USER INTERACTION IN IRAQI BLENDED MASSIVE OPEN ONLINE COURSE MODEL

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Abstrak

Walaupun terdapat bukti nilai didaktik *Massive Open Online Course* MOOC, kebanyakan cendekiawan tidak menekankan interaksi pengguna (UI), pengalaman pengguna (UX), dan teknik reka bentuk MOOC yang menampung komponen utama dan kaedah reka bentuk MOOC berdasarkan budaya dan bahasa pelajar yang berbeza. Akibatnya, terdapat kecenderungan untuk membentangkan MOOC sebagai pendekatan yang mencabar dan tidak praktikal. Pada asasnya, model dan kaedah konsep yang menyusun teori penting, komponen, teknik, teknologi, dan proses MOOC yang sistematik secara komprehensif adalah kurang. Kajian ini mencadangkan model MOOC teradun (bMOOC) untuk merancang, melaksana, dan menilai platform Iraq-bMOOC. Untuk mencapai objektif ini, beberapa sub-objektif telah dibentuk: (1) untuk menentukan kekangan semasa dan cabaran MOOC dalam konteks pendidikan tinggi dari perspektif pelajar Iraq, (2) untuk mengenal pasti dimensi reka bentuk dan komponen model bMOOC, (3) untuk membina dan membangunkan model bMOOC berdasarkan objektif 2, dan (4) untuk menilai prototaip bMOOC dari segi interaksi pengguna berdasarkan pengalaman pengguna. Kajian ini menggunakan kaedah Penyelidikan Sains Reka Bentuk sebagai rangka kerja proses penyelidikan. Aktiviti pembinaan model Iraq-bMOOC termasuk kajian literatur, kajian perbandingan dan analisis kandungan model sedia ada, dan perundingan pakar. Hasil kajian mendedahkan bahawa majoriti pengguna berpuas hati dengan aktiviti pembelajaran di platform Iraq-bMOOC. Hasil daripada ujian interaksi pengguna menyimpulkan bahawa model Iraqi-bMOOC yang dicadangkan dianggap memberikan pembelajaran interaktif yang berkualiti sebagai sumber pembelajaran teradun untuk pelajar universiti. Kajian ini juga mendapati bahawa model yang dicadangkan ini diterima baik oleh para pakar. Empat sumbangan utama teoretikal, praktikal, empirikal dan pendidikan diperoleh daripada kajian ini: (i) mengumpul dan menganalisis karya yang telah dijalankan di MOOCs antara tahun 2008 dan 2016 untuk mendapatkan kefahaman yang mendalam dan lebih baik daripada pihak berkepentingan MOOC dan tingkah laku mereka, (ii) menyediakan pemahaman baharu tentang komponen dan kriteria utama (Dimensi Reka Bentuk) persekitaran bMOOC yang berkesan yang akan memberikan manfaat kepada pembangun untuk membina MOOC teradun dalam konteks pendidikan tinggi secara analitikal, (iii) meningkatkan interaksi pelajar-pelajar Iraq dengan bahan pembelajaran dalam persekitaran pendidikan tinggi melalui Iraqi-bMOOC, dan (iv) memecahkan halangan pendidikan tradisional dan MOOC untuk sesiapa sahaja, di mana sahaja, dan bila-bila masa.

Kata kunci: MOOC, MOOC Teradun, Interaksi Pengguna, Pengalaman Pengguna, Institusi Pengajian Tinggi.

Abstract

Despite the evidence of Massive Open Online Course (MOOC) didactic values, most scholars do not emphasize user interaction (UI), user experience (UX), and MOOC design technique that accommodate the interrelated key components and design methods of MOOC based on different learners' cultures and languages. As a result, there is a tendency to present MOOC as a challenging and impractical approach. Essentially, there is a lack of conceptual models and methods that comprehensively structure the crucial theories, components, techniques, technologies, and systematic processes of MOOC design. Within this context, this study proposes a blended MOOC (bMOOC) model in order to design, implement, and evaluate the Iraqi-bMOOC platform. To accomplish this, a number of sub-objectives are formed: (1) to determine the current limitations and challenges of MOOC in the higher education context from the perspective of Iraqi students, (2) to identify the design dimensions and components of a bMOOC model, (3) to construct and develop bMOOC model based on objective 2, and (4) to evaluate the user interaction of a bMOOC prototype based on the user experience. This study adopts the Design Science Research methodology as the framework of the research process. Activities of Iraqi-bMOOC model construction include a literature review, a comparative study and content analysis of the existing models, and an expert's consultation. The proposed model is evaluated through an expert's review, an experimental test, and user interaction. The results reveal that the majority of users are satisfied with the learning activities in the Iraqi-bMOOC platform. The results from the user interaction testing conclude that the proposed Iraqi-bMOOC model is perceived as significantly providing quality interactive learning as a blended learning resource for university students. This study also finds that the proposed model is well-accepted by the experts. Four major theoretical, practical, empirical, and educational contributions are obtained from this study: (i) collecting and analyzing the literature that has been conducted on MOOCs between 2008 and 2016 to get a deep and better understanding of the MOOC stakeholders and their behaviors, (ii) analytically providing a new understanding of the main components and criteria (Design Dimensions) of effective bMOOC environments that would be of value for developers to construct blended MOOC in the higher education context, (iii) increasing the interaction of Iraqi learners with the learning materials in a higher education environment via the Iraqi-bMOOC, and (iv) breaking down obstacles of traditional education and MOOC for anyone, anywhere, and anytime. In conclusion, it is hoped that this study does not only demonstrate the potential and impact of blended MOOC in technology-enhanced and student-centred learning, but it also provides a capstone for bMOOC research in the higher education context.

Keywords: MOOC, Blended MOOC, User Interaction, User Experience, Higher Education Institutions.

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CHAPTER ONE
INTRODUCTION

This chapter presents an introduction of this study. It highlights the motivation, statement of problem, the research gaps, the research questions and the research objectives, the proposed solution, and the scope and contributions. It further produces the theoretical framework.

1.1 Motivation

A massive open online course (MOOC) is a free distance learning program that is intended to engage a great number of geographical scattered learners (Zheng, 2015). MOOC courses are a recent expansion in online learning with distant learning that has experienced fast growth and development (Knox, 2014). Therefore, MOOCs started to become a part of the context of Higher Education institutions (HEI). As a result, many universities have directed their aims to create MOOC courses. However, MOOC courses creation has shown to be an expensive activity and they have challenges for HEI. For this reasons, and to get rid of MOOC challenges in HEI context, many universities have started to develop and experiment the blended MOOC as an approach for education that combines between the online learning and the traditional learning (classroom methods). Thus, the new design of bMOOC courses can be a solution to resolve the obstacle that faces MOOC courses (Bruff, Fisher, McEwen, & Smith, 2013). Actually, the bMOOC model has the potential to bring human interactions into HEI environment, foster student-centered learning, provide feedback, support the interactive design around video content, and consider the different patterns of learners in MOOC courses based on their cultures (Yousef, Chatti, Schroeder, & Wosnitza, 2015d).

This is considered an important advantage to decrease the tuition fees and get rid of problems in the traditional learning environment of the Iraqi students (traditional teaching methods) (Radif (2016). In addition, it helps the learners to understand the study materials anytime and anywhere (Singleton, 2013; Daniel, 2012). Besides, it motivates the learners to learn and get a college degree inside their countries (Al-Husseini, & Elbeltagi 2015; Alajmi, 2012 & Abbad, 2011). Based on Radif (2016) and Anter (2014), in the Iraqi Higher Education Institutions context the lecturers and students face many challenges in the traditional learning such as information retrieval learning in real-time, interaction, collaboration and many others challenges inside the traditional learning.

Based on the aforementioned reasons, a survey was conducted on January 11, 2016 at Tikrit and Baghdad University, to investigate the need of Iraqi Higher Education Institutions (HEIs) for bMOOC to support the traditional learning. The findings of preliminary study shows that the majority of the interviewees (Universities Students) need the blended MOOC courses to reduce the challenges in the traditional learning. Furthermore, the findings shows that students prefer learning through blended MOOC based on their environment (language and culture). Therefore, the students at HEIs in Iraq are looking for new learning methods in the learning process to help reintegrate the civilian life and to continue their education depending on their needs (Abu-Shanab, 2015; Bonk, 2013). A point worth stating is that the HEIs in Iraq have undergone a series of reforms to improve the Iraqi educational environments via meeting the challenges that hinder the improvement in the educational level (Al-alak, 2013; Ammar, 2012). In addition, Iraq has the largest number of universities around 25

universities with 234 colleges in various specializations including academic universities, application colleges, and institutes (Zwain, 2012).

1.2 Preliminary study

Based on the research motivations collected in the previous section, a preliminary study is conducted as a fragment of the process in developing the research focus and supporting the justification of the research area. This study is conducted in different colleges at Tikrit and Baghdad Universities. The participants of this study consist of 18 respondents. They are as follows: (a) 12 undergraduates, (b) 1 MA and 2 PhD postgraduates, and 3 lecturers. A preliminary study shows that the majority of the interviewees need the blended MOOC to reduce the obstacles and challenges in the traditional learning. The findings also uncover that students prefer learning through blended MOOC based on their environment (language and culture) rather than the current MOOCs courses. Consequently, this preliminary study provides evidences that show that there is a big need to use the blended MOOC in Iraq. Thus, it displays that a further study should be carried out in understanding the learners approach in blended MOOC (For more details refer to Appendix A).

1.3 Problem of MOOC

Based on the preliminary study, the following sections outline the issues and challenges faced by the current MOOC and traditional learning, which consequently lead to the statement of problem in this study.

1.3.1 Challenges of MOOC Model

There are many pedagogical discussions about the MOOC challenges such as openness issues that include: a) the variety of MOOC participants (Yousef, Chatti, Wosnitza, Schroeder, 2015a), b) lack of balance between the online experience and

offline learning experience (Bruff et al., 2013), c) lack of integration among the courses of MOOC and the system of higher learning (Griffiths, Chingos, Mulhern, Spies, 2014; Ghadiri, Qayoumi, Junn, Hsu, & Sujitparapitaya, 2013), d) the MOOC syllabus is not synchronized with the required universities curriculum for credit (Bruff et al., 2013), e) the lack of effective feedback and assessment (Derek Bok Center, 2014), f) the lack of interaction with the video lecture (Grünewald et al., 2013), g) adopting lecturer-centered in the learning process (centralized learning model) (Griffiths et al., 2014; Yousef et al., 2014b), h) MOOCs participants highly drop-out from the courses due to the complexity in the courses and diversity of MOOC learners perspectives (El-Hmoudova, 2014; Hill, 2013), i) the culture and level of language skills result in misunderstanding of the video content (Hollands & Tirthali, 2014; Yousef et al., 2014c).

Therefore, to undermine these challenges confronted in MOOC, it is important for learners to interact with the video lectures through blended MOOC. MOOC providers must focus on the diversity of languages and cultures. Also, the learners must interact with MOOC courses as an effective solution for the problems in the traditional learning. However, a solid and holistic method of blended MOOC model should be established based on the core elements of MOOC (Kolukuluri, 2013).

1.3.2 Key Elements of MOOC

Much has been stated on the key elements of MOOCs to provide opportunities for exploring new pedagogical strategies and business models in higher education. Most of the existing MOOCs are especially sources of high quality content which depend on key elements of MOOC such as video lectures, test, forms of discussion, assessments, assignments, feedback, material and other key elements of MOOC.

However, one important obstacle that prevents MOOCs from reaching their full potential is rooted in the behavioral learning theories (Smith & Eng, 2013). In other words, the current MOOCs so far still follow the centralized learning model (i.e. the traditional lecturer-centered) that controls the MOOCs and their key elements. Efforts in student-centered MOOC, based on connectivism and constructivist principles that emphasize the role of collaborative and social learning, are exceptions but are not the rule (Yousef et al., 2014b).

Other criticisms have been raised concerning the use of these key elements, they are: (a) assessment and feedback (Hill, 2013), (b) the lack of interaction around video content (Grünewald, Meinel, Totschnig, and Willems, 2013), (c) the ignorance of face-to-face communication (Schulmeister, 2014), (d) the lack of integration between the MOOC platform and the campus Learning Management System (LMS) (Griffiths et al., 2014; Ghadiri et al., 2013), (e) the dates of MOOC courses are rarely suitable with the material schedule in the classroom (Loviscach, 2013), (f) the provided syllabus has not covered the required university curriculum for credit (Bruff et al., 2013; Griffiths et al., 2014) and (i) the current learning follows a lecturer-centered model (Yousef et al., 2015a; Griffiths et al., 2014). Therefore, solutions are required to foster the communication among MOOC applicants by interacting face-to-face with the key elements of MOOC for creating a flexible and an effective model for higher education institutions that combines the two approaches (face to face learning and MOOC courses) (Yousef et al., 2015a).

1.3.3 Interaction in MOOC

The lack of interaction is an important issue in models of MOOCs, for both learners and lecturers. The problem in most models of MOOC is that learners effectively drop out the courses in contrary of learners in face-to-face learning, who continue with the learning process. This is confirmed by Professors at high-ranked universities which already offered MOOCs courses (Yousef et al., 2014a). They discuss that the courses of MOOC are not equivalent compared to the same classes content held on their own campuses. The reason of this issue is related to the course structure of MOOC model, and thus considered a factor influences the quality of learning outcomes (Hollands & Tirthali, 2014; Schulmeister, 2014). This is consistent with Bill Gates vision, which considers MOOCs models unindependent online courses and recommends them in the blended MOOC approach. Similarly, professors also confirm the benefits and importance of face-to-face learning in the learning process at higher education institutions (Young, 2012). Thus, there is a necessity for solutions to increase the interaction between MOOC learners through leveraging classroom interactions (face-to-face) with online learning, to create a flexible and an effective model for higher education institutions.

MOOC models (such as Udacity, Coursera, and EdX) commonly refer to Extended MOOC (xMOOC) and Connectivist MOOC (cMOOC) models widely used the pedagogical approach (Hollands, 2014 & Godwin, 2013). Yet, there are many criticisms on the approach of xMOOC or cMOOC in that they require users to be intelligent enough in using the internet. It also discourages the learners to be active in the course due to the limited knowledge of some learners in using the internet tools as not all learners in MOOCs are students in the universities (Milligan, Littlejohn &

Margaryan, 2014; Saadatmand & Kumpulainen, 2014; Christensen et al. 2013; Waard, 2011; Kim & Frick, 2011; Hartnett et al., 2011; Bekele, 2010; Elameer, 2010).

