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ABSTRACT

Current trend in digital age lead us to argue that access tools will become more and more contextual in near future. New frontiers in knowledge society for new forms of shared knowledge that lead to a social and cooperative learning environment to guarantee extensibility and flexibility. It is clear that the era of rigid platforms is closing, we tend to learn from the network, enhance existing knowledge, experiment with innovative models, explore new contexts. We tend towards web solutions that lead to the so-called “cognitive intelligence”, in the perspective of “collaboration” between users becoming real prosumer. In light of this, the informal approach increasingly supports the formal approach, focusing on the learner. In this scenario cloud learning is born, “formation in cloud”, which combines the possibility to draw resources distributed with contextual information. But the needs that arise in the era of distributed computing to manage the various heterogeneous activities are that there is the absolute certainty that the machines of network, scattered all over the world, are always available (latency times, unpredictable crashes) therefore continuous monitoring is essential. In this context, the docebo cloud e-learning platform was analyzed to analyze the different trend.

KEYWORDS

docebo, cloud computing, services, architecture, monitoring.

INTRODUCTION

Since the ‘90 with Grid Computing and today with technological evolution and methods of use by users we are witnessing the proliferation of an interaction between different systems for the purpose of a computational cooperation, which shifts the classic vision of ICT towards large datacenter [3], [6], [9], [22]. Hence the rise of web 2.0 and the services of sharing and publishing content has generated the possibility of having services without having to incur classic problems of management of local resources [4], [16], [20], [25]. These advances have led to a huge increase in the reach of IT environments, and consequently, the need arose to manage them in a single “cloud” [6], [26], [30]. The need for such environments is felt for the growth of networked equipment and data streaming processes in real time and also for the dissemination of architectures and applications oriented to service, collaboration and sarin [3], [19]. Cloud architecture has been for many IT giants the best candidate for solving some problems generated by large-scale data processing [27], [29]. With this in mind, a new hybrid model of resource utilization has been defined, which has taken the name of Cloud Computing [20], [28], [29]. Cloud computing represents, therefore, a new approach for the supply of ICT resources in continuous progress that allows to obtain an easy access to the on-demand network to a group of configurable computational resources [1], [7], [17], [19]. Although the cloud landscape is still extremely young, in recent years it has become increasingly important in Information and Communication Technology (ICT) and is the new technology that will allow the entire educational system to be changed in the near future, allowing it to be delivered on an ongoing basis high-tech e-learning services leading to significant savings [10], [18], [19]. The perspective leads to the development of Cloud-Learning (Cloud-learning) and CloudMobile-Learning (CloudMobile-Learning) where the user will have access to data that will be shared in cloud according to his request. The term “cloud learning” can be translated as “formation in cloud”, indicating a virtual space where you can store, share and consult training data on a remote server [6], [23]. Currently there
are several suppliers on the market that have enhanced their data centers for hosting applications in the cloud: from giants like amazon, ibm, google, microsoft, sun microsystems up to cloud reality offered by smaller companies like goGrid [24]. It is possible to access applications via a browser with any device that accesses the network (PC, notebook, tablet, mobile phones) (Fig.1). In a cloud computing environment there are three distinct actors [2], [5], [12], [15], [17]:

- **Infrastructure Provider** (service provider): manages the platforms by providing services (storage, applications, computing capacity), generally following the pay-per-use model;
- **Service Provider / Cloud User** (user administrator): chooses and configures the services offered by the provider. Implements a service that uses the resources provided by Infrastructure Provider and offers them to the end user.
- **Final Client**: use the services configured by Service Provider. In some cases, the administrator and the end customer can coincide.

This article analyzes docebo cloud platform in the first section, then the experimental results conducted in various learning times and finally conclusions and future developments.

### 2 DOCEBO CLOUD PLATFORM

The spread of virtualization and cloud computing technologies, together with the growing need to reduce the costs of managing applications and systems in the IT world, has led to the diffusion of delivery policies in on-demand mode, to allow the diffusion of new models relating to access to software applications [11], [14], [21], [27]. Here, then, that we talk about platforms or infrastructures that are made available as services. These services can be considered as the basic components for development of cloud computing [6], [24], [29]. On this basis, the docebo cloud platform, an e-learning as a service platform designed to allow the creation and management of on-line courses with ample interaction possibilities, is considered. Docebo was born as an evolution of Spaghettilearning, an LMS, developed in 2003 by the same team of developers [7], [13]. Today it has a widespread use and in this the foundation that introduced it has migrated to develop its platform in Cloud / As a Service direction and has resulted in the release of docebo 7.0, directly accessible online “as a service”, without no installation required. Docebo provides the creators of e-learning courses with a series of tools, such as forum and chat, user and group management, tests and surveys, document archives and the possibility to connect to some videoconferencing services, such as Teleskill [14], [29].

### 3 EXPERIMENTAL RESULTS
Many online teaching problems depend on a structure incapable of managing organizational complexity deriving from the introduction of new technological solutions [14], [16]. In light of this, several tests were conducted on docebo cloud platform, migrated to cloud solutions to allow online courses to be managed with ample opportunity for interaction. The tests were conducted in the community with 200 participants aged between 23 and 40, willing to evaluate new cloud impact. The docebo cloud platform can be accessed by connecting with an account as shown in Fig. 2 and exploring features ranging from distance learning, videoconferencing lessons, archiving and making available educational files, monographic courses, evaluation tests, publications of alerts, discussion forum.

Figure 2. Docebo Cloud platform access and monitoring

Docebo Cloud considering the monitoring related to the organizational complexity of teaching, placed in the era of distributed computing in order to manage different activities to an unknown number of machines, scattered around the world, or that there is the absolute certainty that they are always available (latency times, unpredictable network crashes) provided variable cloud response times in the management of various tasks as shown in Fig.2, a reduction occurred with a number of users of less than 100, very dependent also on the skills of the interlocutors.

4 CONCLUSIONS and FUTURE DEVELOPMENTS

Concluding C-Learning as last form of globalization stands as innovation of web 2.0 and migration to new areas, where needs of user demand a strong demand for services, which needs connectivity and transmission band and that must be promptly adapt to the requests of users resulting in a number of advantages, especially for resources that can be requested and obtained on-demand. It is emerging as a model that changes the way resources are provisioned, because they are decoupled by technology and “encapsulated” in IT services. These services are dynamic and flexible and can be used individually or in larger business contexts, allowing optimal use of resources shared between different users (multitenant model). The article analyzed didactic-organizational complexity of docebo cloud e-learning platform and provided variable response times in management of various tasks with a slightly uneven trend. The experimentation carried out within the community between a different number of students willing to explore the new platform for provision of content has resulted in an optimal result with a number of users of less than 100, very dependent on the skills of the interlocutors.

