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Application of Quality Matters in Digital Learning in Higher Education

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Abstract: This is the extended research work especially in the COVID: 19 pandemic presenting the application of broad multidimensional reference model of Quality Matters for E-Learning standards for blended courses and full online courses in such a way that learning outcomes of the module could be met. In this research paper the importance and tasks of Quality Matters for the course development and its relationship with E-Learning was defined and analyzed in the learning environment with special reference to Public University (PU) in Gulf for undergraduate students. This study clearly defined that the Reference Model of Quality Matters for E- Learning standards could be applied for all types of Modules such as Supportive, Blended or Full Online in learning paradigm that aid in meeting learning outcomes of the course. Also this study magnified the patterns how QM standards facilitated E-Learning. The reference model of Quality Matters can be applied for all types of modules and program.

Keywords— Quality Matters, E-Learning Standards, Blended Module, Learning Management Services, E-Learning Deanship

Introduction

Public University (PU) in Middle East introduced an e-learning centre in 2005 and in 2008 pioneered Blackboard Collaborate[TM] [BBCL] to achieve local and international online education. E-Learning [EL] with Quality Matters attempted present in PU put efforts to organize, build and construct learning modules at an international level. For example in this view in 2011 and 2012 E-Learning introduced Public University E-Learning (PUEL) for achieving international standards for learning Modules while applying Quality Matters (QM rubrics) [1] with an objective to new learning and teaching practices. In online settings, teachers and students bring assumptions about how class's work that are based on face-to-face models of teaching and learning can be moved to online environment. New technologies and resources for interaction, teaching and learning are appearing every day and transforming the potential for new teaching practices. A teacher engaged with thinking about, experimenting with and continuously developing their technical and social practices. Online teaching can be a boon for teachers themselves, making it possible for educators, like their students, to have access to the professional resources they need to continue to learn. If online professional development is taken seriously and done right, every teacher, novice and experienced, could have the opportunity to learn from the best. Online courses also provide a powerful way to enhance teachers' opportunities for quality professional development. Quality Matters is a continuous improvement model for assuring the quality of online courses through a faculty review process which furnishes rubrics for Online and Hybrid courses.

PU attempts to appraise the learning modules at par with international standards while fulfilling the essential standards of Quality Matters. This study has shown how the blended learning modules and full online applied QM standards and successfully achieved for the graduate.

Literature Review

In 2005, the university established its first EL centre and in 2008, chose BBCl to integrate with the university's primary LMS, Blackboard Learn™. Mohammad Qatrawi, Research and Development Manager at the EL Center at PU state "Choosing online collaboration was a strategic decision [10][11][12]." It provides equal chances for all, quality, and better student experiences and keeps us up to date with best practices [10][11][12]. So, BBCl was used to support achieving EL vision [10]". With this idea on education, many of the facet and capabilities of the BBCl™ online collaboration platform are assisting PU with its EL vision. Most widely used capabilities are web conferencing for hosting virtual classrooms, the whiteboard for making classes more engaging and interactive, polling for answering questions, and instant messaging[10][11][12].

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A feature that is particularly relevant to PU's gender separated population is the ability to provide instantaneous collaboration through the operation of instant messaging on BBCl enterprise [10][11]. This has enabled students and teachers to work together in an informal "virtual environment," therefore they are able to chat, connect through video to have one-to-one interviews, and share their desktops with one another to exchange ideas; an enhancement to communication in all the perspective [4][5][6]. Over 7,000 students across 25 departments, including medicine, pharmacy, dentistry, computer sciences, engineering, education, Sharia and religion, training, and more are adopting online collaboration into their prospectus today[10]. The increase in adoption has been driven by their 'top–down' vision where instructors are comprehensively trained either face-to-face or more often, online. All of the content and training materials are published on the university's EL Deanship website and EL specialists can be reached practically to help students requiring backing [11]. PUEL has adopted Learning Management Services for providing online platform for imparting knowledge and assessments. Figure 1 shows historical and trends of application of LMS for various benefits such as software demonstration, education sector, sharing learning resources, developing courses, making announcements, communicating with the participants, etc. Figure 1 has covered some of the features of LMS from the past.

