Alliance Recommendations to Establish Quality in Egyptian Higher Education VLEs

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Abstract

This research aims to identify quality in VLEs (Virtual Learning Environments), describes the development of a model, based on original research, describing the characteristics associated with the successful deployment of technology evidenced in the Egyptian higher education, and the alliance factors related to such implementation of quality in VLE. Research findings clarify the importance of quality for the accreditation of VLEs and demonstrate the proposed model that, based on the motivations arising from the challenges: improving the quality of learning, identify the possible stakeholders in determining the quality of VLEs, improving access to teaching and learning, and reducing the costs for providers. The suggested model incorporates: stakeholders' satisfaction; learning outcomes; environment facilities; and evaluation during development. The findings also revealed groups of Recommendations for VLEs' participants, designers, and administration to accomplish quality in VLEs.

Keywords: VLE, quality in VLE, Egyptian higher education, VLE in higher education, recommendations for implementing quality in VLE.

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ملخص البحث:

يهدف هذا البحث للتعريف بجودة بيئات التعلم الإفتراضية, ووصف نموذج يوضح العوامل المرتبطة بالتوظيف الناجح للتكنولوجيا فى التعليم العالى المصرى, والعناصر المرتبطة بتحقيق الجودة فى بيئات التعلم الإفتراضية. يتضح من مخرجات البحث مدى أهمية الجودة فى إعتماد بيئات التعلم الإفتراضية, وتشرح النموذج المقترح المبنى على محاولة تحقيق الاهداف التالية: تحسين جودة عملية التعلم؛ التعريف بالمساهمين المحتملين فى تحديد جودة بيئات التعلم الإفتراضية؛ تحسين عملية وصول المتعلم والمعلم لعملية التعليم والتعلم؛ تقليل التكلفة لمزودى الخدمة التعليمية. النموذج المقترح يتضمن رضا المساهمين؛ مخرجات التعلم؛ تسهيلات بيئة التعلم؛ التقويم أثناء التطوير والبناء. كما أوضحت النتائج أيضا مجموعة من التوصيات والمقترحات للمتعلملين؛ المصممين؛ و الإدارة التعليمية لضمان تحقيق الجودة ببيئات التعلم الإفتراضية.

كلمات مفتاحية : بيئات التعلم الإفتراضية, الجودة فى بيئات التعلم الإفتراضية, التعليم العالى المصرى, بيئات التعلم الإفتراضية فى التعليم العالى, توصيات ومقترحات تحقيق الجودة فى بيئات التعلم الإفتراضية.

Introduction

The quest of Quality educational systems is an inevitable robust and continuous operation that being done by educators worldwide around eternities.

According to Ehlers (2004), the ongoing pursuit of a high quality classroom face-to-face (FTF) learning without the development of a robust system to reach the ideal quality in the learning climate may have developed a deep suspicion of the existence of such terms in education in general and, specifically, in face-to-face teaching and learning. Clearly, quality education is a topic of intense debate that affects both government officials and scholarly reporters

In essence, numerous efforts have been done in the realm of VLE to arrive at the optimum structure for conceiving and founding quality in VLE frameworks. This research highlights the steps of setting up a system (model) for identifying quality in VLE frameworks. The current research addresses these questions: In VLE, what exactly is meant by quality in VLEs? why seeking quality in VLEs? how would quality be implemented and evaluated in VLE? what would be recommended if quality is desired?

Research questions:

1. “What is the proposed model to guide design and evaluate quality in VLEs?”
2. What are the Alliance Recommendations to Establish Quality in Egyptian Higher Education VLEs?

Research aims:

1. Generate a group of Alliance Recommendations to Establish Quality in Egyptian Higher Education VLEs.
2. Create an e-learning course for the "printing & binding" curriculum.

Significance of the Research:

The purpose of this research is to: examine the effectiveness of e-learning; and present Alliance Recommendations to Establish Quality in Egyptian Higher Education VLEs? Therefore, this research gains its importance from establishing a group of Alliance Recommendations to Establish Quality in Egyptian Higher Education VLEs.

Context of the research:

Quality in VLE

This research aims to deploy VLE as the medium and tool to help integrate modern technologies in Egyptian higher education. Thus, based on Egyptian higher education students' points of view, this research seeks to identify what is needed to integrate quality in VLEs and underline the related factors that are expected to affect quality achievement.

It is undeniable that, In Egypt, VLE is still developing. Thus, educational organisations, government conferences, and educators are calling for more systematic research to develop an VLE theory and practices that best suits the Egyptian circumstances. Yet, in Egypt, the under-utilised new technologies problem continues despite the remarkable advances at the hardware and software levels. Thus, it is inevitable to fully absorb the conditions under which the educational institutions and their learners will embrace new technologies. In fact, it is a high-priority research issue. Consequently, an accelerating movement toward theorising the adoption of new technologies appeared. As a result, theoretical and empirical support has been particularly given to the Technology Acceptance Model (TAM) (Davis, 1989).

In literature, the research investigating quality in VLE can be classified into three areas. The first area is research that focused on the VLE situation e.g., (Raab, 2002). E-learning (VLEs), according to Raab (2002) is "a learning situation where distance and time or

both separate the instructor and the learner". The Second area is research that focused on VLEs technological aspects, e.g., Sun et al. study (2008). E-learning, according to (Sun et al, 2008) is "delivering information for education and training using telecommunication technology". The third and last area is research that focused on e-learning evaluation based on the above mentioned areas perspectives e.g., Rosenberg's study (2001). E-learning (VLEs), according to (Rosenberg 2001), is "delivering a wide range of solutions that enhance knowledge and performance using Internet technologies". It is clear that he equalizes the technological and the pedagogical aspects in VLEs stating that, necessarily, both aspects have to work together if VLE is to succeed.

