Relevance of E- Learning and Quality Development in Higher Education

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Summary

This is an extended paper explaining the role of E-learning and quality development in the current situation. Amid Covid:19 , E-Learning has achieved a new miles stone in imparting education and all levels of institutions have transformed their learning platform from face to face to virtual learning. In this scenario E-Learning is facing two major challenges, first to ensure the ability of computer systems or software to exchange and make use of information on virtual platform (interoperability) and secondly, developing quality learning through e-Learning. To impart learning and teaching (L&T) through E-learning, Middle East University (MEU) has adopted Learning Management Services (LMS) through Blackboard. The university has three types of L&T methods; full online, Blended and Supportive. This research studies the concept, scope and dimensions of interoperability (InT) of E-Learning in MEU then the connection and interdependence between with quality development. In this paper we have described the support and the importance of finest standards and specifications for the objectives of InT of E-Learning and quality development in MEU. The research is based principally on secondary data observed from MEU E-Learning deanship. Also sample of 20 E-Learning experts at MEU were given closed ended as well as semi closed questionnaires for evaluating the assurance of InT of E-Learning and quality development. These experts are mainly certified online facilitators and admin staff. Results provide the verification of application and presence of InT of E-Learning and assured the quality development process in MEU.

Keywords:
InT, LMS, Blackboard, Quality Development, E-Learning

1. Introduction

E-learning is explained as a network affinity group sharing their information, Knowledge, proficiency and conferring education to large number of learners at the same time or different. A learning system based on formalized teaching but with the help of electronic resources is known as E-learning [1].The universities which use E-Learning technologies are a step ahead of those which still have the traditional approach towards learning [1]. E-Learning is able to provide a platform for commercial sectors to conduct workshops, seminars, presentations and even training programs for professionals within the organization or different, under the same roof or remotely.

InT means the ability of exchange and re-use of information and resources between two different systems. InT is a precondition and a request for quality development that can be described and defined in different ways.

Focusing the educational sector, InT is an objective in the current environment for all prestigious schools, but educational and learning standards providing InT have been discussed and developed for only a short time [3] [4]. InT can be classified by their focuses on domains, entities, and implementation scenarios. E-Learning plays a very important role in educational sector and has advanced discussions on InT. It is the precondition to solve the technological problems. Based on the above explanation on the development of technological and learning technology standards, InT has to be addressed in respect of the quality of learning, education, and training offers and learning processes [3] [4].

This research is organized in various sections; First part give a short description on reviewed previous work and then defines InT and describes characteristics of good practices [3], and also the general preconditions of quality development and quality improvement in e-Learning [3]. The focus is based on Middle East University, InT of E-Learning and quality development

The second part provides the fundamentals in detail: Analyzing learning, education, and training in general for quality development especially in the field of E-Learning in Middle East University. Third part explains the categories and generic classification model of educational and learning standards applicable for e- Learning [3] and how they are working in Middle East University. The third part carries out the evaluation of these categories and classifications. An overview of E-Learning standardization committees and standardizations initiatives is followed by the description and analysis of their standards and specifications allocated and matched to the dimensions of the classification model [9]. Fourth part explains the research and methodology of this paper and at the end the results of InT and quality development are outlined.

2. Literature Review

The fast development in technology and the advancement in getting to know systems, E-Learning is now embraced with the aid of the masses. The introduction of computers changed into the premise of this revolution and

with the passage of time, as we get hooked to smartphones, capsules, etc.; these gadgets now have an importance location inside the classrooms for learning. In the current scenario books are replaced by E-Books or other electronic academic materials like optical discs or pen drives. Knowledge can also be shared through the internet, which is available 24/7, anywhere, anytime [1].

Face to face learning has its own important and it is important to take forward the concept of non-electronic teaching with the help of books and lectures, but the importance and effectiveness of technology-based learning cannot be taken lightly or disregarded completely. It is observed that moving pictures or video can be easily remembered and related by the human brain. Also it has also been found that learners can pay more attention and hold it for longer period of time to visuals. Apart from education sector other sectors, such as agriculture, medicine, education, services, business, and government are also adopting to the concept of E-Learning for growth and development [1].

In 1999, during the CBT (Computer Based Training) systems seminar, the term "E-Learning" came into existence. Other words also began to coil up in search of an accurate description such as "online learning" and "virtual learning". However, the principles behind E-Learning are not very new rather history has proofs of existence of E-Learning way back in 19th century in various forms [2].