Figure1: History and Trends of LMS [12] [17]
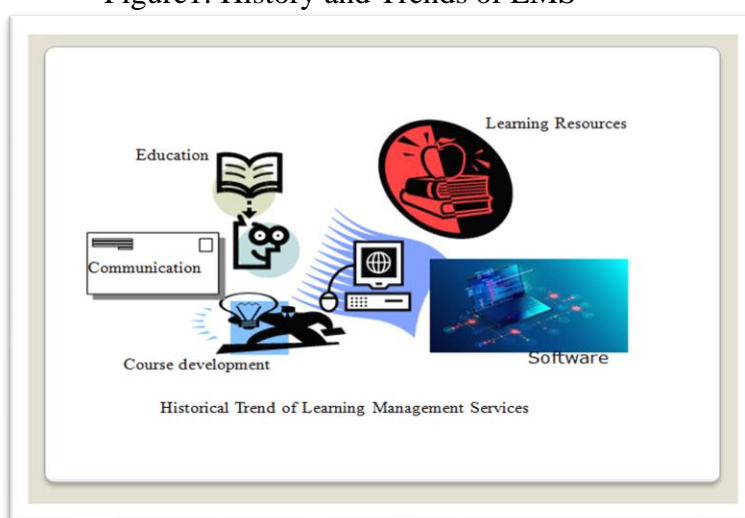
In general E-learning (EL) is not a new concept it was started way back in 1924 for basic communication and conducting assessments through the medium of distant learning education. With the development of computer based training in 1980, EL witnessed a drastic development in education section. Below given Figure 2 provides concise but comprehensive stages of development of EL

Figure 2: History of EL [12] [17] [18]

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E-learning is being originated as a fundamental scope of the student learning experience in H.E. It is no longer core business only for those universities with a mission for distance education, its financially and economically affordable and can be organized in a systematic as well as in integrated methods therefore many universities in US, UK and Australian Learning and Teaching Council in Australia focus more on relevance of virtual learning [21].

Many researches are conducted in the past to analyze the students' learning experience through EL and more than two decades compared the aspects associated with F2F learning over digital learning[21] [22] [23]. The comparative studies show relevance in terms of financial and economic feasibilities without hurdles in the meeting of course learning outcomes also there are evidences showing EL effectiveness with the application of reference models such as QM that we covered in this research paper, where we clearly showed how students' centric approach can be implemented on EL through the applications of rubrics of QM.

Many researchers have defined EL as information and communication technologies used to support students improve their learning such as (Higher Education Funding Council of England, 2005) and the results show that good course design will enhance online learning[22] [23].

Past studies also explain the financial and economic stabilities of universities or H.E. with the El platform for imparting teaching. In this regard researchers focus on four criteria, namely, interactivity, approaches to e-moderating, issues related to course design, and workload awareness[21] [22].

History of Quality Matters

Quality Matters (QM) started with a small group of colleagues in the MarylandOnline, Inc. (MOL) consortium [1]. These people researched to identify the issues for quality learing in academies, finding solutions for these issues and developed a structural framework to ensure quality of module. In the year 2003 MOL listed the mthods of QM program that was able to develop the measurable procedure of quality assurance (QA) and request for funds from the academies for QA. These financial assistance was applied for the Improvement of Postsecondary Education (FIPSE)[15] [16] grant from the U.S. Department of Education.QM set the following framework for developing courses with QA strandards.