This research classification is consistent with Smulders' (2003) who noticed that the great part of online discussions concerning e-learning environment mainly dealt with technical problems such as technical failings, troubleshooting, and logistic faults of the course. Yet, very little or no discussions focused on the real course content or such questions like: Does the existing e-education systems benefit from the suitability of the e-learning environment? Are the learners actually learning through e-learning courses? The VLE developers have to be aware of the existing technological advances to create a successful course. In addition, they have to be aware of the pedagogical strategies and delivery methods to make full use of e-learning affordances in achieving their goals.

The researcher believes that, in VLE design, quality seekers attempt to balance both the technological and the pedagogical sides. Consequently, it is very reasonable to warn against getting attracted by the new technologies, yet completely ignoring pedagogically well-designed VLE. It is logical to warn against getting overwhelmed by the new technologies and the potentials promises and possibilities these technologies entails to the extent of jeopardizing e VLE s' pedagogical issues (Chang, 2008: p. 40).

The Implemented VLE

In order to gain access to a certain sample, the research followed the following steps: The main instruction was conducted totally by the designed VLE; The designed VLE contained two kinds of activities: collaboration activities include online two-way communications between both instructor and learners, and learner to learners via the course website to enhance learning; and personalisation activities include learning activities dependant on the person's efforts to improve his/her learning; The evaluation in this research is divided into two categories: the evaluation of learning improvement in the computer-maintenance curriculum; and the evaluation of quality in VLEs according to the designed model; Overall (2 units) of the computer-maintenance curriculum were taught over the semester and each unit was offered entirely online; In the VLE, all resources were mainly online and available on the Internet. The whole course was delivered via a VLE designed and supported by a "Moodle" software; During the data collection period there were two face-to-face meetings with the learners (one before they start the course to explain the new method of delivery for them, and the other after they had finished learning with the VLE) to ascertain what difficulties they had faced during their learning and to arrange suitable times to meet with the learners in order to collect their feedback regarding their experiences in learning with the VLE.

Recently, in Human-Computer Interaction (HCI) research the capturing of user experience has been an important and interesting research issue, and that is why empirical evaluation methods are used wildly in HCI research (Arhippainen, 2003).

An extensive literature search was carried out in order to: design the quality VLE model, preparation of the semi-structured interview schedule and the focus group concentration topics, and design of the questionnaire (Mamary, 2000; Ofsted, 2009; Paulsson, 2007; Wang, 2003; Washer, 2001; Wischmeyer, 2004).

An intensive search for the most appropriate software to design and implement the VLE was followed by designing the curriculum in the electronic format. The search for the appropriate quality electronic sources has taken a lot of time and research to find out the specifications of quality electronic sources (Mattheos, 2001).

In order to complete the process of evaluating the designed VLE; the researcher used two methods of evaluation:

- EEM (Experts Evaluation Method).
- Usability test for the VLE.

Usability tests and expert reviews are staple methods in the field of human-computer interaction (CUE-4, 2003).

Three of the researcher colleagues in the Faculty of Specific Education– Tanta University (all are lecturers of Instructional Technology, have the required experience and knowledge to perform all the scenario required for evaluating the VLE) tested the designed VLE to give their opinions, experiences, comments and questions regarding the VLE and its suitability for the desired objectives and to what extent its affordances are sufficiently inspected.

Usability tests: The insights gained from usability testing are essential for creating a truly user-centred website, software application or product. It allows the designer to look through the eyes of the user, identifying potential usability issues before release and allowing them to be corrected in a highly cost-effective manner (User Vision, 2009).

How it works? Based on task analysis, user profiling and the educational organisation objectives, the researcher created realistic task scenarios to test the VLE. Three of the researchers' colleagues helped the researcher to conduct the usability test, each colleague performed a series of tasks and 'thinks aloud' through synchronous chat online and to describe their steps to reach the task goal. The

researcher observed and recorded the users' actions, thoughts and opinions, and where necessary, asked questions to better understand the person's strategy and experience (User Vision, 2009).

The Task Scenario:

- Opening the VLE link to test the access speed.
- Make an online registration.
- Enroll oneself in the desired course in the VLE.
- Investigate all the links in the chosen course to see if they are working, opening with suitable speed, and compatible with different browsers.
- Participate in all the activities in the chosen course to enable the designer to test the accessibility to all the previous activities data.
- Participate in the quizzes in order to estimate a suitable time to solve the quiz and to determine the best design of the quiz screen.

According to Bates (1997) and (UNESCO, UNICEF, the World Bank and OECD (2021), four reasons necessitate integrating technology in higher education: learning quality improvement; education and training access improvement; education costs reduction; and education cost-effectiveness improvement. Consequently, the researcher believes that, VLEs integration and use in higher education is the way to bring quality into learning. However, here, two crucial questions still need an answer: What makes a VLE a quality system for learning? How to implement such a quality?

According to Sims (2001: p. 2), "to ensure that the learners receive the most effective resources it is inevitable that online development projects implement the highest quality control levels." Hence, the researcher believes this is a clear evidence that quality implementation in e-learning systems is indispensable.

Virtual learning environment can be conceived as a space where activities are carried out using technologies, such as: Internet, multimedia materials and learning objects, which significantly changed traditional education, the focus in VLEs isn't essentially on the technological aspect which is seen only as a delivery mean of education, while pedagogy is expected to be the main underlying framework of designing that delivery device. (Nori et al., 2020; Morales-Salas, R., Infante-Moro, J., & Gallardo Pérez, J., 2020).

VLE is a very powerful and rich curriculum delivery method with a variety of affordances, opportunities, and outcomes. However, like other teaching medium, if it doesn't satisfy the users it will fade away and vanish. Thus, this research defines quality as a combination of VLE satisfactions: stakeholders' VLE satisfaction; authorities' VLE outcomes satisfaction; community's sociological VLE learners' impact satisfaction; and the working market's VLE graduates' ability satisfaction.