2.1 An E-Learning history timeline:

Methods of E-Learning existed long before the internet was launched in some or the other forms such as distance courses were being offered to provide students with education on particular subjects or skills. Like in the 1840′s Isaac Pitman taught his students shorthand through correspondence. Pitman was a qualified teacher, used to send completed assignments to his students by mail and then send his students more work to be finished using the same system. This kind of learning was more prevalent with secretaries, journalists, and others who used this symbolic writing, design to improve their writing speed [2].

First testing machine was invented in 1924 that made students to tests automatically. In 1954, teaching machine was invented by a Harvard Professor, BF Skinner. This device enabled schools to manage programmed teaching to their students. In 1960 the first computer based training program was introduced to the world. It was originally designed for students studying in the University of Illinois, but concluded having used in all the schools in that region. This computer based training program (CBT program) was branded as PLATO-Programmed Logic for Automated Teaching Operations [2].

In the first phase of E-Learning it was only one way communication, it was mending to deliver information or conduct assessments but in early 1970's online learning started to become more interactive. In Britain the Open University took the benefit of e-learning by introducing wider range of interactive educational materials. Earlier this university used to primarily focus on learning at a distance by delivering the course materials by post and further correspondence with tutors was through mail [2].

2.2 Online learning today:

E-Learning took the pace of development in the 20th century with the introduction of the computer and internet. In the 1980′s the first MAC facilitated and encourages learners to have personal computers for learning on specific topics, develop knowledge in their area of interests, explore more information, etc. Eventually E-Learning tools and delivery methods expanded all over the world. Later in the century, more users joined virtual learning environments, started to connect with people remotely and gain online information for more E-Learning opportunities [2].

In the current scenario several schools and universities delivered courses online, enhance distant learning program, conduct conferences and meeting on virtual environment, etc. All this could happen with the technological advancements that aided educational firms to reduce the costs of distance learning, and building to obtain education for wider audience [2].

Now E-Learning is used by businesses to train their employees, new interns and experienced workers have the opportunity to improve their knowledge about their job description and industry and can expand their skill sets. Also E-Learning facilitated learners to accomplish their education from their home and practice assignments and development skills at par with latest trends and technology [2].

3. Discussion

3.1 InT and Quality Development

InT and quality development are the main challenges of E-Learning today [3].The acceptance, the realization, and the success of E-Learning offers depend on their InT and quality [3] [10]. For this purpose we present that InT and quality improvement cannot be prescribed in a selected manner, however there's always the requirement for an edition and specification concerning to the given situation [11] [12] [13]. InT means more than technical conformance: It covers the whole range of requirements and characteristics from any systems and has to be addressed at all different levels and domains. In this research we use system that includes human beings, societies, and any kind of technical and natural networks. A system consists of internal communication and relationship between all its elements, entities and members and can be defined against its external environment [3]. The epistemological (theory of nature or ground of knowledge) problems regarding the recognition of a system by another system can be suppressed here especially if we are concentrating on E-Learning [11]. It is impossible for other persons such as teachers [3] to observe

and follow the internal learning processes of a learner. Learning progress, knowledge and competencies are always built by the learner itself and we cannot prove a causal connection between learning offers and learning processes, we can only assume some relationships and its effectiveness. Implying these preconditions we can therefore define InT as follows: InT means the ability of exchange and reuse of every kind of information and resources in anyway within or between different systems. The definition of InT explains four scopes and can be differentiated in relation to given systems [11]:

Table 1: Scope of InT in relation to given systems

Internal:	The InT is only established between the internal elements, entities and members within one system [3] [14].
Directional:	The InT exists in the direction from one system towards another system, but there is no feedback loop or reciprocal relation (e.g. only import without export) [3].
Mutual:	The mutual InT allows the exchange between different systems in both directions [3].
General:	The InT looks for achieving exchange between all given systems in general [3] [11].

Middle East University is using Blackboard, registration deanship and IT facilities to perform internal InT between IT experts, E-Learning experts, course instructors and registered learners but till now there is no common platform for all internal entities. Recently Google class room is introduced by the E-Learning, Middle East University, but its application is still limited to few users.

Middle East University has directional InT between E-Learning (LMS), IT and registration services which is monitored by deanship of registration, deanship of E-Learning and IT department. Presence of mutual InT of E-Learning is limited to strategic level only. Currently MEU is working on general InT like between Blackboard, registration, self-service and IT department. IT can access the MEU employees' systems and solves technical issues remotely. IT can establish the communication network between systems within MEU employees but a detailed differentiation is needed to know the Scope of InT in the specific domains to implement quality development.