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Mobile Learning: New Frontier for Teaching

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ABSTRACT

The growing centrality of multimedia content, their digitization as well as flexibility and personalization are leading to new trend for distance learning. In this scenario, with the rapid spread of mobile devices, among which the smartphone prevails, it has been possible to meet the needs of users with a paradigm that envisages the “learning on the move” process. In this article a case study is reported regarding mobile platforms oracle i-learning, claroline and ilias considering the modalities of content delivery, user-based monitoring as well as evaluation techniques in order to better manage interactive online courses, which make the web user active participant of the production process.

KEYWORDS

platform, questionnaire, learning, monitoring, interoperability.

1 INTRODUCTION

In recent years there has been a real and wide-scale spread of mobile devices, such as mobile phones, PDA, pocket PC, ebook, tablet PC, smartphones, TV-phone, ipod, ipad, and other portable devices, which from simple objects personal devices are becoming devices suitable for displaying multimedia contents, ensuring extreme temporal and spatial flexibility. A new way of delivering training, a new frontier for e-learning: mobile learning [1], [2], [3], [4], [5], [6], [7], [8], [9], [10], [12], [13], [14], [18], [19], [21], [23], [26], [27], [28]. Users move from simple users to content producers, designed, modified or simply shared [10], [11], [20], [22].

Today there is a strong demand for immediately usable contents, easily assimilated and oriented to immediate application, structured as a set of modular multimedia, interactive and multisensory teaching objects [16], [17]. In this context, a case study was initiated and the experimental results achieved together with the conclusions and future developments reported.

2 CASE STUDY

In the field of mobile learning, a study was launched that takes into consideration the analysis as well as the modular integration of oracle i-Learning, claroline and ilias platforms on four different mobile operating systems such as Android, iPhone OS, symbian, windows mobile, to encourage communication through services [2], [16], [17]. The mobile learning area is accessed through an application created specifically and which brings important features such as the vision of educational material and other content, tested on emulators and on real devices. The prototype examined is the oracle i-learning mobile platform, claroline mobile, ilias mobile of which the screenshots are shown (Fig.1):
The user interface was very intuitive. The problems that have arisen have concerned: Which teaching and communication models are more effective? Which technological solutions can favor a wide participation of the users? Based on these questions, evaluation sessions were carried out as well as simulations with real users of the prototypes created. Interest has focused on a particular subset of applications in which the cellular device has been used to increase and improve communication.

3 EXPERIMENTAL RESULTS

During the simulations the students involved were submitted to observations and then interviewed by means of questionnaires (Fig.2) to test their opinions.

![Figure 2. Questionnaire on mobile learning technologies](image)

The research was carried out at the Intelligent Systems laboratory and involved 80 students between the ages of 19 and 21 of computer science degree course, who were asked to comment on how m-learning supported during the learning phase as well as arousing their interest.

The students have shown themselves to like experimentation, even when technical problems have prevented the perfect functioning, even if only some of functionalities have been found to correspond to collaborative level that is access and consultation.

The following is a graphical representation of questionnaire conducted (Fig.3):

![Figure 3. Users questionnaire results in mobile learning](image)

The results presented, for the first question, found that 71% of students said that mobile technologies supported him adequately during the learning phase. For 24%, the technologies did not support the learner during the learning phases. While 5% say it has received no support from use of new technologies. For second question, 76% say that mobile devices make learning phase more interesting. For 21% the use generates little interest, while for 3% does not originate involvement. To the question of what you want to receive from your mobile device, the most common answer was to get new information. While the question of what a mobile device can offer you, 90% of users responded by learning more and learning better.

Ultimately, positive results were achieved in terms of satisfaction, acquisition of knowledge and changes in performance on the part of those who participated. It is essential that the learner can access a flexible learning strategy, and that all learning resources are available at any time and in different types of support, to allow users access to information according to their preferences and needs [6], [16], [24], [25]. The data show a wide availability of information technology and a significant predisposition towards the use of mobile devices. The mobile device learning experience shows that about 95% have positively evaluated the teaching method and about 90% want to continue studying through the mobile phone. The goal was to create a flexible learning model, which makes access to information possible with any type of device and produces flexible materials taken from different situations [4], [15], [17]. The criticalities detected are small size of screen, which do not allow you to view a large amount of content but only essential concepts, the difficulties of interoperability between different...
devices and the connectivity was a bit fragmented.

4 CONCLUSIONS AND FUTURE DEVELOPMENTS

Concluding the widespread large-scale deployment of mobile devices, such as mobile phones, PDA, pocket PC, ebook, tablet PC, smartphones, TV-phones, ipod, ipad, and other portable devices along with the availability of mobile broadband connections brings new trend in development of training content or so-called “mobility learning”. A new frontier for e-learning: mobile learning. In this context, a study was carried out among students regarding mobile platforms oracles, claroline and ilias tested on four different mobile operating systems such as android, iPhone OS, symbian, mobile windows considering the modalities of content delivery, user-based monitoring as well as evaluation in order to better manage interactive online courses, which make the web user an active participant in the production process. The results obtained were positive in terms of satisfaction, acquisition of knowledge and changes in performance on the part of those who participated. Ultimately it is essential that the learner can access a flexible learning strategy, and that all teaching resources are available at any time and in different types of support. The critical issues are related to the interoperability between the different devices and in this they are carrying out further studies, in particular having “responsive” devices with a “bite-sized” mode for administration. Ultimately we can state that m-learning is proposed as bridging between the emerging needs of digital natives and training outcomes.

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ABSTRACT

Faced with the development of the internet, the educational resources present in the network in an informal and unstructured way have grown exponentially. For this reason, the need to have tools to extract the constantly evolving knowledge for a varied user is becoming more and more widespread. So starting from the evolution put in place by web 2.0, more and more social with prospects of “knowledge management” and “knowledge sharing”, in this article the potentials of current technological and methodological tools have been verified with reference to the characteristics of proprietary platforms considering progress made by an increasingly innovative technology, content delivery methods, user-based monitoring tests as well as evaluation techniques to better manage online training, which make web user an active participant in the production process. In this direction we achieve what is called lifelong learning.

KEYWORDS

monitoring, platforms, performance, collaborative learning, characteristics.

1 INTRODUCTION

The panoramic of FAD platforms has been continuous over the years. The term “platform” refers to that technological infrastructure that allows e-learning activities or management of online courses, integrating didactic modules, evaluative checks within learning groups [1], [10], [11], [12]. In favoring the use of advanced and interactive platforms, an analysis of proprietary solutions has been proposed, which aims to be a useful contribution to the various forms of social and collaborative learning and which require new skills in the integrated management of training components typical of social networks and to guarantee extensibility and flexibility in order to promote knowledge and personalization. The analysis is determined by evidence that the literature partially allows to obtain an objective evaluation of platforms and how they support the learning processes, considering the peculiarities, needs and requirements with reference to web tools [1], [10], [11], [14]. Already from the ‘90 are drawn up models to classify, analyze the management systems [4], [7]. Among them is the Commonwealth model that has analyzed the different characteristics such as usability, accessibility, collaborative functionality, manuals, installation, technical support, standards compliance, interoperability and reusability of content, tracking [15]. Following are different sections on proprietary platforms analyzed in the respective evaluation studies and finally the conclusions and future developments.