Why quality in VLEs?

The researcher believes that one of the strongest reasons for quality implementation in VLEs (before COVID 19 pandemic) is the growing competition between educational institutions and universities around the world to encourage online courses. Around the world, the broadening of MOOCs (Massive Open Online Courses) at universities is a clear example. In other words, "Universities are ensuring the standard of their educational products offered matches the standard of what is offered onshore" (Inglis, 2005: p.2).

According to Jara (2009), face-to-face (FTF) learning based higher education institutions are increasing use and support of their e-learning courses delivery. In addition, these intuitions are particularly, expanding their VLE provision using web-based technologies for online and blended courses delivery, especially, in the most recent MOOCs. Parker (2008) believed that due to VLE

increasing demand; governments, accreditation bodies, and universities are increasingly striving to identify the appropriate strategies to assure the quality of VLEs.

Quality is not only a challenging concept, but also quality related concepts are similarly challenging ones i.e., quality assurance (QA), quality control, quality management, and quality enhancement. The challenge emerges as a result of the multidimensional criteria of the learning quality in higher education. According to Green (1994), "since the mid-1980s, public interest in and concern about quality and standards has been intensified by the increasing attention given by successive governments to reforming higher education" (p. 3). This explains the arising and increasing challenges to traditional perspectives of quality assurance especially that, when dealing with the existing VLEs, the existing quality assurance processes shows their own clear significant limitations.

The infrastructure issues represent the main challenges that facing the usage of VLEs (Almaiah and Mulhem, 2018؛ Amin and Alyoussef, 2019؛ Eltahir, 2019). However, challenges expand to include factors such as course issues, where there is completely shift from traditional face-to- face to online e-learning system. (Rasha, 2021)

In higher education institutions, the existing quality assurance procedures were originally designed to enhance the quality ordinary FTF courses. However, is not clear if the same procedures would do the same for VLE courses. VLE quality pursuit is strongly shows in the existing literature and strongly asserts that VLE quality in is not a myth or illusion that is beyond reach. The field of education, in fact, is full of decent researchers who have frequently attempted to investigate the issue. The debate concerning whether or not quality exists is due to the difficulty it takes in VLE implementation. Consequently, instead of handling and uncovering

its structure, requirements, and assurance procedures, quality is rather described and treated as a myth.

One of the, if not the most, substantial e-learning advantages, is its capability of hosting not only one learner but also as many learners as it could at the same time. This wide hosting capability strongly determines the quality of an e-learning system. It is in fact called Scalability. According to Rosenberg (2001), "Scalability is the ability to host from 10 participants to 100 or even 100,000 participants with little extra effort or incremental cost (providing the infrastructure is in place" (p. 31). In fact, this e-learning systems' scalability has generated what is now known as "MOOCs" i.e., this kind of university courses that is widely capable of hosting and absorbing enormous numbers of learners in a single online course at a time.

Methodology:

The present research used a wide context, multi-variant case-study methodology (Yin, 2003: p. xi). Data collection methods included three focus group (Bloor et al., 2001: p. 19); (Cohen et al., 2007: p. 228) and five in-depth semi-structured interviews, in addition to the VLE's feedback, along with a questionnaire for learners' satisfaction with the VLE. Data collection methods were used to identify the learners' views regarding the essentials factors for implementing quality in VLEs in Egyptian higher education. Existing literature and related studies formed the bases for making decisions about VLE structure and investigation methods. The original schedules were written in English and translated to Arabic. Moreover, there was similar scrutiny of the translation of Arabic responses before the open and thematic coding analysis processes conducted in English.

The participants were given the opportunity to construct their learning groups based on social preferences and circumstance giving them, in the spirit of e-learning, the freedom to learn how, when, and where they like.

Using “three” focus groups, the study data was collected in almost two months. During that period, the researcher investigated and identified the challenges that faced the participants studying using VLE. The researcher conducted "five" individual face-to-face interviews (duration =20 minutes) in which the participants were asked about: First, their VLE experience and Second, what successful quality implementation entails?

The course implemented in this research (computer-maintenance VLE) was designed for Tanta University students joining the teaching profession. During that semester, 195 students were enrolled in the VLE. Yet, only 95 participants joined the course.

The research was conducted following two related steps to answer its questions. Step one was the implementation of (VLE) to the Egyptian higher education students. **The first step** aimed to insure students are involved in using and handling VLE and to get acquainted with the affordances and the capabilities of VLEs in any curriculum delivery. **The second step** aimed to collect and analyze data across two stages: open coding, and specific coding processes. The open coding process focused on generating broad conceptual themes and patterns using the data collected from the interviews and focus groups.

Next, the more detailed process of classification was applied to identify nodes, sub-nodes, and tree nodes utilising a data analysis program to identify the emerging themes. All these procedures followed the principles of grounded methods in the qualitative research (Corbin, 1998; Glaser, 1967).

1- Case Study Identification:

Stake (1995: p. xi) identifies Case Study as, “The study of the particularity and complexity of a single case, coming to understand its activity within important circumstances.” While, Gillham (2004: p. 1) defines it as “an approach that tries to represent a case through

the investigating of an individual or a group such as a family, class, or an office".

Jaques (1994: pp. 75-114) lays out an interesting outline for describing what a case study should be and do:

- Written summaries or syntheses of real-life cases based upon data and research;
- Require you to isolate and think through the key issues involved against both theory and the larger comparative environment;
- Identify appropriate strategies for the determination of the 'case';
- Weigh the pros and cons of the remedial options/strategies; and
- Recommend and present a rationale for the best resolution.

Why Case Study?

