
	Total	190	4.02	1.084		
Q3.It assigns evaluation practice for the class	Female	109	4.06	1.053	.172	.679
	Male	81	3.99	1.178		
	Total	190	4.03	1.105		
Q4.It provides frequently Asked Question(FAQ)	Female	109	3.83	1.110	.167	.683
	Male	81	3.90	1.102		
	Total	190	3.86	1.104		
Q5.It provides cases and situations to improve student' understanding	Female	109	3.93	1.069	.144	.705
	Male	81	3.99	1.135		
	Total	190	3.95	1.095		
Q6.It applies various learning facilitation medias	Female	109	3.87	1.072	1.980	.161
	Male	80	**4.51**	4.592		
	Total	189	4.14	3.102		
Q7.It applies novel and challenging strategies to increase motivation	Female	109	3.88	1.069	.010	.919
	Male	81	3.86	1.159		
	Total	190	3.87	1.105		
Q8.The presented content is correct in its instructional goal	Female	109	4.16	.973	.854	.357
	Male	81	4.02	.961		
	Total	190	4.10	.968		
Q9.It effectively integrates learners ' past learning experience and knowledge	Female	109	3.98	1.105	.002	.967
	Male	80	3.98	1.102		
	Total	189	3.98	1.101		
Q10.The provides learner communication and interaction opportunities (e.g. online discussion)	Female	109	3.94	.998	.039	.843
	Male	81	3.98	1.107		
	Total	190	3.96	1.043		
Q11.The provides practical learning tools (e.g. online notebook)	Female	109	3.81	1.049	.249	.619
	Male	81	3.73	1.118		
	Total	190	3.77	1.077		
Q12.The provides search functions	Female	109	3.83	1.135	.014	.907
	Male	81	3.81	1.226		

	Total	190	3.83	1.171		
Q13.The provides related software for downloading	Female	109	3.87	1.147	.063	.802
	Male	81	3.91	1.131		
	Total	190	3.89	1.138		
Q14.The provides learning records	Female	109	3.81	1.076	.777	.379
	Male	81	3.95	1.150		
	Total	190	3.87	1.107		
Q15.The menu linkage displays normally	Female	109	3.88	1.103	.042	.837
	Male	81	3.91	1.063		
	Total	190	3.89	1.084		
Q16.The category is appropriate	Female	109	3.97	1.032	.450	.503
	Male	81	4.07	1.034		
	Total	190	4.02	1.031		
Q17.The provides learner process management	Female	109	3.94	1.044	.270	.604
	Male	81	3.86	1.081		
	Total	190	3.91	1.058		
Q18.The provides quick error instruction	Female	109	4.11	1.003	.159	.691
	Male	81	4.05	1.083		
	Total	190	4.08	1.035		
Q19.The provides the mechanism to ask for systematic manager help	Female	109	4.04	1.079	.000	.998
	Male	81	4.04	1.112		
	Total	190	4.04	1.090		
Q20.The navigation is clear and easily understood	Female	109	3.83	1.177	.266	.607
	Male	81	3.91	1.142		
	Total	190	3.86	1.160		
Q21.The texts can be clearly read	Female	108	3.76	1.183	1.631	.203
	Male	81	3.98	1.107		
	Total	189	3.85	1.153		
Q22.The words frequently convey information	Female	107	3.84	1.199	.243	.623
	Male	81	3.93	1.127		
	Total	188	3.88	1.166		
Q23.The images clearly communicate information	Female	109	3.71	1.219	2.199	.140
	Male	81	3.96	1.123		
	Total	190	3.82	1.183		
Q24.The graphics and text complement and support comprehension improvement	Female	108	3.92	1.128	.003	.956
	Male	81	3.93	1.160		
	Total	189	3.92	1.139		
Q25.The animation design clearly communicates information	Female	109	3.94	1.012	.004	.948
	Male	81	3.93	1.058		
	Total	190	3.93	1.029		
Q26.The animation design increases learning desire	Female	109	3.87	1.115	1.587	.209
	Male	81	4.07	1.070		

	Total	190	3.96	1.098		
Q27.The video quality is clear and good	Female	109	4.02	1.080	1.984	.161
	Male	81	3.79	1.137		
	Total	190	3.92	1.107		
Q28.The video transmission is smooth and does not lag	Female	109	3.97	1.058	.031	.861
	Male	81	4.00	1.084		
	Total	190	3.98	1.066		
Q29.The interface design is pleasing and artistic	Female	108	4.01	1.081	.368	.545
	Male	81	3.91	1.063		
	Total	189	3.97	1.071		
Q30.The interface design is creative	Female	109	4.02	1.036	.081	.776
	Male	80	4.06	1.071		
	Total	189	4.04	1.049		
Q31.The teaching material is accurate	Female	109	4.00	1.063	.299	.585
	Male	81	4.09	1.098		
	Total	190	4.04	1.076		
Q32.The teaching material is objective	Female	108	4.00	1.077	.006	.940
	Male	81	3.99	1.167		
	Total	189	3.99	1.113		
Q33.The teaching material paragraph is clear	Female	109	4.07	1.086	.321	.572
	Male	81	**4.16**	.993		
	Total	190	4.11	1.046		
Q34.The teaching material induces learning motivation	Female	109	3.92	1.107	3.072	.081
	Male	81	**4.20**	1.066		
	Total	190	4.04	1.095		
Q35.The teaching material scheme is appropriate and materials correlate	Female	109	3.93	1.184	.086	.770
	Male	81	3.98	1.060		
	Total	190	3.95	1.130		
Q36.The teaching material quantity is appropriate and meet learners 'needs	Female	109	3.91	.996	.275	.600
	Male	81	3.99	1.078		
	Total	190	3.94	1.030		
Q37.The teaching material quality is appropriate and meets learner's capabilities	Female	109	3.78	1.173	.524	.470
	Male	81	3.90	1.102		
	Total	190	3.83	1.142		
Q38.The teaching material unit topic is clear and definite	Female	109	3.94	1.082	.165	.685
	Male	81	4.00	1.072		
	Total	190	3.96	1.076		
Q39.The teaching material organizational structure is clear and systematic	Female	109	3.93	1.043	.909	.342
	Male	81	4.07	1.070		
	Total	190	3.99	1.054		
Q40.The interface design is creative	Female	109	3.97	1.084	.245	.621
	Male	81	4.05	1.023		

| | | Total | 190 | 4.01 | 1.057 |

Average Mean= 3.959156627   Significant *point = p<0.05*.   Average SD= 1.159578313

4.3.3 Participants' Perceptions of WBLP Effects on Students' Learning Outcomes Regarding Their Experience

The population was chosen from second, third and fourth-year students. This decision was made based on the fact that these students' academic curriculum force them to at least had at least one WBLP course from second-year forward. However, in our sample, there were some second-year students who had WBLP course for their first time. According to the results, the number of students who had used WBLP courses before (N=103) were more than those students who did not have a WBLP course before (N=83). This result can be proven by closer look at the average mean and standard deviation of this table. Considering average mean (M=3.913, SD=1.016) the participants whom had previous experience using WBLP had higher mean compare to the ones who did not used WBLP before. Moreover question Q18, Q19, Q31, Q34 and Q35 with (M=4.46, SD=0.751), (M=4.48, SD=0.765), (M=4.61, SD=0.598), (M=4.51, SD=0.698), (M=4.48, SD=0.726) had significantly higher mean than an average mean (M=3.913) in the table.

Table 9 also displays F-statistic and sig (p-value) based on previous experience of the participants with WBLP. Considering the fact that from the 40 items in the list almost all of them showed a p-value bellow the $P<0.05$; It indicate that there is dramatically considerable difference between perception of participants toward WBLP based on their previous encounter with WBLP. This issue is statistically tested with ANOVA test shown in Table 9. As it can be seen based on the One-Way ANOVA test only Q6

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has a p-value higher than 0.05 (Q6: F (0.451) = 7.888, p = .0.503). However almost all other questions used for measurement of students learning outcomes, had significant values below the p value point (p<0.05). This result indicate that previous experience with this system has a significant effect on the students perception of WBLP and clearly the participants whom used this system before had more positive attitude toward it. Full ANOVA table can be found in appendix D.

Table 9: Participants' perceptions on WBLP system effects on students' learning outcomes regarding their previous experience using this system

		N	Mean	SD	F	Between and Within Groups (P value)
Q1.It clearly indicates the instruction goal	Yes	103	4.35	.763	44.933	.000
	No	87	3.32	1.316		
	Total	190	3.88	1.169		
Q2.It indicates knowledge and techniques to be learned	Yes	103	**4.47**	.623	47.205	.000
	No	87	3.49	1.266		
	Total	190	4.02	1.084		
Q3.It assigns evaluation practice for the class	Yes	103	4.47	.654	43.635	.000
	No	87	3.51	1.293		
	Total	190	4.03	1.105		
Q4.It provides frequently Asked Question(FAQ)	Yes	103	4.31	.767	45.684	.000
	No	87	3.33	1.207		
	Total	190	3.86	1.104		
Q5.It provides cases and situations to improve student' understanding	Yes	103	4.38	.794	41.318	.000
	No	87	3.45	1.189		
	Total	190	3.95	1.095		
Q6.It applies various learning facilitation medias	Yes	103	4.28	.797	.451	.503
	No	86	3.98	4.524		
	Total	189	4.14	3.102		
Q7.It applies novel and challenging strategies to increase motivation	Yes	103	4.19	.864	20.897	.000
	No	87	3.49	1.238		
	Total	190	3.87	1.105		
Q8.The presented content is correct in its instructional goal	Yes	103	4.39	.717	22.198	.000
	No	87	3.76	1.110		
	Total	190	4.10	.968		
	Yes	103	4.41	.760	41.810	.000

Q9.It effectively integrates learners ' past learning experience and knowledge	No	86	3.47	1.224		
	Total	189	3.98	1.101		
Q10.The provides learner communication and interaction opportunities (e.g. online discussion)	Yes	103	4.37	.700	42.615	.000
	No	87	3.47	1.170		
	Total	190	3.96	1.043		
Q11.The provides practical learning tools (e.g. online notebook)	Yes	103	4.19	.829	41.657	.000
	No	87	3.28	1.128		
	Total	190	3.77	1.077		
Q12.The provides search functions	Yes	103	4.32	.744	50.515	.000
	No	87	3.24	1.312		
	Total	190	3.83	1.171		
Q13.The provides related software for downloading	Yes	103	4.40	.705	58.653	.000
	No	87	3.29	1.257		
	Total	190	3.89	1.138		
Q14.The provides learning records	Yes	103	4.34	.823	51.708	.000
	No	87	3.31	1.144		
	Total	190	3.87	1.107		
Q15.The menu linkage displays normally	Yes	103	4.32	.717	42.298	.000
	No	87	3.39	1.223		
	Total	190	3.89	1.084		
Q16.The category is appropriate	Yes	103	4.45	.622	49.301	.000
	No	87	3.51	1.180		
	Total	190	4.02	1.031		
Q17.The provides learner process management	Yes	103	4.28	.678	32.250	.000
	No	87	3.47	1.247		
	Total	190	3.91	1.058		
Q18.The provides quick error instruction	Yes	103	**4.46**	.751	34.140	.000
	No	87	3.64	1.151		
	Total	190	4.08	1.035		
Q19.The provides the mechanism to ask for systematic manager help	Yes	103	**4.48**	.765	44.902	.000
	No	87	3.52	1.190		
	Total	190	4.04	1.090		
Q20.The navigation is clear and easily understood	Yes	103	4.32	.843	42.624	.000
	No	87	3.32	1.253		
	Total	190	3.86	1.160		
Q21.The texts can be clearly read	Yes	103	4.31	.792	44.072	.000
	No	86	3.30	1.275		
	Total	189	3.85	1.153		
Q22.The words frequently convey information	Yes	102	4.32	.747	39.288	.000
	No	86	3.35	1.344		
	Total	188	3.88	1.166		
	Yes	103	4.29	.788	44.738	.000