In addition, the quality of learning is a core design factor in models of MOOC for the learning service providers and for MOOCs communities. Therefore, literature provides a wide set of design criteria for the courses environments in the MOOC. These criteria include methods for content, design, learning tools, illustrations use, and colors. Nevertheless, not all of these courses can be a successful blended MOOC. Therefore, the quality of blended MOOC design needs to be clearly defined because blended MOOC environments have specific requirements such as openness and scalability based on the culture of learners. It should be taken into account their own unique user interaction, different cultures and languages in the design because they will be supporting to traditional learning (Yousef et al., 2014b). On the other hand, there is a lack of interaction around the video lectures, which is one of the most important key learning resources used recently in MOOCs. However, one of the most crucial issues in current models of MOOCs is the lack of interactivity between learners and the video content (Grünewald et al., 2014; Zahn, Krauskopf, Kiener, & Hesse, 2014). Several studies on the nature of MOOCs address the linear structure of video lectures to present knowledge to learners in a passive way (Yousef et al., 2014a; Yousef, Chatti, Schroeder, Wosnitza, 2014c). Therefore, there is a need for new design techniques to increase the interactivity and flexibility with video lectures in MOOCs.

These issues denote that a MOOC model method should focus on user interaction to understand the core of blended MOOC in order to reduce the challenges in the traditional education and to increase the interaction in the classes. Despite the

importance of user experience, studies have largely neglected the methods and developmental approach which relate to user experience (Zheng, 2015). Thus, there is a need for solutions to increase the interaction and communication among MOOC and classroom in higher education context, by creating a flexible and an effective model for higher education institutions.

1.4 Statement of Problem

The current models of MOOC categorize the MOOCs to two main types, namely cMOOC and xMOOC (Daniel, 2012). cMOOC is a connectivist MOOCs (cMOOCs) which applies the ideas of connectivist learning (i.e. focus on connected and collaborative learning in the same time) (Daniel, 2012; Siemens, 2012; Siemens, 2011). xMOOC is an extensional MOOCs (xMOOCs) which confirms a more traditional learning approach via video presentations with short quizzes and tests (Yuan, 2013; Daniel, 2012; Siemens, 2011). Although these models of MOOCs have been agreed on, researchers in the educational field know very little about the student experiences and their needs during MOOCs courses as well as how these courses can address those needs based on the students' experiences (Heckman, 2015). Despite the point that efforts have been exerted to understand the user experiences (UX) (Zheng, 2015; Zaharias, 2012; Müller, 2010; Schaik, 2011; Martin, 2008), still there are questions on how these courses can satisfy the students' needs based on UX, as evidenced by very high dropout rates (Colombati, 2015).

The previous studies might be biased for the design only because they do not focus on the experiences of users who have enrolled in the courses (Satchell, 2009). Therefore, the researchers in this area emphasized to study UX in the MOOCs contents (Milligan,

20113 & Haywood, 2012), whereas Milligan (2013) confirmed on the point that "understanding the nature of UX is a critical for the success of online education.

Many researchers have been discussing the development of MOOCs in terms of concept, value, social aspects, institution, technology, importance, and marketing (Daniel, 2012). Yet, the quality design of MOOC environments has not been clearly defined so far. Besides, the technological and pedagogical approaches have not been mentioned so as the passive participants become active learners via the learning activities (Morris, 2013). As a result, several studies (such as Hill, 2013; Waite, Mackness, Roberts, & Lovegrove, 2013) have reported the lack of effective MOOC design. Thus, the quality of bMOOCs design becomes one of the main factors that determines their success.

The current MOOCs have been effected by very high drop-out rates (Adamopoulos, 2013; Downes, 2010). Although a good deal of studies have investigated the students' retention and interaction issues, little research has examined the UX. This is the main reason that makes the students do not finish the courses they register in (Adamopoulos & Milligan, 2013). In addition, it is difficult to fully identify the user experiences that tied for some problems such as diversity of participants, different cultures & language, different levels of education (Satchell, 2009). It is important to understand UX and student motivations and perceptions towards MOOCs. Therefore, more in-depth investigation is needed to understand the MOOC students such as how to design courses and how to deliver content successfully during a set of subjects at different levels in addition to ensuring that the courses experience is helpful for the learners (Haywood ,2012).

On the other hand, researchers have focused on the MOOCs with regard to their design, case studies, effectiveness, and the ability to explore new pedagogical strategies in higher education. Most of the existing MOOCs are particularly interested in a source of high quality content that include video presentation, forms of discussion, testing and other sides of the shared knowledge. His believed, one important obstacle or challenge that prevents MOOCs from obtaining their full possibility is rooted with the behavioral learning theories. That means that the current MOOCs still follow the centralized learning model by using the traditional instructor-centered education that controls the MOOC and its activities. Efforts have been exerted in student-centered MOOC based on connectivism and constructivist principles that confirm the role of social learning & collaboration which are exceptions and not the basics (Yousef et al., 2014b).

In addition, certain criticisms have been raised on the models of MOOC such as feedback (Hill, 2013) where there is a lack of interaction with video lectures (Grünewald, Meinel, Totschnig, & Willems, 2013) and no connection with face-to-face approach (Schulmeister, 2014). Therefore, the integration of MOOC into higher education institutions is an important issue that requires fulfillment to eliminate challenges (Yousef, Chatti, & Schroeder, 2014d). MOOC participants are more effective in classroom discussions than the online discussions (Bruff et al., 2013). Besides, there is a lack of integration among the MOOC courses and the university learning system such as semester schedule, syllabus, and required university curriculum for credit) (Griffiths et al., 2014; Ghadiri et al., 2013). For instance, the dates of MOOCs are rarely suitable for the semester schedule (Loviscach, 2013). Also, there is no link between the provided syllabus by the MOOC and the required university curriculum for credit (Bruff et al., 2013; Griffiths et al., 2014).

On the other hand, there are other issues related to openness such as: a) participants diversity in the MOOC courses without considering the issue of different cultures & languages (Yousef, Chatti, Wosnitza, Schroeder, 2015a), where research also reveals that there are some differences among the learners with regard to their perceptions of online learning via MOOC based on the cultures of their countries (Asiri, 2014 & chew, 2011). In particular, language is a barrier (Nkuyubwatsi, 2013) in MOOCs which restricts the user interaction (Asiri, 2014; Koutropoulus et al. 2012; deWaard et al., 2011; Kop, 2011; Kop et al., 2011; Fini, 2009). Moreover, the learners in MOOCs participate from all over the world. They speak English in different levels based on their different cultures. Hence, the examples used in MOOCs should be presented in such a way that they can be understood by everyone regardless of his/her cultural background. Thus, developers should consider the variety in the cultural values such as everyday objects, animals, symbols and food (Jona & Naidu, 2014; Yousef et al., 2014c). In addition, the level of language skills can be a source of misunderstanding in the video content in the courses (Hollands & Tirthali, 2014; Yousef et al., 2014c).

b) adherence to the instructor-centered learning (centralized learning model) (Griffiths et al., 2014; Yousef et al., 2014b), where they follow a lecturer-centered model (Griffiths et al., 2014; Yousef et al., 2015a). Learners who participate in the online activities perform inaccurately compared to those who are engaged in the in-class sessions (Derek Bok Center, 2014). Courses need to be redesigned in order to fit effectively into a university curriculum (Griffiths et al., 2014; Derek Bok Center, 2014). According to Mahraj (2012), the problem in MOOCs is that it has a replicated lecture. The professors in the MOOC always use auto digital to apply multiple choice item tests in the classes. Therefore, the students in MOOCs cannot build relationships

with the professors or get in-depth feedback in their educational progress. Basically, there is no interaction between the colleges and MOOC students (Creed, 2013).

A case in point is that the students in these learning courses find the online videos (lectures) useful, but less experienced students (e.g., 1st year undergraduates) might not find them so due to the lack of face-to-face interaction between the lecturers and the students (Bruff, et al., 2013; Konstan, et al., 2014). Furthermore, Sharma (2014) states that it becomes the responsibility of MOOC designer and deliverer to maintain the students' interest in the courses. A large number of researchers are trying to provide the solution by focusing on the behavioral and sentimental analysis. Therefore, student with lecturer interaction plays a vital role in MOOC environment (Carr, 2012).

All these criticisms on MOOC indicate that the current models lack an effective educational design (Creed, 2013. Conole, 2013). Therefore, this study aims to fill the gaps by proposing a blended MOOC model based on these criticisms.

1.5 Research Gaps

Based on the aforementioned problems, the following research gaps are emphasized:

1) After searching and investigating from 2003 up till now, real achievements have not been accomplished to update the Iraq's higher education system. That is, there is no bMOOC framework or model being used in Iraq. Therefore, there is a need to develop the traditional learning a step forward to take advantage of the blended MOOC in Iraq.
2) The previous studies know very little about the student experiences during the learning process. This is evidenced by the high dropout rates of current MOOCs courses.

3) Few studies investigated the UX, therefore, more research is needed to understand the MOOC students based on UX element.
4) The current MOOCs still follow the centralized learning model by using the traditional method (i.e. instructor-centered education) that controls the MOOC and its activities.
5) Lack of different MOOC design
6) There is limited interactions with the video content in the courses of MOOC.
7) Neglecting certain issues correlated with the participants' diversity based on their cultures & languages.

Due to these gaps, this study is aimed at closing the gaps for the issues of UX in blended MOOC model and the lack of effective design.

1.6 Research Questions

Based on the aforementioned research gaps, the following research questions are highlighted:

i. What are the current limitations and challenges of MOOC in the higher education context from the perspective of Iraqi student?
ii. What are the design dimensions of a blended MOOC?
iii. How to construct and develop a blended MOOC model?
iv. How to evaluate the user interaction element of the proposed blended MOOC model based on the user experience?

1.7 Research Objectives

This study aims to propose a blended MOOC (bMOOC) model for HEIs in Iraq so as to cater the UX issues. The following sub-objectives are formed:

i. To determine the current limitations and challenges of MOOC in the higher education context from the perspective of Iraqi students.
ii. To identify the design dimensions and components of a bMOOC model.
iii. To construct and develop bMOOC model based on objective ii.
iv. To evaluate the user interaction of a bMOOC prototype based on the user experience.

1.8 Research Scope

The setting of this study is in Iraq based on the following criteria:

i. This research carried out comparative studies on blended MOOC learning in scholarly literatures within formal high education context.
ii. Due to limited study-period, user data collection was obtained from a two Iraqi universities (Tikrit and Baghdad). The target users of the proposed Iraqi-bMOOC model were undergraduate students from the different faculties.
iii. This study concerned on evaluating the user interaction of the proposed model as a blended MOOC resource rather than the traditional learning (face to face) of the learners.

1.9 Significance of the Study

The aim of this study is to propose an Iraqi-bMOOC model that includes components, features, functionality and activities for developing the blended MOOC model (as described in Chapter 4). Therefore, this study attempts to propose a blended model of MOOC which integrates various elements of MOOC (such as materials (video lectures), assignments, assessments, forum, comments and message (e-mail)) with the university learning system (Face to Face learning); including the concept of student-centered learning to increase the user interaction with bMOOC courses. The proposed

model has its unique characteristics as it provides specific guidelines on developing the user interaction with the blended MOOC encompassing various theories and concepts, such as lcognitivism, social constructivist theory, multimedia theory, and interaction theory, practice of online learning, social learning theory, and social interaction theory. In addition, this study identifies the key elements that should be considered in the bMOOC development such as MOOC models, and blended MOOC models. The proposed model with its related concept could be significantly utilized for future research by academics, researchers, and future bMOOC developers. Consequently, this study contributes generally to the structure of knowledge which covers the bMOOC design as well as the instructional design area. In this way, this study closes the knowledge gap identified in Section 1.5. This study is also significant because it explores and develops the learning process in HEIs that has the potential to improve and revolutionize education for the next generations of students and educators, in terms of improving the traditional teaching methods in classroom, managing the learning materials and outcome efficiently, providing the features of teamwork and permitting the students and lecturers to exchange their information among each other. This way will get rid of the knowledge gap between the Iraqi universities and the international universities, and increase the efficiency of the educational process in the HEIs by using new techniques in teaching via bMOOC.

Furthermore, the theories, concepts, and methodologies reviewed and utilized in this study (as described in Chapter 2 and 3) are relevant for the blended MOOC developers, the educators, and the fellow researchers. For example, the context of this study within bMOOC could improve the learning policy, the traditional teaching methods and the learning methods within the learning environment in the higher education institutions.

On top of that, this study supplements the pool of current literatures by presenting a research and theoretical framework that could be adopted to examine potential related theories, concepts, and issues for future studies.

1.10 Research and Theoretical Framework

The research framework of this study consists of five phases (the problem awareness, suggestion, development, evaluation, and conclusion). The first phase includes research problem and research scope which are identified through conducting a preliminary study to examine whether Iraqi Higher Education Institutions need Iraqi-bMOOC to support the traditional learning. The next phase is the suggestion, the reviewed research, and studies (models and frameworks) that are used as the basis in determining the components of bMOOC, identifying design criteria, bMOOC model, and specifying the main features and tools in the implementation of Iraqi-bMOOC, based on current models and frameworks, to clarifying the problem statement and research gaps. Besides, theories, concepts, and techniques are also analyzed in the areas of online learning such as Connectivist theory, Social Constructivist theory, Multimedia theory, Interaction theory, theory and practice of online learning, social learning theory, and social interaction theory. Therefore, these theories are considered the most appropriate methods to obtain the information to facilitate in-depth explanation for the learners with regard to their perceptions of online learning. In the development phase, the proposed bMOOC model is developed based on combining all the linked components as previously suggested in the literature review. The bMOOC model is tested and evaluated by a combination of three stages (experimental testing, expert review, and user interaction in the evaluation phase). Finally, in the conclusion phase, the results of the evaluation phase are analyzed, concluded, and reported in publications. Figure 1.1 illustrates the research and theoretical framework.