2 PROPRIETARY PLATFORMS

Among the main proprietary platforms existing today are listed the most common considering triad sharing, participation and collaboration typical of web 2.0 and in particular blog, feedback, chat, forum, podcasting and wiki in a reticular concept, participated in knowing where to achieve cognitive reconstruction for centrality of e-teaching (Tab.1) [2], [4], [9], [13]:

<table>
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The study is aimed at interaction between learning objects, monitoring activities and results obtained. Online questionnaires, interventions in forum and chat to highlight the different polarities [2], [13]. In providing the courses, comparisons made were used for the user friendly role of online platform, the modalities inherent to multimodal lessons, contents, forms of verification and evaluation used, interactive support. The results that follow show a link between collaborative teaching and user satisfaction, a variable influence on level of socialization on the satisfaction obtained. The following analysis assessed the duration of courses, management of courses, quality of material distributed, quality of theoretical lessons transmitted and exercises performed by administering following self-assessment questionnaire (Fig.1):

**Figure 1. Platforms monitoring questionnaire**

**Centra**
Collaborative web-based platform with web conference functionality, virtual classroom, web seminar, net meeting [2], [4], [12]. The performance monitoring performed to a contingent of 100 students (between the ages of 18 and 30) in community gave (Fig.2)

- **Course duration**: very good with an average of 54% against an insufficient 10% and 24% I do not know;
- **Course management**: good with an average of 54% against a 16% I do not know;
- **Material quality distributed**: good with an average of 55%;
- **Quality theoretical lessons transmitted**: very good with an average of 39% against a 25% I do not know;
- **Quality exercises performed**: very good with an average of 56%.

The advantages are: good synchronous and asynchronous communication; media audio-video interaction; VOIP system and integrated videoconferencing; good real-time interaction. The disadvantages: interactive gaps, improved in audiovision.
E/Pop
Content sharing tool, multiplatform windows, mac os [3], [4], [12]. The performance monitoring performed to a contingent of 100 trainees (aged between 20 and 30 years) in community gave (Fig.4)
- **Course duration**: good with an average of 35% against an insufficient 15% and 30% I do not know;
- **Course management**: good with an average of 40% against 35% I do not know;
- **Material quality distributed**: good with 35% average against 35% I do not know;
- **Quality theoretical lessons transmitted**: good with an average of 45% against a 30% I do not know;
- **Quality exercises performed**: very good with an average of 40% against a 21% I do not know;

The advantages are: good sharing; interactive evaluation test; multiplatform compatibility.
The disadvantages: application interactive gaps, improved by continuing to chat. Monitoring was balanced in the various tests conducted.

Collaborative learning tool, based on PHP [4], [6], [14]. The performance monitoring performed to a contingent of 100 participants (aged between 18 and 30) in community gave (Fig.5)
- **Course duration**: good with an average of 35% against an insufficient 15% and 20% I do not know;
- **Course management**: good with an average of 50% against an insufficient 10% and 15% I do not know;
- **Material quality distributed**: very good with an average of 45% against an insufficient 5% and 5% I do not know;
- **Quality theoretical lessons transmitted**: very good with an average of 50% against a low 5%;
- **Quality exercises performed**: very good with an average of 60%;

The advantages are: good sharing; interactive evaluation tests; multiplatform compatibility.
The disadvantages: interactive application problems, improved by continuing in chat, forum. Balanced monitoring in the various tests.

Groove

**HotConference**
E-learning tool for collaborative sharing, based on PHP [5], [7], [12]. The performance monitoring performed to a quota of 150 participants (aged between 19 and 25) in community gave (Fig.6)
- **Course duration**: good with an average of 45% against an insufficient 5% and 5% I do not know;
- **Course management**: very good with an average of 50% against an insufficient 10% and 5% I do not know;
**Material quality distributed**: good with an average of 50% against an insufficient 10% and 15% I do not know;

**Quality theoretical lessons transmitted**: very good with 45% against an insufficient 5% and 5% I do not know;

**Quality exercises performed**: good with an average of 48% against a 9% low and an insufficient 5%.

The advantages are: good sharing; interactive evaluation tests; multiplatform compatibility. The disadvantages: interactive and collaborative problems, improved by continuing to chat. Test monitoring conducted somewhat balanced.

![Monitoring HotConference](image1)

**Figure 6. Monitoring HotConference**

**LearnLinc**

E-learning tool for collaborative learning, synchronous and asynchronous solution [4], [8], [12]. The evaluation of the performances to a contingent of 100 participants (aged between 20 and 25) in the community reported duration of the courses with an average of 60%, quality of material distributed with an average of 40%, quality of lessons, exercises and test with an average of 50% (Fig.7). Balanced monitoring in the various tests conducted.

![Monitoring LearnLinc](image2)

**Figure 7. Monitoring LearnLinc**

**Lotus Learning Space**

Groupware platform, consists of learning space core and learning space collaboration [4], [8], [12]. The performance monitoring performed to a contingent of 100 students (aged between 20 and 30 years) in community gave (Fig.8)

- **Course duration**: good with an average of 50% against an insufficient 10%, a 20% poor and a 10% I do not know;
- **Course management**: good with an average of 45% against an insufficient 10% and 10% I do not know;
- **Material quality distributed**: good with an average of 45% against an insufficient 10% and 10% I do not know;
- **Quality theoretical lessons transmitted**: good with an average of 60% against a 15% insufficient and 15% I do not know;
- **Quality exercises performed**: good with an average of 60% against an insufficient 10% and a 10% I do not know.

The advantages are: good sharing; interactive evaluation tests; multiplatform compatibility. The disadvantages: interactive and application problems, improved by continuing to chat. Test monitoring conducted somewhat balanced.

![Monitoring Lotus Learning Space](image3)

**Figure 8. Monitoring Lotus Learning Space**

**Netlearning**

Collaborative platform for synchronous and asynchronous training activities [8], [4], [12]. Functionality is scalability, modularity, personalization, reporting. The performance monitoring performed to a contingent of 100 participants (between the ages of 25 and 35) in community gave (Fig.9)

- **Course duration**: very good with an average of 55% against a 15% I do not know;
- **Course management**: good with an average of 60% against a 10% I do not know;
Material quality distributed: good with an average of 50% against a 10% I do not know;
Quality theoretical lessons transmitted: very good with an average of 50% against an 8% I do not know;
Quality exercises performed: good with an average of 54% against a 4% I do not know.

The advantages are: good sharing; interactive evaluation tests; multiplatform compatibility.
The disadvantages: problems related to menu management, improved by customizing the interface. Monitoring of tests conducted optimally balanced.