Q23.The images clearly communicate information	No	87	3.25	1.323		
	Total	190	3.82	1.183		
Q24.The graphics and text complement and support comprehension improvement	Yes	103	4.31	.792	30.758	.000
	No	86	3.45	1.308		
	Total	189	3.92	1.139		
Q25.The animation design clearly communicates information	Yes	103	4.29	.775	31.993	.000
	No	87	3.51	1.130		
	Total	190	3.93	1.029		
Q26.The animation design increases learning desire	Yes	103	4.52	.712	87.236	.000
	No	87	3.29	1.099		
	Total	190	3.96	1.098		
Q27.The video quality is clear and good	Yes	103	4.41	.747	56.114	.000
	No	87	3.34	1.189		
	Total	190	3.92	1.107		
Q28.The video transmission is smooth and does not lag	Yes	103	4.40	.856	41.053	.000
	No	87	3.49	1.088		
	Total	190	3.98	1.066		
Q29.The interface design is pleasing and artistic	Yes	103	4.44	.750	55.971	.000
	No	86	3.41	1.131		
	Total	189	3.97	1.071		
Q30.The interface design is creative	Yes	103	4.47	.669	47.186	.000
	No	86	3.52	1.185		
	Total	189	4.04	1.049		
Q31.The teaching material is accurate	Yes	103	**4.61**	.598	96.749	.000
	No	87	3.36	1.120		
	Total	190	4.04	1.076		
Q32.The teaching material is objective	Yes	103	4.46	.751	48.816	.000
	No	86	3.44	1.223		
	Total	189	3.99	1.113		
Q33.The teaching material paragraph is clear	Yes	103	4.55	.606	51.024	.000
	No	87	3.59	1.206		
	Total	190	4.11	1.046		
Q34.The teaching material induces learning motivation	Yes	103	**4.51**	.698	55.022	.000
	No	87	3.47	1.209		
	Total	190	4.04	1.095		
Q35.The teaching material scheme is appropriate and materials correlate	Yes	103	**4.48**	.726	66.072	.000
	No	87	3.32	1.206		
	Total	190	3.95	1.130		
Q36.The teaching material quantity is appropriate and meet learners 'needs	Yes	103	4.33	.746	38.235	.000
	No	87	3.48	1.130		
	Total	190	3.94	1.030		
	Yes	103	4.39	.770	74.115	.000

Q37.The teaching material quality is	No	87	3.17	1.163		
appropriate and meets learner's capabilities	Total	190	3.83	1.142		
Q38.The teaching material unit topic is clear	Yes	103	**4.38**	.729	40.577	.000
and definite	No	87	3.47	1.209		
	Total	190	3.96	1.076		
Q39.The teaching material organizational	Yes	103	4.36	.827	32.258	.000
structure is clear and systematic	No	87	3.55	1.128		
	Total	190	3.99	1.054		
Q40.The interface design is creative	Yes	103	**4.39**	.731	34.869	.000
	No	87	3.55	1.198		
	Total	190	4.01	1.057		

Average Mean=3.913855422   Significant *point = p<0.05*.   Average SD=1.016409639

4.3.4 Participants' Perceptions of WBLP Effects on Students' Learning Outcomes Regarding Their Grades

As it is shown in table 10 the number of students with the lowest grade of D - D +D D- has the least population number (N=4). Students with an average grade of C - C +C C- had a population of (N=54). Students with a grade of B (B +B B-) had the highest number of (N=70) and finally, students who got highest grade of A (A A-) in their WBLP course had a number of (N-62). A populous number of the times were students with A and B grades had more interest and positive attitude toward WBLP course shows the effectiveness and usefulness of such system in the academic sphere. Considering average mean (M=3.730, SD=1.137) the participants who had higher grade more specifically the ones who got (A A-) had better perception toward WBLP. Moreover question Q5, Q19, Q28, Q33, Q34 and Q38 with (M=4.44, SD=0.716), (M=4.47, SD=0.844), (M=4.55, SD=0.670), (M=4.58, SD=0.780), (M=4.45, SD=0.717) and (M=4.42, SD=0.759) had significantly higher mean than an average mean (M=3.730) in the table.

Table 10 also displays F-statistic and sig (p-value) based on grades of the participants in their WBLP course. Considering the fact that from the 40 items in the list almost all of them showed a p-value bellow the P<0.05; It indicate that there is dramatically considerable difference between perception of participants toward WBLP based on their grades. This issue is statistically tested with ANOVA test shown in Table 10. As it can be seen based on the One-Way ANOVA test only Q6 and Q7 have a p-value higher than 0.05 (Q6: (F =01.063), p = (0.366), Q7: (F =4.062), p = (0.80)). However almost all other questions used for measurement of students learning outcomes, had significant values below the p value point (p<0.05). This result indicate that students whom had higher grades in their WBLP course had more positive attitude toward web-based learning system functionality and design. Full ANOVA table can be found in appendix D.

Table 10: Participants' perceptions on WBLP effects on students' learning outcomes regarding their grade

		N	Mean	SD	F	Between and Within Groups (P value)
Q1.It clearly indicates the instruction goal	D +D D-	4	3.25	1.708	5.445	.001
	C+ C C-	54	3.50	1.255		
	B +B B -	70	3.83	1.191		
	A A -	62	4.31	.879		
	Total	190	3.88	1.169		
Q2.It indicates knowledge and techniques to be learned	D +D D-	4	2.75	1.500	7.198	.000
	C+ C C-	54	3.67	1.166		
	B +B B -	70	4.01	1.097		
	A A -	62	4.42	.780		
	Total	190	4.02	1.084		
Q3.It assigns evaluation practice for the class	D +D D-	4	2.75	1.500	8.824	.000
	C+ C C-	54	3.72	1.220		
	B +B B -	70	3.89	1.136		
	A A -	62	4.53	.671		

	Total	190	4.03	1.105		
Q4.It provides frequently Asked Question(FAQ)	D +D D-	4	3.00	1.826	8.264	.000
	C+ C C-	54	3.50	1.285		
	B +B B -	70	3.74	1.003		
	A A -	62	4.37	.773		
	Total	190	3.86	1.104		
Q5.It provides cases and situations to improve student' understanding	D +D D-	4	2.50	1.291	9.009	.000
	C+ C C-	54	3.65	1.084		
	B +B B -	70	3.84	1.199		
	A A -	62	**4.44**	.716		
	Total	190	3.95	1.095		
Q6.It applies various learning facilitation medias	D +D D-	4	3.00	1.414	1.063	.366
	C+ C C-	53	3.58	1.100		
	B +B B -	70	4.43	4.930		
	A A -	62	4.37	.730		
	Total	189	4.14	3.102		
Q7.It applies novel and challenging strategies to increase motivation	D +D D-	4	2.75	1.258	4.062	.080
	C+ C C-	54	3.74	1.152		
	B +B B -	70	3.74	1.188		
	A A -	62	4.21	.852		
	Total	190	3.87	1.105		
Q8.The presented content is correct in its instructional goal	D +D D-	4	2.75	1.258	6.241	.000
	C+ C C-	54	3.96	.951		
	B +B B -	70	3.99	1.028		
	A A -	62	**4.44**	.760		
	Total	190	4.10	.968		
Q9.It effectively integrates learners ' past learning experience and knowledge	D +D D-	4	3.25	.957	5.011	.002
	C+ C C-	53	3.72	1.183		
	B +B B -	70	3.86	1.171		
	A A -	62	4.39	.817		
	Total	189	3.98	1.101		
Q10.The provides learner communication and interaction opportunities (e.g. online discussion)	D +D D-	4	3.00	.816	5.149	.002
	C+ C C-	54	3.70	1.127		
	B +B B -	70	3.89	1.110		
	A A -	62	4.32	.763		
	Total	190	3.96	1.043		
Q11.The provides practical learning tools (e.g. online notebook)	D +D D-	4	4.00	1.414	6.515	.000
	C+ C C-	54	3.33	1.046		
	B +B B -	70	3.74	1.099		
	A A -	62	4.18	.915		
	Total	190	3.77	1.077		
Q12.The provides search functions	D +D D-	4	3.25	1.500	9.367	.000

	C+ C C-	54	3.26	1.277		
	B +B B -	70	3.86	1.146		
	A A -	62	4.32	.825		
	Total	190	3.83	1.171		
Q13.The provides related software for downloading	D +D D-	4	2.75	1.500	8.758	.000
	C+ C C-	54	3.44	1.254		
	B +B B -	70	3.87	1.115		
	A A -	62	4.37	.794		
	Total	190	3.89	1.138		
Q14.The provides learning records	D +D D-	4	3.00	1.414	8.274	.000
	C+ C C-	54	3.41	1.190		
	B +B B -	70	3.87	1.179		
	A A -	62	4.32	.672		
	Total	190	3.87	1.107		
Q15.The menu linkage displays normally	D +D D-	4	2.50	1.732	6.022	.001
	C+ C C-	54	3.57	1.238		
	B +B B -	70	3.94	1.020		
	A A -	62	4.21	.813		
	Total	190	3.89	1.084		
Q16.The category is appropriate	D +D D-	4	3.25	.957	7.045	.000
	C+ C C-	54	3.57	1.126		
	B +B B -	70	4.10	1.009		
	A A -	62	4.35	.812		
	Total	190	4.02	1.031		
Q17.The provides learner process management	D +D D-	4	3.25	1.708	3.275	.022
	C+ C C-	54	3.67	1.182		
	B +B B -	70	3.87	1.115		
	A A -	62	4.21	.727		
	Total	190	3.91	1.058		
Q18.The provides quick error instruction	D +D D-	4	3.75	.957	2.839	.039
	C+ C C-	54	3.89	1.160		
	B +B B -	70	3.99	1.056		
	A A -	62	4.39	.837		
	Total	190	4.08	1.035		
Q19.The provides the mechanism to ask for systematic manager help	D +D D-	4	3.00	1.155	7.680	.000
	C+ C C-	54	3.63	1.186		
	B +B B -	70	4.03	1.063		
	A A -	62	**4.47**	.844		
	Total	190	4.04	1.090		
Q20.The navigation is clear and easily understood	D +D D-	4	3.00	1.826	7.447	.000
	C+ C C-	54	3.41	1.296		
	B +B B -	70	3.86	1.133		