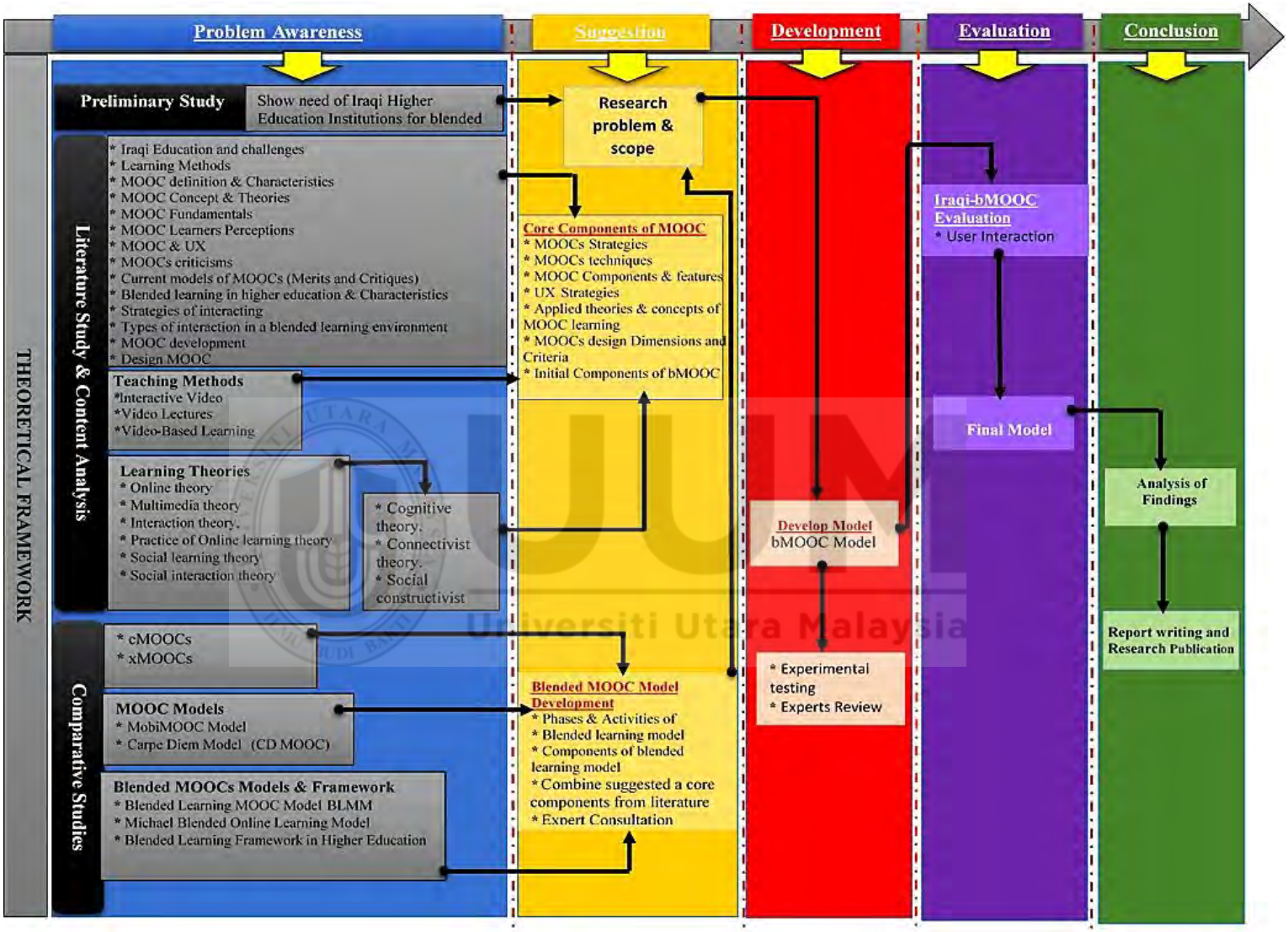


Figure 1.1. Research and Theoretical Framework

1.11 Definition of Terminologies

This section describes the terminologies related to this study which lead to the operational terminologies that are used commonly throughout this thesis.

1. Traditional Learning: It is defined as face to face approach based on teacher-centered delivery of instruction to the students in the classroom who are the receivers of information. The traditional learning generally stresses basic learning practices such as reading, writing, exams, and homework.

2. Massive Open Online Courses (MOOCs): MOOCs are internet based teaching programmes designed to handle thousands of students simultaneously. There are no fees or entry requirements and the formal academic credit is unavailable. MOOCs can be noticed as an extension of the existing online learning approaches; in terms of open access to courses. In addition, MOOCs provide the participants with course materials such as examples, lectures, videos, study materials and interactive user forums.

3. Blended MOOC: It is an approach of learning that combines between MOOCs courses (interaction online) and the traditional learning (the classroom learning methods of Face to Face). It requires the physical presence of both instructor and student. Therefore, the instructors in this approach use the classroom lecture to interact with the learners and use the online learning to deliver lectures, typically as a videos lecture.

4. Blended Learning: It is an alternative course to online learning and classrooms learning (face to face learning). It is also known as flipped classrooms, based on the elements of learner such as control over time, place, path, or pace.

5. cMOOC: It is a social platform for collaboratively sharing and constructing knowledge within a community of learners. (i.e. an approach that focuses on the connectivist philosophy).

6. xMOOC: It is an approach that focuses on a more traditional method of education through the lectures videos.

7. User Interaction: It is the space where interactions between humans and system occur. That is, it is the branch of user interaction design that illuminates the linkship among the persons and the components, features, and functionality of the system. Examples of this broad concept of user interaction include the interaction with interface, pages, text, links, buttons and images to build a system that forms the user interaction.

8. User Experience: It refers to a learner's attitudes and emotions about using a new or an old system, such as the practical, experiential and affective aspects based on a valuable learner–computer interaction. In addition, it includes a learner's perceptions around the system characteristics such as interest, efficiency, usability, and ease of use.

1.12 Thesis Outline

The thesis consists of six chapters. The contents of every chapter are outlined as follows:

Chapter 1: It is an introductory chapter that addresses the background of study that triggered the research motivation. Results of the preliminary investigation are then discussed as a justification for the chosen research topic. Issues, scenarios and problems are scrutinized in the research area which led to the formulation of research gaps, research objectives, and research questions. Finally, the research scope, and contributions are also provided in this chapter.

Chapter 2: In this chapter, theories, concepts, and techniques are elaborated primarily in the areas of MOOC and Blended MOOC. This chapter describes the learning theories, online theories, connectivism theories and perspectives that influence the MOOCs characteristics. This chapter also provides the background to the thesis and the bMOOC design and development. It reviews and analyzes the instructional design models of MOOC, blended learning models, and bMOOC development methodologies. It also discusses the, design dimensions and criteria which provide the bases for Iraqi-bMOOC development.

Chapter 3: This chapter explicitly explains the research methodology adopted in this study. It describes the research design and data collection approach applied in this study. The overall research processes and the instruments used to accomplish the objectives of this study are elaborated.

Chapter 4: This chapter reports the results of the user interaction evaluation. The purpose of this stage is to evaluate the proposed model through user interaction based on participants (i.e. interaction with peers, instructors and content). This is because the efficacy of the model is exhibited by observing and measuring how well it supports a solution to the problems in the tradition learning.

Chapter 5: This chapter reports the results of the experimental testing. The purpose of this stage is to evaluate the proposed model through usability and user interaction based on participants. This is because the efficacy of the model is exhibited by observing and measuring how well it supports a solution to the problems in the tradition learning. In addition, the components evaluation is used to support the

proposed model efficacy. This chapter also explicates the expert review stage. Experts selection process, instruments for expert review, and results obtained from the experts' feedback are also elaborated. The goal is to validate and finalized the proposed research.

Chapter 6: It provides conclusion of the study. It answers the research questions and reviews the research objectives, limitations and recommendations for future research are also presented.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

The current study focuses on the area of online learning known as Massive Open Courses Online (MOOC). This study identifies the weak points of the learning environments that are related to the MOOC. Therefore, this gives an urgent need to study the core components of MOOC such as lecturers, students, materials (video lectures), assignments, students' assessment, forum, message (e-mail)), and multimedia as illustrated in Figure 2.1. By doing so, a new theoretical framework for learning is provided and adopted in the institutions of higher education in Iraq. This helps the Iraqi students to open up to modern educational methods and encourage them to continue their learning.

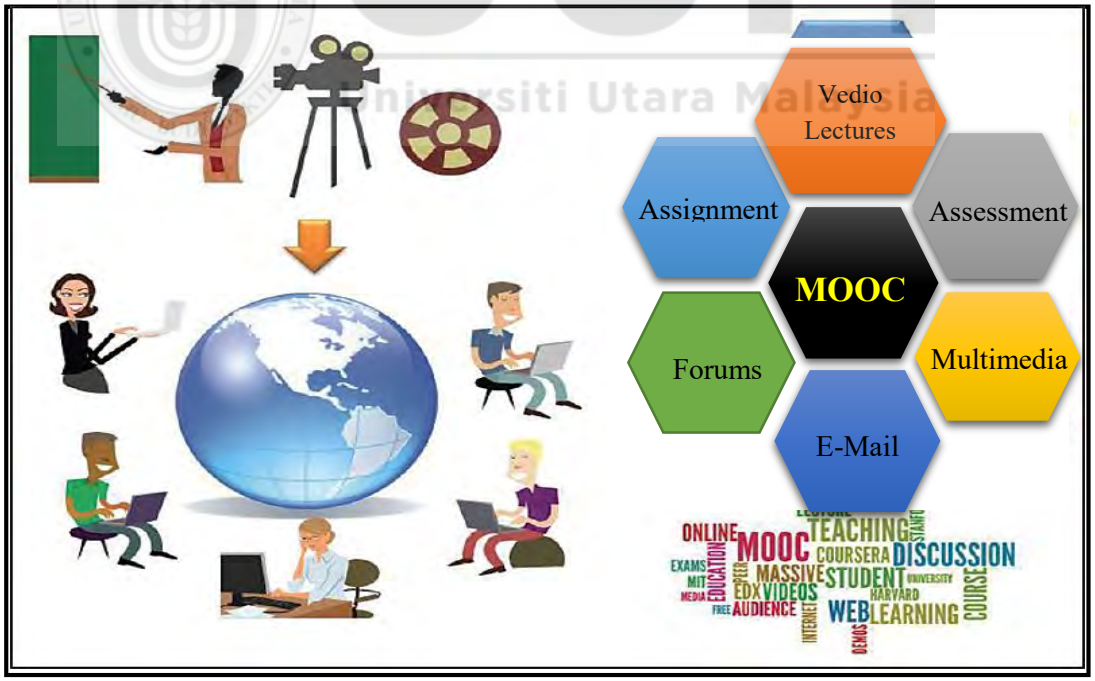


Figure 2.1. Core Components of Massive Open Courses Online.
Source: Kennedy (2014)

2.2 Concept of MOOC

MOOCs are recent developed courses for distance education. They are developed by open education which is suggested by Open Educational Resources. There are many definitions of MOOC but the most commonly used one is that MOOC is an online course includes a large participation from all over the world via web and open access to the resources. There is no need to the books, lecturer, face to face discussion, or classroom availability. In other words, any individual can join the courses via online (Daniel, 2012; Downes, 2011). McAuley (2010) confirms the fact that a MOOC is an online course which permits a lot of people to register freely. Besides, MOOCs are integrated social networking and online resources that can be accessed and facilitated by leading practitioners in the field of study. The most important issue is that the building of MOOCs can engage learners with the objectives of learning, knowledge, previous skills, and common interests.

Moreover, it is noticed that MOOC came into being in 2008 in spite of a large versions of courses on the internet. Many universities applied online courses system in 2008 but these courses were limited for the students. In 2011, Stanford University applied three free courses of MOOCs. They were shown to the learners to watch online lectures with a homework via two databases courses and one course of artificial intelligence of platform by a team of students. This configuration is related to Coursera which eventually became the genesis of Udacity. Since then, many other institutions (MOOCs), such as edX, FUN, FutureLearn, NovoEd, Iversity, and others had started to gradually offer similar courses of MOOC via internet. Gradually, in 2008, the term of MOOC was termed by McAuley (2010) to be described in twelve weeks on an online course based on the relationship and knowledge. The latter were designed by

George Siemens and Stephen Downes and presented at the University of Manitoba in Canada. Therefore, for George Siemens and Stephen Downes, MOOC is defined as a key goal to develop the experiences of students through information technology where the teacher's voice is not an essential part as the lecture can be presented online.

Students can join the MOOC courses because most of the courses are available either for free or with low charge (Chen, Barnett, & Stephens, 2013; Wilson et al., 2013). Besides, some faculty studies are expensive and have content of low-quality, in some occasions that push the learners to engage in MOOC which has a high-quality content (Chen et al., 2013). In addition, the MOOC learners are allowed to take any course they like at any faculty so that they expand their knowledge and customize their learning (Cooper & Sahami, 2013). Besides, one of MOOCs advantages is that it can help learners who are disable physically to join courses and develop their knowledge without travelling as it is an open learning and available everywhere (Wilson et al., 2013). Moreover, students can use MOOCs as a complementary role to improve the educational methods through one of the potential benefits of MOOCs. This helps the students to strengthen the ability of their writing by participating in the discussion forums actively (Comer, 2012). Accordingly, the available online training courses allow the students to better understand the people's opinions and deal with their views and arguments appropriately.

Marshall (2013) examined the online courses advantages to increase the success of students so as to obtain a degree in computer science. This scholar proposed that taking earlier online courses at the university level can help the students to succeed in their college classes. Marshall also added that students can acquire learning experiences via

online courses more than those who have not tried these courses yet. According to McAuley et al. (2010), MOOCs used similar strategies of social networks (e.g. Facebook and Twitter) to reach the masses anywhere and anytime in the world. In addition, the learning benefits of experts in the online learning materials and the wide range of online knowledge material facilitate the content and knowledge. The students also have the opportunity to share and organize their educational goals and interests with others all over the world. Therefore, there are certain definitions of MOOC such as massiveness, openness and a connectivist philosophy connectivity which can be explained briefly as follows:

2.2.1 Massiveness

The MOOCs are easy to accommodate a large number of students. From a practical perspective, MOOCs have the characteristics of enrolling a large number of students in the courses and obtaining vast quantities of participants' activities and performance data (Carr, 2012). Hollands (2014) discussed that massive is anything that is broad enough through getting sub-groups at George Siemens. In addition, MOOC provides access to any point in the world and overcome some factors such as time, geographical location, official requirements, and financial distress (McAuley et al., 2010).