![Monitoring Netlearning](image1)

**Figure 9. Monitoring Netlearning**

**Saba Learning Enterprice**
The modular platform consists of Saba Publisher and Saba Content for mixed learning (on-line, off-line, classroom) and customizable [4], [6], [12]. The performance monitoring performed to a contingent of 100 participants (aged between 20 and 30 years) in community gave (Fig.10)

Course duration: good with an average of 60% against a 5% I do not know;

Course management: very good with an average of 43% against a 17% I do not know;

Material quality distributed: good with an average of 55% against a 10% I do not know;

Quality theoretical lessons transmitted: good with an average of 44% against a 14% I do not know;

Quality exercises performed: good with 53% average against 17% I do not know.

The advantages are: good sharing; interactive evaluation tests; multiplatform compatibility.
The disadvantages: interactive and collaborative problems, improved by continuing in chat, forum. Monitoring almost optimally balanced in the various tests conducted.

![Monitoring Saba Learning Enterprice](image2)

**Figure 10. Monitoring Saba Learning Enterprice**

**T-learn**
Collaborative, synchronous and asynchronous learning platform [4], [7], [12]. The performance monitoring performed to a contingent of 100 participants (aged between 20 and 30 years) in community gave (Fig.11)

Course duration: good, very good with an average of 30% against an insufficient 10%, 13% poor and 17% I do not know;

Course management: good with an average of 50% against an insufficient 10% and 12% poor;

Material quality distributed: good with an average of 45% against an insufficient 5%, 9% poor and 11% I do not know;

Quality theoretical lessons transmitted: good with an average of 34% against a 10% insufficient and poor and 14% I do not know;

Quality exercises performed: good with an average of 43% against an insufficient 5%, 10% poor and 12% I do not know.

The advantages are: good sharing; interactive evaluation tests; multiplatform compatibility.
The disadvantages: interactive and application problems, improved by continuing to chat. Monitoring almost optimally balanced in the various tests conducted.
Figure 11. Monitoring T-learn

WebCT
Standalone platform, allows evaluation systems (quizzes, tests, self tests) [3], [5], [12]. The performance monitoring performed to a contingent of 100 participants (aged between 20 and 30) in community reported (Fig.12)
- **Course duration**: good-very good with an average of 40% against a low 1% and 19% I do not know;
- **Course management**: good with an average of 50% against a low 5% and 10% I do not know;
- **Material quality distributed**: good with an average of 50% against a 9% poor and a 10% I do not know;
- **Quality theoretical lessons transmitted**: good with an average of 43% against an 11% poor and 15% I do not know;
- **Quality exercises performed**: good with an average of 42% against an 8% poor and 12% I do not know.

The advantages are: good sharing; interactive evaluation tests; multi-platform compatibility, flexibility, scalability
The disadvantages: collaborative problems, improved by continuing in chat, forum. Monitoring somewhat balanced in the various tests conducted.

Figure 12. Monitoring WebCT

WebConference
Platform e-meeting, allows the sharing of applications [2], [4], [12]. Multi-platform windows, mac os, solaris. The *performance* monitoring carried out to a contingent of 100 participants (between the ages of 25 and 35) in community reported (Fig.13)
- **Course duration**: good with an average of 41%, against an insufficient 10% and 19% I do not know;
- **Course management**: good with an average of 47%, against an insufficient 5% and 15% I do not know;
- **Material quality distributed**: good with an average of 45%, against a poor 9% and a 10% I do not know;
- **Quality theoretical lessons transmitted**: good with an average of 53% against an 11% I do not know;
- **Quality exercises performed**: very good with an average of 50% against a low 5% and 2% I do not know.

The advantages are: good sharing; interactive evaluation tests; cross-platform compatibility. The disadvantages: interactive and application problems, improved by continuing in chat, forum. Monitoring in the various tests conducted somewhat balanced.

Figure 13. Monitoring WebConference

Saba Learning Enterprice and LearnLinc are the platforms that reported the best results by duration of the courses; for material quality distributed are WebCT, Saba Learning Enterprice, Netlearning and Hotconference; for quality theoretical lessons transmitted and quality exercises performed are Groove and Lotus Learning Space.

3 CONCLUSIONS AND FUTURE DEVELOPMENTS

You live in an era of transformative technological communication, in a dynamism in which training takes on ever more relevant trend. In conclusion new developments to integrate
tools (formal / informal), methodologies (provisional / collaborative) and contexts (presence / distance), which accompany the user even after the formal phase and in this potentials of current proprietary platforms have been analyzed today existing. In particular, the study concerned monitoring of training activities in provision of content in order to identify those features considered fundamental considering evolution made by an increasingly innovative technology, which puts the user at center in the use of new content. In this scenario, social collaborative learning has been considered, which leads to transform the system from a container of educational material into a tool for sharing and managing knowledge. The experiments, which involved planning and delivery of courses, tracking of activities, evaluation reports, forum or discussions, application sharing, communication between learning objects, showed a positive trend considering the simulations in terms of traceability and results of satisfaction of questionnaires given to students, in terms of acquisition of knowledge and changes in performance by those who participated in a flexible learning process. In delivery of courses, observations and comparisons have been used to better understand the user friendly role of the navigability of online platform, the modalities of use related to multimodal lessons, contents, materials, forms of verification and evaluation used, the interactive support during the phases of course. There are still improvements that affect the interface of most platforms and lack of flexibility. The analysis was decisive considering the peculiarities present literature concerning in-depth studies in the field. At the moment further developments tend to favor interoperability in which everyone is a consumer and a producer of knowledge.

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Obstacles and Opportunities for Yemeni Students to Use Mobile Learning

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ABSTRACT
These days we are witnessing a rapid development in technology, especially in the areas of information and communication technology (ICT) and distance learning. Mobile learning uses mobile devices such as digital cell phones, personal digital assistants and laptops. Traditional learning process faces many troubles in Yemen because of the lack of resources and the management issues. We have remarked that most of students and teachers have smartphones and they often access the Internet frequently during the day hours, especially the higher education students. Thus, we thought that using M-Learning may add a great value and provide a kind of assistance for the learning process stakeholders in Yemen, and this is the motivation of this research. This paper attempts to give a vision for the future of education in Yemen by using M-learning to support the education in order to keep pace with the global development. The main aim of this paper is to identify the possible obstacles and opportunities of using M-learning in Yemen. The field survey of this paper focuses on different categories of universities and schools in Yemen. The study sample was applied to 148 male and female students. Data was collected and analyzed using SPSS, and the results show that a percentage of 74.4% of the study sample has a strong desire to use M-learning in learning process. Results also show the benefit from opportunities is about 80.5%, and the emergence of some difficulties that hinder the use of smartphones in learning process is about 76.4%.

KEYWORDS
Mobile learning (M-learning), Electronic learning (E-learning), Information and Communication Technology (ICT), distance learning, Smart phone.

1 INTRODUCTION
The rapid development of E-learning, mobile computing, wireless communication technology and the communication channel of distance education has great effects on learning. Unlike many traditional methods of learning, M-learning has not so far been studied as a phenomenon in the world; rather, it has been introduced as a new technology-led practice that will potentially lead to new learning phenomena. Various schools, universities and distance education institutions at each level are using lots of learning modes through various media ways in teaching, assessment ways and supporting students around the world [1][2].