Figure 3: Framework of QM [1] [2] [15]
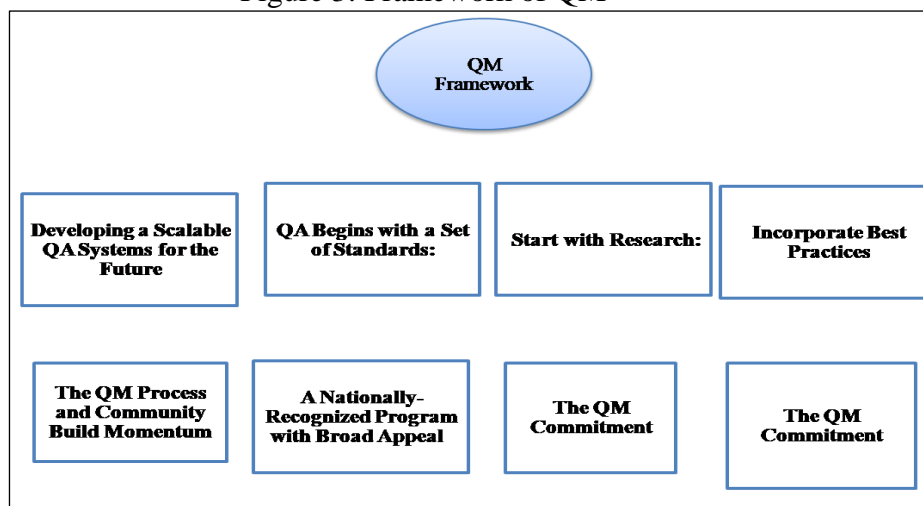
QM is a presitigious international society that ensures the best E-learning practices and gurantess the completion and achievement of learing outomes. Table given below explains the all the framework of QM briefly. These framwork if applies by any academy for the QM practices of any module development, it is assumed that the module has execellent learing materials, assessment methods are aligned with the activities in an online environment or in traditional environment.

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Table I: Framework of QM Defined [1]

QM Framework	Description
Developing a Scalable QA Systems for the Future	QM has the positive impact of the QM Rubric and peer review process. As a result, QM's QA tools and professional developments are included in many organizations outside of the Higher Education sector, including K-12, continuing and professional education, course publishers, and education service providers. In 2014 Quality Matters began operating as a standalone nonprofit organization to broaden reach worldwide, build new partnerships, and take on a greater leadership role .
QA Begins with a Set of Standards:	QA has set of standards for different types off modules and to achieve the goal of learning these standards should be applied.. There are General and Specific Review Standards in each Rubric are intended to guide you through the development, evaluation, and improvement of online and blended courses.
Start with Research:	The QM Rubrics are supported by literature reviews of online learning research. Research Library contains a searchable database of curate research relating to the Rubrics.
Incorporate Best Practices	The QM Rubrics incorporate best practices from those on the front lines: the course developers and instructors. QM helps to meet the goals through the General Standards of each Rubric and the Online Teaching Skills set used to inform competencies for online instruction.
The QM Process and Community Build Momentum	QM to develop a rubric of course design standards and help teachers to measure the course for General and Specific QM standards, offer guidelines for the module development, authenticates and certifies the course under different categories such as online, blended or traditional.
A Nationally-Recognized Program with Broad Appeal	In 2006, QM introduced a sustaining program within MOL and was used to impact the quality of teaching and learning at a state and national level. Under this program more than 1300 colleges and universities throughout the world joined the QM community and used the HE Rubric to improve course design.
The QM Commitment:	Today Quality Matters is a nonprofit organization supporting QA objectives across the globe.

Online classes, hybrid or blended classes, and web-facilitated classes all employ online materials, which instructors and students are using at ever-increasing rates. Accordingly, instructors should continuously evaluate the effectiveness of such online materials. This paper sets forth the author's initial attempts to analyze a business course pursuant to items in the Quality Matters (QM)™ Rubric designed by an organization whose mission is to certify the quality of online and blended courses.[28]

Methodology

This is research was descriptive in nature yet few standards for the course were scaled on likert. On the likert Scale 5 degree had been allotted to the levels from highly functional to poorly functional. PU E-Learning deanship assigns a peer reviewer for measuring the standards of Quality matters on blended courses and full online courses.

Discussion

This paper discusses the application of QM rubrics in course development and the process of applications for full online courses as well as for blended courses.