2.2.2 Openness

This includes opening up some key concepts such as software, registration, curriculum, evaluation, and communication. The latter involves interaction, cooperation, exchange, and earning environments (Rodriguez, 2012). Rodriguez (2012) also discussed that the software, registration, curriculum, sources of open information, assessment processes, and learners are open to a domain of diverse learning settings. All these points are open sources for anyone in the world. McAuley et al. (2010) added

a new openness concept in that MOOC can be taken by any learner at any time and place. To sum up all the definitions mentioned above, MOOCs provide simply effective means by which the university professors are exposed to the online learning experience, the research, and the investigation (Chen et al. 2013).

2.2.3 Connectivism

The connectivism is an important factor which indicates that MOOCs possess the methodology of teaching via online. This is why it is sometimes referred to the formula of MOOC which is usually called C-MOOCs (Connectivism Massive Open Online Course). Connectivism values include certain items such as diversity, openness, and interactivity (Rodriguez, 2012). The teaching strategies of the connectivism allow the lecturer to take over the role of facilitator with learners and interact actively with other students. It is not only a transfer of knowledge from the lecturer to the learner in one learning environment (kop, 2011), rather, it is to regulate the learners in their participation in line with the objectives of learning and knowledge, previous skills, and common interests (McAuley et al., 2010). Therefore, the active participation and interaction is a method of education in the MOOC (Chen et al. 2013).

On one hand, MOOCs are an effective way of providing an easy way for the learning in the universities and the academic institutions. They aim to test the learning via internet through collaboration between lecturers and students to change the practice on a large scale. In addition, the MOOC provides also a new useful tool to deal with the educational models for all participants who have (or have not) an experience. On the other hand, there are some questions that have to be discussed to know the importance of courses via MOOC. For instance, why courses via MOOC have obtained vast popularity? Do all the learning materials via MOOC have a high efficiency compared

with the learning materials in the traditional classroom? Is there any coordination between the traditional lectures and the lectures via MOOC? If they are not similar, it would be a problem for the learners although the MOOC attracts a great number of them to register and participate via international programs such as Coursera Edx and Udacity. In addition, it has quickly attracted thousands of students and teachers from all over the world. To answer the above questions, four reasons can be highlighted:

1. The MOOC is available for everyone who can freely makes admission at any time and place.
2. The reason that led the students to enroll in MOOCs is to get an experience from online learning, acquire new knowledge, obtain the certificate, and improve their professional lives.
3. Another reason for selecting MOOCs is that lecturers are familiar with preparing a well prepared and organized lectures of MOOC. This characteristic is available only in MOOC's professors due to their experience. This fact is attested and confirmed by a number of studies conducted by some scholars such as Wilson et al. (2013) and McAuley et al. (2010). This issue might be the main reason by which MOOC materials differ from those of the traditional classroom.
4. Some students choose courses via MOOC because these courses are offered by the prestigious university that occupies a high rank of knowledge.

In addition, researchers such as Carr (2012), Kop (2011) McAuley et al. (2010), and Rodriguez (2010) focused on the definition of the key elements of MOOC which includes Massiveness, Openness and Connectivism. Carr (2012) defined Massiveness as the capacity to accommodate a large number of students and obtain vast quantities

of participants' activities and performance data. Rodriguez (2010) defined the second element as openness in that it is open to the world where students can access it anywhere and anytime. McAuley e al. (2010) defined the third element connectivism as the methodology of teaching via online which inspired from philosophy of connectivity. Besides, Rodriguez (2010) focused on connectivism values such as diversity, openness, and interactivity. However, one can conclude from all the definitions above that MOOCs provide operative means so as the university academics can be exposed to the online learning experience, research, and collaboration.

2.3 Learning Methods

When investigating the issue of e-learning in the different sources, the term "learning via internet" is frequently associated with or paralleled to the following concepts (Alshaher 2013, Čechová 2011 , Kanninen, Essi, 2009):

2.3.1 Distance Learning: It takes place when the learning occurs between the learners and the lecturer by internet which can be considered a physical distance (e.g. voice, video, data, and printing) to fill the educational gap.

2.3.2 Online Learning: It is a teaching and learning approach which comprises the use of internet technologies for the learning and teaching. Learners utilize the learning environments via the internet not only to be able to access the information and course materials but also to interact and cooperate with other applicants in the session.

2.3.3 Blended Learning: It refers to a course of online courses that integrates face-to-face interaction with the proper use of technology.

2.3.4 Flexible Learning: It increases the opportunity to know what, when, where and how people learn. It helps diverse styles of learning.

A number of MOOC definitions consist of methods, development approaches, learning methods, culture, and others have been deeply discussed in this section. Concept,

design, learning, features and others are parts of MOOC components and are crucial in the development of Iraqi-bMOOC model. Furthermore, Iraqi-bMOOC is a type of blended learning that functions as a learning model. The next section focuses on the previous scholars who used the MOOC Fundamentals in the educational process.

2.4 MOOC Fundamentals

2.4.1 MOOCs Lecturers

The lecturers are responsible for providing many of the activities such as: (a) the learning materials contents for courses and references that support learning, (b) the tasks to assess the student outcomes (e.g. tests, homework, and quizzes...etc.), (c) student activities should be monitored to support the behaviors weakness in some students' activities and processes. This automatically improves the teaching efficiency, reduces the stress in the teaching processes, and ensures accurate learning processes such as automatic assessment tests. In addition, lecturers need to assess the management of e-learning processes such as colleges and methodology of IT management (Anter, 2014).

MOOC lecturers are playing an important role in enhancing the participation of students. The prominent eight points in Stanford courses include: amplifying, curating, way (direction) finding, aggregating, filtering, and modeling (Rodriguez, 2012). They can also improve the participation of the students and the lecturers' limitations of the learning styles for students as well as adapting the teaching strategies. Accordingly, it is essential to ensure the promotion of the students' participation in MOOCs in present and future (Chen, 2013).

Some scholars like Chew (2011) indicated that lecturers must give attention to the student to overcome the barriers of learning by: a) being patient and sympathetic, b) being prompt with their comments on the questions and show concern to them, c) be hopeful and helpful with their observations and feedback, and d) be fair in dealing with students. Therefore, these features develop the lecturers to improve the learning quality in online learning settings. With regard to Strother (2003), there is a need for professional development for the lecturers in the field of learning strategies and skills via Internet. On one hand, based on observations of students, the lecturers must focus on i) teacher's features, ii) the planning of culturally sensitive curricula, iii) collaborative learning and cooperative working strategies and skills, and iv) flexible program structures. On the other hand, the lecturers in the MOOC are always using digital grader to apply multiple choices in the classes. Therefore, all assignments submitted by this way (multiple choices) influence the students' performance because they cannot build relationships with the professors or get in-depth feedback about their educational progress (Creed, 2013). In this way, the students don't have any opportunity to discuss any content courses with others.

In this respect, Waite (2013) clarified that college lecturers can play a significant role in teaching and they must be skilled in teaching the online learning environment. In this vein, Guàrdia (2013) stated that three criteria must be taken into account by teachers when they participate in the planning and implementation of the learning based online: 1) the context must be considered for the student's comprehension 2) make the students active in the learning activities that utilize the analysis, discussion, and criticism opposite to merely save the information, and 3) discuss socially and interact directly with experts, colleagues and team projects. In turn, the students would

appreciate the benefits of technology use if the lecturer is acquainted with the use of technology to facilitate teaching (Kvavik, 2005).

The students who attend a classroom with the lecturer for the purpose of learning encourage technology to see more positive learning results. In the distributed educational setting, the students frequently feel isolated because they lack the classroom setting where they can communicate with the lecturer (Zheng, 2015). Other researchers like Beadle and Santy (2008) characterized the use of learning technology over the internet to support the student's learning in an educational environment where learning is based on solving problems.

Neo, (2004) summarized the role of the lecturer in the internet as follows:

i. To provide education and knowledge as a prerequisite for students.
ii. To describe the project group and Content.
iii. To be responsible for watching and evaluating the student's results.
iv. To be an external advisor for groups.
v. To utilize the internet technology to adapt and update the curriculum materials, and stay in contact with students.
vi. To verify the students' links in the research papers.
vii. To evaluate the student performance.

Hence, lecturers have significant roles to confirm that the learners adapt well in the online learning setting. In a same vein, Chew (2011) investigated the approach that prepares the first-year students to adapt to online learning in a study conducted in the Australian Universities. They suggested that the best methods in the first year of online learning are constructed on comprehending the lecturers. These methods are:

a) The lecturers are advisers for the students to engage them in online learning in the university. This must happen well before encountering the first official university that include online learning setting, especially when the universities face an increase in numbers of students of different cultures.
b) The lecturers prepare the students' skills in earning via internet.

Australian Council of Distance and E-Learning (ACODE) are formed to promote policies and practices in open distance and e-learning where the higher education in Australia suggested standards for E-learning in universities (ACODE, 2008) that concentrate on:

i. The institutional policy to support the learning and teaching of technology.
ii. Planning in advance for the quality enhancements from technologies on learning and teaching.
iii. Using infrastructure of information technology to support teaching and learning.
iv. The educational application of data and communication technology.
v. The professional development / staff members for the operative use of technologies learning and education.
vi. Supporting the staff members for utilizing the learning and teaching technologies.
vii. Training the students on the efficient use of learning technologies.
viii. Supporting the students in using the learning technologies.

On the one hand, the lecturers have significant roles to confirm that the learners adapt in a good way in the online learning context through advising them and finding

residents for them. Moreover, the students must be stimulated to engage in the online learning through suggesting the best practices on the internet and enabling technology experience for them, especially at the time when universities face an increase in the number of students with different cultures .On the other hand, researchers disagree on the best method of teaching when dealing with students. Some researchers' focused on the basic features of the lecture such as the lecturer should be patient with the students and pay attention to the comments. S/he must also focuses on some factors such as encouraging and supporting with feedback which is very important to the students in addition to being fair in dealing with the students. These policies help the students to learn via Internet and they are good ways for learning. At the same time, attention must be focused on the culturally sensitive issues which have an effect on the learning via online. This fact has been confirmed by Chew (2014) who stated that it is important to provide a learning environment free of any constraints. Besides, when a computer is available at home, it would affect the student's response and reaction towards the online learning setting.

Therefore, the student's experiences with early online learning have been influenced greatly by information and communication technology. Finally, to deal with the scenario of MOOCs in online learning, instructors need to work and learn the best ways to explore and identify the typical educational practices. There are some important features which must be considered in the professional development of online education such as:

i. Access to education and learning resources.
ii. Uniform quality in content.
iii. Control of the teacher online interaction.

iv. Ongoing continuing professional improvement.

v. Visual images [recorded footage] teaching.

Learners who learn online require initiative and positive behaviors throughout the learning process so as to learn successfully. The reactions and enlightenment of the teachers are always crucial. To do this, teachers must become familiar with the latest knowledge and learning skills over the internet and related technologies.

2.4.2 MOOCs Students

MOOCs are designed to promote the participation of students and to improve the student outcomes which are the main objectives. According to Trowler and Trowler (2010), the student's participation is an investment of time and effort and other relevant resources, where the institutions designed to improve the students' experiences, learning outcomes, development, and performance. Therefore, all of the important factors such as the student and teacher participation, motivation, and the method of teaching need to create MOOC environment to be helpful factors for the learning process (Belanger and Thornton, 2013). Important points must be focused on to help the students understand the materials courses via MOOC:

i. The lecturers in the MOOC always use digital the auto grader to apply multiple choice in the classes. Therefore, all the assignments submitted by this way (multiple choice) as well as the students would not build relationships with the professors or get in-depth feedback about their educational progress (Creed, 2013).

ii. In Mahraj's (2012) view, the problems in many of MOOCs are that they represent replicated lectures based on the instructions in the MOOC. They lack effective instructional design and loss of interaction (face to face). These

factors are necessary for the successful classes as if the students do not participate in the course activities and might not have any opportunity to interact with others about any of the course content.

iii. Using one language only in the course such as English does not encourage the learning via internet as not all the learners speak English. Thus, different languages should be provided for the learners via MOOC (Nkuyubwatsi, 2013).

In this vein, Adamopoulos (2013) stated that a constructive feedback is very important for the students. It should be informative and can be presented in a suitable time. He also emphasized the language content and use in the replies as a significant act. Actually, improper reactions can affect students' learning. Similarly, Abraham and Jones, (2015) emphasized on the feedback from the lecturer who gives and promotes confidence of the students.

On the one hand, students must be involved in problem solving and critical thinking (Windham, 2007). The students have been taught to work altogether on projects of actual importance. Yet, the international students habitually find that they are in challenge whenever they need to express themselves and their ideas or to interact with lecturers / peers whom they have to cooperate with effectively to solve the problem. On the other hand, the students would be in face-to-face with the components of website interface which means that there are no exchange experiences among themselves during the course. The students have to be able to make discussions and exercises among themselves. As such, there would be an interaction among the students during online course which is vitally important for them in the learning process (Conole, 2013).

Based on the above debate, one can argue that there are main reasons that determine whether the students will continue in the course. The reasons could be the numbers of homework, numbers of competitions, and the educational approach. These reasons are playing an important role in engaging students in the course. Belanger and Thornton (2013) discussed that patience, flexibility and adaptability are some reasons that make students successful.

A point worth stating is that the students are always different which means that the distant learning lacks the information about the students such as background, aptitude, experience, knowledge, etc. In addition to the fact that there is a lack in giving the feedback which is very important for the students as it is confirmed by some scholars such as Konstan et al. (2014) .The feedback should be informative and presented in a suitable time by focusing on interaction between students and lecturers. Moreover, there is a disagreement among the researchers about the constructivist learning. Some researchers confirmed on constructivist learning, which is the science of the most applicable pedagogy in online learning. In contrast, other researchers emphasized on the constructivist learning approach which is ineffective related to the lack of specific learning goals in the results. The students also prefer to learn in the individual competitive setting and they do not favor to share the knowledge they have with students of low motivation as it happens in the traditional schoolroom.

2.4.3 Assessment Method

The assessment of the student might be similar in most of the online courses. The students in the MOOCs models are assessed in the same way of that in the traditional classroom through homework assignments, labs, and exam in a midterm so as to finally

determine the grades of the student. In addition, more sophisticated predictive analyses must be carried out via relationships between the students' use of course materials and their achievement in the MOOC (Breslow, et al. (2013). In terms of Smith, et al, (2006), the assessment of the student is noticed by exploring interactive engagement in MOOC and estimating the impact of time the learners spend on working in online labs. Furthermore, the students are assessed through the relationship between scores on practice problems and scores of final exam in the course. (e.g., Breslow et al., 2013).