Quality development can be defined as a kind of measurement, assurance, optimization, and continuous improvement of the quality within given systems [11]. According to InT quality development can also be described formally by the chosen scope. Quality is not a fixed characteristic belonging to subjects or systems but depends amongst others on the point of view and the scope [3]. The following differentiation of the scope into three quality dimensions has become widely accepted (cf. Donabedian 1980).

Table 2: Quality Dimensions

Quality Dimensions	Description
Potential dimension	What are the potentials for the quality development in the future [3]?
Process dimension:	How can the processes be described and optimized for the purpose of quality development [3]?
Result dimension	How can the quality development be supported regarding given results and systems [3]?

In this study we focus only on the common characteristics of InT and quality development and their relationships in the field of E-Learningi n Middle East University. If we address the educational section in general, we find that InT has been developed only for short time, similar findings we have in the case of Middle East University but the university has realized its importance and acknowledge it as precondition to solve many several technological problems and facilitate in quality development.

Since the learners, teachers, and learning objects and technology systems need to exchange and re-use information and resources between each other [3]. Therefore InT is a request and a precondition for the quality development: Both can be described and defined in different ways using the same domains, entities and implementation scenarios [3]. Standards are offering a special support and have been accepted widely for the aims of InT as well as of quality development [13]. Middle East University has realized the importance of InT as an enabler for the quality development in E-Learning. Therefore focused to use best learning practices, conduct training from E-learning experts, find ways of improvement and resolve technological issues on its learning management services.

3.2 Categories of E-Learning standards

There are many categories that focus on the complex field of E-Learning standards [15]. E-Learning standardization has to deal with many dimensions such as service providers, users and stakeholder [3]. It is important to understand these standards because service providers and users of E-Learning have different motivation, benefit, requirements, and likings and eventually affect quality development. E-Learning standards can mainly address and support either the users or the providers, or both. Regarding the organization using or providing E-Learning it is possible to differentiate the organizational levels on which an E-Learning standard is focusing: learning offers (e. g. content, learning objects), processes, and (business units of) the whole organization [16]. There can be more categories in

the dimensions of E-learning standards but for the purpose of our study we have considered only three [17].

<p style="text-align:center">Table 3: Dimensions of E-Learning Standards [3]</p>

Dimensions	Sub-Part
Types of E-Learning Standards	Implementation Standards [3], Conceptual Standards [11] Levels Standards [3]
Domains of E-Learning	Meaning, Quality, Didactics, Learning technology, Learning Content and Context
Entities of E-Learning Standards	Learning Environment, Roles, Methods, Learning Systems, Learning Resources and Practice

The three main dimensions of E-Learning standards are [3] namely, Types of E-Learning standards, Domains of E-Learning standards and Entities of E-Learning standards. There are three types of E-Learning standards as mentioned above, implementation standards are developed to ensure InT within all the domains of E-learning. Middle East University provides E-Learning platform to teachers, students, Admins staff, as well to some external members too who offer quality standards to E-learning. Conceptual standards offer generic and theoretical solutions to compare and harmonize the entities and objects corresponding to the standard. Middle East University's E-Learning provide sharing of concepts, by adding the different users such as teachers, staff members on the same course. Also Conceptual standards works on some other E-Learning methods too for Quality learning such as Massive Open Online Course (MOOC), E-Course, online training, etc. Level standards define the quality level that should be reached by the application of the E-Learning offer and are often used for certification aims. For achieving Level Standards MEU E-Learning has given many Quality development certifications such as Quality development course, peer reviewer , masters reviewer and created an InT with all entities such as teachers, students, stakeholders. These three types of E-Learning standards can be attributed to the two main purposes and functions of E-Learning standardization which are InT and quality development. Implementation standards are focusing the InT within all domains and level standards are addressing the quality development. Conceptual standards can support both the quality development (e. g. by providing generic frameworks or reference models) as well as the InT by implementing and adopting the concept [3]. The following figure1 shows that relationship, types and purposes of e-learning.