	A A -	62	4.32	.805		
	Total	190	3.86	1.160		
Q21.The texts can be clearly read	D +D D-	4	2.75	1.500	5.777	.001
	C+ C C-	53	3.51	1.339		
	B +B B -	70	3.81	1.107		
	A A -	62	4.26	.848		
	Total	189	3.85	1.153		
Q22.The words frequently convey information	D +D D-	4	2.25	1.893	8.246	.000
	C+ C C-	54	3.59	1.296		
	B +B B -	70	3.77	1.144		
	A A -	60	4.37	.758		
	Total	188	3.88	1.166		
Q23.The images clearly communicate information	D +D D-	4	3.00	1.826	9.943	.000
	C+ C C-	54	3.24	1.345		
	B +B B -	70	3.86	1.107		
	A A -	62	4.32	.785		
	Total	190	3.82	1.183		
Q24.The graphics and text complement and support comprehension improvement	D +D D-	4	2.75	1.708	4.664	.004
	C+ C C-	54	3.61	1.250		
	B +B B -	70	3.94	1.166		
	A A -	61	4.25	.830		
	Total	189	3.92	1.139		
Q25.The animation design clearly communicates information	D +D D-	4	3.25	1.500	7.100	.000
	C+ C C-	54	3.54	1.077		
	B +B B -	70	3.91	1.060		
	A A -	62	4.34	.745		
	Total	190	3.93	1.029		
Q26.The animation design increases learning desire	D +D D-	4	2.75	1.500	7.443	.000
	C+ C C-	54	3.56	1.192		
	B +B B -	70	3.99	1.097		
	A A -	62	4.35	.791		
	Total	190	3.96	1.098		
Q27.The video quality is clear and good	D +D D-	4	3.00	1.414	7.531	.000
	C+ C C-	54	3.54	1.161		
	B +B B -	70	3.86	1.120		
	A A -	62	4.39	.837		
	Total	190	3.92	1.107		
Q28.The video transmission is smooth and does not lag	D +D D-	4	3.25	1.500	13.205	.000
	C+ C C-	54	3.44	1.093		
	B +B B -	70	3.94	1.075		
	A A -	62	**4.55**	.670		
	Total	190	3.98	1.066		

Q29.The interface design is pleasing and artistic	D +D D-	4	3.25	1.500	7.480	.000
	C+ C C-	53	3.51	1.219		
	B +B B -	70	4.00	1.063		
	A A -	62	4.37	.707		
	Total	189	3.97	1.071		
Q30.The interface design is creative	D +D D-	4	3.00	1.155	9.866	.000
	C+ C C-	54	3.59	1.267		
	B +B B -	70	4.03	.947		
	A A -	61	4.51	.674		
	Total	189	4.04	1.049		
Q31.The teaching material is accurate	D +D D-	4	2.50	.577	10.510	.000
	C+ C C-	54	3.63	1.202		
	B +B B -	70	4.03	1.035		
	A A -	62	4.50	.763		
	Total	190	4.04	1.076		
Q32.The teaching material is objective	D +D D-	4	3.50	1.000	6.709	.000
	C+ C C-	53	3.57	1.248		
	B +B B -	70	3.96	1.148		
	A A -	62	4.44	.760		
	Total	189	3.99	1.113		
Q33.The teaching material paragraph is clear	D +D D-	4	3.75	.957	8.266	.000
	C+ C C-	54	3.69	1.163		
	B +B B -	70	4.04	1.013		
	A A -	62	**4.58**	.780		
	Total	190	4.11	1.046		
Q34.The teaching material induces learning motivation	D +D D-	4	3.50	1.291	5.802	.001
	C+ C C-	54	3.67	1.229		
	B +B B -	70	3.99	1.148		
	A A -	62	**4.45**	.717		
	Total	190	4.04	1.095		
Q35.The teaching material scheme is appropriate and materials correlate	D +D D-	4	2.50	1.291	8.617	.000
	C+ C C-	54	3.54	1.177		
	B +B B -	70	3.96	1.185		
	A A -	62	**4.39**	.776		
	Total	190	3.95	1.130		
Q36.The teaching material quantity is appropriate and meet learners 'needs	D +D D-	4	3.50	1.291	7.154	.000
	C+ C C-	54	3.46	1.128		
	B +B B -	70	4.04	1.013		
	A A -	62	4.27	.772		
	Total	190	3.94	1.030		
	D +D D-	4	3.00	.816	10.355	.000
	C+ C C-	54	3.31	1.256		

		N	Mean	SD	F	p
Q37.The teaching material quality is appropriate and meets learner's capabilities	B +B B -	70	3.80	1.137		
	A A -	62	**4.37**	.773		
	Total	190	3.83	1.142		
Q38.The teaching material unit topic is clear and definite	D +D D-	4	3.25	1.500	8.555	.000
	C+ C C-	54	3.50	1.240		
	B +B B -	70	3.96	.999		
	A A -	62	**4.42**	.759		
	Total	190	3.96	1.076		
Q39.The teaching material organizational structure is clear and systematic	D +D D-	4	3.00	1.826	4.060	.008
	C+ C C-	54	3.70	1.093		
	B +B B -	70	4.03	1.007		
	A A -	62	4.26	.940		
	Total	190	3.99	1.054		
Q40.The interface design is creative	D +D D-	4	3.50	1.732	3.248	.023
	C+ C C-	54	3.74	1.152		
	B +B B -	70	3.97	1.035		
	A A -	62	4.31	.879		
	Total	190	4.01	1.057		

Average Mean=3.730496894   Significant *point = p<0.05.* Average SD=1.137409938

4.3.5 Participants' Perceptions on WBLP Effects on Students' Learning Outcomes Regarding Their Computer Literacy

Table 11 shows the number of students who consider themselves computer literate (N=113) is significantly higher than those who consider themselves not familiar with computers (N=77). Moreover comparing the results for this table with previous tables illustrate the fact that students who are more computer literate are more satisfied with WBLP and tend to have better results using it. This result can be proven by closer look at the average mean and standard deviation of this table. Considering average mean (M=3.878, SD=1.0781) the participants with whom consider themselves computer literate had higher mean than other the ones who were not computer literate. Moreover question Q6, Q18, Q26, Q31, Q34, Q38 and Q40 with (M=4.54, SD=3.869), (M=4.34, SD=0.902), (M=4.30, SD=0.925), (M=4.35, SD=0.935), (M=4.42, SD=0.821),

(M=4.33, SD=0.829) and (M=4.55, SD=0.598) were all had significantly higher mean than an average mean (M=3.878) in the table.

Table 11 also displays F-statistic and sig (p-value) based on computer literacy of participants. Considering the fact that from the 40 items in the list all of them showed a p-value bellow the $P<0.05$; It indicate that there is significantly considerable difference between perception of participants toward WBLP based on their computer literacy. This issue is statistically tested with ANOVA test shown in Table 11, accordingly all of questions used for measurement of students learning outcomes, had significant values below the p value point ($p<0.05$). This result indicate that computer literacy has a significant effect on the student's perception of WBLP and Students whom were more computer literate were more interested and had positive attitude toward web-based learning system. Full ANOVA table can be found in appendix D.

Table 11: Students perceptions on WBLP effects on students' learning outcomes regarding their computer literacy

		N	Mean	SD	F	Between and Within Groups (P value)
Q1.It clearly indicates the instruction goal	Yes	113	4.14	1.017	15.131	.000
	No	77	3.49	1.273		
	Total	190	3.88	1.169		
Q2.It indicates knowledge and techniques to be learned	Yes	113	4.33	.911	25.138	.001
	No	77	3.57	1.163		
	Total	190	4.02	1.084		
Q3.It assigns evaluation practice for the class	Yes	113	4.32	.909	21.627	.000
	No	77	3.60	1.228		
	Total	190	4.03	1.105		
Q4.It provides frequently Asked Question(FAQ)	Yes	113	4.14	.953	19.461	.000
	No	77	3.45	1.187		
	Total	190	3.86	1.104		
Q5.It provides cases and situations to improve student' understanding	Yes	113	4.27	.909	27.439	.000
	No	77	3.48	1.177		

	Total	190	3.95	1.095		
Q6.It applies various learning facilitation medias	Yes	112	**4.54**	3.869	4.491	.035
	No	77	3.57	1.175		
	Total	189	4.14	3.102		
Q7.It applies novel and challenging strategies to increase motivation	Yes	113	4.15	.947	19.155	.000
	No	77	3.47	1.199		
	Total	190	3.87	1.105		
Q8.The presented content is correct in its instructional goal	Yes	113	4.35	.812	21.252	.000
	No	77	3.73	1.059		
	Total	190	4.10	.968		
Q9.It effectively integrates learners ' past learning experience and knowledge	Yes	113	4.26	.943	19.665	.000
	No	76	3.57	1.193		
	Total	189	3.98	1.101		
Q10.The provides learner communication and interaction opportunities (e.g. online discussion)	Yes	113	4.19	.959	14.247	.000
	No	77	3.62	1.077		
	Total	190	3.96	1.043		
Q11.The provides practical learning tools (e.g. online notebook)	Yes	113	4.11	.859	30.756	.000
	No	77	3.29	1.179		
	Total	190	3.77	1.077		
Q12.The provides search functions	Yes	113	4.13	.996	21.117	.000
	No	77	3.38	1.267		
	Total	190	3.83	1.171		
Q13.The provides related software for downloading	Yes	113	4.18	.918	19.552	.000
	No	77	3.47	1.294		
	Total	190	3.89	1.138		
Q14.The provides learning records	Yes	113	4.21	.930	31.210	.000
	No	77	3.36	1.157		
	Total	190	3.87	1.107		
Q15.The menu linkage displays normally	Yes	113	4.20	.836	25.595	.000
	No	77	3.44	1.241		
	Total	190	3.89	1.084		
Q16.The category is appropriate	Yes	113	4.32	.837	27.403	.000
	No	77	3.57	1.129		
	Total	190	4.02	1.031		
Q17.The provides learner process management	Yes	113	4.15	.909	15.439	.000
	No	77	3.56	1.164		
	Total	190	3.91	1.058		
Q18.The provides quick error instruction	Yes	113	**4.34**	.902	18.011	.000
	No	77	3.71	1.110		
	Total	190	4.08	1.035		
Q19.The provides the mechanism to ask for systematic manager help	Yes	113	4.29	.951	16.525	.000
	No	77	3.66	1.177		

	Total	190	4.04	1.090		
Q20.The navigation is clear and easily understood	Yes	113	4.22	.989	30.735	.000
	No	77	3.34	1.199		
	Total	190	3.86	1.160		
Q21.The texts can be clearly read	Yes	113	4.17	1.017	23.708	.000
	No	76	3.38	1.188		
	Total	189	3.85	1.153		
Q22.The words frequently convey information	Yes	113	4.17	.999	19.305	.000
	No	75	3.44	1.265		
	Total	188	3.88	1.166		
Q23.The images clearly communicate information	Yes	113	4.15	1.011	25.161	.000
	No	77	3.32	1.251		
	Total	190	3.82	1.183		
Q24.The graphics and text complement and support comprehension improvement	Yes	113	4.17	.990	14.207	.000
	No	76	3.55	1.248		
	Total	189	3.92	1.139		
Q25.The animation design clearly communicates information	Yes	113	4.19	.872	18.612	.000
	No	77	3.56	1.130		
	Total	190	3.93	1.029		
Q26.The animation design increases learning desire	Yes	113	**4.30**	.925	31.647	.000
	No	77	3.45	1.142		
	Total	190	3.96	1.098		
Q27.The video quality is clear and good	Yes	113	4.27	.916	31.292	.000
	No	77	3.42	1.174		
	Total	190	3.92	1.107		
Q28.The video transmission is smooth and does not lag	Yes	113	4.28	.949	24.658	.000
	No	77	3.55	1.083		
	Total	190	3.98	1.066		
Q29.The interface design is pleasing and artistic	Yes	113	4.31	.856	33.477	.000
	No	76	3.46	1.160		
	Total	189	3.97	1.071		
Q30.The interface design is creative	Yes	113	4.30	.865	19.544	.000
	No	76	3.64	1.174		
	Total	189	4.04	1.049		
Q31.The teaching material is accurate	Yes	113	**4.35**	.935	27.648	.000
	No	77	3.57	1.105		
	Total	190	4.04	1.076		
Q32.The teaching material is objective	Yes	113	4.32	.966	27.085	.000
	No	76	3.51	1.149		
	Total	189	3.99	1.113		
Q33.The teaching material paragraph is clear	Yes	113	**4.42**	.842	27.062	.000
	No	77	3.66	1.154		