Yin (2003: p. xi) stated that "case study is appropriate when investigators either desire or are forced by circumstances to: (a) define research topics broadly and not narrowly; (b) cover contextual or complex multivariate conditions and not just isolated variables; and (c) rely on multiple and not singular sources of evidence."

In order to investigate how quality could be accomplished in VLEs, and to create a group of Alliance Recommendations to Establish Quality in Egyptian Higher Education VLEs. this investigation covered multivariate study and used multiple methods to collect the data, which could indicate the quality criteria that should be included in the designed model for quality in VLEs.

This methodology is the best approach to determine (a) what the factors that determine quality in VLEs are; (b) what are the group of Alliance Recommendations to Establish Quality in Egyptian Higher Education VLEs.

Yin (2003: p. 4) stated "The case study method is the method of choice when the phenomenon under study is not readily distinguishable from its context".

This research is trying to study the effects of implementing a VLE in the Egyptian higher education context and broadly focuses on studying every element involved in the process of implementation and covers the complex multivariate conditions of the whole process relying on multiple data collection tools which shape the sources of evidence this research needs.

This research belongs to the instrumental case study type because it explores the case of the Egyptian higher education's usage of VLE to gain insights into, and a better understanding of, the necessary criteria to be included in the suggested model for designing and evaluating quality in VLEs. (Simons, 2009).

Arguably, the most reliable reason for choosing the case study approach is: the richness of the data it gets and the ability to collect more in-depth data about the case in a natural context. Creswell (2007) pointed out "case study captures the complexity of case/cases through detailed, in-depth data collection."

Table 1 Chronology of the data collection

Method	**What Happened**	**Where**	**When**
Focus Groups	to get the groups' opinions regarding their experiences with the e-learning system	Inside the buildings of the Faculty of Specific Education/ Tanta University (Educational Technology Dep.)	Mon, 8 April 2019 & Wednesday, 10 April 2019
Interviews	to collect rich details about the efficacy of the Implemented VLE	Inside the buildings of the Faculty of Specific Education/ Tanta University (Educational	From 10 to 18 April 2019

		Technology Dep.)	
VLE Feedback	The feedback on the VLE from the participated learners, which included "three" forum sessions and "four" chat session.	VLE Activities	From 17 March to 25 April 2019

Quantitative versus qualitative methodologies for this research:

Gorard & Taylor (2004: p. 3) "outlined some important points about the methodological approaches to research:

- Qualitative or quantitative represents only one way of classifying methods;
- The choice of method is determined by the needs of the investigation not the personal preferences or fears of the investigator;
- All researchers need to be able to use a range of techniques."

Connolly (2007: p. 4) stated that "qualitative methods are subjective and anecdotal or that quantitative methods are crude and simplistic and thus unable to capture the realities of social life. However, it is only when you step back from these arguments to consider them properly that you can see just how nonsensical they are. For example, it is equivalent to a builder arguing that hammers are better than screwdrivers. It just does not make any sense. The point is that both tools are useful but for different jobs. Imagine if the builder advertised his or her services but stated that whatever the job, he or she would only ever use a hammer. How many of you would invite them into your house to re-tile your bathroom? It may

sound silly but how is this any different from someone in an educational research context claiming that they only do quantitative (or qualitative) research?"

Quantitative data may provide the basic answers for the research questions, while qualitative methods are used to make more detailed exploration and to provide further details. According to Borg and Gall (1989) The use of both qualitative and quantitative methods, is a legitimate approach to research, and may lead to a logical fulfilment of the research requirements.

Access & the Setting

A case study approach is conducted in the area of the Egyptian higher education and to be more specific the population of the research are the learners of the fourth grade/computer-teacher division/ instructional technology department at the faculty of specific education/ Tanta University.

During the processes of this research VLE was implemented to teach the computer-maintenance curriculum to the participated learners in order to clarify the suitability, and efficacy of VLEs in the Egyptian Higher Education context, and to give the Egyptian learners an adequate experience with e-learning systems to get their feedback regarding to what extent the quality e-learning model will help in attaining quality in VLEs and to clarify the recommendations to achieve such quality.

By reviewing the literature, the researcher began with a long list of factors involved with implementing quality in VLEs, and from this long list the researcher determined a group of factors that actually influence the decision for designing and implementing quality in VLEs. Thus, the researcher found that designing a quality model is the most appropriate way to congregate all the factors that influence designing and evaluating quality in VLEs.

By studying each factor in this model closely and figuring out the relationship between all the factors in the model, a lot of

information and points with which to guide researchers about how to accomplish quality in e-learning systems are expected. As a result of the conceptual framework various data is collected and a variety of data collection methods are used, thus “Case Study” is an appropriate approach to use in this research. To provide a practical solution to the problems of designing and evaluating the quality of VLEs and to answer the research questions presented in this research completely and appropriately, a mix of quantitative and qualitative methods were used under the case study approach to investigate the efficacy of the suggested model in designing and evaluating quality in VLEs. Denscombe (1998: p. 31) stated that “One of the most strengths of the case study approach is that it allows the researcher to use a variety of sources, a variety of types of data and a variety of research methods as part of the investigation.”

Participants

The involved participants in the data collection were “3” University lecturers in the Egyptian higher education context; “95” learners participated in the computer-maintenance e-learning/ computer-teacher's division at the faculty of specific education-Tanta University.

Results

Implementing a new delivery method into educational systems - especially when it is evolved with using new technologies in an inexperienced society similar to the Egyptian higher education context as it shown from the literature - is a difficult and complex process requiring a lot of attention and care from all the stakeholders involved in the processes of such implementation, such difficulty could be observed in the new learning delivery method that Egypt tried to apply in the secondary schools (tablet) without including all the stakeholders in the decision making processes, which resulted in creating unclear learning environment.(Niehues-Jeuffroy & Rusnak, 2020; Rasha, 2021).