In other models of MOOCs, the students were assessed according to their learning objectives. This was because the students had time and concern so as to take the auto graded quizzes and the final examination. Yet, the peer-graded short essay questions and peer-graded assignments had not been completed by the students because theyhad no time and interest (Hollands, 2014).

The biggest challenge that faces the MOOCs is to evaluate the learners' performance (Rodriguez, 2012). Cheating is a major challenge for online education (Carr, 2012). The question that was raised was that how to verify the authenticity of the original work? Preventing or revealing plagiarism was one of the challenges that had been discussed extensively in the field of online education (Cooper and Sahami, 2013). Some of the proposed solutions to that challenge were presented by institutions which offer MOOCs. For instance, Udacity and EDX used test centers in online courses. Coursera tried to use plagiarism detection software to detect plagiarism. Moreover, a learning machine for identifying plagiarism has been suggested by analyzing the behavior of the learner. Waard (2011) stated that the open badges can refer to the

assessment. The concept was easy in that the badges are applied by the learners for indicating their completion of MOOC characteristics. This might be simple as if an individual completes part of the course or learns particular aspects. The badges have standards connected with them and the learners are anticipated to explain in what way they have accomplished these standards. The peers or tutors can validate this issue. The best famous instances of badges are the Mozilla's Open Badges 20 and they have a slogan which is to obtain recognition of skills when an individual learns at any place (Waard, et al., 2011).

2.4.4 Features of MOOC

The following discuss the key features in MOOC

a) MOOCs Video Lectures

The video lectures consist of clarifications, text, equations, and explanation. They include drills that provide the learners with chances to practice the notions covered and displayed in the videos. The video sometimes includes also tutorials similar to the lecture (Breslow, 2013). In addition, video duration depends on the length of the lecture. It might be between 10 to 60 minutes or more than this. There is a study investigated by Philip (2014) to measure the impact of video on the students in their learning through the internet for three courses via Coursera. It was found that many of the students and auditors were engaged in the first place with videos. Besides, the shorter videos were more attractive than longer ones, where the maximum benefit must be from the online videos to teach.

In Bruff et al.'s (2013) and Konstan et al's (2014) view, there are some problems in the current implementation of the design model (MOOC). They confirmed some

common problems in some MOOC model like the video, where the students found the online videos (lecture) were not useful because they were less experienced (first-year undergraduates). In addition, the video dropouts were examined by Kim et al. (2014) who discovered that a very longer video had the highest drop-out rate. It was also concluded that the students felt bored when they watched again the materials course more than one time as well as the participation of the students was declined significantly with a longer video.

b) MOOCs Discussion forums

Gao and Zhang (2013) stated that using discussion forums on the internet might enhance higher critical thinking. In this regard, Zhang et al. (2007) and Vonderwell et al. (2007) confirmed the fact that the discussion forums on internet do not only stimulate the critical thinking skills, but also they develop the writing skills of the students. In addition, Cheng (20111), and Balaji (2010) revealed that the online learning allows the learners to interact equally to avoid a small group of learners to dominate the process. Moreover, the learners have chances and flexibility to regulate their posts by interacting in the discussion forums on internet (Yildiz & Bichelmeyer, 2003). Besides, there are occasions by which the discussion forums on internet, rather than face-to-face discussion, might help the learners to effectively express their ideas (Bender, 2012).

However, another study by Thompson and Ku (2005) showed that more efforts were given by the Chinese learners in an online course to achieve the activities in the online learning context. Moreover, the Chinese learners commonly were inactive in the traditional classroom contexts while they were active in the online learning, where

they enjoyed the online discussions among themselves. These learners continue in their participation in the discussion forum on internet, even though they were anxious of their structural mistakes in their posts.

Zhang (2007) confirmed that the objective of discussion forum is to better interact via an appropriate community to prevent the potential undesirable applicants from participating in the discussions. The forum of discussion should also give appropriate feedback for the students. McLoughlin (2001a) emphasized the importance of lecturer's role in the discussion forum on the Internet. They advised that the lecturers must be effective and be able to apply the knowledge or discuss the knowledge features for the students. This is due to the point that students tend to take a negative attitude because they only read the posts in the discussion forums, rather than participating actively in them (Nandi et al., 2012). In this vein, Bender (2012) added that students who are just browsing via the discussion forums also have tendency to have advantages as well as they learn by reading and obtain the leaflets in the discussion forum from their peers.

Moreover, using various multimedia tools and edutainment in the MOOC such as video, discussion forums, presentation, audio interactive, and 3D models help the learners to better understand the course materials. This refers to forms of entertainment which aim at providing an interaction between students and lecturers. For instance, discussion forums on the internet might enhance higher critical thinking for students through feedback between students and lecturers. On one hand, the role of the lecturer is very important in the discussion forum on the internet and the lecturers must be effective enough in the learning process. On the other hand, specific techniques and

methods should be followed when preparing a video to make it more attractive for education. For instance, suitable video subtitles and transcripts, longer videos, and scientific knowledge can be provided to the learners. The lecturers are responsible for preparing lectures on the video in a concrete way and designing the learning path. They must also provide course materials and devise assessments. Howevr, this role has pedagogical consequences.

c) MOOCs E-Mail

Delialioglu and Yildirim (2008) emphasized the importance of using e-mail, chat tools and teleconferencing to avoid communication in one direction and also to improve the online teaching quality. Besides, the students can use e-mail in the learning environment to send e-mail messages to the lecturers at any time and place (Chew, 2011; McKeage, 2001). The online learning also provides opportunities for the students to get their own educational resources every day, irrespective of the student's position (Bergmann, 2012).

Another investigation is carried out by Yuen et al. (2009), to show the use of Web in supporting the online and blended MOOC in a course at the University of Hong Kong. The sample was 28 participants. It is found that the more interaction is for the lecturers as the learners rely heavily on e-mail. In addition, Web 2.0 refers to a term that illustrates the varying trends in utilizing of the technology of World Wide Web on a large scale and Websites. It aims to improve the functions on the web and enhance the creativity, the data sharing, and the cooperation. This leads to the development of hosted services such as social networking sites (i.e., Facebook, twitter), video sharing sites (i.e. YouTube), wikis, blogs, and so on. Web 2.0 tools provide the students with

chances to participate online through using blogs and wikis in addition to the quality and activity the browser has with network (synchronous and asynchronous) to upload or download files. This is very important in the learning courses where one must focus on all these means when preparing learning via online and determining the best methods for these means. In other words, one must ascertain the student‘s appropriateness so that s/he can access the learning activities and become efficient in logging on the learning materials at time that is proper for the student.

Moreover, one should provide better response times for transferring and exchanges files because time is very important with learning through video and downloaded files among the learners and the students who are always using the Web to conduct research. Thus, the focus should be on issues that are concerned with internet browsers and the failure to log on the downloaded video and audio files. Some computers are working slowly in overcrowding hours which affect negatively the student's learning. As such, certain attempts are made to find solutions for this problem through institutions.

d) MOOCs Multimedia Tools

Several studies show that the multimedia models in the online learning setting meaningfully increase the learners' engagement in the learning process and in their perception of the learning items and the needed skills such as (Paolis, et al., 2013; Yamada et al. 2004; Pawlowski, et al. 2014). Thus, it improves the learning setting to become much more involved and entertaining with the distance learning. This can be fulfilled via using various multimedia tools and edutainment in the MOOC such as video, presentation, audio interactive, virtual reality, animation and flash as stated in Figure 2.2. All these types help the learners to better understand the course materials.

They also refer to the forms of entertainment to create an environment between the students and lecturers (Philip, 2014).

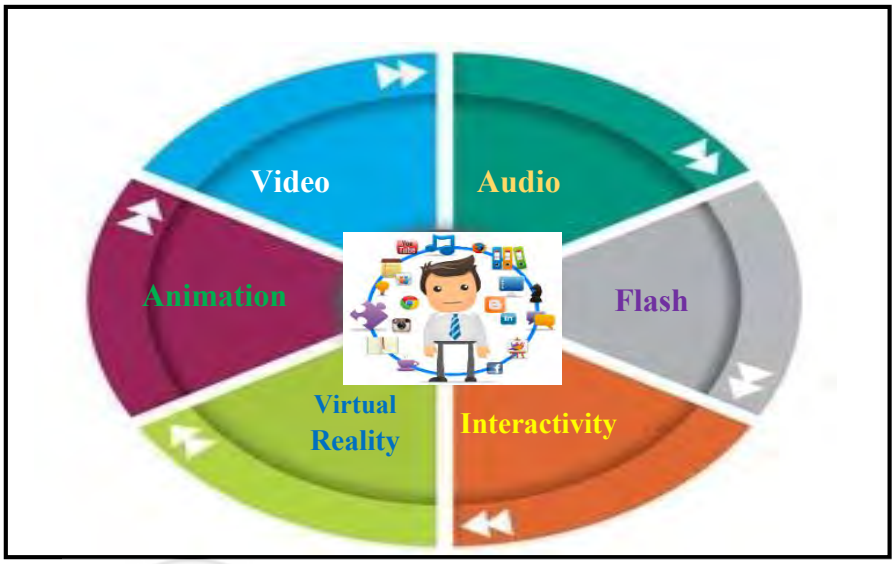


Figure 2.2. Multimedia Tools

In light of Mayer (2009), it is better to view the educational subjects for the students by multimedia in accordance with their way of thinking in such a way that allows them to review specific aspects according to their needs in the educational aspect. This way is motivating as it permits the students to be responsible for their learning individually. Besides, multimedia provide feedback for students. Hence, it adjust their difficulty level and evaluate their skills correctly by interface, video, discussion, text, graphics, animation, audio, flash, virtual reality, planning design, and discussion forums. These improve the results of university students and innovation in teaching and learning through conducting research on the MOOC (teaching and learning) (Rennie and Morrison 2012; Peachey 2011; Traxler 2010; Conole and Alevizou 2010).

2.4.5 Implications of MOOC Definition and Fundamentals to the Study

This section deeply discusses the MOOC definitions which consist of methods, development approaches, learning methods, culture, and others. These definitions consider certain points such as concept, design, learning, features, students, lecturers and others which are parts of MOOC components and crucial for the development of a bMOOC model.

2.5 Structure of Established Institutions for the MOOC

According to Wright (2013), it is clear that the reason behind the emergence of online education is the high costs of learning in higher education along with the improved models that are appeared for the interfaces of platforms. However, there are many universities support the MOOC such as Harvard and MIT (Massachusetts Institute of Technology). In addition, the lecturers are also available for the students in MOOC's. Harvard University and the MIT cooperated with each other and devoted 60$ million dollars to make EDX which comprises now data from other universities. The former Stanford professor Sebastian Thrun originated Udacity in cooperation with Stanford University academics and other staff.

Moreover, providers of MOOC are related to the largest group of scientists (Professors). It is worth stating that Coursera courses are submitted by professors represent more than 30 Universities. They recently offer the biggest number of courses through a great number of MOOC providers. In relation to Wright et al. (3013), the following section provides a more detailed description about the services of main institutions of MOOC, and how these institutions are supported the learning by using platform of MOOC.

2.5.1 EDX Platform

This non-profit company created by Harvard University and the Massachusetts Institute of Technology present nine courses. Actually these courses are similar to the courses provided in the universities. Thus, these nine courses focus on the solid science field of computer program design, artificial intelligence, and quantitative methods. Yet, recent courses would be added to the College such as the social sciences and humanities courses in the upcoming months. These courses offer the basic and advanced lectures for the students with high experienced lecturers who assess the students' assignments by grades to complete the course in a specific time frame. Some professors recommend to give e-books that to the students who enroll in these courses. That is, the students do not need to use the traditional textbooks, besides, they would be finally awarded the certificate of completing the EDX courses (Lewin, 2012a). The data structure in EDX are shown in Figure 2.3.

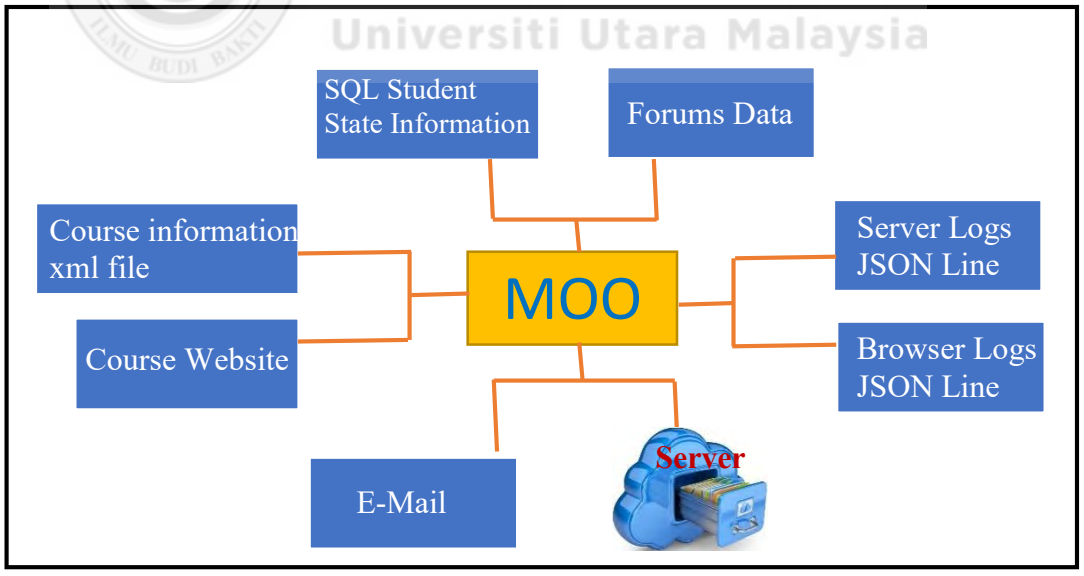


Figure 2.3. Edx Data Structure
Source: Daniel (2012)

2.5.2 Udacity Platform

This institution had been founded by the former Stanford professor Sebastian Thurn. It offered courses about 'Introduction to Artificial Intelligence' and more than 150,000 students were enrolled in these courses in 2011. Since then, it had been developed from four courses to nineteen ones by a team of scientists. The focus was on the computer science, physics, statistics and others. The students were learning by watching video lectures with quizzes and submitting homework's which were necessary to complete the courses.