	Total	190	4.11	1.046	
Q34.The teaching material induces learning motivation	Yes	113	**4.42**	.821	40.355 .000
	No	77	3.48	1.210	
	Total	190	4.04	1.095	
Q35.The teaching material scheme is appropriate and materials correlate	Yes	113	4.27	.945	24.876 .000
	No	77	3.48	1.221	
	Total	190	3.95	1.130	
Q36.The teaching material quantity is appropriate and meet learners 'needs	Yes	113	4.25	.829	28.101 .000
	No	77	3.49	1.131	
	Total	190	3.94	1.030	
Q37.The teaching material quality is appropriate and meets learner's capabilities	Yes	113	4.27	.889	53.536 .000
	No	77	3.18	1.167	
	Total	190	3.83	1.142	
Q38.The teaching material unit topic is clear and definite	Yes	113	**4.33**	.829	38.274 .000
	No	77	3.43	1.175	
	Total	190	3.96	1.076	
Q39.The teaching material organizational structure is clear and systematic	Yes	113	4.33	.860	33.612 .000
	No	77	3.49	1.119	
	Total	190	3.99	1.054	
Q40.The interface design is creative	Yes	113	**4.55**	.597	120.314 .000
	No	77	3.21	1.080	
	Total	190	4.01	1.057	

Average Mean=3.87825   Significant point = $p<0.05$.   Average SD=1.0780375

4.4 Qualitative Findings

For qualitative research, 8 students from School of Computing and Technology at Eastern Mediterranean University were invited to be interviewed. However for making the research process easy and fast only the students who were familiar with the English language and had more experience with WBLP (4th year students) were chosen for this interview. The researcher designed the interview questions to answer three main questions: their personal information their academic background, their computer literacy level and finally the advantages and disadvantages which they find using WBLP in their courses. The researcher will analysis these answers in the section below.

4.4.1 Students' Perceptions from Semi-Structured Interviews on WBLP courses

According to the semi-structured interview, most of the interviewed students were female (N=10), in the age range of (18-24). All of these students were in the fourth year of their studies and able to speak English fluently. Interestingly all of the interviewees consider themselves computer literate and very comfortable with using WBLP courses. However, there was no way of checking these students level of computer knowledge or even their legitimacy of considering themselves computer literate. Computer literacy can be translated very differently from person to person and what consider to be basic knowledge for one, could be considered too complicated to learn or un-relevant for another one.

4.4.2 Transcriptions of the Instructors' Perceptions on the advantages and disadvantages of using WBLP courses

It is worth stating at this point that almost all of the students were aware of the advantages of the WBLP and new computerized technologies in their learning process, nevertheless most of the students were complaining about the way that this system has been implemented in the university and the resources and infrastructure which is needed for operational and useful web-based learning platforms. Table 12 illustrates the codes which were derived from the research questions in order to analyse the qualitative data.

Table 12: Codes which were derived from the research questions

Research Questions	Codes derived from Research Questions
1. What are the students' perceptions of the effects of a Web-Based Learning Platform (WBLP) on their learning outcomes based on its learning interface, teaching material, learning tool, and instructional strategy?	S'S percepts.
2. To what extent the WBLP affect the students' learning outcome regarding their grades?	Contrib. of WBLP
3. To what extent the WBLP affect the students' learning outcome regarding their gender?	Contrib. of WBLP.
4. To what extent the WBLP affect the students' learning outcome regarding the previous experience with this system?	B.Requirements.
5. How many students computer literacy can affect students learning outcome and their attitude toward WBLP courses?	B.Requirements

To be able to analyze the interviews data, first of all, the researcher coded the research questions into the three main categories. The first question "What are the students' perceptions towards the effects of a Web-Based Learning Platform (WBLP) on their learning outcomes based on its learning interface, teaching material, learning tool and instructional strategy" was coded as "S'S percepts" , the second research question "To what extent the WBLP affect the students' learning outcome regarding their grades?" was coded as "Contrib. of WBLP", moreover the third research question "To what extent the WBLP affect the students' learning outcome regarding the previous experience with this system? And How much students computer literacy can affect students learning outcome and their attitude toward WBLP courses?" were coded as "B.Requirements.

Table 13: Definition of the derived codes from the research questions

Codes	Definitions
S'S precepts.	Students' Perceptions
Contrib. of WBLP.	Contrib. of WBLP to learning outcomes of students
B.Requirements.	Background requirements to use WBLP course by students

According to S1: *"Web-based learning is the easiest way to have all the material that you need for your courses online and without asking other students or teacher for the needed material. I think as an international university it is very important for our university to invest more in new technology and guide students and instructors toward using these technologies in the classroom".*

S3 also said that: *"WBLP is a very easy to use the system, at least for me! However I see many of my classmates, especially the freshman students have a problem in using it, mostly because they don't know how to use it and we don't have a very good tutorial or course to teach them from the first how to use it. I see many of my friends even do not know how to use a computer and this could be a real problem and barrier when they want to use WBLP. This problem can be solved easily if department create an extra course to teach the basic computer literacy and WBLP usage to the students who are not very familiar with it".*

S6 underlined the same issue that: "*I am good with computers, I don't have a problem. However, I see many students and even instructors face real challenge using it".*

On the contrary, one of the students were against the whole WBLP and find it really follow. According to T4: *"I really had a problem first time when I entered this course.*

I almost failed because that time I was not very good at using computers and I did not have good internet at the home. I couldn't access my study materials, worth than that I had to print every lecture note and pay too much for that! I am not used to studying from the screen. I still prefer books and classroom and had to put too much effort to connect to this new system. The new technologies are hard to be followed for me. Not everyone has money to buy a laptop or smartphones. University computer lab is most of the times full or the systems are not working properly. There is now one in the lab to guide you".

S5 had better technical views about the platform and mentioned: *"new technologies and new systems are usually not welcome at first. WBLP is a very good system. You have your lecture materials wherever you go, you can edit and create your course notes. However, it is important to teach this new technology to all the students and instructor and make sure university internet lines have a suitable speed for students to use this system comfortably. Also, computer labs need a serious upgrade".*

S2 believed that: *"using computers create extra problems that we did not face before. Before when I wanted to study I just get my book and lecture notes and I could study. In WBLP you have to have your computer or tablet all the time. If you don't have a laptop or it is damaged you're doomed! This platform has made everything more complicated and although I used it in my studies I hated using it".*

S8 from other hand loved the WBLP courses and said "*I don't understand why some people do not like new technology. Your classroom is in your bag or pocket now. Wherever you go you can study. I have my tablet in my backpack all the times and whenever I need I study. I even go to Gloria jeans sometimes and study there. It is also*

very eco-friendly, you don't have to use too many papers. Everything you need is with you".

To conclude from all the interviews it is safe to say that, using WBLP course at the Eastern Mediterranean University from student's perception has many advantages and few structural disadvantages. As emphasized formerly, although most of the student did like using WBLP in their learning process there were some limitations such as lack of training, technological infrastructure made use of this system difficult for the students. Fortunately, none of these problems seems unsolvable and with correct management, students could benefit the most from WBLP.

Chapter 5

CONCLUSION

5.1 Conclusion

Nowadays, the benefits of the Internet and online learning have gained a lot of attention to education. These technological tools let students and instructors cooperate and communicate much more effective than before. Not only they are efficiently applicable in individual practices, but also inherently they support "collaboration, communication, interaction, exchange, and reflection". Although many educational systems have adopted these technologies, still there are needs to discover the complete potential in utilizing of them and how to reach this aim.

Recently, the quantity of Web-Based Learning Platform (WBLP) has been rising at a shocking rate, and various institutions and individuals have a preference in the provision of education/training via the Internet, according to the latest requirements.

The grand motive of this project is the evaluation of a comprehensive overview of WBLP in the context of their experience at the School of Computing and Technology. This work introduced a number of critical questions in WBLP:

- What are the students' perceptions of the effects of a WBLP on their learning outcomes based on its learning interface, teaching material, learning tool, and instructional strategy?

- To what extent WBLP affect the students' learning outcome regarding their grades?

- To what extent WBLP affect the students' learning outcome regarding their gender?

- To what extent WBLP affect the students' learning outcome department?

In continuation, the research design, participant's instrument, data collection tools and techniques, validity and reliability. Data collection instrument, population, the data collection procedure, data collection period, validity and reliability and finally data analysis were presented. The mix research method was used for collecting the data in order to analyze the students' perceptions of the effects of a WBLP on their learning outcomes through an evaluation scale designed by Hsu .et. al (2009) in which the Turkish version of this scale adopted by Dağ (2016). The questionnaire were distributed via the online platform of EMU to the students who had been registered to a course which was offered by the School of Computing and Technology through a web-based learning platform in order to analyze the effectiveness of that platform in terms of interaction, communication and ease of access to information, learning and connectivity of students. After the data were collected, the data were analyzed by using SPSS. It is found that the majority of students were either agreeing or strongly agreeing with the developed WBLP course materials and the quality of their delivery. The interview questions were asked from 8 4th year students and the result was coded and analyzed by the researcher.

At the end by reviewing the result of questionnaire and semi-structured interview analysis, it is possible to say that; many students in their semi-structured interviews mentioned that although they like WBLP and they would enjoy working with them,

however, it is possible to say that infrastructure problems sometimes hold students to benefits from all the possibilities of this system. In another word most students were aware of the advantages of WBLP course and usage of new technologies in the classrooms, however, they were concerned about the infrastructure and utilities needed for such changes in eastern Mediterranean University. Many students believed that internet speed, computer labs and personal pcs and laptops could build a barrier for students learning, from other hand solving these problems could change the learning horizons in EMU and contribute too much to the students learning outcomes.

Researcher in this thesis has examined the perceptions of students in the eastern Mediterranean university toward the effectiveness of a Web-Based Learning Platform (WBLP) on their learning outcomes. Accordingly based on the finding it is possible to conclude that:

- Web-based learning platform when it is implemented correctly can scale down many problems such as time-limitation, constant physical attendance requirement in the classrooms and dependence on the teacher. Moreover, this system could be considered more eco-friendly and cheaper than the traditional classroom-based learning.

- Web-based learning potentially has many advantages however lack of experience working with such a system and shortfall of computer literacy could build a barrier in the way of students learning.

- The researcher can suggest that university anticipate the lack of student's computer literacy and offer basic computer literacy classes before ahead. Also, explanatory classes needed to be given students about the advantages and many ways that they can use such systems in their own benefits.

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APPENDICES

Appendix A: Questionnaire Guide and Consent Forms for Turkish Students

ÖĞRENCİ KATILIM ONAN FORMU

Değerli Öğrenciler,

Tez çalışmam kapsamında, "Web tabanlı öğrenme platformunun öğrenme çıktıları üzerindeki etkisine yönelik öğrenci algıları: DAÜ Örneği" üzerine bir çalışma sürdürmekteyim.