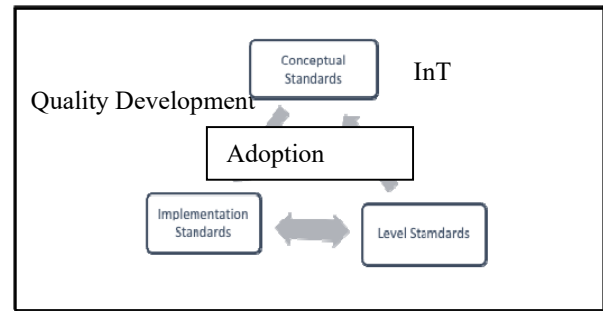<p style="text-align:center">Fig. 1 Types and purposes of E-Learning standards [3]</p>

Level standards in E-Learning can be based on different scopes of quality like Minimum expectation, Average expectation and Maximum (ideal) standard. The dimension domain describes which topic and subject the E-Learning standard is addressing mainly. There are six main domains of E-Learning.

3.3 Domains of E-Learning standards [3][8]

Meaning: The domain meaning focuses the general understanding and deal with the categorizations of E-Learning standards. InT of MEU E-Learning and quality development process work very effectively at all levels. All MEU online users, Teachers, Students and other admin staff members realize the understanding of E-Learning Standards and role in imparting the quality learning and teaching process.

Quality: The domain quality covers all aspects of the development, assurance and management of quality and deals with e. g. results, processes, and potentials. Online Teachers and E- Learning experts in accordance with Quality standards work in developing E-Courses aligned with students' centric approach in MEU. Through this teaching pedagogy, InT is applied to an extent between online users in learning environment.

Didactics: The domain didactics deals with all pedagogical questions and issues concerning e. g. methods, learners, and environments. MEU E-Learning has developed a team of experts who monitor the entire online learning process.

Learning Technology: The domain learning technology includes all technological solution especially developed for learning objectives and purposes and deals with e. g. data exchange, interfaces, and accessibility questions. To solve the technological issues, MEU E-learning and MEU IT work together and find optimum solutions to all technological issues and provide accessibility to all online users.

Learning Content: The domain learning content covers all aspects that are necessary for E-Learning objects and deals with the resources, their aggregation, and packaging. Online instructors share learning material, carryout assessments,

announce grades, etc, on Learning Management Services MEU E-Learning and aggregate on another online platform MEU registration.

Context: The domain context combines all other disciplines and information with regard to E-Learning and its given context and deals with e. g. rights, laws, and experiences. MEU E-Learning deanship, clearly specify all the digital rights management and other laws pertaining to legal rights. For reaching InT of E-Learning and Quality development, MEU has been working and to fair extent in all the domain of E-Learning standards. Below given results will verify more this context, however E-Learning standards can cover one domain or a combination of all six E-Learning domains depends on the level of InT.

3.4   Entities of E-Learning Standards:

The domain entity depends on the main object that the E-Learning standard is focusing on. Across the domains there are six entities and objects that E-Learning can address [19]. It is vital to know the how MEU E-Learning addresses these standards so that quality learning can be attained.

Learning Environment: The entity learning environment covers the organizational and pedagogical management and structure of E-Learning offers including the infrastructure and all services and processes [3]. MEU E-Learning and MEU IT together develop an online learning environment, where all online users can share learning resources, get technological solutions and communicate at all levels in the organization.

Roles: The entity roles deal with the different defined groups within an E-Learning solution (e. g. learner, teacher, and tutor) and include also the focus on single persons. Online Experts are playing the many roles in MEU E-Learning, they are the trainers, online facilitators, instructors, etc.

Methods: The entity methods concern the used methods defined for and used within an E-Learning environment [20]. MEU E-Learning has three learning methods, namely full online, hybrid and supportive learning. All three methods are based on application of some quality standards.

Learning Systems: The entity learning systems deals with all technological and conceptual questions (including the architecture) regarding the systems used within E-Learning. MEU IT aids MEU E-Learning by various other tools to develop learning systems, such as online registration, self-services, employees' corner, research, etc.

Learning Resources: The entity learning resources covers all content offers that are components of the learning system. MEU provides online learning resources such as digital software, Books on digital library, educational videos, etc on its LMS

Practice: The entity practice concerns all relevant information experiences in respect of the realization and the usage of an E-Learning offer. For the best practices MEU E-Learning standards has developed correspondence with more than one entity in combination such as MEU IT, MEU employee's corner, MEU registration, MEU self-services.