Deployment of 3G/4G mobile technology is speeding up. Research activities on mobile platforms for supporting mobile learning have emerged in the academic community. Sometimes students cannot approach classrooms because of some issues. It can decrease the study quality in these specific areas. Therefore, M-learning should be applied for supporting student access to virtual-laboratory environments at anytime from anywhere by simply using their own computers, laptops, smartphones, or any other electronic equipment [3].

The rapid in computer technology and the Internet has contributed to an increase in using different media for education. Instructional technologies can range from using software like PowerPoint and word, to hardware like laptops and smartphone in the classroom [4].

The well-designed educational apps are very effective for M learning. Current research shows that, in mobile learning, interface design and attention to usability will lead to better mobile learning [5].

Mobile applications increasingly affect the diffusion of information as well as business activity. They gain broad acceptance due to the increased need for supporting the mobile workforce and the rapid improvement in the devices and wireless technologies for communication. Many mobile applications provide personal services such as sending and viewing email, browsing the World Wide Web
(WWW), viewing traffic and weather reports, watching movies and chatting with others [6].

The development of telecommunication capabilities have led to the concept of anytime and anywhere education. However, these are not without limitations. The so-called Internet educational transaction, popularly termed e-learning, contrary to it, the mobile devices have become part of the learner and hence it demolishes the notion of distance and boundaries [7].

Teaching and learning in the 21st century has shifted from a teacher-centred to a learner-centred, because of using ICT tools for teaching and learning. Integrating ICT into teaching and learning does not only bring changes to the teachers’ role in the classroom. ICT brings chances for students in their learning activity since it triggers them to collect and share ideas and information that they found with others. Applying ICT also helps students to be independent in learning and promotes student-centered learning settings but also creates a dynamic learning environment where learners can become more self-directed and motivated towards learning[8][9].

M-learning in Yemeni universities has not been applied or implemented in Yemeni universities until now. Therefore, this study proposes that universities are required to use the M-learning applications between teachers and students.

This paper presents an overview of obstacles and opportunities for Yemeni students to use M-learning, and it discusses the results of the study. The paper explores the integration of mobile technology in distance learning or in traditional classroom environments. Learning on mobile devices will never replace classroom or other electronic learning approaches. However, if mobile technology is used properly, it can complement and add value to the existing learning on mobile devices [10].

The learning process is mainly based on students and teachers. So it is necessary to identify their attitudes towards using M-learning in learning. Hence, it is important to identify the attitudes of the students and teachers at some colleges of Yemeni universities towards using M-learning in learning and to identify the effect of the independent variables on those attitudes and then the difficulties of applying M-learning in Yemeni universities.

The main objective of the study is to illustrate the development of methods of traditional learning, learning by M-learning in order to keep up with technology and development in the world of communication in order to serve E-learning and educate students and teachers. This study is an attempt to answer the following questions:
1. What are the perceptions and opinions of the respondents regarding the usefulness of M-learning to support learning?
2. Are there significant differences in (opinions, obstacles, opportunities acceptance) to the gender, age group, level of learning, educational institution, current job, and learning institution?  
3. What are the opportunities and obstacles of applying M-learning?

2 LITERATURE REVIEW

2.1 Overview of E-learning

E-learning depends on the computer, the internet, and electronic education such as the CD Rom and, watching an educational television program would be counted as E-learning.

E-learning is one of the most important types of education at the present time. Technology is the language of the times. It has become one of the basic necessities for the development of educational systems. The use of information and communication technology (ICT) such as interactive Internet, TV channels, e-mail, computers, and teleconferencing way is synchronized or asynchronous [11].

E-learning provides the opportunity for students to interact electronically with each other as well as with their teachers. This interaction can be via e-mail, on discussion board, or in chat rooms. ICT can be used along with traditional face-to-face education. However, its use can also create mixed mode or even full online mode [12]. So mobile devices have the power to make learning even more widely available and accessible. Mobile devices are considered by many to be a natural extension of E-learning [13] as illustrated by Figure
2.2 Definitions of Mobile Learning

Due to the development of technology, M-learning has a set of definitions. The M-learning is described as distinct from traditional E-learning because mobile devices include camera, voice recorder, the Internet, and programs that help in education [14].

M-learning is a means of learning using mobile devices that allow students to learn in different environments. M-learning is a subset of e-learning, but it refers much more specifically to these laptops, mobile devices, and wireless devices such as iPads, Smartphone, and tablets, and more sophisticated mobile phones such as the iPhone and Android [11].

M-learning involves the use of mobile technology in combination with other information and communication technology (ICT) to enable learners anytime and anywhere contact with others. Mobile learning also includes efforts to support educational goals such as communication between students and teachers and to improve communication between schools and families [15].

The use of mobile devices such as Smartphones and PDAs in the learning process and the delivery of electronic learning materials supported solely or mainly by handheld, that work on a wide range of mobile devices, and we can carry and use for accessing content for learning [7].

2.3 Advantages of M-learning

There are many advantages of M-learning to help the students and the teachers. These advantages will be addressed by authors to clarify the benefits that can be gained from using tablets, mobiles and other mobile devices in the classroom.

-Educational Support

Makes connection between the lecturer and his students and communication between schools and families [13].

-Mobility

It provides easy access to learning in any place and at any time, which is more comfortable for learners [13].

-Wider Access

Besides having access to educational tools, courses, and teachers, the students can use their smartphones and tablet computers online and gain more benefits [16].

-Without Noise

M-learning provides a noise-free learning environment. Since these devices offer touch-screen option, there is no need to connect keyboard or mouse. This can result in a learning environment that reduces noise [16].

-Self Learning

With M-learning, learners are now able to learn in their own style at their own pace without a teacher [13].

2.4 Disadvantages of M-learning

The major obstacles to tablets use are also highlighted and include the following: frequent breakdowns, small screen size, slow processing power and short battery life [17].

There are many disadvantages of M-learning [16].

-High Cost

Cost is a vital disadvantage of M-learning. It is very difficult for students to be part of M-learning if they do not have a mobile device because of its cost.

- Screen size

Small screen and small buttons make the device difficult to manipulate.

-Battery Life

Battery life does not serve education continuously because most gadgets only have about 4 to 6 hours of productivity.

-Dispersion

While accessing the path through mobile phones, if the learner gets a call, an SMS, or social media updates, they must have to get distracted.

2.5 Related Work

Many studies were conducted and addressed the use of mobile technologies in education. This section provides some previous studies related to this paper.
Alfahd [18] studied the students' attitudes and perceptions towards the effectiveness of mobile learning in King Saud University. The sample of the study consisted of (186) female undergraduate students majoring in arts and medicine. The researcher used a questionnaire as an instrument for his study. The results indicated the students’ preference for using the mobile phone in their learning regardless of time and place. The mobile phone enabled them to communicate easily with each other and to exchange information and data related to their instructional materials.