Etkileşim, iletişim, bilgiye erişim kolaylığı, ve öğrencilerin öğrenimi açısından web tabanlı öğrenme platformunun etkinliğine ilişkin bir anket doldurmaya davetlisiniz. Bu anketi tamamlamanız yaklaşık 20 dakika surecektir. Tüm sorulara vereceğini doğru ve samimi cevaplar, sağlıklı sonuçlar alabilmemiz açısından çok önemlidir. Sizi temin ederiz ki sağladığınız kişisel bilgileriniz ve bireysel yanıtlarınız gizli tutulacak ve sadece araştırma amacıyla kullanılacaktır. Detaylı bilgi için benimle veya tez danışmanımla iletişime geçmekten çekinmeyiniz. Bu çalışmaya katılmak gönüllülük esasına dayanmaktadır ve istediğiniz zaman çalışmadan çekilmekte serbestsiniz.

Katılımınız ve iş birliğiniz için teşekkurler.

Parisa Ghanouni	Dr. Bengi Sonyel
YüksekLisansÖğrencisi	TezYöneticisi
EğitimdeİletişimTeknolojileri	EğitimdeİletişimTeknolojileri
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Araştırmaileneyinaçıklandığınıvebuaraştırmayakatılmanınneyigerektirdiğiniokudum, anladım.

Bu araştırmayagönüllüolarakkatılmayıkabulediyorum.

Öğrenciadıvesoyadı: ………………………………………

Tarih: ……………………………………….

İmza:

Appendix B: Questionnaire Guide and Consent Forms for Students

Dear Participant,

I am a graduate student in the Information and Communication Technologies in Education Department at Eastern Mediterranean University. Within the scope of my dissertation, the aim is to evaluate the "Students' Perceptions Towards The Effectiveness of A Web-Based Learning Platform (WBLP) on Their Learning Outcomes: Case of EMU". The information obtained from the questionnaire will construct the basis of the scientific work and will not be used for any other purpose

Part A:

Demographic

Age: (18- 23) [ ]   (24- 29) [ ]   (30 -34) [ ]   (35 -39) [ ]   (40 -45) [ ]   (+45) [ ]

Gender: Female [ ]   Male [ ]

Part B:

Course GPA: A (A, A-) [ ]   B (B-, B, B+) [ ]   C (C-, C, C+) [ ]   D (D-, D, D+)   F (F-, F+)

Do you have experience using WBLP class platform before? [ ] Yes; [ ] No

Do you consider yourself computer literate? [ ] Yes; [ ] No

Part C:

Please answer the following question by selecting the appropriate level of agreement on the following statements.

Strongly Agree = 5, Agree = 4, Neutral = 3, Strongly Disagree = 2, Disagree = 1

	Q.	Statements	Strongly agree	Agree	Neutral	Strongly Disagree	Disagree
Part C: Platform Design	1	It clearly indicates the instruction goal					
	2	It indicates knowledge and techniques to be learned					
	3	It assigns evaluation practice for the class					
	4	It provides Frequently Asked Question(FAQ)					
	5	It provides cases and situations to improve student' understanding					
	6	It applies various learning facilitation medias					
	7	It applies novel and challenging strategies to increase motivation					
	8	The presented content is correct in its instructional goal					

	9	It effectively integrates learners ' past learning experience and knowledge					
	10	The provides learner communication and interaction opportunities (e.g. online discussion)	84				
	11	The provides practical learning tools (e.g. online notebook)					
	12	The provides search functions					
	13	The provides related software for downloading					
	14	The provides learning records					
	15	The menu linkage displays normally					
	16	The category is appropriate					
	17	The provides learner process management					
	18	The provides quick error instruction					
	19	The provides the mechanism to ask for systematic manager help					
	20	The navigation is clear and easily understood					
	21	The texts can be clearly read					
	22	The words frequently convey information					
	23	The images clearly communicate information					
	24	The graphics and text complement and support comprehension improvement					
	25	The animation design clearly communicates information					
	26	The animation design increases learning desire					
	27	The video quality is clear and good					
	28	The video transmission is smooth and does not lag					
	29	The interface design is pleasing and artistic					
	30	The interface design is creative					
Part D: Teaching Material Quality	31	The teaching material is accurate					
	32	The teaching material is objective					
	33	The teaching material paragraph is clear					
	34	The teaching material induces learning motivation					
	35	The teaching material scheme is appropriate and materials correlate					
	36	The teaching material quantity is appropriate and meets learners 'needs					

	37	The teaching material quality is appropriate and meets learner's capabilities					
	38	The teaching material unit topic is clear and definite					
	39	The teaching material organizational structure is clear and systematic					
	40	The teaching material cases and situations meet learners' cognitive abilities					

Değerlikatılımcı;

Eğitimdebilgiveiletişimteknolojileriprogramıyükseklisansöğrencisiolaraksürdürmekteolduğu mtezçalışmamkapsamında, "Web tabanlıöğrenmeplatformununöğrenmeçıktılarıüzerindekietkisineyöneliköğrencialgıları: DAÜ Örneği"nindeğerlendirilmesiamaçlanmaktadır. Anketteneldeedilecekbilgiler, bilimselbirçalışmayıtemeloluşturacakvebaşkabiramaçlakullanılmayacaktır.

Bölüm A:

Yaş: (18- 23) [ ]   (24- 29) [ ]   (30 -34) [ ]   (35 -39) [ ]   (40 -45) [ ]   (+45) [ ]

Cinsiyet: Kadın[ ]   Erkek [ ]

Bölüm B:

Kurs GPA: A(A, A-) [ ]   B(B-, B, B+) [ ]   C(C-, C, C+) [ ]   D(D-, D, D+)   F(F-, F+)

Dahaönce web tabanlıbirdersaldınızmı? [ ] Evet; [ ] Hayır

Kendinizi bilgisayar okur yazarlığı mı düşünüyorsunuz? [ ] Evet; [ ] Hayır

Bölüm C:

Aşağıdakiifadelerden size enuygunolanıişaretleyiniz.

KesinlikleKatılıyorum= 5, Katılıyorum = 4, Kararsızım = 3, Katılmıyorum= 2, KesinlikleKatılmıyorum= 1

	Q		Kesinlikle Katılıyorum	Katılıyorum	Kararsızım	Katılmıyorum	Kesinlikle Katılmıyorum
Bölüm C:	1	Site, öğretimhedefiniaçıkçabelirtir.					
	2	Site, öğrenilmesigerekenbilgi ve tekniklerbelirtir.					

				86			
	3	Site, sınıfiçindeğerlendirmea maçlı alıştırmauygulamalarısun ar.					
	4	Sitedesıkçasorulansorula rbölümü mevcuttur.					
	5	Site, öğrenenindahaiyianlayab ilmesi içinörnekolayvedurumlar sunar.					
	6	Site, öğrenmeyeyardımcıolaca kfarklı ortamlarkullanır.					
	7	Site,motivasyonuarttırma kiçinyeniveilgiçekicistrat ejileruygular.Site öğrenenleringeçmişöğren me					
	8	Sitedesunulaniçerik, öğretimhedeflerineuygun dur.					
	9	Deneyimvebilgilerin ietkilişekildetamamlar.					
	10	Site öğreneniletişimiveetk ileşimineimkansağlar. (örn: çevrimiçitartışmalisteleri)					
	11	Site pratiköğrenmearaçları (Ör: çevrimiçi not etmearacı) sağlar.					
	12	Site, aramafonksiyonlarısağlar .					
	13	Site, indirmeişlemleriiçinilgili yazılımlarısağlar.					
	14	Site, öğrenmekaydıtutar.					
	15	Menübağlantılarıdüzgün görünür. çevrimiçi not etmearacı) sağlar.					
	16	Menükategorileridüzgün veuygundur					
	17	Site, öğrenmesürecininyönetil mesineimkansağlar.					

	18	Site, hızlıhatayönergesi (düzeltme/ayıklamaiçin) sağlar.				
	19	Site, yöneticidendestekalmakiçinuygunbirmekanizmasağlar.				
	20	Gezinmeaçıkvekolaylaşılırdır				
	21	Metinleraçıkbirbiçimdeokunabilir				
	22	Kelimelerçoğunluklabilgiaktarıcıözelliktedir.				
	23	Görsellerbilgiyiaçıkveanlaşılırşekildeiletir				
	24	Grafiklervemetinbirbirini tamamlarveöğrencininanlayışınıgeliştirmeyidestekler.				
	25	Canlandırmatasarımı (animasyon) bilgiyiaçıkveanlaşılırşekildeiletir.				
	26	Canlandırmatasarımı (animasyon) öğrenmeisteğiniarttırır.				
	27	Video kalitesi net veiyidir.				
	28	Video iletimiakıcıdırvedurakla mayapmamaktadır.				
	29	Arayüztasarımımemnuniyetvericivesanatsaldır.				
	30	Arayüztasarımıyaratıcıdır.				
Bölüm D: Materyal Kalitesini Öğretmek	31	Öğretimmateryalihatasız veeksiksizdir.				
	32	Öğretimmateryalitarafsızdır.				
	33	Öğretimmateryalindekiparagraflaraçıkveanlaşılırdır				
	34	Öğretimmateryaliöğrenme. motivasyonunuarttırır.				
	35	Öğretimmateryallerininsunumplanıuygundurvemateryallerbirbirleriileilişkilidir.				
	36	Öğretimmateryalininniceliği (sayısı/ miktarı/süresi) uygundurveöğrencininkapasitesiileörtüşür				
	37	Öğretimmateryalininniteliği (düzey/doğruluk/güncellik vb.) uygundurveöğrencininkapasitesiileörtüşür.				

	38	Öğretimmateryalindekiünite/bölüm/ konubaşlıkları net veaçıktır.				
	39	Öğretimmateryalininorga nizasyonyapısıaçık, anlaşılırvesistematiktir.				
	40	olaylarvedurumlar, öğrencininbilişselyetene kleriyleörtüşür.				

Appendix C: Semi-Structured Interview Questions for Students

Parisa Ghanouni

M.Sc in Computer and Instructional

Technology in Teacher Education

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Semi-Structured Interviews with Students

Dear Student,

The purpose of this Semi-Structured Interviews is to collect data about "Students' Perceptions towards the Effectiveness of a Web-Based Learning Platform (WBLP) on Their Learning Outcomes: Case of EMU". This research aims to answer the following as listed:

- o What are the students' perceptions towards the effects of a Web-Based Learning Platform (WBLP) on their learning outcomes based on its learning interface, teaching material, learning tool, and instructional strategy?
- o To what extent the WBLP affect the students' learning outcome regarding their grades?
- o To what extent the WBLP affect the students' learning outcome regarding their gender?
- o To what extent the WBLP affect the students' learning outcome regarding the previous experience with this system?
- o How many students computer literacy can affect students learning outcome and their attitude toward WBLP courses?

As a researcher, I would appreciate if you participate in this research. This is completely confidential and will not be used for any other purposes.

Thank you very much for your contributions.

- ❖ **Demographic features:**

1) Could you please introduce yourself?

- ❖ **Computer and Online skills:**

2) Do you consider yourself a computer literate and interested in the new technologies and new learning methods?

❖ **Evaluation of WBLP:**

5) What are some advantages and disadvantages of WBLP courses in your opinion and experience with this system?