This research tries to generate a model for implementing and evaluating quality inside VLEs, and to extract a set of recommendations that could help establishing quality inside VLEs. an e-learning course aims to provide a flexible learner-centred environment through different means to address learners' needs, Abd El-Gawad and Woollard (2010: p. 27) have developed a definition of e-learning as:

- An electronic learning processes takes place originally on the Web;
- An organised and well-planed delivery method through which a thoughtful design, implementation and continuous evaluation processes take place;
- The use of new multimedia technologies and the Internet to improve the quality of learning;
- A learning situation that enables learners to learn at any time, place with many reusable resources;
- A rich environment with its activities that make the learner more involved in the learning situation;
- The use of both 'synchronous' and 'asynchronous' communication tools to enable interactivity between the stakeholders;
- A learning situation that facilitate access to resources and services as well as remote exchanges and collaborations.

This research defines "the implementation processes" as the whole processes of designing & realising, constructing, and utilising the e-learning delivery system (VLE).

A deep concern was given to the participants' views on VLEs: its efficacy for the Egyptian higher education, and how to guarantee the quality of it. Thus, a case study research approach was applied to collect the views of "95" learners of the educational technology department \ fourth grade learners \ computer-teacher division at the faculty of Specific Education \ Tanta University), and "3" lecturers. The views of the two groups (learners and lecturers) of

the available stakeholders were gathered to examine their thoughts about the VLEs using four different methods to collect their views: questionnaires (for the learners), semi-structured interviews (for the two groups), and their feedback on the VLE (for the learners). Learners' views were explored further in three brainstorming sessions (focus groups).

Any educational systems (whether traditional or e-learning) have to go through multiple stages in order to be successfully implemented as a robust and powerful system. These stages contain main stages and sub-stages that could vary upon the nature of the desired implemented system.

Every new educational system has its pre-implementation expectations and possibilities; some challenges arising during the implementation; and post-implementation outcomes and recommendations for enhancing the system itself. Thus, the analysis of the results is reviewed in a time-line beginning with the stage “Before” implementing any educational system ending with the stage “After” the implementation, passing by the stage “During” the implementation. Each stage constructed with a number of emerging themes that emerged from the data analysis that considered the interaction between these themes (in both the same stage and between themes in the three stages as well). The framework of analysis reflects the conceptual framework model and is influenced by analysis of nodes. Below, the researcher defines each of these constructs and displays the framework for the analysis process.

As described above, data emerges as a series of themes related to a time-line in constructing a new learning delivery system in the Egyptian higher education sector. These themes are shown in the next Figure:

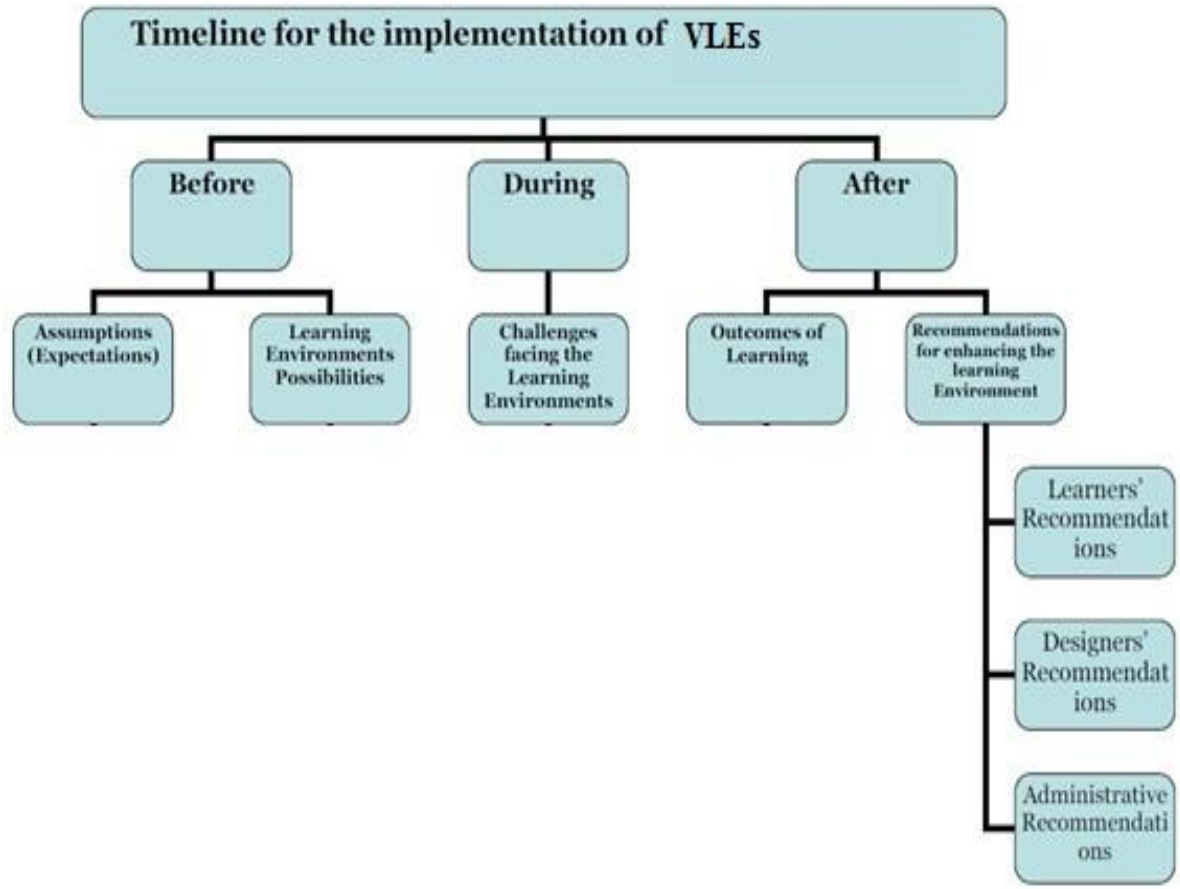

Figure 1 Data Analysis Framework

Discussions of results:

The answer of research questions

In this section, the questions of the research are revisited.