Application of QM standards in online courses benefit the academy in several ways, this justification can be explained in terms of economies of scale not necessarily related with the direct financial gain. PU used the stimulus of EL to achieve the benefit of improving teaching pedagogy on digital platform by encouraging using QM standards, as a result this investment in QM consequence in various benefits such as quality driven modules, accredited course development, resource sharing options, training and guideline for other instructors to develop the modules on the same systems, achieving international acclaimed learning and teaching practices, etc. This investment by the academy has brought intangible profits and image building in the long term.

The substance of economies of scale derives from learning by doing, and this adds a dynamic element to an otherwise essentially static concept. PU has to input some measures in QM application in EL but in return, online instructors got trained and expert in online course development and online teaching practices while applying several models or rubrics. Below given procedure show how QM rubrics were applied successfully on blended modules.

Figure 4: Economies of scale and scope in e-learning in PU [12] [29]

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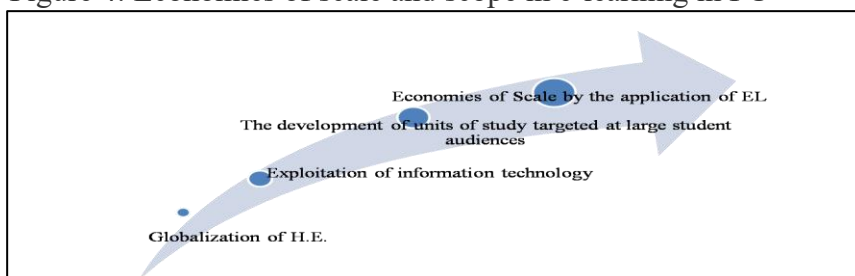
It is practical to conclude how economies of scales worked in public academies without referring to the financial terms. As mentioned above PU achieved excellence and other intangible advantages through QM application in EL and below given case study discuss more on this findings showing how QM rubrics were applied on different tools and features of EL and successfully developed online module for students at large by having global presence and exploiting the optimum of IT.

PU's e-learning (PUEL) consisted four sections, entry point for the course named as Start Here, Project Page that described most important page in instructor had to describe and instructions about the course, Tasks elaborated list of detailed helping material that were required to achieve the QM standards for the Online as well as for Supportive Modules lastly Learner Support where instructor was to elaborate all issues pertaining to technical or problems related to learning. Blended Learning Modules are developed under 7 tasks sections, Introduction, Course Proposal, Start here, Syllabus, Are You an Online teacher, Sample unit, Learner Centric, Assessment and Final Thought and its learning outcomes were measured by using likert scale by the E-Learning peer reviews. For the purpose of study one of the Business Information Systems (BIS) modules was chosen. The name of the module was E-Commerce which was taught as blended as well as full online course.

Table II: Action Plan for Blended Course [17] [18] [20]

Task list	Expected time to accomplish	Comments
Introduce yourself	0.5 hour	Finished
1. Your proposal	6 hours	We applied all the standards and met the deadline
2. Start here	2 hours	
3. Syllabus	3 hours	
4. Are you online teacher?	3 hours	
5. Sample unit	5 hours	
6.Learner centric	3 hours	
7. Assessment	2.5 hours	
Final Thought	2 hours	

Task: Proposal for the blended module had to be submitted as Course Plan QM with PUEL peer review evaluate the Learning Module on the guidelines given in Course Plan.

Table III: Course Plan for blended Module Ecommerce [17] [18] [20]