Parisa Ghanoni   Assist.Prof.Dr.Bengi Sonye

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Appendix D: SPSS ANOVA Tables

Participants' perceptions of WBLP effects on students' learning outcomes regarding their age

		Sum of Squares	df	Mean Square	F	Sig.
Q1.It clearly indicates the instruction goal	Between Groups	21.168	3	7.056	5.536	.001
	Within Groups	237.048	186	1.274		
	Total	258.216	189			
Q2.It indicates knowledge and techniques to be learned	Between Groups	26.374	3	8.791	8.362	.000
	Within Groups	195.541	186	1.051		
	Total	221.916	189			
Q3.It assigns evaluation practice for the class	Between Groups	28.692	3	9.564	8.799	.000
	Within Groups	202.176	186	1.087		
	Total	230.868	189			
Q4.It provides frequently Asked Question(FAQ)	Between Groups	18.245	3	6.082	5.331	.002
	Within Groups	212.197	186	1.141		
	Total	230.442	189			
Q5.It provides cases and situations to improve student' understanding	Between Groups	23.538	3	7.846	7.188	.000
	Within Groups	203.036	186	1.092		
	Total	226.574	189			
Q6.It applies various learning facilitation medias	Between Groups	19.855	3	6.618	.684	.563
	Within Groups	1789.288	185	9.672		
	Total	1809.143	188			
Q7.It applies novel and challenging strategies to increase motivation	Between Groups	21.500	3	7.167	6.364	.000
	Within Groups	209.468	186	1.126		

	Total	230.968	189			
Q8.The presented content is correct in its instructional goal	Between Groups	13.418	3	4.473	5.082	.002
	Within Groups	163.682	186	.880		
	Total	177.100	189			
Q9.It effectively integrates learners ' past learning experience and knowledge	Between Groups	18.785	3	6.262	5.539	.001
	Within Groups	209.130	185	1.130		
	Total	227.915	188			
Q10.The provides learner communication and interaction opportunities (e.g. online discussion)	Between Groups	13.224	3	4.408	4.260	.006
	Within Groups	192.439	186	1.035		
	Total	205.663	189			
Q11.The provides practical learning tools (e.g. online notebook)	Between Groups	20.980	3	6.993	6.560	.000
	Within Groups	198.288	186	1.066		
	Total	219.268	189			
Q12.The provides search functions	Between Groups	28.402	3	9.467	7.627	.000
	Within Groups	230.866	186	1.241		
	Total	259.268	189			
Q13.The provides related software for downloading	Between Groups	31.315	3	10.438	9.100	.000
	Within Groups	213.364	186	1.147		
	Total	244.679	189			
Q14.The provides learning records	Between Groups	17.143	3	5.714	4.954	.002
	Within Groups	214.567	186	1.154		
	Total	231.711	189			
Q15.The menu linkage displays normally	Between Groups	16.379	3	5.460	4.941	.003
	Within Groups	205.515	186	1.105		
	Total	221.895	189			

Q16.The category is appropriate	Between Groups	22.093	3	7.364	7.658	.000
	Within Groups	178.860	186	.962		
	Total	200.953	189			
Q17.The provides learner process management	Between Groups	20.548	3	6.849	6.672	.000
	Within Groups	190.931	186	1.027		
	Total	211.479	189			
Q18.The provides quick error instruction	Between Groups	12.834	3	4.278	4.192	.007
	Within Groups	189.819	186	1.021		
	Total	202.653	189			
Q19.The provides the mechanism to ask for systematic manager help	Between Groups	20.610	3	6.870	6.260	.000
	Within Groups	204.132	186	1.097		
	Total	224.742	189			
Q20.The navigation is clear and easily understood	Between Groups	19.353	3	6.451	5.104	.002
	Within Groups	235.089	186	1.264		
	Total	254.442	189			
Q21.The texts can be clearly read	Between Groups	27.539	3	9.180	7.639	.000
	Within Groups	222.313	185	1.202		
	Total	249.852	188			
Q22.The words frequently convey information	Between Groups	23.462	3	7.821	6.237	.000
	Within Groups	230.724	184	1.254		
	Total	254.186	187			
Q23.The images clearly communicate information	Between Groups	24.126	3	8.042	6.222	.000
	Within Groups	240.426	186	1.293		
	Total	264.553	189			
Q24.The graphics and text complement and support comprehension improvement	Between Groups	19.739	3	6.580	5.432	.001

	Within Groups	224.071	185	1.211		
	Total	243.810	188			
Q25.The animation design clearly communicates information	Between Groups	19.556	3	6.519	6.715	.000
	Within Groups	180.554	186	.971		
	Total	200.111	189			
Q26.The animation design increases learning desire	Between Groups	31.553	3	10.518	9.976	.000
	Within Groups	196.110	186	1.054		
	Total	227.663	189			
Q27.The video quality is clear and good	Between Groups	24.008	3	8.003	7.163	.000
	Within Groups	207.807	186	1.117		
	Total	231.816	189			
Q28.The video transmission is smooth and does not lag	Between Groups	23.270	3	7.757	7.527	.000
	Within Groups	191.682	186	1.031		
	Total	214.953	189			
Q29.The interface design is pleasing and artistic	Between Groups	22.151	3	7.384	7.053	.000
	Within Groups	193.659	185	1.047		
	Total	215.810	188			
Q30.The interface design is creative	Between Groups	23.301	3	7.767	7.833	.000
	Within Groups	183.440	185	.992		
	Total	206.741	188			
Q31.The teaching material is accurate	Between Groups	19.608	3	6.536	6.105	.001
	Within Groups	199.135	186	1.071		
	Total	218.742	189			
Q32.The teaching material is objective	Between Groups	23.282	3	7.761	6.846	.000
	Within Groups	209.713	185	1.134		

	Total	232.995	188			
Q33.The teaching material paragraph is clear	Between Groups	15.681	3	5.227	5.090	.002
	Within Groups	190.998	186	1.027		
	Total	206.679	189			
Q34.The teaching material induces learning motivation	Between Groups	21.543	3	7.181	6.509	.000
	Within Groups	205.199	186	1.103		
	Total	226.742	189			
Q35.The teaching material scheme is appropriate and materials correlate	Between Groups	20.522	3	6.841	5.758	.001
	Within Groups	220.952	186	1.188		
	Total	241.474	189			
Q36.The teaching material quantity is appropriate and meets learners 'needs	Between Groups	11.523	3	3.841	3.783	.011
	Within Groups	188.840	186	1.015		
	Total	200.363	189			
Q37.The teaching material quality is appropriate and meets learner's capabilities	Between Groups	30.605	3	10.202	8.785	.000
	Within Groups	216.006	186	1.161		
	Total	246.611	189			
Q38.The teaching material unit topic is clear and definite	Between Groups	20.301	3	6.767	6.343	.000
	Within Groups	198.441	186	1.067		
	Total	218.742	189			
Q39.The teaching material organizational structure is clear and systematic	Between Groups	14.245	3	4.748	4.512	.004
	Within Groups	195.734	186	1.052		
	Total	209.979	189			
Q40.The interface design is creative	Between Groups	12.760	3	4.253	3.991	.009
	Within Groups	198.234	186	1.066		
	Total	210.995	189			

Participants' perceptions of WBLP effects on students' learning outcomes regarding their gender

		Sum of Squares	df	Mean Square	F	Sig.
Q1.It clearly indicates the instruction goal	Between Groups	.379	1	.379	.276	.600
	Within Groups	257.837	188	1.371		
	Total	258.216	189			
Q2.It indicates knowledge and techniques to be learned	Between Groups	.011	1	.011	.009	.924
	Within Groups	221.905	188	1.180		
	Total	221.916	189			
Q3.It assigns evaluation practice for the class	Between Groups	.211	1	.211	.172	.679
	Within Groups	230.657	188	1.227		
	Total	230.868	189			
Q4.It provides frequently Asked Question(FAQ)	Between Groups	.205	1	.205	.167	.683
	Within Groups	230.237	188	1.225		
	Total	230.442	189			
Q5.It provides cases and situations to improve student' understanding	Between Groups	.173	1	.173	.144	.705
	Within Groups	226.400	188	1.204		
	Total	226.574	189			
Q6.It applies various learning facilitation medias	Between Groups	18.954	1	18.954	1.980	.161
	Within Groups	1790.189	187	9.573		
	Total	1809.143	188			
Q7.It applies novel and challenging strategies to increase motivation	Between Groups	.013	1	.013	.010	.919
	Within Groups	230.956	188	1.228		
	Total	230.968	189			

Q8.The presented content is correct in its instructional goal	Between Groups	.801	1	.801	.854	.357
	Within Groups	176.299	188	.938		
	Total	177.100	189			
Q9.It effectively integrates learners ' past learning experience and knowledge	Between Groups	.002	1	.002	.002	.967
	Within Groups	227.913	187	1.219		
	Total	227.915	188			
Q10.The provides learner communication and interaction opportunities (e.g. online discussion)	Between Groups	.043	1	.043	.039	.843
	Within Groups	205.620	188	1.094		
	Total	205.663	189			
Q11.The provides practical learning tools (e.g. online notebook)	Between Groups	.290	1	.290	.249	.619
	Within Groups	218.979	188	1.165		
	Total	219.268	189			
Q12.The provides search functions	Between Groups	.019	1	.019	.014	.907
	Within Groups	259.250	188	1.379		
	Total	259.268	189			
Q13.The provides related software for downloading	Between Groups	.082	1	.082	.063	.802
	Within Groups	244.597	188	1.301		
	Total	244.679	189			
Q14.The provides learning records	Between Groups	.954	1	.954	.777	.379
	Within Groups	230.757	188	1.227		
	Total	231.711	189			
Q15.The menu linkage displays normally	Between Groups	.050	1	.050	.042	.837
	Within Groups	221.845	188	1.180		
	Total	221.895	189			
Q16.The category is appropriate	Between Groups	.480	1	.480	.450	.503

	Within Groups	200.473	188	1.066		
	Total	200.953	189			
Q17.The provides learner process management	Between Groups	.303	1	.303	.270	.604
	Within Groups	211.176	188	1.123		
	Total	211.479	189			
Q18.The provides quick error instruction	Between Groups	.171	1	.171	.159	.691
	Within Groups	202.481	188	1.077		
	Total	202.653	189			
Q19.The provides the mechanism to ask for systematic manager help	Between Groups	.000	1	.000	.000	.998
	Within Groups	224.742	188	1.195		
	Total	224.742	189			
Q20.The navigation is clear and easily understood	Between Groups	.359	1	.359	.266	.607
	Within Groups	254.083	188	1.352		
	Total	254.442	189			
Q21.The texts can be clearly read	Between Groups	2.160	1	2.160	1.631	.203
	Within Groups	247.691	187	1.325		
	Total	249.852	188			
Q22.The words frequently convey information	Between Groups	.332	1	.332	.243	.623
	Within Groups	253.855	186	1.365		
	Total	254.186	187			
Q23.The images clearly communicate information	Between Groups	3.058	1	3.058	2.199	.140
	Within Groups	261.494	188	1.391		
	Total	264.553	189			
Q24.The graphics and text complement and support comprehension improvement	Between Groups	.004	1	.004	.003	.956
	Within Groups	243.806	187	1.304		

	Total	243.810	188			
Q25.The animation design clearly communicates information	Between Groups	.005	1	.005	.004	.948
	Within Groups	200.106	188	1.064		
	Total	200.111	189			
Q26.The animation design increases learning desire	Between Groups	1.906	1	1.906	1.587	.209
	Within Groups	225.757	188	1.201		
	Total	227.663	189			
Q27.The video quality is clear and good	Between Groups	2.420	1	2.420	1.984	.161
	Within Groups	229.395	188	1.220		
	Total	231.816	189			
Q28.The video transmission is smooth and does not lag	Between Groups	.035	1	.035	.031	.861
	Within Groups	214.917	188	1.143		
	Total	214.953	189			
Q29.The interface design is pleasing and artistic	Between Groups	.424	1	.424	.368	.545
	Within Groups	215.386	187	1.152		
	Total	215.810	188			
Q30.The interface design is creative	Between Groups	.090	1	.090	.081	.776
	Within Groups	206.651	187	1.105		
	Total	206.741	188			
Q31.The teaching material is accurate	Between Groups	.347	1	.347	.299	.585
	Within Groups	218.395	188	1.162		
	Total	218.742	189			
Q32.The teaching material is objective	Between Groups	.007	1	.007	.006	.940
	Within Groups	232.988	187	1.246		
	Total	232.995	188			