Answers of the following research questions will be considered:

1. "What is the proposed model to guide design and evaluate quality in VLEs?"

2. What are the Alliance Recommendations to Establish Quality in Egyptian Higher Education VLEs?

What is quality in VLEs?

According to Abd El-Gawad (2010) Quality, is the ongoing pursue for excellence in the educational process. In addition, in e-learning it is a multidimensional concept which involves fitness for use, fitness for purpose, reliability, and durability.

The existing literature on e-learning systems' quality evaluation indicates that measuring the students' learning is the main evaluation procedure available to measure the teaching quality. (Jafari, Khorasani, & Rezaeizadeh, 2016; Nori et al., 2020) In fact, "all evaluation depends on measures of 'fitness for purpose', and because teaching has purpose only where it supports learning, learning is the only authentic measure of teaching" (Hay et al. 2008: p. 1038). However, quality evaluation based on learning as the only reliable outcome contradicts with the researcher's definition of VLEs quality as a mixture of different satisfactions:

- Stakeholders' satisfaction with the VLE;
- Authority's satisfaction with the VLE outcomes;
- Communities' satisfaction with regard to the sociological impact of VLE on students;
- Working market's satisfaction with regard to the abilities of the graduated students from VLEs.

Yet, relaying on learning as the only trustworthy teaching measure reflects two problems: First, the learning process is believed to be too complex to be empirically measured; second, teaching, as believed, can lead to learning, however, learning is not a necessary outcome of teaching.

Recommendations for establishing quality in VLEs

Despite researchers ongoing debates concerning the VLEs efficacy as a delivery method (New Zealand Council for Educational Research, 2004; Parker, 2008), it is not really

trustworthy that VLEs can overcome all associated FTF (face-to-face) learning problems. This could be due to the indefinite provision when it comes to using VLEs as a delivery method in the Egyptian higher education. As Connolly et. al., (2005) argues "models of learning under e-learning are not as well understood or accepted as those for traditional higher education learning" (p. 61).

VLEs' measurements (procedures and metrics) need to be redesigned to guarantee their effectiveness and sustainable satisfaction. Here, it is strongly recommended to come to terms with the criteria that should be adopted to guarantee the implementation and evaluation of quality of VLEs. This would definitely help higher education institutions integrate quality into their VLEs.

For (Newton, 2002; Kurilovas, Dagiene, 2016; Affouneh, Salha, Khlaif, 2020), "quality implementation process of VLEs needs to involve all stakeholder groups to develop a relevant online learning strategy and ensure alignment of needs prior to implementation". This research aims to reach a systematic and practical model capable of enabling Egyptian higher education institutions, stakeholders included, to integrate quality into their VLEs.

This model for VLEs' quality implementation and evaluation was originally designed to host all the possible influential factors on quality of VLEs. It was first proposed by Abd El-Gawad and Woollard (2009) as a framework to capture the multidimensional aspects of quality in VLEs.

As was previously mentioned, quality is a multidimensional concept. Hence, to capture this nature, VLEs designers and evaluators need to follow guidelines based on models and frameworks to work a plan which is able to collect dynamic information concerning whether or not system objectives were met and whether best practices were implemented. Consequently, the researcher proposes a model for designing and evaluating quality in

e-learning systems. This proposed model comprises: (1) Stakeholders' Satisfaction; (2) Learning Outcome; (3) Learning Environment; (4) Evaluation during Development (see Figure 2 below).

Figure 2: VLEs Quality model

Recommendations for VLEs' participants:

Regarding VLEs' participants, the researcher recommends: First, VLEs' participants change their thinking guaranteeing their VLEs adoption. Second, VLEs' participants should develop their computer and Internet literacy. I similar veins, El-Zayat & Fell (2000) changing VLEs' participants thoughts and attitudes towards VLEs as a valuable method to deliver learning but not a time-wasting one. Thus, learners would get strongly and effectively involved in VLEs.

A VLE should not be designed in a vacuum; on the contrary, it should match students' needs and desires as closely as possible, and adapt during course progression (Graf and List, 2005).

Furthermore, to alter VLEs' participants thinking regarding the best learning method, they should attempt other methods, especially e-learning or blended e-learning. According to the participants' viewpoint, the above mentioned changes have the ability to alter the Egyptian higher education learners' thoughts to engage effectively and efficiently in VLEs.

Further, the participants emphasized that e-learners should work hard to improve and master their computer and Internet skills to participate effectively in VLEs. As the participant FG4-2 puts it: *"For learners, it is essential for them to know the basics of computer and Internet usage before we come and say to him/her you have to use the Internet in order to learn."*

Research indicates that barriers to successful VLEs' adoption and implementation exist. For example, the fact that users need to master a new set of skills, including the use of online tools, communicate effectively and deal with specific procedures such as passwords, permissions, the need to be open to change, etc. (Newton, 2002; New Zealand Council for Educational Research, 2004; Ali, 2008; Amin, and Alyoussef, 2019; Morales-Salas, Infante-Moro, & Gallardo Pérez, 2020; Nori, Morteza, Abasalt & Farnoosh, 2020). Among Egyptian higher education e-learners, research indicates that similar problems exist i.e., lacking the

necessary skills for using e-learning efficiently, e.g. IT skills, mastering the usage of e-learning tools and activities, internet usage skills (Grigg, 1998; Health Libraries Group, 2005: p. 27; Mamary, 2000; Mattheos, 2001; Ouellette, 2002; Washer, 2001).