Weeks	Week # 01 Face to Face Learning	Week # 02 Face to Face Learning	Week # 03 Face to Face Learning	Week # 04 Face to Face Learning
Topics	Unwrapping the Gift Rapid Pace of Change New Developments and Dramatic Impacts	Privacy Privacy and Computer Technology "Big Brother is Watching You" Privacy Topics	Freedom of Speech Changing Communication Paradigms Controlling Offensive Speech Censorship on the Global Net	Intellectual Property Intellectual Property and Changing Technology Copyright Law and Significant Cases
Learning outcome	Outline Rapid Pace of Change Recognize New Developments and Dramatic Impacts Explain the Issues and Implement Themes	Comprehend Privacy and Computer Technology Analyze the idea of "Big Brother is Watching You" Define Privacy Topics Illustrate Protecting Privacy	Recognize Changing Communication Paradigms Illustrate Controlling Offensive Speech Recognize Censorship on the Global Net	Illustrate Intellectual Property and Changing Technology Explain Copyright Law and Significant Cases Explain Copying and Sharing
Content type/ files	Text Book: The Gift of Fire by Sara Base PowerPoint Presentations for conducting lectures	Text Book: The Gift of Fire by Sara Base PowerPoint Presentations for conducting lectures	Text Book: The Gift of Fire by Sara Base PowerPoint Presentations for conducting lectures	Text Book: The Gift of Fire by Sara Base PowerPoint Presentations for conducting lectures
Activities	Formal Introduction of Instructor with Students on Discussion Forum Discussion: – How should we interpret "plain view" for search of computer or smartphone files?	Discussion: – What data does the government have about you? Who has access to the data? Discuss how is your data protected?	Group Presentation Topic 1:– Global Impact of Technology on Free Speech	Discussion:–Discuss how intellectual property like physical property is? How is intellectual property different than physical property? Do you agree with the idea that someone can "own" intellectual property?

Task: Start here was the task where QM requested to make an entry point elaborating all vital details of blended learning modules such as Welcome Message, Introduction, Course Description, Goals and Learning Outcomes, Course Structure, Course Outline, Readings References, Assessment and Grading and Assignments.

Task: Syllabus was a highly structured guideline which elaborated the course content and methodology of program of study, reading reference, breakdown of assessment and other minute details. Considering these

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aspects we presented course syllabus for Ecommerce with perspective of the students therefore we had put concise, simple, logical yet comprehensive content relevant for the student's knowledge. For the preparation of Syllabus as QM standards following features had been accounted that made the syllabus as most appropriated for meeting learning outcomes of the modules. Course Description, Course Co- requisite, Course pre – requisite, Goals and Learning Outcomes of the Modules, Course outline, Topic wise learning objectives, Basic information about course instructors, communication medium between instructor and students, teaching pedagogy, reading references, any rubrics for learning the course, Assessment Methods, Grading Policy, and netiquettes.

Task: In the note "Are you an online teacher", as per PUEL and QM an instructor had to file proof and information explaining how effective was her online teaching pedagogy and how she was so successful in delivering quality learning material. Ecommerce was offered as blended course as well as full online course, where 30 % was through online learning and 70% was through face to face learning before Covid:19 situation then this course was instructed in a full online medium. We got experience as online instructors for this course and we satisfactorily organized the principles of giving on line education. For uploading Course Contents and annotations, we used Lectures tool content type as PPT or PDF document. Announcement tool was used for urgent and instant notifications. We used course mail for selective notification. Uploaded E- Quiz and E- Exam Assignment tools then provided detailed steps to access the e-exam with all its prerequisites. For short and analytical case studies, used Discussion board where our students very devotedly participated through creating threads on that. To manage our course effectively, we created online Start here tool, from where students were easily able to take a journey to know all the minute details of the course, Grading policy, Pre- requisite and Co – requisite for the course, etc. We enjoyed giving online session on Blackboard collaborate and on Elluminate live; students experienced new method to learn, to communicate and response to the queries. On Blackboard collaborate and Elluminate live we used an option to record our lectures too and students could get back to the lecture and listen many times to comprehend better. It was found that E- learning was a good way for an effective time management principle.

Task: Sample Unit described the methodology of explaining and other course material delivery by the course instructor. To elucidate this task certain features were clarified below for the Ecommerce Module:

Ecommerce was a blended course where 30% course was to be given online and 70% given to face to face before pandemic and in current situation it was given as 100% online. Entire course of Ecommerce comprised nine chapters scheduled to be completed in 12 weeks.

Chapter 8 was given as a Sample Unit Content side. This chapter was given as an online session as well as face to face session and similar methodology we followed for the other entire chapters in the course Ecommerce.