Jebreen and his co-authors [19] studied a sample which consisted of (363) students selected randomly cluster from the colleges of education at the Jordanian universities: The Hashemite University, Yarmouk University and University of Jordan for the academic year 2010-2011. The instrument was a questionnaire developed by the researchers. The results showed that the percentage of students who indicated positive attitudes towards mobile phone use in university education is high.

Amer and his co-authors [20] studied a sample conducted in three educational institutions Sadat Academy for Management and Sciences (SAMS), computer Information System (CIS), Faculty of Commerce Transport College of International Transport and Logistics (CITL), Arab Academy for Sciences, Technology and Maritime at Alexandria, Egypt. A sample of undergraduate male and female students (n=218), between the ages of 17 to 24 years, was asked to fill a questionnaire which measures the extent to accept students to the concept of mobile learning and its effectiveness.

Assuora [21] tried to examine the possibility of acceptance in mobile learning (M-Learning) and study main factors that affect using M-Learning that focuses on higher education students in Saudi Arabia. The researcher used a quantitative approach survey of 80 students. The modified acceptance framework that based on the Unified Theory of Acceptance and Use of Technology (UTAUT) model is adopted to determine the factors that influence the students’ intention to use M-Learning. The results from statistical analysis show that the acceptance level of students on M-Learning is in the high level.

Cassim and his co-authors [22] tried by this study to achieve through qualitatively analyzing interview data from three second grade teachers from urban and rural schools in the Kea-Zulu Natal Province in South Africa. These teachers were interviewed after the participation of their learners in an experiment in which M-learning was used for word problems homework. The results of this experiment indicate that M-learning improves learners’ performance, attitudes and excitement with regard to word problems. All the teachers interviewed were satisfied with the use of M-learning in teaching word problems, and they all agreed on its usefulness, effectiveness, and efficiency.

Quinn [23] presented survey results. The use of M-Learning for social networking and communication is more prevalent than it is for the development of custom applications, with 38.1% of organization implementing, designing or building the business case for social networking and only 25.7% for custom application development. The research showed much personal use, and 70.2% of respondents are using their personal mobile devices for business use. Of those who have conducted M-Learning implementation, 50% is showing positive returns.

Jiranantagorn and his co-authors [24] studied preliminary survey conducted at Rajamangala University of Technology Rattanakosin, Thailand has shown that there are both social and technological issues to consider when developing mobile learning system in Thai public universities. A preliminary survey was conducted with eight participants, who are lecturers in the Faculty of Computer Engineering at Rajamangala University.

Brand and his co-authors [25] tested and reported the learning outcomes, technology orientations, attitudes, and times on task, exposure frequencies with iPad, tablet computers and make comparisons of these groups using other mobile devices and groups not using mobile devices. Participants were 150 students over 2 semesters randomly assigned to rotating a comparison group using a traditional bound textbook and regular access to a blackboard subject site, another comparison group using their existing mobile devices, and an experimental group using iPads to access equivalent content through enhanced Blackboard content and an enriched e-text.

Pal [26] focused on developing countries such as India, having a huge student presence and a large number of universities and institutions, though gradually shifting towards Information
Communication and Technology (ICT) enabled education system. The paper made feasibility analysis by making market, technical and economic analysis of M-learning in universities and institutions in India running higher education like engineering and scientific research. The feasibility analysis was added with a survey on 301 students from an Engineering institute for their acceptance of the technical and usable issues of mobile based learning. The survey results showed a positive indication, but with many issues to be taken care of.

Rabail and his co-authors [5] focused on providing a measurement model for evaluating the interface of mobile educational apps designed for children. The research attempts to review the existing interface design guidelines and consequently develop a measurement model. The model serves as basis for comprehensive usability evaluation consisting of guidelines, usability characteristics, goals (interface design criteria), questions, and usability metrics (objective and subjective). Moreover, two evaluation instruments (task list and satisfaction questionnaire). To ensure the effectiveness and reliability of the model, it was validated by applying the proposed metrics and evaluation instruments in a usability study conducted on two android educational apps for children. Results gathered from usability testing proved that the Model is applicable for evaluation of mobile educational apps for children.

Khajitpan [3] presented utilization of mobile technologies for supporting distance learning system in open universities or online courses. The architectural framework of learning module is proposed specifically for constructing engineering and scientific remote laboratories. Affordances of mobile technologies are presented herein concerning usability, functionality, portability, consistency, and security. Furthermore, conceptual design of the proposed modules consists of mobile internet/software platforms, remote controller, and user interface and portable-multimedia-device sensor network. It showed that implementation of mobile technologies regarding their affordances can accomplish student’s comprehension in remotely conducting engineering and scientific measurement and in participating in activities from different locations. Finally, the paper presented the ideal platform development and practical usage initiated by the proposed collaborative mobile system in order to achieve the academic standard in these areas.

3 THE RESEARCH METHOD

The descriptive survey method was adopted in conducting this study. The descriptive analysis was used in analyzing the data of the study. The means, standard deviations, t-test and analysis of variance in analyzing data were used (SPSS) [27].

3.1 Questionnaire Design

The questionnaire is one of the ways to collect data from large sample. The Researcher can get useful and clear information and clear about the problem of the study. The aim of this questionnaire is to clarify opinions of the Yemeni community in the use of M-learning in learning as well as to identify obstacles and opportunities possible when using M-learning to learn. The questionnaire was based on five scale options: Strongly agree, agree, not sure, disagree, and strongly disagree. It contained the necessary data for the study that was sent to all participants, and it consisted of two sections.

Section A:
Personal information of the respondent to the questionnaire.

Section B:
In this study, the survey questions are divided into three axes.
- Opinions about the use of M-learning in learning.
- Obstacles that prevent the use of M-learning in learning.
- Opportunities for the use of M-learning in learning.

3.2 The Community(subjects) and the Sample

In this part, we will explain the community and the sample of the research

❖ Community study

The researchers chose people from schools, universities, and institutes for training and education. Most of them were randomly chosen in Sana’a and Hodeida, and those quarters are:

❖ - The City of Sana'a.
- University of Science and Technology and College of Commerce, Sana’a University
- Schools (Upgrading of private, and New Generation and Cooperation of Government).
- Institute for Training and Education

❖ The City of Hodeida.
- College of Dentistry, Hodeida University.
- Bilquis Governmental School.

❖ Sample
The target sample was students, teachers and academics. The number of questionnaires was 148 distributed to schools, universities, and the institute for training and education- governmental and private.

3.3 The Survey Distribution Methods
The questionnaires were distributed through a variety of methods in an attempt to save time and money and get a wide range of participants, both geographically and by the type of organization. The first method to distribute questionnaires was via electronic device, where the electronic questionnaires were sent by e-mail and through Facebook. The second way of distribution was through field visits to places where papers of the questionnaires was distributed. The questionnaires were distributed in Hodeida and Sana’a governorates in several sectors of public and private universities and schools.