In conclusion, regarding changing current practice, the participants recommended:

- VLEs can be a useful tool for delivering the Egyptian higher education curriculum, though this is dependent on learners perceiving this as a valuable delivery method, rather than seeing it as a waste of time. Therefore, there is a need to address learners' attitude towards VLEs.
- Effective use of VLEs depends on learners' mastering the necessary computing and Internet skills. Learners have to possess the necessary prerequisite skills to interact effectively with VLEs.

Recommendations for VLEs designers:

In the present research, the participants' recommended that VLEs designers need to reconsider VLEs constructions, and the characteristics of VLEs tutors. In addition, the participants emphasized that the key factors for the successful VLEs implementation are: VLEs constructions including its interface, activities to be included inside, and periodical learners' assessment.

From questionnaire's results, more than 81% of the participated learners think that the used background colours inside the implemented VLE were suitable for them. On the contrary, only 3.7% of the learners don't believe that the used colours for background were suitable. It worth mentioning here that the used background themes in the implemented VLE was "wooden" themes.

Regarding learners' satisfaction with the fonts used inside the implemented Computer-maintenance VLE the questionnaire analysis reveals that 96.3% of learners have stated that the used font colors are suitable for them. Strangely, there is not a single learner has declared that he/she dislike the used font colors.

Additionally, more than 91% of the learners believe that the used font sizes in the implemented VLE were suitable to read. While, only 3.7% did not agree with this. It worth mentioning here that the used font sizes are "14" for the addresses and "12" for the normal text.

Regarding the interface design, participants indicated their preference of an VLE interface which has font size (14) as this size is the best comforting size for their eyes. As for the e-learning interface colors, the participants required no more than three colors and to comfort their eyes and avoid distraction while learning. Moreover, the participants stated that pictures and flash images should be used for educational reasons only, or risk the learner's distraction from the learning process. The participants preferred to manage the virtual learning environment (VLE) layout in week's format where so to allow them learn about a certain matter in one week. Finally, the participants suggested using a descriptive title for each resource and activity in the VLE, which identifies the type of the resource and activity as well. Based on the participants' views, it is concluded that learners consider the VLE interface appearance as an important factor that any e-learning designers has to take into account when they try to design a successful VLE.

The participants' views regarding the VLE interface construction are consistent with a number of studies. For example, Lehmann and Chamberlin (2009) stated that successful e-learning interfaces should be presented as small chunks of information to be learned easily by learners. In addition, VLEs should provide comprehensive text titles for all graphics and captions. Furthermore, written scripts for all audio and video files should be

included. Finally, Lehmann and Chamberlin argue that red and yellow colors are difficult colors for those with poor eye sight to see online; thus they agree with the participants' recommendation to use colors that do not strain the eyes when designing VLEs. All in all, e-learning systems designers should utilize various forms of media (such as audio, visual, movies, texts, etc.) rather than purely relying on textual materials (Ehlers, 2004).

Regarding the type of VLEs activities i.e., personalized and collaborative or just one of these types, the participants stated that it is important to have both kinds of activities to provide learners with the freedom to learn and interact as they prefer. Despite participants' preferences that e-learning systems should include personalized and collaborative activities, they were aware that both kinds of activities are challenging, which indicates that they are aware of the e-learning principle aimed at giving learners the freedom to learn according to their preferences. Participant FG3-4 statement is a good example:

"The collaborative learning is good and not good; it is good in the collaboration between us in knowledge and opinions and we came up with new information that we didn't have any idea about before. It is not good in the differences between us in the available times: because we cannot agree on a specific time to meet online. Hence, it breaks our online meetings."

The point the participant was trying to make i.e., collaboration activities are challenging, is fully supported by research stating that e-learning as a delivery method needs to take place in "learner-centered" environments which allows for different learning styles and learners' preferences (Clarke, 2004; Ehlers, 2004; New Zealand Council for Educational Research, 2004; Newton, 2002).

Jafari et al. (2016) in their study of the challenges of developing VLEs to improve the performance of human resources in organizations, argue that the most important challenges of the development of VLEs in organizations are educational and cultural

ones, as for periodical assessment process of the learners' achievement following each unit or each week, there is a famous saying in Egypt: “There is no learning without assessment”. Due to this cultural emphasis on assessment, participants continued to embrace this saying, even in their learning with VLEs. Thus, they required that VLEs should include the periodical assessment they are used to. Participant FG1-1 explained the assessment situation saying:

“Periodical assessment is better. Because if you evaluated me at the end of the course you will know my final level only but if you periodically evaluated me, then you will have better chances to discover the faults in the VLE and be able to solve these faults.”

On the other hand, periodical assessment during VLEs enables both tutors and learners recognize their weaknesses as early as it helps to identify and overcome these weaknesses so as to continue benefiting from the VLEs. The inevitability of a periodical assessment process for both tutors and learners is strongly enhanced by (Coman, 2002; Kingswood, 2011; and Sun et al., 2008).

The participants’ recommendation concerning the periodical assessment and its relevant connection to the Egyptian higher education system lead the researcher to compare this statement with the one used in the UK: “Assessment for learning” (Black, 2003). The comparison indicates that Egyptian learners' views of the assessment process being a burden needs to be altered as part of the learning process rather than judging regardless the fact that learning has occurred or not.

The research participants intensified that VLEs tutors need to have certain characteristics including reasonable fast feedback, which enables tutors to maintain the interactivity established with their learners. As the participant FG4-5 puts it:

“The feedback should be given in adequate time; it is better to be fast not to delay it for one or two months.” Thus, the successful VLE tutor should be able to give a fast respond to his/her learners

to maintain the interactivity established between him/her and the learners."

Moreover, the participants intensified that the tutor's academic proficiency enables him/her to deliver a high standard teaching and that the tutors' ability to monitor and observe his/her learners, which enable them to adjust learners' undesirable behaviors toward the completion of learning processes. According to participant FG3-1:

"Indeed, if the tutor doesn't understand the curriculum s/he teaches, whatever s/he tries to explain, we will not understand anything."