		Sum of Squares	df	Mean Square	F	Sig.
Q33.The teaching material paragraph is clear	Between Groups	.353	1	.353	.321	.572
	Within Groups	206.326	188	1.097		
	Total	206.679	189			
Q34.The teaching material induces learning motivation	Between Groups	3.646	1	3.646	3.072	.081
	Within Groups	223.096	188	1.187		
	Total	226.742	189			
Q35.The teaching material scheme is appropriate and materials correlate	Between Groups	.110	1	.110	.086	.770
	Within Groups	241.363	188	1.284		
	Total	241.474	189			
Q36.The teaching material quantity is appropriate and meets learners 'needs	Between Groups	.293	1	.293	.275	.600
	Within Groups	200.070	188	1.064		
	Total	200.363	189			
Q37.The teaching material quality is appropriate and meets learner's capabilities	Between Groups	.685	1	.685	.524	.470
	Within Groups	245.925	188	1.308		
	Total	246.611	189			
Q38.The teaching material unit topic is clear and definite	Between Groups	.192	1	.192	.165	.685
	Within Groups	218.550	188	1.163		
	Total	218.742	189			
Q39.The teaching material organizational structure is clear and systematic	Between Groups	1.011	1	1.011	.909	.342
	Within Groups	208.968	188	1.112		
	Total	209.979	189			
Q40.The interface design is creative	Between Groups	.275	1	.275	.245	.621
	Within Groups	210.720	188	1.121		
	Total	210.995	189			

Participants' perceptions of WBLPeffects on students' learning outcomes regarding their grades

		Sum of Squares	df	Mean Square	F	Sig.
Q1.It clearly indicates the instruction goal	Between Groups	20.846	3	6.949	5.445	.001
	Within Groups	237.370	186	1.276		
	Total	258.216	189			
Q2.It indicates knowledge and techniques to be learned	Between Groups	23.083	3	7.694	7.198	.000
	Within Groups	198.832	186	1.069		
	Total	221.916	189			
Q3.It assigns evaluation practice for the class	Between Groups	28.764	3	9.588	8.824	.000
	Within Groups	202.105	186	1.087		
	Total	230.868	189			
Q4.It provides frequently Asked Question(FAQ)	Between Groups	27.103	3	9.034	8.264	.000
	Within Groups	203.339	186	1.093		
	Total	230.442	189			
Q5.It provides cases and situations to improve student' understanding	Between Groups	28.746	3	9.582	9.009	.000
	Within Groups	197.828	186	1.064		
	Total	226.574	189			
Q6.It applies various learning facilitation medias	Between Groups	30.664	3	10.221	1.063	.366
	Within Groups	1778.479	185	9.613		
	Total	1809.143	188			
Q7.It applies novel and challenging strategies to increase motivation	Between Groups	14.202	3	4.734	4.062	.008
	Within Groups	216.766	186	1.165		
	Total	230.968	189			

Q8.The presented content is correct in its instructional goal	Between Groups	16.196	3	5.399	6.241	.000
	Within Groups	160.904	186	.865		
	Total	177.100	189			
Q9.It effectively integrates learners ' past learning experience and knowledge	Between Groups	17.130	3	5.710	5.011	.002
	Within Groups	210.786	185	1.139		
	Total	227.915	188			
Q10.The provides learner communication and interaction opportunities (e.g. online discussion)	Between Groups	15.770	3	5.257	5.149	.002
	Within Groups	189.893	186	1.021		
	Total	205.663	189			
Q11.The provides practical learning tools (e.g. online notebook)	Between Groups	20.849	3	6.950	6.515	.000
	Within Groups	198.420	186	1.067		
	Total	219.268	189			
Q12.The provides search functions	Between Groups	34.028	3	11.343	9.367	.000
	Within Groups	225.240	186	1.211		
	Total	259.268	189			
Q13.The provides related software for downloading	Between Groups	30.285	3	10.095	8.758	.000
	Within Groups	214.394	186	1.153		
	Total	244.679	189			
Q14.The provides learning records	Between Groups	27.282	3	9.094	8.274	.000
	Within Groups	204.428	186	1.099		
	Total	231.711	189			
Q15.The menu linkage displays normally	Between Groups	19.645	3	6.548	6.022	.001
	Within Groups	202.249	186	1.087		
	Total	221.895	189			
Q16.The category is appropriate	Between Groups	20.505	3	6.835	7.045	.000

	Within Groups	180.447	186	.970		
	Total	200.953	189			
Q17.The provides learner process management	Between Groups	10.612	3	3.537	3.275	.022
	Within Groups	200.867	186	1.080		
	Total	211.479	189			
Q18.The provides quick error instruction	Between Groups	8.874	3	2.958	2.839	.039
	Within Groups	193.779	186	1.042		
	Total	202.653	189			
Q19.The provides the mechanism to ask for systematic manager help	Between Groups	24.771	3	8.257	7.680	.000
	Within Groups	199.971	186	1.075		
	Total	224.742	189			
Q20.The navigation is clear and easily understood	Between Groups	27.285	3	9.095	7.447	.000
	Within Groups	227.157	186	1.221		
	Total	254.442	189			
Q21.The texts can be clearly read	Between Groups	21.400	3	7.133	5.777	.001
	Within Groups	228.452	185	1.235		
	Total	249.852	188			
Q22.The words frequently convey information	Between Groups	30.123	3	10.041	8.246	.000
	Within Groups	224.063	184	1.218		
	Total	254.186	187			
Q23.The images clearly communicate information	Between Groups	36.562	3	12.187	9.943	.000
	Within Groups	227.990	186	1.226		
	Total	264.553	189			
Q24.The graphics and text complement and support comprehension improvement	Between Groups	17.143	3	5.714	4.664	.004
	Within Groups	226.666	185	1.225		

	Total	243.810	188			
Q25.The animation design clearly communicates information	Between Groups	20.562	3	6.854	7.100	.000
	Within Groups	179.549	186	.965		
	Total	200.111	189			
Q26.The animation design increases learning desire	Between Groups	24.401	3	8.134	7.443	.000
	Within Groups	203.263	186	1.093		
	Total	227.663	189			
Q27.The video quality is clear and good	Between Groups	25.109	3	8.370	7.531	.000
	Within Groups	206.707	186	1.111		
	Total	231.816	189			
Q28.The video transmission is smooth and does not lag	Between Groups	37.743	3	12.581	13.205	.000
	Within Groups	177.210	186	.953		
	Total	214.953	189			
Q29.The interface design is pleasing and artistic	Between Groups	23.346	3	7.782	7.480	.000
	Within Groups	192.463	185	1.040		
	Total	215.810	188			
Q30.The interface design is creative	Between Groups	28.515	3	9.505	9.866	.000
	Within Groups	178.226	185	.963		
	Total	206.741	188			
Q31.The teaching material is accurate	Between Groups	31.707	3	10.569	10.510	.000
	Within Groups	187.035	186	1.006		
	Total	218.742	189			
Q32.The teaching material is objective	Between Groups	22.862	3	7.621	6.709	.000
	Within Groups	210.132	185	1.136		
	Total	232.995	188			

Q33.The teaching material paragraph is clear	Between Groups	24.313	3	8.104	8.266	.000
	Within Groups	182.366	186	.980		
	Total	206.679	189			
Q34.The teaching material induces learning motivation	Between Groups	19.402	3	6.467	5.802	.001
	Within Groups	207.341	186	1.115		
	Total	226.742	189			
Q35.The teaching material scheme is appropriate and materials correlate	Between Groups	29.467	3	9.822	8.617	.000
	Within Groups	212.007	186	1.140		
	Total	241.474	189			
Q36.The teaching material quantity is appropriate and meets learners 'needs	Between Groups	20.727	3	6.909	7.154	.000
	Within Groups	179.636	186	.966		
	Total	200.363	189			
Q37.The teaching material quality is appropriate and meets learner's capabilities	Between Groups	35.295	3	11.765	10.355	.000
	Within Groups	211.316	186	1.136		
	Total	246.611	189			
Q38.The teaching material unit topic is clear and definite	Between Groups	26.524	3	8.841	8.555	.000
	Within Groups	192.218	186	1.033		
	Total	218.742	189			
Q39.The teaching material organizational structure is clear and systematic	Between Groups	12.906	3	4.302	4.060	.008
	Within Groups	197.073	186	1.060		
	Total	209.979	189			
Q40.The interface design is creative	Between Groups	10.504	3	3.501	3.248	.023
	Within Groups	200.491	186	1.078		
	Total	210.995	189			

Participants' perceptions of WBLP effects on students' learning outcomes regarding their previous experience using WBLP

		Sum of Squares	df	Mean Square	F	Sig.
Q1.It clearly indicates the instruction goal	Between Groups	49.810	1	49.810	44.933	.000
	Within Groups	208.406	188	1.109		
	Total	258.216	189			
Q2.It indicates knowledge and techniques to be learned	Between Groups	44.538	1	44.538	47.205	.000
	Within Groups	177.378	188	.944		
	Total	221.916	189			
Q3.It assigns evaluation practice for the class	Between Groups	43.490	1	43.490	43.635	.000
	Within Groups	187.378	188	.997		
	Total	230.868	189			
Q4.It provides frequently Asked Question(FAQ)	Between Groups	45.051	1	45.051	45.684	.000
	Within Groups	185.392	188	.986		
	Total	230.442	189			
Q5.It provides cases and situations to improve student' understanding	Between Groups	40.823	1	40.823	41.318	.000
	Within Groups	185.750	188	.988		
	Total	226.574	189			
Q6.It applies various learning facilitation medias	Between Groups	4.354	1	4.354	.451	.503
	Within Groups	1804.788	187	9.651		
	Total	1809.143	188			
Q7.It applies novel and challenging strategies to increase motivation	Between Groups	23.105	1	23.105	20.897	.000
	Within Groups	207.864	188	1.106		
	Total	230.968	189			

Q8.The presented content is correct in its instructional goal	Between Groups	18.703	1	18.703	22.198	.000
	Within Groups	158.397	188	.843		
	Total	177.100	189			
Q9.It effectively integrates learners ' past learning experience and knowledge	Between Groups	41.646	1	41.646	41.810	.000
	Within Groups	186.269	187	.996		
	Total	227.915	188			
Q10.The provides learner communication and interaction opportunities (e.g. online discussion)	Between Groups	38.004	1	38.004	42.615	.000
	Within Groups	167.659	188	.892		
	Total	205.663	189			
Q11.The provides practical learning tools (e.g. online notebook)	Between Groups	39.773	1	39.773	41.657	.000
	Within Groups	179.496	188	.955		
	Total	219.268	189			
Q12.The provides search functions	Between Groups	54.910	1	54.910	50.515	.000
	Within Groups	204.358	188	1.087		
	Total	259.268	189			
Q13.The provides related software for downloading	Between Groups	58.183	1	58.183	58.653	.000
	Within Groups	186.496	188	.992		
	Total	244.679	189			
Q14.The provides learning records	Between Groups	49.983	1	49.983	51.708	.000
	Within Groups	181.727	188	.967		
	Total	231.711	189			
Q15.The menu linkage displays normally	Between Groups	40.755	1	40.755	42.298	.000
	Within Groups	181.140	188	.964		
	Total	221.895	189			
Q16.The category is appropriate	Between Groups	41.749	1	41.749	49.301	.000