One of the most unique items to complete the MOOC in the Udacity is that the students can select the curricula that suit their objectives. Udasity shows these curricula based on Silicon Valley companies which are available to many technological companies and thousands of emerging technological companies (Information Technology) in the world. All courses are self-sufficient because they are completely taught from lectures and assignments. These courses have a clear policy which is "not using the traditional books". Once the students complete these courses, they receive certain certificates such as certificate of completing Udacity, certificate of achievement with distinction, and with highest distinction on the basis of the students' performance and participation in the session (Wright 2013).

2.5.3 Coursera Platform

This company recently provides more than 200 courses that cover a great deal of topics in the humanities, medicine, biology, social sciences, mathematics, business, and computer science. The faculty members have originated these courses and these members represent more than 30 university such as Princeton University, Stanford

University, Pennsylvania State University, Duke University, and Virginia University. In general, the learners look over the lectures with quizzes and accomplish their homework within a certain period of time. Other features include cooperation among the students through online forums as well as peer review to assess the assignments. The scientific references for the learners differ greatly from one course to another and several courses are "self-contained" and do not need any extra literature. On the other hand, the students in other courses may require to read a classic literature. Many lecturers (professors) recommend more readings for additional contents in addition to links for free resources. Then, the students would be awarded certificates of completing the online course in the university (Koller, 2012).

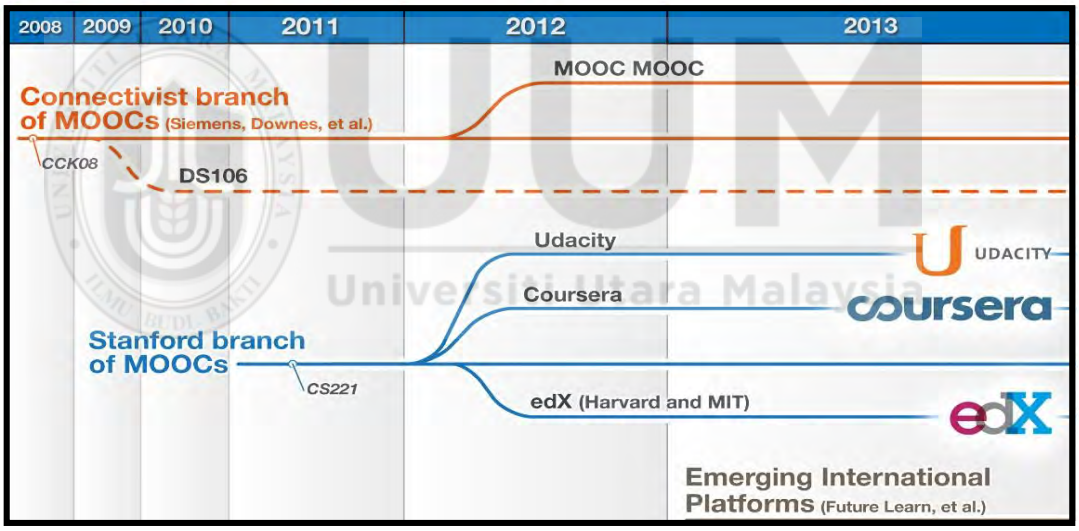


Figure 2.4. History of MOOC
Source: Hill (2012)

After summarizing the aforementioned companies, one can find that Coursera, EDX, and Udacity provide educational offers through platforms of MOOC via internet as indicated in Figure 2.4. It is noticed that the education is widely expanded through these institutions because they include content of the finest quality, and they are able to make significant modifications in the higher education. It seems that the early

success of higher education for years belongs to that companies (Coursera, EDX, and Udacity) which offer courses in various fields of science (e.g. humanities, medicine, and biology, social sciences, mathematics, business, and computer science).

2.5.4 Developing OER & OCW Approach to MOOC in Asia & Europe

A large number of models appeared as education required to expand their services to anyone, regardless of their locations, via different models of open education via internet. One of these models is the Open Educational Resources (OER) which aims to allow the students to learn the materials and knowledge contents freely in the Internet. The goal of open educational resources is to provide a more equal access to knowledge and educational opportunities (Lim, 2011).

Consequently, the content providers of OER for the educational materials do not only present the deployment of knowledge, but they also offer free online courses to the general public. These free courses can be used by academics and students as well. Another model is an extended and a developed one for OER which is called the open courseware (OCW). It can be defined as the educational materials that are organized for full courses including assessment processes. Based on Caswell (2009), OCW has many benefits such as obtaining institutional quality in the educational institution, connecting the students before, during and after the course, and encouraging researchers and lecturers of intellectual faculties to learn via internet.

In this regard, Juhary (2014) stated that the usefulness and approval on OER and OCW led to the emergence of a wider concept model in the field of higher education which is called the MOOC. MOOC emerged from the open educational resources movement which was coined by Dave Cornier and Brian Alexander. Since its beginning in 2008,

MOOC had quickly become an alternative platform for online learning. This could be noticed in many cases where higher education providers began to launch initiatives in MOOC (Kim, 2015). Recently, many universities in Malaysia encourage using Platform of MOOC. For instance, University Putra Malaysia launched an initiative called PutraMOOC in April 2014 in addition to University Kebangsaan Malaysia (UKM), University Teknologi Malaysia (UTM), University Malaya (UM) and other universities in Malaysia as clarified in Figure 2.5.

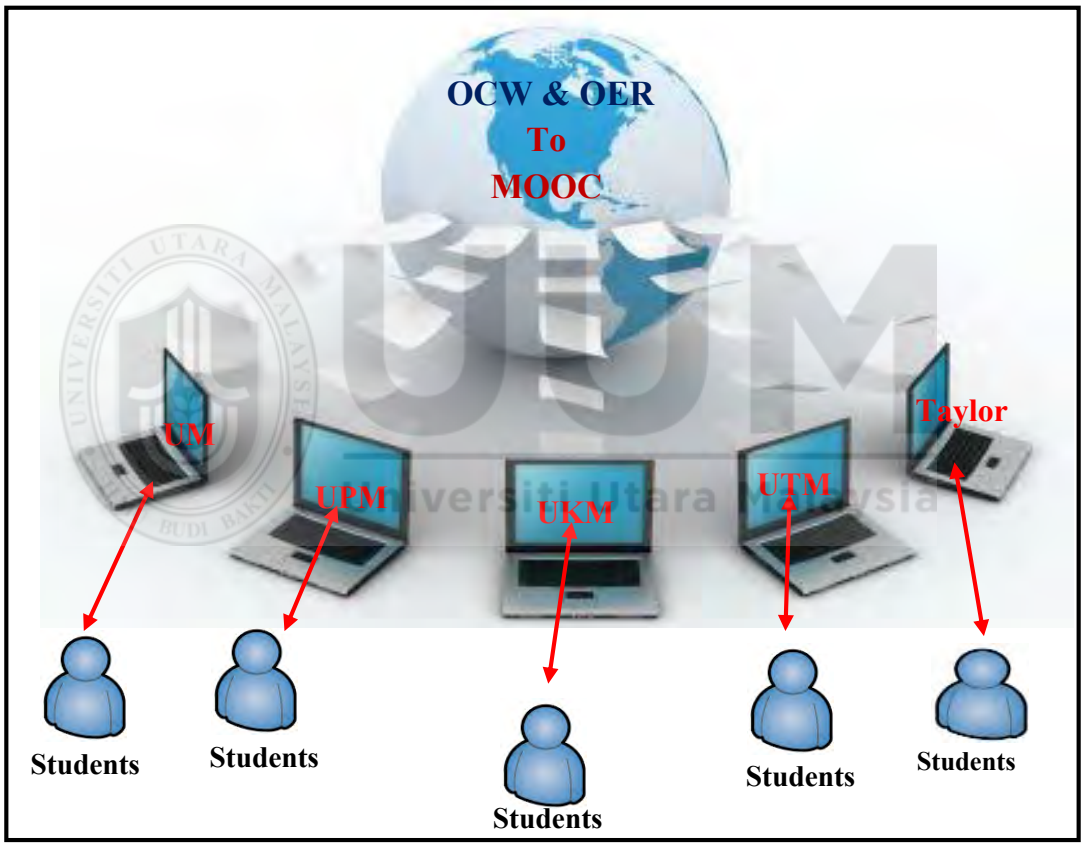


Figure 2.5. Malaysia MOOC
Source: Kim (2015)

Pawlowski, et al. (2014) discussed that all of the aforementioned universities offer the MOOC for undergraduates' and postgraduates' programs in different fields via free online courses. These courses include a series of lectures that can be used any time and

place with feedback and exercises for students through audio, video, and text as shown in the Table (2.1).

Table 2.1

MOOC Courses Program

Course	Description
Type of Course	Open Learning
Student registration	All the students who are following the MOOC course have to register to the MOOC platform
Features	Demo Platform
Course Structure	Provided Courses
How to create content	Exercises are given
Course Information	All lecturers of the pilot course should prepare course synopsis, objectives, learning outcomes, and learning time
Quiz	The types of quizzes that are proposed to have feedback (audio, video, text)

Gradually, in 2013, Taylor University in Malaysia began to offer courses through the MOOC Taylor University where 12,000 full-time students were enrolled in. It provides undergraduates' and postgraduates' programs in different fields such as medicine, pharmacy, biological sciences, engineering, architecture and design, computing, hospitality, business, law, education, and communication. Furthermore, it encompasses a range of lectures and projects groups by which the students do their tasks on developing their ideas by organizing their acquired skills alongside feedback, course lessons, and guidance on the progress of their projects.

Accordingly, Stump et al. (2012) mentioned that there are many universities support MOOC and offer learning materials by connecting with the main institutions of MOOC such as Edx, Coursera and Udacity. These are freely available for everyone at any time

and place (Kolukuluri, 2013). Therefore, the students study the materials via short video and assessments are classified either by learning systems (LS) or peer evaluation. MOOCs support a large capacity of the learners in the classes depending on technology of providers (MOOCs) such as EDX, Coursera, Udacity, Khan Academy and Udemy. The following Table 2.2 shows that MOOCs courses are offered and provided by the various countries (Usa, Japan, Korea, Singapore and China) that represent areas of higher education (universities). They encourage the students to use MOOC because it represents a new form of education that can be taught online to a great deal of students from diverse countries of the world. For instance, University of Texas is a member at Union EDX, and offers eight courses of MOOCs in diverse subjects such as mathematics, music, medicine, and globalization along with University of Texas and school of nursing which offer Edx.

Table 2.2

MOOC Institutions around world

Country	**Participating Institutions**	**MOOCs Platform**
USA	University of Texas System.	Edx
Japan	Kyoto University.	Edx
	The University of Tokyo.	Coursera
Korea	Seoul University.	Edx
	Korea Advanced Institute of Science and Technology.	Coursera
Singapore	Nanyang Technological University.	Coursera
	National University of Singapore.	Coursera
China	South China University of Technology (SCUT).	Open2study
	The Chinese University of Hong Kong.	Coursera
	Shanghai Jiao Tong University.	Coursera
	Fudan University.	Coursera
	Peking University.	Coursera
	The Hong Kong University of Science and Technology.	Coursera
	Tsinghua University Beijing.	EDX

The concept of online education means openness and flexibility to provide education anytime and anyplace which shows the open learning communities. In twentieth century, it had become imperative that there would be a new and open education system to accelerate the shift from a traditional learning to the online educational system. The strategy for continuing education is started with OER and then developed to OCW which in sequence has been developed to be MOOC. Accordingly, the advanced countries in the world have already recognized MOOC to be a powerful alternative to the future of the community in an attempt to switch from the traditional education to the open educational community. Therefore, the universities strongly desire to adopt the MOOC in the field of education but they are not able to configure MOOC. They only connect with the institutions of MOOC such as Edx, Coursera and Udacity to offer the educational materials. This shows the urgent need for a new framework that includes all methods of modern technology such as Multimedia and other technology tools that embrace e-learning. That serves learners via providing digital resources and open educational resources in their studies.

2.5.5 MOOCs Challenges

2.5.5.1 MOOCs Dropout Issue

The MOOCs attract the attention of students but one may ask what does the completion rate for the students who enroll in the MOOC mean? Some of the students register in the course just for the purpose of curiosity or to enjoy themselves out of the main goal of education. Therefore, they refuse to participate in the course in the first or second week (Perna et al., 2013). Grainger (2013) and Perna et al. (2013) stated that these reasons are playing an important role for engaging the students in the course.

Moreover, Belanger and Thornton (2013) discussed that the when lecturer becomes patient, flexible and adaptable, the student would success and not drop out of MOOCs. Furthermore, Belanger and Thornton (2013) confirmed that the time limitation and lack of background are the core of the most common reasons that push the students to decide to quit the track. Levy (2007) noted that the student's satisfaction with the e-learning course is the chief factor that decides to either continue the course study or dropt it out by the student.

According to Adamopoulos (2013), there are five reasons that lead to drop out the course of MOOC:

- The student course evaluation (e.g. the lecturer's evaluation on his/her student),
- The course characteristics (e.g. difficulty, academic discipline),
- The university characteristics (e.g. university rank),
- The program characteristics (e.g. program usability),
- The student's characteristics (e.g. gender).

On the one hand, Adamopoulos (2013) confirmed that MOOC academics have the most positive influence in expecting the possibility of completing the successful course by the students. On the other hand, Kim et al. (2014) examined the video dropouts to conclude that the longer video tapes have the major drop-out rate. Besides, Kim et al. (2014) also demonstrated that the participation of students can be declined with longer video tapes. Also, the students might require to re-watch a particular data in re-watching sessions. . Thus, the dropout rate is higher than that one which is watched by them in the first time (Kim et al. 2014).

Asiri (2014) conducted a research on the Coursera platform to investigate the reasons of students' failure in the MOOCs. He found that there was no sufficient time to meet the requirements in MOOC. In addition, some students enrolled in some of the MOOCs just because they were curious of it. Then, they did not continue because the content of course did not correspond with their anticipations or they were not acquainted with the language of the course. Asiri (2014) also pointed out that there was some curriculum in the MOOCs that has a title or an interesting topic. When he looked at the syllabus, he soon found that he was unable to understand the content and thus he cancelled the registration in the MOOC. Other issues like length, difficulty, and the workload of MOOCs also caused dropping out by the students. The students encountered these matters when they enrolled in the MOOC. Due to the mentioned reasons, the students either dropped out or enrolled in the course without participating and using their account later. According to Mahraj (2012), replicated lectures, lack of effective instructional design, and loss an interaction (face to face) cause problems in MOOCs. These factors are necessary for the classes to be successful in learning.