4 QUESTIONNAIRE ANALYSIS AND RESULTS

The Questionnaire Analysis shows the basic part of the categories of the research variables and analyze field study. The first section is an axis study variables to get the general information for respondents. The second section is the descriptive analysis including the attributes of the respondents, and the results of the measurement variables.

4.1 The profiles of Respondents
This part of the study aims to present the personal information of the respondents, to whom the questionnaire was distributed and then to provide descriptive statistics for personal data. Data has been summarized in a table showing the values of each variable and explaining the values inside the variant in form of numbers and percentages. Features of the study sample variables are illustrated in Table 1.

Table 1: the majority of respondents

<table>
<thead>
<tr>
<th>Study Variables</th>
<th>Classification</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>50</td>
<td>33.8%</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>98</td>
<td>66.2%</td>
</tr>
<tr>
<td>Age Group</td>
<td>under 18</td>
<td>32</td>
<td>21.6%</td>
</tr>
<tr>
<td></td>
<td>18 to 25</td>
<td>57</td>
<td>38.5%</td>
</tr>
<tr>
<td></td>
<td>26 to 40</td>
<td>58</td>
<td>39.2%</td>
</tr>
<tr>
<td></td>
<td>above 40</td>
<td>1</td>
<td>0.7%</td>
</tr>
<tr>
<td>Level of Learning</td>
<td>High School</td>
<td>45</td>
<td>30.4%</td>
</tr>
<tr>
<td></td>
<td>Diploma</td>
<td>6</td>
<td>4.1%</td>
</tr>
<tr>
<td></td>
<td>Bachelor</td>
<td>77</td>
<td>52.0%</td>
</tr>
<tr>
<td></td>
<td>Masters</td>
<td>16</td>
<td>10.8%</td>
</tr>
<tr>
<td></td>
<td>Ph.D.</td>
<td>4</td>
<td>2.7%</td>
</tr>
<tr>
<td>Institution of Learning</td>
<td>School</td>
<td>39</td>
<td>26.4%</td>
</tr>
<tr>
<td></td>
<td>Institute for Education and Training</td>
<td>17</td>
<td>11.5%</td>
</tr>
<tr>
<td></td>
<td>University</td>
<td>91</td>
<td>61.5%</td>
</tr>
<tr>
<td>Current Job</td>
<td>Manager</td>
<td>7</td>
<td>4.7%</td>
</tr>
<tr>
<td></td>
<td>Administrative Officer</td>
<td>39</td>
<td>26.4%</td>
</tr>
<tr>
<td></td>
<td>Teacher</td>
<td>25</td>
<td>16.9%</td>
</tr>
<tr>
<td></td>
<td>Student</td>
<td>74</td>
<td>50.0%</td>
</tr>
<tr>
<td>Learning Institution</td>
<td>Government</td>
<td>39</td>
<td>26.4%</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>109</td>
<td>73.6%</td>
</tr>
</tbody>
</table>

As show in Table 1, it is clear that the majority of respondents was females with percentage of (66.2%), age group range between 26 to 40 with percentage of (39.2%). Regarding the level of learning we get that (52.02%) of the respondents have Bachelor degree. (61.02%) of the respondents are in universities. Regarding to the current job we found that (50.0%) of the respondents are students. Regarding to the learning institution we get that (73.6%) of the respondents are in private.

4.2 Questionnaire Analysis of Axes
The results shown by the questionnaire are shown by analysing the data of the axes.

4.2.1 Results of First Axis
Table 2 represents the first axis that shows opinions of the respondents about the use of M-learning in learning.
As shown in Table 2, the percentages of (11) items were above 60% and the percentages of (5) items were below 60% which indicates that the sample has the big desire for the use of the services available on mobile. The percentages of eleven items were above 80%. (Items 10, 11, 2, 15, 5, 9, 3, 6, 1, and 13). The highest percentage was (93.0%)

### 4.2.2 Second Axis

Second Axis shows the obstacles to the use of M-learning in learning.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Q No</th>
<th>Statement Text</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>% Mean</th>
<th>Recognition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12</td>
<td>Lack of sufficient awareness in the Yemeni government to M-learning.</td>
<td>4.453</td>
<td>0.819</td>
<td>89.1%</td>
<td>Agree fully</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>The cost of buying devices M-learning for some students.</td>
<td>4.304</td>
<td>0.862</td>
<td>86.1%</td>
<td>Agree fully</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>Internet is considered slow and bad do not support the process of mobile learning.</td>
<td>4.209</td>
<td>1.058</td>
<td>84.2%</td>
<td>Agree fully</td>
</tr>
<tr>
<td>4</td>
<td>6</td>
<td>Internet is not available in places of learning.</td>
<td>4.169</td>
<td>1.006</td>
<td>83.4%</td>
<td>Agree</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Non-availability of M-learning with a large number of students.</td>
<td>4.054</td>
<td>1.022</td>
<td>81.1%</td>
<td>Agree</td>
</tr>
<tr>
<td>6</td>
<td>9</td>
<td>Lack of sufficient awareness among parents of the importance of M-learning in learning.</td>
<td>4.020</td>
<td>1.007</td>
<td>80.4%</td>
<td>Agree</td>
</tr>
</tbody>
</table>

As shown in Table 2, the percentages of (11) items were above 60% and the percentages of (5) items were below 60% which indicates that the sample has the big desire for the use of the services available on mobile. The percentages of eleven items were above 80%. (Items 10, 11, 2, 15, 5, 9, 3, 6, 1, and 13). The highest percentage was (93.0%)
As shown in Table 3, ranking refers to the most important obstacles for using the M-learning. It was found that Q12 (Lack of sufficient awareness in the Yemeni government to M-learning in learning.) got the highest percentage with (89.1%). It is considered the most crucial obstacle that needs processing speed or the biggest priority in process for implementing M-learning in learning. The percentages of (7) items were above 80% and the percentages of (9) items were below 80%. The seven items whose percentages were above 80% are items 12, 2, 5, 6, 1, 9, and 13.

### 4.2.3 Third Axis

Third Axis shows the opportunities of using the M-learning in learning.
As shown in Table 4, the percentages of (10) items were above 80% and the percentages of (8) items were below 80%, considered to Q4 (Easily take and save images and recording lectures and lessons) of the most important opportunities by (88.9%), which indicates the importance of the opportunities and benefits used M-learning in learning. The ten items that have a percentage above 80% are items 4, 5, 17, 3, 15, 16, 1, 14, 2, and 18.

5 RESULTS AND DISCUSSIONS

Using analysis of variance duo T-Test to see if there were differences in the sample answers on the questionnaire axes has been caused by the duo pair variable (contains only two categories) such as gender (male answers differ from females). It also uses a multi-way analysis of variance F-One-Way ANOVA to see if there were differences in the sample answers on the questionnaire phrases that have been caused by variable containing three or more classes (such as variable age and qualification ... etc.) as pointed by an asterisk (*) on the right of the number in the box (significance level Sig. or also called P-Value) indicates the presence of these differences [22].