As a result, it is inevitable that the learners trust their tutor as capable of delivering the best knowledge whether it is through FTF or VLEs. In addition, the tutors' positive attitudes toward the curriculum they teach are expected to sustain the e-learners' positive attitudes toward the curriculum they are undertaking.

The tutor's characteristics uncovered by the participants find their place in a number of studies. For example, studies reveal that tutors' characteristics in VLEs would increase acceptance and satisfaction among learners including "tutors' attitudes toward learners, technology mastering skills, and attitudes toward using e-learning units in classrooms" (Selim, 2010: p. 337). In similar veins, The Health Libraries Group (2005) stressed the importance of tutors obtaining IT skills and training, information literacy and e-learning development for successful VLEs implementation. Furthermore, Ehlers (2004) stated that tutors' support has been viewed as an essential element in judging the VLEs quality, and he identified eight main dimensions of tutor support: the importance of communication and interaction between the tutor and the learner; an active moderation of learning processes by the tutor; and the tutors' abilities to cope with learner's variation in their preferences.

Recommendations for administration:

In this research, the Participants recommended VLEs administration that they should necessarily start learning using VLEs at an early age. As the participant FG1-3 puts it:

"Start from the younger ages not to start with our ages; we are at faculty; it is not right to start with us. No, you have to start from the beginning ages, from primary schools."

Moreover, the participants intensified that the stakeholders should all be involved in e-learning curriculum design. As the participant FG1-3 puts it:

"All the stakeholders in the learning processes should be involved in designing the content of VLEs."

The participants also intensified that learners' attendance should be necessarily decreased. according to participant FG1-3:

"From my point of view, if there are days off during the week, there will be a good chance for us to work and enter VLEs. Unfortunately, every day we come back from the faculty tired, exhausted".

More and more, the participants recommended that tutors need training to obtain skills and knowledge to effectively engage with online learners. As the participant FG1-2 puts it:

"There are tutors are illiterate in the Internet skills, indeed, you have to eliminate their Internet illiteracy before transforming into e-learning."

Above all, the participants recommended that the administrators' thoughts regarding using modern technologies in education should be altered. In fact, the participants thought that this is a substantial factor for successful VLEs implementation. Participant FG4-2 stated:

"We desperately need to respect computers and Internet usage in education; people need to think of it as more than a toy. We need to look at computers and Internet as an important matter

because we deal with learning by computers and the Internet as a non-important matter."

Finally, sustaining the technologies infrastructure to fit with e-learning demands was the participants' last recommendation to the administration.

In fact, the participants' recommendations concerning the administration are strongly enhancing by the literature. For example, Selim (2010) stated factors that enable successful VLEs implementation include: the readiness and reliability of an organization's IT infrastructure; computer network functionality and reliability as well as the availability of internet on campus. In addition, the use of new technological tools and artifacts for teaching and learning require technical support by central support units. This goes with the necessity of affording strong ICT infrastructure, the absence or inadequacy of which will totally hamper the idea of e-learning adoption in universities (McPherson & Nunes, 2008). Finally, Eke (2011) states that successful VLEs requires the provision of computers and high bandwidth to enable the smooth flow of classes online.

organisational support may target overcoming technical difficulties through tech support, raise the use of e-learning among teachers through instructional support or improve students' perceptions of ease of use and usefulness through offers of computing support and training (Zheng et al., 2018).

In relation to the necessity of training tutors to effectively engage with e-learners, McPherson and Nunes (2008) believed in the necessity of a systematic identification of training needs through staff review and development programs. The researchers also added that staff viewed training as a serious success element for VLEs implementation. Similarly, Baldwin- Evans (2004: p. 273) stated "Without effective on-going training, the ability of any organization to compete successfully is under threat." This final quote highlights the significance of the participants'

recommendation to support e-learning tutors through sustainable training programs on how to engage effectively with e-learners. Finally, in line with the challenges that faces VLEs in the era of COVID 19, Niehues-Jeuffroy & Rusnak, (2020) stated that, the vast majority of personnel doesn't have to rely on access to devices at higher education institutions in case of lockdowns and it is not clear how comfortable teachers are in terms of using the internet.

In relation to altering officials' minds (Ministry of Higher Education officials) concerning e-learning as a delivery method, it is strongly believed that to achieve sustainable e-learning, it is essential to implement it strategically through clear and open communication channels, sufficient resources, targeted professional development, and a willingness to revise institutional systems so that e-learning 'fits' across the entire enterprise (Nichols, 2008: p. 10). The participants emphasized the strong connections between the desire to obtain a successful VLEs and the willingness to change officials' thoughts concerning e-learning significance.

The participants also believed that stakeholders should all be involved in VLEs implementation to include their views and opinions. This would definitely reflect on the quality of the established VLEs. Supporting this view, Newton et al. (2002) stated: "it is evident that there is a need to consider the views of a range of stakeholders' priorities for effective online learning" (p.24). Similarly, Sloman (2002: p. 164) stated that "the phrase "work-intensive" is often used to characterize modern society. For many people work is interesting, fulfilling, demanding but exhausting: there is always something else of value to do."

In this research, the participants, however, expressed their frustration concerning their overloaded duties and their Faculty restricted attendance requirements. Such requirements created an intensive work load that kept them from interacting effectively with VLEs and hindered their investigation of the endless possibilities, potentials, and affordances that e-learning and VLEs promise.

Conclusion

This research aimed to present practical recommendations to establish and evaluate quality in VLEs. As a result of reviewing the relevant literature, academic discussion, and the empirical evidences of analysis, a group of Alliance Recommendations to Establish Quality in Egyptian Higher Education VLEs was presented.

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