	Within Groups	159.203	188	.847		
	Total	200.953	189			
Q17.The provides learner process management	Between Groups	30.966	1	30.966	32.250	.000
	Within Groups	180.513	188	.960		
	Total	211.479	189			
Q18.The provides quick error instruction	Between Groups	31.145	1	31.145	34.140	.000
	Within Groups	171.507	188	.912		
	Total	202.653	189			
Q19.The provides the mechanism to ask for systematic manager help	Between Groups	43.329	1	43.329	44.902	.000
	Within Groups	181.413	188	.965		
	Total	224.742	189			
Q20.The navigation is clear and easily understood	Between Groups	47.026	1	47.026	42.624	.000
	Within Groups	207.416	188	1.103		
	Total	254.442	189			
Q21.The texts can be clearly read	Between Groups	47.654	1	47.654	44.072	.000
	Within Groups	202.198	187	1.081		
	Total	249.852	188			
Q22.The words frequently convey information	Between Groups	44.328	1	44.328	39.288	.000
	Within Groups	209.858	186	1.128		
	Total	254.186	187			
Q23.The images clearly communicate information	Between Groups	50.854	1	50.854	44.738	.000
	Within Groups	213.699	188	1.137		
	Total	264.553	189			
Q24.The graphics and text complement and support comprehension improvement	Between Groups	34.437	1	34.437	30.758	.000
	Within Groups	209.372	187	1.120		

		Sum of Squares	df	Mean Square	F	Sig.
	Total	243.810	188			
Q25.The animation design clearly communicates information	Between Groups	29.101	1	29.101	31.993	.000
	Within Groups	171.009	188	.910		
	Total	200.111	189			
Q26.The animation design increases learning desire	Between Groups	72.158	1	72.158	87.236	.000
	Within Groups	155.505	188	.827		
	Total	227.663	189			
Q27.The video quality is clear and good	Between Groups	53.287	1	53.287	56.114	.000
	Within Groups	178.529	188	.950		
	Total	231.816	189			
Q28.The video transmission is smooth and does not lag	Between Groups	38.526	1	38.526	41.053	.000
	Within Groups	176.427	188	.938		
	Total	214.953	189			
Q29.The interface design is pleasing and artistic	Between Groups	49.714	1	49.714	55.971	.000
	Within Groups	166.096	187	.888		
	Total	215.810	188			
Q30.The interface design is creative	Between Groups	41.656	1	41.656	47.186	.000
	Within Groups	165.085	187	.883		
	Total	206.741	188			
Q31.The teaching material is accurate	Between Groups	74.322	1	74.322	96.749	.000
	Within Groups	144.420	188	.768		
	Total	218.742	189			
Q32.The teaching material is objective	Between Groups	48.232	1	48.232	48.816	.000
	Within Groups	184.763	187	.988		
	Total	232.995	188			

Q33.The teaching material paragraph is clear	Between Groups	44.119	1	44.119	51.024	.000
	Within Groups	162.560	188	.865		
	Total	206.679	189			
Q34.The teaching material induces learning motivation	Between Groups	51.336	1	51.336	55.022	.000
	Within Groups	175.406	188	.933		
	Total	226.742	189			
Q35.The teaching material scheme is appropriate and materials correlate	Between Groups	62.796	1	62.796	66.072	.000
	Within Groups	178.678	188	.950		
	Total	241.474	189			
Q36.The teaching material quantity is appropriate and meets learners 'needs	Between Groups	33.862	1	33.862	38.235	.000
	Within Groups	166.501	188	.886		
	Total	200.363	189			
Q37.The teaching material quality is appropriate and meets learner's capabilities	Between Groups	69.731	1	69.731	74.115	.000
	Within Groups	176.880	188	.941		
	Total	246.611	189			
Q38.The teaching material unit topic is clear and definite	Between Groups	38.831	1	38.831	40.577	.000
	Within Groups	179.911	188	.957		
	Total	218.742	189			
Q39.The teaching material organizational structure is clear and systematic	Between Groups	30.753	1	30.753	32.258	.000
	Within Groups	179.226	188	.953		
	Total	209.979	189			
Q40.The interface design is creative	Between Groups	33.011	1	33.011	34.869	.000
	Within Groups	177.983	188	.947		
	Total	210.995	189			

Participants' perceptions of WBLP effects on students' learning outcomes regarding their computer literacy

		Sum of Squares	df	Mean Square	F	Sig.
Q1.It clearly indicates the instruction goal	Between Groups	19.235	1	19.235	15.131	.000
	Within Groups	238.981	188	1.271		
	Total	258.216	189			
Q2.It indicates knowledge and techniques to be learned	Between Groups	26.174	1	26.174	25.138	.000
	Within Groups	195.742	188	1.041		
	Total	221.916	189			
Q3.It assigns evaluation practice for the class	Between Groups	23.818	1	23.818	21.627	.000
	Within Groups	207.050	188	1.101		
	Total	230.868	189			
Q4.It provides frequently Asked Question(FAQ)	Between Groups	21.617	1	21.617	19.461	.000
	Within Groups	208.825	188	1.111		
	Total	230.442	189			
Q5.It provides cases and situations to improve student' understanding	Between Groups	28.857	1	28.857	27.439	.000
	Within Groups	197.716	188	1.052		
	Total	226.574	189			
Q6.It applies various learning facilitation medias	Between Groups	42.429	1	42.429	4.491	.035
	Within Groups	1766.714	187	9.448		
	Total	1809.143	188			
Q7.It applies novel and challenging strategies to increase motivation	Between Groups	21.357	1	21.357	19.155	.000
	Within Groups	209.611	188	1.115		
	Total	230.968	189			

Q8.The presented content is correct in its instructional goal	Between Groups	17.987	1	17.987	21.252	.000
	Within Groups	159.113	188	.846		
	Total	177.100	189			
Q9.It effectively integrates learners ' past learning experience and knowledge	Between Groups	21.687	1	21.687	19.665	.000
	Within Groups	206.229	187	1.103		
	Total	227.915	188			
Q10.The provides learner communication and interaction opportunities (e.g. online discussion)	Between Groups	14.488	1	14.488	14.247	.000
	Within Groups	191.175	188	1.017		
	Total	205.663	189			
Q11.The provides practical learning tools (e.g. online notebook)	Between Groups	30.828	1	30.828	30.756	.000
	Within Groups	188.440	188	1.002		
	Total	219.268	189			
Q12.The provides search functions	Between Groups	26.182	1	26.182	21.117	.000
	Within Groups	233.087	188	1.240		
	Total	259.268	189			
Q13.The provides related software for downloading	Between Groups	23.050	1	23.050	19.552	.000
	Within Groups	221.629	188	1.179		
	Total	244.679	189			
Q14.The provides learning records	Between Groups	32.990	1	32.990	31.210	.000
	Within Groups	198.721	188	1.057		
	Total	231.711	189			
Q15.The menu linkage displays normally	Between Groups	26.589	1	26.589	25.595	.000
	Within Groups	195.306	188	1.039		
	Total	221.895	189			
Q16.The category is appropriate	Between Groups	25.565	1	25.565	27.403	.000

	Within Groups	175.388	188	.933		
	Total	200.953	189			
Q17.The provides learner process management	Between Groups	16.049	1	16.049	15.439	.000
	Within Groups	195.429	188	1.040		
	Total	211.479	189			
Q18.The provides quick error instruction	Between Groups	17.717	1	17.717	18.011	.000
	Within Groups	184.936	188	.984		
	Total	202.653	189			
Q19.The provides the mechanism to ask for systematic manager help	Between Groups	18.158	1	18.158	16.525	.000
	Within Groups	206.584	188	1.099		
	Total	224.742	189			
Q20.The navigation is clear and easily understood	Between Groups	35.752	1	35.752	30.735	.000
	Within Groups	218.690	188	1.163		
	Total	254.442	189			
Q21.The texts can be clearly read	Between Groups	28.112	1	28.112	23.708	.000
	Within Groups	221.740	187	1.186		
	Total	249.852	188			
Q22.The words frequently convey information	Between Groups	23.901	1	23.901	19.305	.000
	Within Groups	230.285	186	1.238		
	Total	254.186	187			
Q23.The images clearly communicate information	Between Groups	31.227	1	31.227	25.161	.000
	Within Groups	233.326	188	1.241		
	Total	264.553	189			
Q24.The graphics and text complement and support comprehension improvement	Between Groups	17.215	1	17.215	14.207	.000
	Within Groups	226.595	187	1.212		

		Sum of Squares	df	Mean Square	F	Sig.
	Total	243.810	188			
Q25.The animation design clearly communicates information	Between Groups	18.026	1	18.026	18.612	.000
	Within Groups	182.084	188	.969		
	Total	200.111	189			
Q26.The animation design increases learning desire	Between Groups	32.802	1	32.802	31.647	.000
	Within Groups	194.861	188	1.036		
	Total	227.663	189			
Q27.The video quality is clear and good	Between Groups	33.079	1	33.079	31.292	.000
	Within Groups	198.737	188	1.057		
	Total	231.816	189			
Q28.The video transmission is smooth and does not lag	Between Groups	24.924	1	24.924	24.658	.000
	Within Groups	190.029	188	1.011		
	Total	214.953	189			
Q29.The interface design is pleasing and artistic	Between Groups	32.769	1	32.769	33.477	.000
	Within Groups	183.041	187	.979		
	Total	215.810	188			
Q30.The interface design is creative	Between Groups	19.563	1	19.563	19.544	.000
	Within Groups	187.178	187	1.001		
	Total	206.741	188			
Q31.The teaching material is accurate	Between Groups	28.044	1	28.044	27.648	.000
	Within Groups	190.698	188	1.014		
	Total	218.742	189			
Q32.The teaching material is objective	Between Groups	29.477	1	29.477	27.085	.000
	Within Groups	203.518	187	1.088		
	Total	232.995	188			

Q33.The teaching material paragraph is clear	Between Groups	26.007	1	26.007	27.062	.000
	Within Groups	180.672	188	.961		
	Total	206.679	189			
Q34.The teaching material induces learning motivation	Between Groups	40.070	1	40.070	40.355	.000
	Within Groups	186.672	188	.993		
	Total	226.742	189			
Q35.The teaching material scheme is appropriate and materials correlate	Between Groups	28.218	1	28.218	24.876	.000
	Within Groups	213.256	188	1.134		
	Total	241.474	189			
Q36.The teaching material quantity is appropriate and meets learners 'needs	Between Groups	26.054	1	26.054	28.101	.000
	Within Groups	174.309	188	.927		
	Total	200.363	189			
Q37.The teaching material quality is appropriate and meets learner's capabilities	Between Groups	54.660	1	54.660	53.536	.000
	Within Groups	191.950	188	1.021		
	Total	246.611	189			
Q38.The teaching material unit topic is clear and definite	Between Groups	37.000	1	37.000	38.274	.000
	Within Groups	181.742	188	.967		
	Total	218.742	189			
Q39.The teaching material organizational structure is clear and systematic	Between Groups	31.847	1	31.847	33.612	.000
	Within Groups	178.132	188	.948		
	Total	209.979	189			
Q40.The interface design is creative	Between Groups	82.337	1	82.337	120.314	.000
	Within Groups	128.658	188	.684		
	Total	210.995	189			