4. Research Methodology

The aim of the study is to arrive at a comprehensive picture of InT of E- Learning and Quality Development and in Middle East University. Therefore based on the theoretical concepts earlier in this paper we prepared closed ended questionnaire and gave to E-Learning Deanship to be filled by E-Learning administration, E-Learning experts and online facilitators.

Our sample size was small; we collected data from 20 people only. We divided our questionnaire into 5 sections. Below given is the structure of our questionnaire.

Table 4: Structure of the Questionnaire

Sec	Title Questionnaire	Description of Content
	Scope of InT	Internal, Directional, Mutual and General
	Dimension of InT	Types of E-learning: Domain and Entities E-learning
	E- Learning in general	Involvement in e- learning Role in E- learning Length of involvement with e-learning
	Quality in E- Learning	Involvement with quality in e- learning Personal understanding of quality Importance of Quality e-learning
	Use of Quality instruments in E- Learning	Use of Quality Approach

Table 5: Scope of InT of E-Learning in MEU

Do you think Internal InT exit in E-Learning MEU? (Yes/No) Between what levels? _____
Do you think Directional InT exit in E-Learning MEU? (Yes/No) Between what levels? _____
Do you think Mutual InT exit in E-Learning MEU? (Yes/No) Between what levels? _____
Do you think General InT exit in E-Learning MEU? (Yes/No)

Table 6: Dimensions of InT

Are you aware of various types of E-Learning? (Yes/No) Do you think Implementation E-Learning Exit in MEU? (Yes/No) At what level? Do you think Conceptual E-Learning Exit in MEU? (Yes/No) At what level?

Do you think Levels E-Learning Exit in MEU? (Yes/No)
At what level?
Are you aware of Domains of E-Learning? (Yes/No)

Table 7: Domains of E-Learning

Please rate the following domains of e-learning from 1-10 with respect to their presence in MEU (1-10) Where 1 is least present and 10 denotes best present.

Domains	1	2	3	4	5	6	7	8	9	10
Quality										
Learning technology										
Didactics										
Learning content										
Context										

Are you aware of Entities of E-Learning?
Please rate the following Entities of e-learning from 1-10 with respect to their presence in MEU (1-10) Where 1 presents least and 10 denotes best present

Entities of e-learning	1	2	3	4	5	6	7	8	9	10
Learning Environment										
Roles										
Methods										
Learning Systems										
Practice										

Table 8: General Scenario of E-Learning

E-Learning in general:-
What is the level of your involvement in E-Learning?
Average [   ]   Medium   [   ]   Low [   ]
What is your role in E-Learning?
Strategic [   ]   Managerial   [   ]   Operational   [   ]
How long have you been associated with E-Learning?
5 years   [   ]   3 years [   ]   2 Years [   ]   0-1 Year [   ]

Table 9: Quality in E-Learning

Were you involve in the quality development in e- learning?
Advance [   ] Medium [   ] Low [   ] None [   ]
What is your Personal understanding of quality?
Advance [   ] Medium [   ] Low [   ] None [   ]
What is the Importance of Quality e- learning?
Very Important [   ] Moderately Important [   ] Less Important [   ]
Not Important [   ]

Table 10: Quality in E-Learning

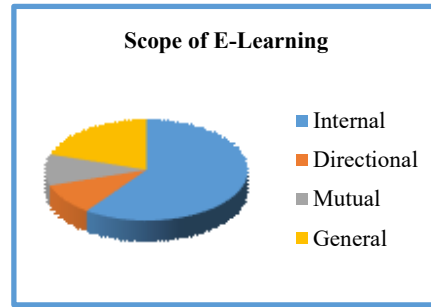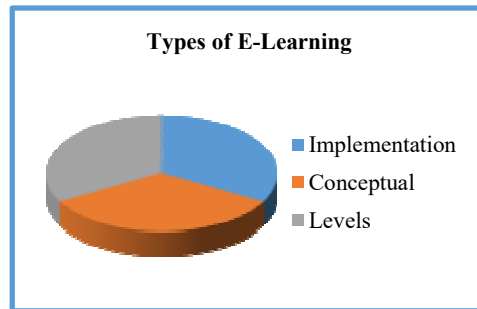| At what level do you have a use of Quality Approach |
|---|
| Advance [   ]   Medium [   ] Low [   ] None [   ] |