On one hand, the challenge for the lecturers is to engage the students (Interaction with Materials), maintain their interest in the course, and adapt the learning environment that suits their needs. All these factors help students to continue with the course without dropping out. Thus, this attracts a large number of students with diverse learning modes from all over the world. On the other hand, long video that is shown to the students' causes problems, thus, it is necessary to focus on the video that includes a new and useful information without duplication. This issue is confirmed by some researchers such as Kim et al. (2014) who stated that all the lectures depended on video to focus on its content. In this way, the trainer can formulate the learning environment

to suit each student's learning style and needs and to reduce dropping-out of the MOOC courses.

2.5.5.2 User Interaction (UI) and User Experience UX Issue

In the online learning process especially with MOOC courses, the aim of user interaction (UI) is to make the interaction as strong and efficient as possible between user and system, in terms of achieving user goals (user-centered design). Thus, user interaction requires to understand the user experience (UX) (such as motivation, wants, experiences, needs, and goals) (Shneiderman, 2010). Therefore, the user interaction can be achieved after the designer analyzes the potential users. Viswanath (2009) confirmed that if the designer does not know who will use the system, then the designer does not know what type of interaction we should make (Viswanath, 2009) . Furthermore, the designer should always consider the users' needs and fulfill their demands, to configure a user interaction with the system (i.e. attention to the user experience design will lead to better user interaction with the system) (Lowgren, 2008). Besides, there must be a balance between learning elements and technical functionality, to create an educated system that is not only interactive but also usable and adaptable to change the users' needs to get the satisfaction of learners.

However, scholars have very little knowledge about the learners' needs and when they study via MOOC as well as how successful is the MOOC to meet their cultural requirements. By comparison with the long-learn concept of a virtual learning environment (VLE), the MOOCs is considered a comparatively new phenomenon. It differs from the learning environments in several ways such as the level and scope of learners, control and reflexibility, the lecturer's and the learner's roles, and the

learners' motivation and results. Despite the point that an investigation has been conducted to understand the user experiences (UX) for these environments (Schaik, 2011; Müller, 2010; Martin, 2008), there are differences in UX cases in these environments. Thus, professors required a research to examine the user experiences in the MOOCs setting (Milligan, 2013 & Haywood, 2012). Milligan (2013) discussed that understanding the nature of the participants helps provide effective courses in the MOOC (Milligan, 2013).

Moreover, there are a lot of high dropout rates in the MOOC (Adamopoulos 2013, Clow 2013, and Lewin 2013). Therefore, it is hard to completely determine the user experiences associated with the retention course difficulties. Besides, many important ideas have been neglected particularly those ideas associated with the expertise of the user (Satchell, 2009). A few years ago many studies have been using the method of data to investigate the registration and retention within large data groups (Huang, 2014; Kizilcec, 2013; Mak, 2010). However, an attention should be given to the learners' motives, the perceptions and experiences of learning in MOOCs, and understanding how to act with learning components that could lead to lower high dropout rates. Therefore, MOOCs aim to provide the course content to a great deal of individuals as much as possible. The learners' number in MOOCs usually extends from tens of thousands to hundreds of thousands from different cultures. Hence, MOOCs must be designed diversely to adjust a great deal of learners based on UX (Zheng, 2015).

The MOOCs essential task is to make the subjects available for free and accessible to the overall public, while the HEIs adopt the VLEs based on the course time-table of

the traditional university, form, and registrations process (Zheng, 2015). Therefore, most of learners cannot choose the course that suits their needs and they only obtain a certificate of completing the MOOCs. In this vein, the participants in these environments are captive audience and the learners cannot choose the favorite course based on the traditional classroom, but they must use the learning content and online tools to learn only.

2.5.5.3 Culture and Language Iessue

Learners of MOOCs have different cultures and this reflects the cultural differences of learners across the Internet. Moreover, certain issues are also shown such as the use of language and communication tool, time zone differences, and multicultural content with respect to learning offers (Xu & Jaggars, 2013; Liu et al., 2010). According to Chew (2014) and Wang (2007), the Chinese students involved in online learning in the American universities and faced social and cultural elements such as educational pattern, the rules of school, language, and cultural values.

In addition, there is study conducted by Kim (2009) to examine the different cultures in learning in England and Thailand approaches. The sample consisted of 122 Thai learners in Thailand, 26 Thai learners and 16 European learners in England. The results uncovered that the learning behavior of learners from diverse cultures is influenced by the culture. The learning tools methods are utilized to improve the comprehension of the differences and learning model, yet, their borders must be recognized well. Hence, it is proposed that the cultural backgrounds affect the learning environments of students. Some researchers like Abraham (2009) stressed on the significance of cultural differences and preferences. He clarified that the online learning should

consider the learners' favourite learning styles. Another study like Triantafillou et al. (2006) emphasized the importance of language and culture in the design of interfaces learning to help learn the students. Michailidou and Economides (2007) mentioned that it is important to take into account the different cultural background of the students when designing and making online courses as they can affect the students' learning. In addition, Economides (2008) stated that it is significant to take into account the social and cultural values in designing the interaction and cooperation tools to simplify the learning process for the learners.

The issue of language is very important where the current MOOC does not consider the different languages of the learners as not all the learners are native English speakers. Therefore, using one language for the course such as English is one of the influential factors for the learners to learn the curriculum in the learning process (Nkuyubwatsi, 2013). Besides, some of the courses (MOOCs) have considered one language for the interfaces (i.e. language of the course in home country). Therefore, there must be a diversity of languages in the MOOC. That is, the interface must include multiple languages to help the students select their own language.

According to Asiri (2014), the students may have problems with the language that makes MOOCs less worthless, or they may greatly focus on not fulfilling the objectives of the session. The international postgraduate learners may differ from other postgraduate learners when using the MOOCs. For instance, through the forums discussion, the comments are difficult to illustrate and understand, especially when they are written by a learner who is incompetent in English.

After reviewing the historical background of this study, it is important to focus on the factor of students' cultural difference in the online learning setting. This is because it discloses significant gaps and contradictions in the knowledge. Bliuc et al. (2007) pointed out that few studies examined the results caused by the differences in language and cultures when integrating the technology in the process of learning.. Hence, these limitations can be addressed in the research literature by paying an attention to the impact of the cultural differences on the students who have experiences in online learning. Besides, it can contribute significantly to the progress of knowledge to show the cultural change in the design of online learning. In conclusion, understanding the social dynamics and knowledge environments are necessary to help and improve the students' learning. It also helps to get rid of the contradictions in the knowledge and its relation with different cultures especially when it comes to distance learning where the cultural backgrounds have a strong impact on the learning environments of the students from different states.

The factor of culture is very important by which the learners' learning might be influenced by their cultural backgrounds. Thus, the lecturers have to recognize this issue, particularly in the classroom that includes students have different cultural backgrounds via internet. However, the lecturers must be clear in anticipating the way and the quantity and quality of task. This is due to the point that the students recognize common cultural experiences; e.g., the historical sources, the opinions, and the events along with the effect of the languages and cultures on learners in the MOOC. A significant cultural factor is the language proficiency particularly for learners and it can be reduced by merging the language with asynchronous online learning. English is the universal language which is commonly used by a great deal of individuals

everywhere but not by all non-native speakers. Thus, it is difficult for nonnative speakers of English to use that language and perhaps this is the major concern of the MOOCs providers.

2.5.5.4 Students' Perceptions issue

Chew (2011) conducted a study on Malaysian and Australian learners in an Australian university to display how the Malaysian learners understand the online learning contexts. The case study used three phases as in the following:

Phase 1: The participants were administered in an adapted version of the instrument OLES. This instrument involved twelve Likert scale items in addition to open-ended questions applied in the last part of every item. Thus, the researcher collected and analysed quantitative and qualitative data. In phase 1, 1 global topic was shown while 5 categories that are non-global topics were integrated.

Phase 2: The participants were 9 distributed in three cohorts. Each focus group interview encompassed two or three learners. . Throughout this stage, a lot of the findings of phase one were either emphasized or elaborated. Also, new topics could be emerged.

Phase 3: The researcher combined the results of the first two phases to the six categories of topics, which were confirmed and elaborated, alongside with one new category of topics.

The results uncovered some diversity in that the international Asian learners differed from the Malaysia and the Australian learners when perceiving the online learning. One of the results was very convincing as it showed that the most dynamic way in the blended learning context was the online learning. Also, it is necessary to illustrate that the appropriate features were blended in a special design to be proper with the special

requirements of the international learners. The results also unveiled that the university can develop the quality of blended online learning context by: a. creating a sense of learning community, b. Stimulating self-motivated learners, and c. encouraging the professional improvement in the instructors' and coordinators' components and in the learning personnel. With regard to perception, there were few diversities between the Malaysian and Australian learners. These differences were uncovered via careful analysis of the open-ended questions data and collective interviews. However, such results were attributed to the cultural factors and educational backgrounds.

Moreover, Asiri (2014) compared the attitudes between the international graduate students and the United States graduate student by using MOOCs in USA. The study focused on showing the resemblance and diversity between these two groups. It used a mixed method research design for the data collection method. The quantitative data was collected via an online survey and 79 responses were collected while the qualitative data was gathered via semi-structured interviews and 10 items were collected. Each of the both groups had similar causes that made them join the MOOCs. At the same time, their reasons were alike for quitting the MOOCs. Yet, these studies uncovered that the international learners had distinctive causes to join the MOOCs. The first reason was to support their English language proficiency and the second one was to make themselves ready for studying in the United States. Also, they preferred to obtain high-levels MOOCs as they were eminent in the universities of USA.

The results of these studies indicated that the postgraduate learners in both cohorts engaged in MOOCs as a complementary device in order to have more knowledge and to support their production in the classes. In addition, one of the main findings in these

studies was that the postgraduate learners in both cohorts knew their aims in the MOOCs. This issue was related to the fact that MOOC was not only used to satisfy the students' curiosity, rather it was mostly preferred by graduate students to keep their accounts in the MOOCs for subsequent visits.

The aforementioned studies used a mixed method research design in which the data were analyzed quantitatively and qualitatively. It was unlike other types of studies in that it showed the similarities and differences between the international and USA students when enrolling in online courses. The results were positive in reaching recommendations which either helped the students to have more self-confidence in acquiring new items or tested their awareness via internet. It was clear that there was a noteworthy diversity, in the online learning, among the international Asian and Malaysian learners on the basis of the cultural background factors. The second study found out that there was a diversity in perception between the international postgraduates and the United States postgraduates. In addition, the study indicated that the theoretical framework for any institution could develop the quality of blended online learning environment by using more than one factor. Therefore, the approach of these studies was effective to achieve better understanding of the learning methods. It also determined the learning resources via internet along with satisfying the students in the design process or the theoretical framework with regard to their communities.

2.5.6 Implications of Current MOOC to the Study

This section has thoroughly discussed the use of MOOC by the first institutions in the education. It shows the challenges in MOOCs and the analyzed methods of these institutions. On the whole, there seems to be a tendency among researchers to explore and identify the obstacles and challenges that face MOOC courses in the learning

process such as dropping out the course, cultures and language, and the students' perceptions of online learning. Hence, it is essential to focus on these findings to know where, how and why there is a lack of interaction in these courses. Therefore, the next sections expands the discussion on the Higher Educational in Iraqi and current educational models.

2.6 Higher Education in Iraq

The most important public universities in Iraqi are the following: Baghdad, Al-Mustansiriyah, Technology, Duhok, Babylon, Mosul, Deqar, Arbil, Al Nahrain, Diyala, Kufa, Al-Qadisiya, Salahaddin, Tikrit, Basrah, Misan, Kufa, Kirkuk, Al-Muthanna, Koya, Al-Anbar, Technology, Sulaimaniah, Wasit, Kerbala, Islamic. These universities are reported in Figure 2.6 and Table 2.3. There are also seven private universities in Baghdad and another two in Kurdistan (Zwain, 2012; Issa & Jamil, 2010; Harb, 2008).

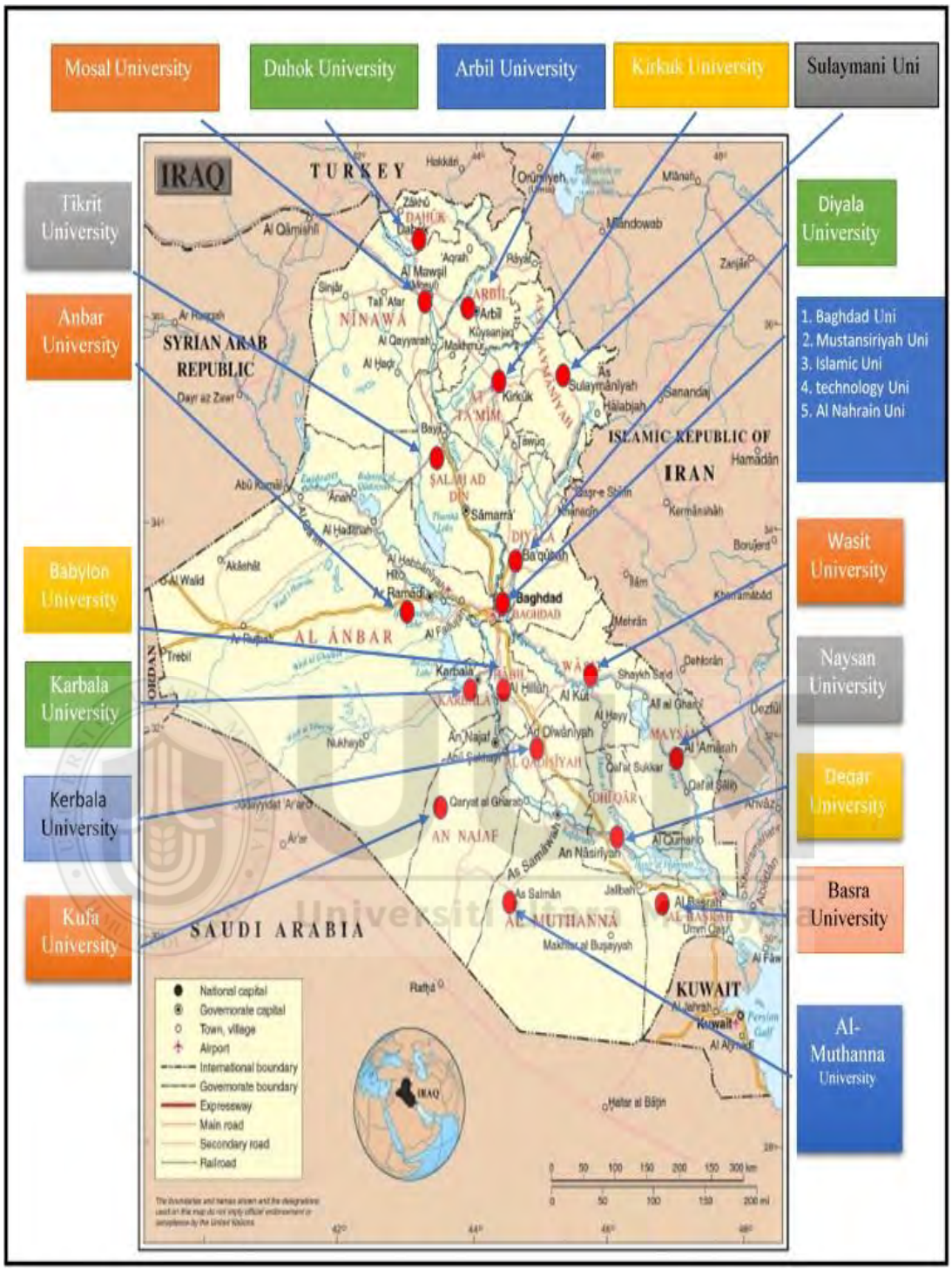


Figure 2.6. Iraqi Universities Map
Source: Zwain (2012)

Table 2.3

No of colleges in Iraqi Universities (Zwain, 2012).