Table IV: Teaching Pedagogy for chapter 4 for Learning Module Ecommerce [17] [18] [20]

Week # 05 Online Learning	Learning Outcomes	Activities	Assessment
Work Impact on Employment Fears and Questions The Impact on Employment The Work Environment Employee Crime Employee Monitoring	Recognize the Fears and Questions Analyze the Impact on Employment Evaluate the Work Environment Explain Employee Crime Illustrate Employee Monitoring	Discussion: - Does the value of informing the public of controversial and sensitive information outweigh the dangers and risks? Discuss 5 reasons to support your answer	Discussion Forum Exam Quiz

Content Type was to describe the contents of chapter 8: PPT, link of PDF, Video, and, Lecture's Handouts, Images on Blackboard before the online Session whole contents were uploaded on lecture Tool and announced on Announcement Tool. Face to face session on regular schedule was given on chapter 8 as well as Online live and recording lecture was conducted for chapter 8 therefore Timings, Navigating clue and other details were clearly declared on announcement prior to online session. After concluding chapter eight learning outcomes were achieved followed by completion of Activities (Assignment) for meeting objectives of Assessment.

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Table V: Assessment Methods for Blended Learning Module Ecommerce [20]

Assessment Methods	Learning Outcome Domain
Discussion Forum	Enhance Communication and analytical skills
Case Study	Enhance logical thinking, comprehend contigencies and illustrate examples to support solution
Group Presentation	Enhance Communication skills, develop team spirit, build up coordination and impose learning by presenting
Quizzes	Enhance knowledge and cognitive skills
Exams	Enhance Enhance knowledge and cognitive skills

Activities were uploaded on the Discussion Board and on Assignment tool with clear instructions on Announcement Tool. Finally all activities were assessed and weighted total was uploaded on Full Grade Center.

Task: Learners Centric Approach was a deciding factor for the success blended learning. To realize learner's centric Learning Module was developed in the subsequent way. As clearly from the term Learner centric approach, this task purpose was to know if the course was being understood, responded and through results given feedback by the students. To appraise the course Ecommerce if it was a learner's centric following measures were given:

A.   Start here
B.   Syllabus
C.   Assignment
D.   Lectures Notes
E.   Discussion board
F.   Written Examination

A. *Start here*: Start here was an action where students got the clear idea about the follow up the whole contents step wise. In simple language we had tried to let learners know the overall structure of the course, with the use of communication tools between students and teachers so that they could be comfortable and how they could clear their doubts and receive navigating clue how to follow the course to meet its goals. We clearly broadcasted on the Announcement tool for Start here tool and other Navigating details on the Announcement tool also clear details about communication mode between students and teacher had been filed.

B. *Syllabus:* Syllabus was a detailed description of all the components of the course, for Ecommerce syllabus, clear inclusive about all the minute details to the students were given. Comprehensive syllabus was uploaded on the start here tool, with course contents so that students can easily access to the course guide lines. Following were the inclusive of syllabus:

I.   *Syllabus contains complete course contents*
II.   *Course Structure*
III. *Communication Methods between students and Instructor*
IV.   *Course description, Course goals, and Course outcomes*
V.   *Course Pre –requisite and Co- requisite*
VI.   *Reading References*
VII. *Details of Assignments, Discussion board and other online activities*
VIII. *Assessment and grading policy*

C. *Assignment:* For the course Ecommerce two assignments as case studies were given to the students, they were asked to submit individually on the assignment tool as well as send through course mail. These assignments were given to the students according to the learning outcomes on the topic concerned and therefore uploaded after the completion of the particular topic. Considering the learner's approach, for crystal clear communication all assignment details with pre- requisites were uploaded on announcement tool for the student's information.

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D. *Lecture Notes:* Ecommerce course was a blended course then full online, therefore Prior to the lectures hand outs were given to the students and content types was up loaded on lecture tools as usual rule availability of lectures notes and details of conducting lectures be it on line or traditional were declared on announcement tool. For every chapter students were given lectures as a content type PPT, Web Pages, simulated case studies.