Fig. 2 Scope of InT

Fig. 3 Types of E-Learning

Results show that Middle East University has good InT within the entities working in E-Learning.
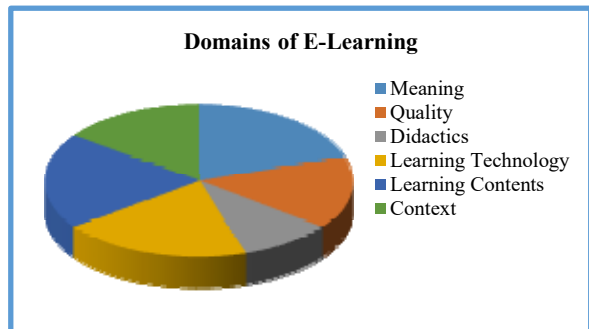

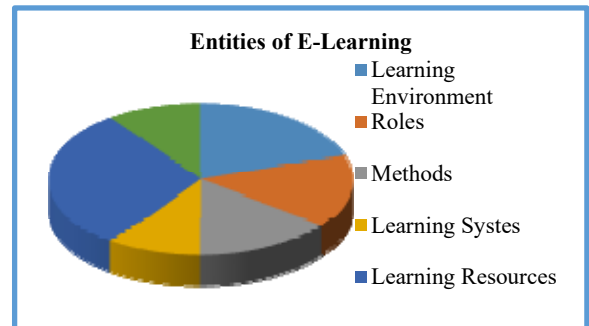Fig. 4 Domain of E-Learning

Fig. 5 Entities of E-Learning

Results show that all three types of E-Learning, implementation, conceptual and levels are equally prevalent in Middle East University.

Figure 4 shows clear evidence that all domains of E-Learning are directing to develop InT of E-Learning and quality development in Middle East University.
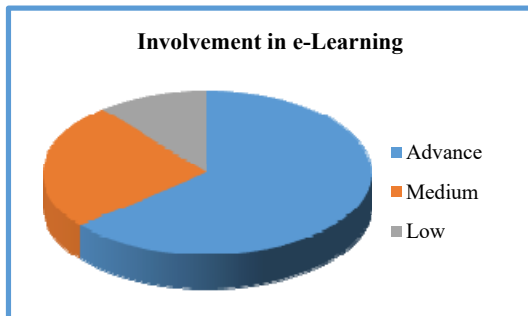

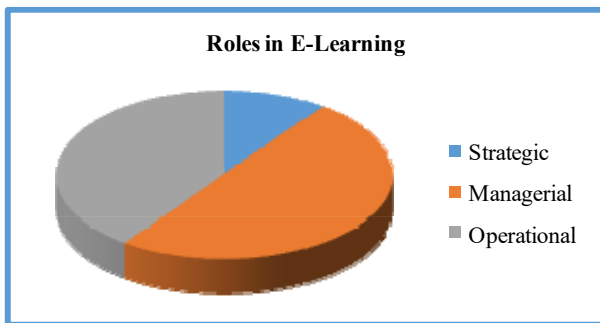Fig. 6 Involvement in E-Learning

Fig. 7 Roles in E-Learning

Survey results show that the entities of E-Learning standards focus equally on all six articles in MEU.

E-Learning in General

In instructive set-up in MEU, E-Learning plays at an advance level. Therefore E-Learning has to assure quality in the learning and teaching environment. Results show excellent involvement of E-Learning in the academy.
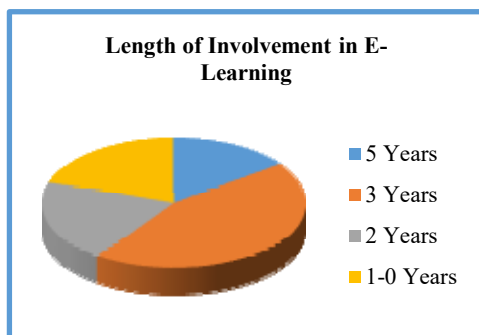

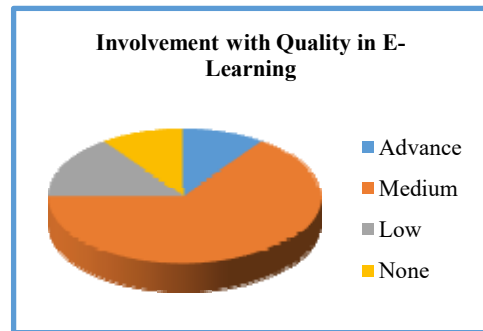Fig. 8 Length of involvement with e-learning

Fig. 9 Involvement with Quality in E-Learning

Figure explains the percentage of decision making process by the different defined groups for E-Learning solutions. Managerial level plays a significant role in E-Learning in MEU.