5.1 Results of Section A

Characteristics of personal information of the respondents to the questionnaire.

1- As shown by Table 5, variable of gender for most of the sample was female and this can be attributed to the distribution in places where there were more females than males as well as for the writer communicates easier with females than males. Gender differences did not affect the result, which refers to harmony between the views of males and females in these three axes.

Table 5: The difference between sample views in gender variable

<table>
<thead>
<tr>
<th>Factor</th>
<th>Male</th>
<th>Female</th>
<th>T-Test</th>
<th>Sig. P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opinions</td>
<td>3.716</td>
<td>0.318</td>
<td>3.724</td>
<td>0.333</td>
</tr>
<tr>
<td>Obstacles</td>
<td>3.896</td>
<td>0.443</td>
<td>3.783</td>
<td>0.471</td>
</tr>
<tr>
<td>Opportunities</td>
<td>3.999</td>
<td>0.572</td>
<td>4.035</td>
<td>0.565</td>
</tr>
</tbody>
</table>

2- Considering the existence of substantial variable of age group differences and the statistic significant in the response of the sample to the axis (obstacles), as shown by Table 6, we can find that the participants between (26 to 40 years old) get the highest average (3.963) and the degree of approval (79.3%).

Table 6: The Difference between sample opinions of the age group

<table>
<thead>
<tr>
<th>Factor</th>
<th>One-Way ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Between Groups</td>
</tr>
<tr>
<td>Opinions</td>
<td>144</td>
</tr>
<tr>
<td>Obstacle</td>
<td>144</td>
</tr>
<tr>
<td>Opportunities</td>
<td>144</td>
</tr>
</tbody>
</table>

3- Regarding the existence of substantial differences in the response of the sample to the axis (constraints), it is found that participants with (PhD) got the largest average (4.078) and the degree of approval is (81.6%) as illustrated by Table 7. This means that they most agree to the existence of obstacles. While we found the axis (opportunities) that, the participants of (high school) are the most agree to provide opportunities average (4.165) and the degree of approval 83.3%.

Table 7: The difference between the sample views in the level of learning

<table>
<thead>
<tr>
<th>Factor</th>
<th>One-Way ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Between Groups</td>
</tr>
</tbody>
</table>

169
4- The existence of substantial differences and statistically significant in the response of the sample to the axis (obstacles) in the educational institutes is shown by Table 8. It is found that the Institute for E&T is the most approval compared to the other groups concerning to the existence of obstacles. Mean of 4.146 and approval of 82.9% are the most agree values to the presence of obstacles.

Table 8: The difference between sample views in the educational institution

<table>
<thead>
<tr>
<th>Factor</th>
<th>Between Groups</th>
<th>Within Groups</th>
<th>F-Test</th>
<th>Sig. P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oppinions</td>
<td>144 0.107</td>
<td>2 0.160</td>
<td>1.50</td>
<td>0.227</td>
</tr>
<tr>
<td>Obstacles</td>
<td>144 0.209</td>
<td>2 0.676</td>
<td>3.23</td>
<td>0.042*</td>
</tr>
<tr>
<td>Opportunities</td>
<td>144 0.322</td>
<td>2 0.102</td>
<td>0.31</td>
<td>0.730</td>
</tr>
</tbody>
</table>

5- The existence of substantial differences and statistically significant in the response of the sample to the axis (obstacles) when considering the current jobs, those who hold other functions that are the most approval compared to the other groups on the existence of obstacles, highest Mean 4.146 and 82.9% as shown by Table 9.

Table 9: The difference between the sample views in the current job

<table>
<thead>
<tr>
<th>Factor</th>
<th>Between Groups</th>
<th>Within Groups</th>
<th>F-Test</th>
<th>Sig. P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oppinions</td>
<td>143 0.108</td>
<td>4 0.073</td>
<td>0.67</td>
<td>0.608</td>
</tr>
<tr>
<td>Obstacles</td>
<td>143 0.202</td>
<td>4 0.651</td>
<td>3.22</td>
<td>0.014*</td>
</tr>
<tr>
<td>Opportunities</td>
<td>143 0.325</td>
<td>4 0.148</td>
<td>0.45</td>
<td>0.768</td>
</tr>
</tbody>
</table>

6- As shown in Table 10, there is no fundamental differences and statistically significant due to the Variable Learning Institution Type which refers to the harmony of opinions, Government and Private, in these three axes.

Table 10: The difference between the samples views the learning institution Type

<table>
<thead>
<tr>
<th>Factor</th>
<th>Government</th>
<th>Private</th>
<th>T-Test</th>
<th>Sig. P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oppinions</td>
<td>3.73</td>
<td>3.71</td>
<td>0.37</td>
<td>0.709</td>
</tr>
<tr>
<td>Obstacles</td>
<td>3.82</td>
<td>3.81</td>
<td>0.11</td>
<td>0.911</td>
</tr>
<tr>
<td>Opportunities</td>
<td>3.90</td>
<td>4.06</td>
<td>1.52</td>
<td>0.130</td>
</tr>
</tbody>
</table>

5.2 Results of Section B

They represent a summary of the previous results that can be shown in one table as Table 12 and Figure 2.

**First Axis:** opinions about the use of mobile in learning.

After analysing the survey results and questionnaire of the study, it is concluded that the sample has strong opinions desire for a percentage of 74.4 % for the use of M-learning.

**Second Axis:** Obstacles to the use of mobile in learning.

The emergence of some of the difficulties that hinder the use of phones in learning increased by 76.4%, despite the analysis shows a great approval on the use of mobile in learning.

**Third Axis:** Opportunities of using the mobile in learning.

The opportunities of about 80.5% show that M-learning can provide good opportunities and benefits for learners and teachers. Thus, you should take advantage of these opportunities to learn.

Table 11: Summary of the survey factor results
5 CONCLUSION

The use of Mobile technologies as M-learning approaches in education institutional courses developed to support the data research is needed to determine which students’ outcomes should be tracked and how this information is best used for individual educational purposes.

Researches reporting the results of case studies using mobile for learning indicate that developing students' abilities to use the technology for learning requires special attention and time. Although students may be adept at using digital technologies for entertainment, the demands [increased collaboration and networking] that are placed on them when using these same technologies are very different.

Our results showed that M-learning can be used to provide in learning for students who have any type of Mobile. However, the successful use of the Mobile in the classroom ultimately depends on the efforts to involve the preparation of lectures or other teaching methods using technology in the software mobile, which is based on the interaction between the students in the lecture. Such technologies can have a great impact on learning. Learning will move more and more outside of the classroom and into the learner’s environments, both real and virtual.

Additionally the research results showed that the existence of difficulties for the application of the M-learning must be disposed of, so that the beneficiary can take advantage of the services offered by mobile. Regarding the later, the lack of standards in mobile devices as well as the limited capabilities of such devices, poses difficulties in integrating mobile devices into learning environments. In this paper, we have analyzed, from both learning and technological perspectives, the development of M-learning in learning applications using mobile devices.

REFERENCES