E. *Discussion Board:* Discussion board was a tool where students got an opportunity to express their opinions, expressions, feedback and creative as well as critical analytical skills. In consideration to learner's centric approach students were asked to create individual discussion thread on reasoning based issues related to the learning objectives of the respective topics. Students successfully responded on the discussion board and got motivated students in persuasion of the course.

F. *Examination*: Ecommerce has practical as well as theory topics and grades distribution changed when the course transformed from face to face to virtual learning. Both types of learning were conducted on LMS e-exam tool but usual pattern of question paper was made consisting following sections so that all learning domains are covered:-
   I. *Objective questions like Fill in the Blanks*
   II. *True and false, wrong statements needed to be rectified*
   III. *Identify the term from its Definition*
   IV. *Identify the Differentiation of terms*
   V. *Analytical and reasoning based objective questions.*

Feedback: For the success of any efforts feedback process was a vital concern, regular follow up was made as responsible teachers for all the students understanding traditionally on face to face interaction, answering on office telephone, meeting students during their official contact hours in office as well as through answering personal e-mail.

Summary: To make Ecommerce course as learners centric we tried to put strict and flexible methodology for students on different activities as required to result in good understanding for the subject matter which could cope up with upcoming challenges.

Task: In Sample Assessment side Learning outcomes were structured in Activities and further through Assessment result all the standards got alignment and as a sample chapter eight had been reported. Learning outcomes were appraised on various activities based on assessment methods such as on online assignments, online Discussion Board, E- Quiz and Online Final Examination. Based on Activities Assessment methods had been decided therefore students would be assuaged to comprehend and solve each problem chosen under assessment criterion.
We tried to grade students in various ways; marks were one option, then giving complimentary second opening to complete any online activity if they complete any prior activity on time, they could receive second chance to complete other activity if they couldn't meet the deadline.

Results

In closed ended questionnaire many questions pertaining to technological part were asked. Such as which technological tutorial such as LMS/CMS had been used, which software was used to deliver the course so on, list of questions are given in table 7 and scaled on likert measurement.

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Table VI: Likert scale measurement for learning module Ecommerce

Questions	Highly Functional	Moderately Functional	Neither Functional nor not Functional	Moderately Not Functional	Not Functional at all
	5	4	3	2	1
To what extent the online components were effective?	5				
To what extent the course objective were met?	5	4	3	2	1
To what extent the syllabus development was effective?	5	4	3	2	1
To what extent this material was effective to meet learning objective for the module?	5	4	3	2	1
To what extent Audio and Visual components were effective?	5	4	3	2	1
To what extent Quality Rubrics were applied in the course?	5	4	3	2	1

Conclusion

This research focus on the application of QM models in EL but also briefly explained the relevance of EL in achieving economies of scale for any academy particularly for this public university. EL facilitates the academy to impart education to students at large, focus global H.E. and make optimum use of IT in educational sector apart from this these benefits also facilitate in providing effective teaching pedagogy to instructors in all disciplines.

This study clearly defined that the Reference Model of Quality Matters for E- Learning standards can be applied for all types of Modules and specifically for Blended courses in the learning paradigm. Also this study magnifies the patterns how QM standards facilitate E-Learning in PU. Through assessments results, online instructors were able to measure the course learning outcomes. It was found that the application of Quality Matters standards facilitated in enhancing online learning environment. This Case study provided a structural format for all the discipline to follow and achieve CLO. This is a case study based on learning and teaching using online mode; application of Quality matters QM in meeting course learning outcomes. Same strategies can be applied in any theoretical or practical modules using various assessment methods. These theoretical or practical course under any discipline can be full online, blended with different percentage like 30% online 70% traditional, 50% for each online and traditional, 70% online and 30 % traditional, fully traditional course. All the types of courses can apply general rubrics of QM and specific rubrics based on the online percentage and eventually if the QM rubrics are successfully applied the course will meet its learning outcomes.

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