This data analysis is done just to know the interviewee duration of association with E-Learning. This analysis was important to justify the dependence and accuracy of information taken from the respondents.
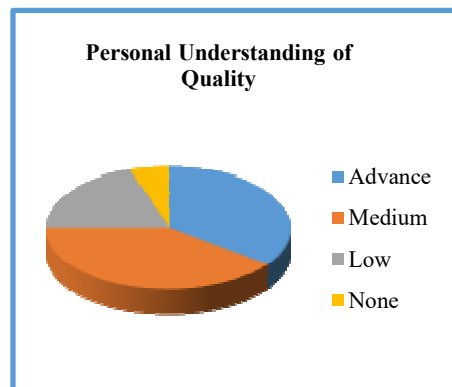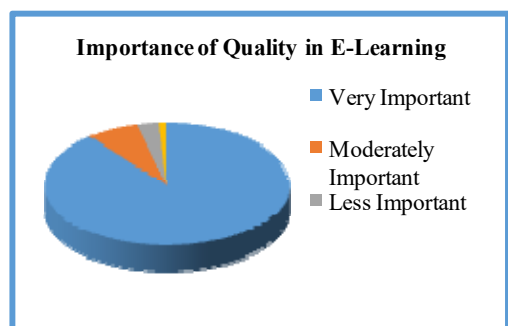

Fig. 10 Personal Understanding of Quality

Fig. 11 Importance of Quality in E-Learning

Above figure evident that, for now quality in E-Learning is widely prevalent and in the growth stage in MEU.
Respondents have medium to advance level of personal understanding of quality, and based on that they use it on online learning environment and on their E-Courses.

MEU E-Learning has adopted standards of Quality Matters to realize the quality teaching and educating on virtual learning setting. Survey result shows the high level of importance of Quality in MEU E-Learning.
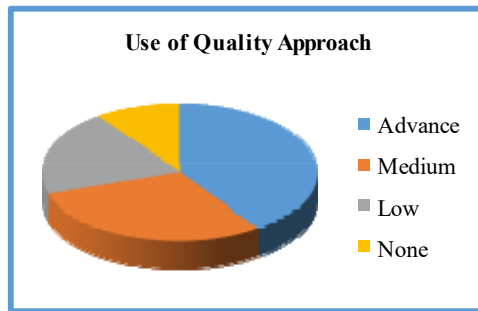

Fig. 12 Use of Quality Approach

MEU E-Learning applies advance level of quality approach for imparting knowledge and providing information. Data analysis show that E-Learning experts, online instructors and facilitator use advance level of quality approach in MEU educational set up.

5. Results

Quality department at E-Learning deanship (Middle East University) was established in the end of 2010. The objective of this department is to create and raise the awareness of quality in E-Learning, especially in the quality development of E-Courses. Development of E-Course by implementation of quality standards which are vital to achieve the accreditation. Also MEU E-Learning promotes the best practices and stimulates innovation and excellence in online learning and teaching. Besides addition, the quality department also works at the level of E-Learning program by measuring performance and improvement efforts of the initiatives taken by at the faculty level.

Objectives of MEU E-Learning and Quality were to provide training to the online facilitator faculty members on how to apply e-courses standards of quality, create and implement the accreditation process of the e-courses quality, measure the efficiency, effectiveness and students' satisfaction for E-Learning that eventually categorize challenges and development opportunities in E-Learning program and launch appropriate projects to fill gaps and take advantage of the opportunities for improvement.

InT between Quality development and E- Learning in Middle East University is not yet widen but having bright and strong intensification attempts to achieve through Policies and regulations. InT between Quality development and E- Learning in MEU is working well to capture, reuse,

and sharing of data, learning objects and other learning resources. Clear Quality development policies and regulations are formulated and broadly understood for E-Learning and currently implemented at the growth level trying and to achieve an advance level. Also we concluded that policies, regulations and norms for student and faculty online communication, access to online resources, performance assessment, monitoring, quality assurance and privacy, existing policies and practices are mixed and based on traditional as well as online learning but rapidly progressing in improving and expected to reach to the best standard of online learning in the near future.

6. Conclusion

This research broadens the information on InT of E-Learning and quality development Middle East University. There are bright Prospects and Strategies for the Improvement the acceptance and usage of E-Learning and development of InT at all levels. This will promote implementation of Quality development in Middle East University

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