No.	Iraqi Public Universities	No. of Colleges
1	Baghdad University	24
2	Al-Mustansiriyah University	14
3	Technology University	14
4	Duhok University	18
5	Babylon University	21
6	Mousl University	23
7	Deqar University	11
8	Arbil Medical University	5
9	Al Nahrain University	8
10	Diyala University	12
11	Kufa University	17
12	Al-Qadisiya University	12
13	Salahaddin University	14
14	Tikrit University	16
15	Basrah University	16
16	Misan University	9
17	Kirkuk University	10
18	Al-Muthanna University	9
19	Koyfa University	7
20	Al-Anbar University	18
21	University of Technology	14
22	Sulaimaniah University	16
23	Wasit University	9
24	Kerbala University	11
25	Islamic University-Baghdad	9
Total		**337**

All universities and organizations nowadays face a common challenge all over the world arising from the rapid changes in the technology environment. Thus, organizations need to improve their performance to obtain possible competitive advantages in order to survive in today's competitive environment. This motivation is

useful for a number of strategic and innovative changes in many universities and organizations.

Iraq has a largest number of universities that including academic public universities, application colleges, and institutes, in addition to the private universities. The total number of universities approved by Ministry of Education (HEI) in Iraq is more than 25 with 237 college in various specialties, distributed all over the Iraq ((Zwain, 2012). The traditional learning approach in Iraqi universities face many challenges in the learning management efforts such as activities, in addition to the lecturers and students also face many challenges such as information retrieval learning in real-time, although IT facilities available in each college such as computer, Internet laboratories, learning facilities, multimedia tools, therefor the universities need to develop and manage aspects of effective learning environment to minimize the costs resources of learning and maximize the level of the learning environment (Anter, 2014; Al-alak 2011).

Therefore, the students at HEIs in Iraq are looking toward using a new learning methods in the MOOC to help reintegrate the civilian life and to continue their education depending on their needs (Bonk, 2013). It is important to mention that the HEIs in Iraq have undergone a series of reforms to improve the Iraqi educational environments through meeting the challenges that hinder the improvement in the educational level (Ammar, 2012). Thus, the higher education institutions are looking forward to renewing plans and policies for Iraqi universities such as MOOC, bMOOC, and distance learning (Imran et al., 2017; Ameen 2017). Therefore, a new strategy must be defined by Blended MOOC to improve the performance of the Iraqi educational institutions and to keep up with technology in the world. In addition, it

helps students to decrease the use of the main sources of the traditional learning environment. This is considered an important advantage to decrease the tuition fees in the traditional learning environment, besides, it promotes the students to study inside their countries.

2.7 Educational Models of MOOCs

2.7.1 Content Analysis xMOOC and cMOOC Models

There are two models from the generation of MOOCs as stated in Figure 2.7 which is ideologically different from the compared previous one.

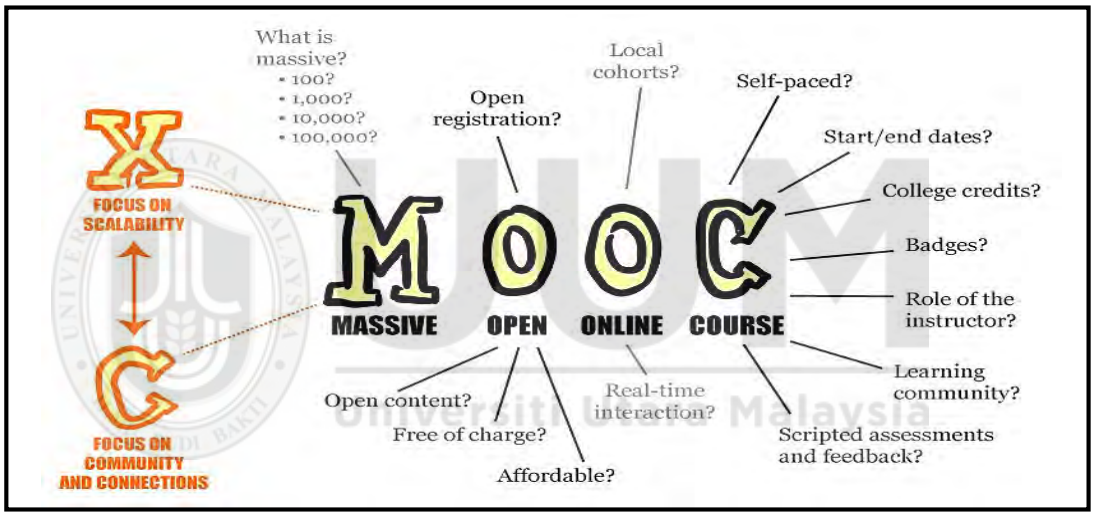


Figure 2.7. xMOOC and cMOOC Models
Source: Siemens (2012)

Furthermore, Siemens (2012) identifies the following two models of MOOCs as indicated in Table 2.4:

i. <u>Connectivist MOOCs (cMOOCs):</u> In 2008 the first generation began with a focus on knowledge creation and generation, and Connectivism and Connective Knowledge (CCK). The learners are encouraged to use creativity, independence, and networking. Also, the content of course was enriched by the learners.. (e.g. Udacity).

ii. <u>Extended MOOCs (xMOOCs):</u> The second group began in 2012 in terms of more traditional form, fixed organized material, central discussion forum support, and automated/ peer-graded evaluation (e.g., Coursera and EDX). The students should control their learning.

Table 2.4

xMOOC and cMOOC Approach

xMOOCs	cMOOCs
Pre-determined, instructor-led, structured and sequenced weekly activities.	The social and technical system of learning are focused on by which the teacher's voice is not an essential hub but a node in an overall network (Siemens).
Short, content-based videos, readings, problem sets	Creation/exploration of topic in "atelier" environment.
Quizzes (auto-graded), peer-graded assessments	Unique products created by students (blog posts, images, diagrams, videos).
Discussion forum participation is optional	Discussion forums, groups, Twitter and other social networking are key elements
Delivered via third party platform provider (e.g., Coursera, edX)	Facilitator aggregates, reviews, summarizes and reflects an activity in daily/weekly newsletter. Boot-strapped" platform and collaboration tools.

These models of learning (e.g. xMOOC and cMOOC for Udacity, Coursera, and EdX) have been criticized on certain issues. For instance, the students should have high skills in using the internet to be able to take these models, besides, such students cannot learn the courses gradually (from simple to difficult). As a result, the students drop out from MOOCs because they start learning with high levels. In addition, most of these models are profitable and not available for all the learners because they are expensive and do

not deal with different levels of students as well as they are complex in education. This fact is confirmed by a number of scholars such as Milligan, et al. (2014), Saadatmand and Kumpulainen (2014), Waard (2011), Kim and Frick (2011), Hartnett et al. (2011), Bekele (2010), and Elameer (2010). This indicates that the current models lack an effective educational design along with limited interaction in their colleges in the traditional learning (i.e. Classroom) (Creed, 2013; Conole, 2013).

2.7.1.1 Learning Theories (cMOOCs & xMOOCs)

With regard to Smith and Eng (2013), the current MOOC model classified the MOOCs into two basic types based on learning theories: cMOOCs and xMOOCs. Furthermore, new formats have been highlighted by xMOOCs. Figure 2.8 shows these models that include Social Massive Open Online Course (sMOOCs) and bMOOCs, with different kinds of MOOCs in addition to their underlying learning theories (Yousef et al., 2014b; Smith & Eng, 2013).

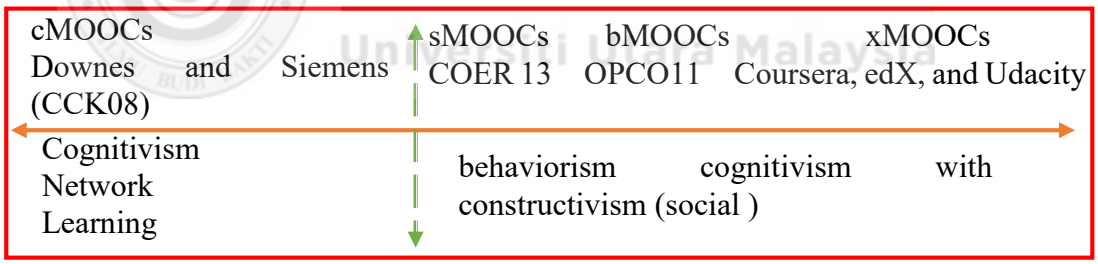


Figure 2.8. Learning theories (cMOOCs & xMOOCs)

cMOOCs focuses on the connectivism theory which promote the learning of self-organized by which the learners characterize and describe their own goals and show their own opinions to share knowledge. Models of cMOOCs make the learners able to also organize their nets such as wikis, blogs, Twitter, Facebook, Google groups and other social networking tools apart from the learning program and without any effect caused by the instructor (Kruiderink, 2013).

Peer-assessment and self-assessment are used to grade the learners' assignments and tests. These can be conducted via predefined documents to develop the learners' understanding of the course material and to put them in the focus of the learning process. Figure 2.9 illustrates the cMOOCs key concepts.

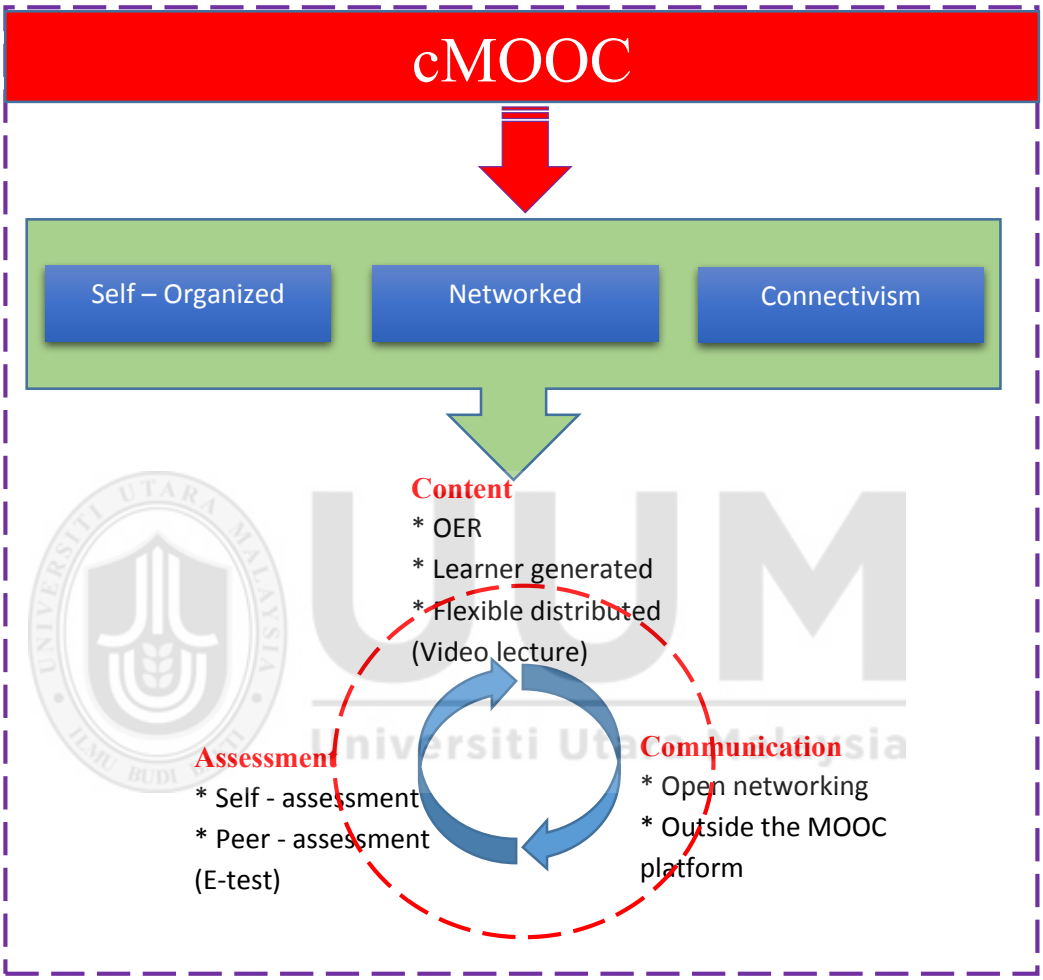


Figure 2.9. The key concepts of cMOOC

On the other hand, xMOOCs are the extension of MOOCs and a number of models (e.g. Coursera, edX, and Udacity). The learning objectives in the xMOOCs models are predefined through an instructor who conveys the knowledge s/he has based on video lectures. Simple e-assessment tasks (such as short quizzes and e-test) frequently follow these lectures (Kruiderink, 2013; Stewart, 2013; Daniel, 2012).

Only limited number of xMOOCs models use peer-assessment. In addition, a limited interaction space is provided by xMOOCs among the course learners (Gaebel, 2013). This means that cMOOCs is dissimilar to xMOOC, where the communication in the former occurs inside the platform itself. Figure 2.10 demonstrates the key concepts of xMOOCs.

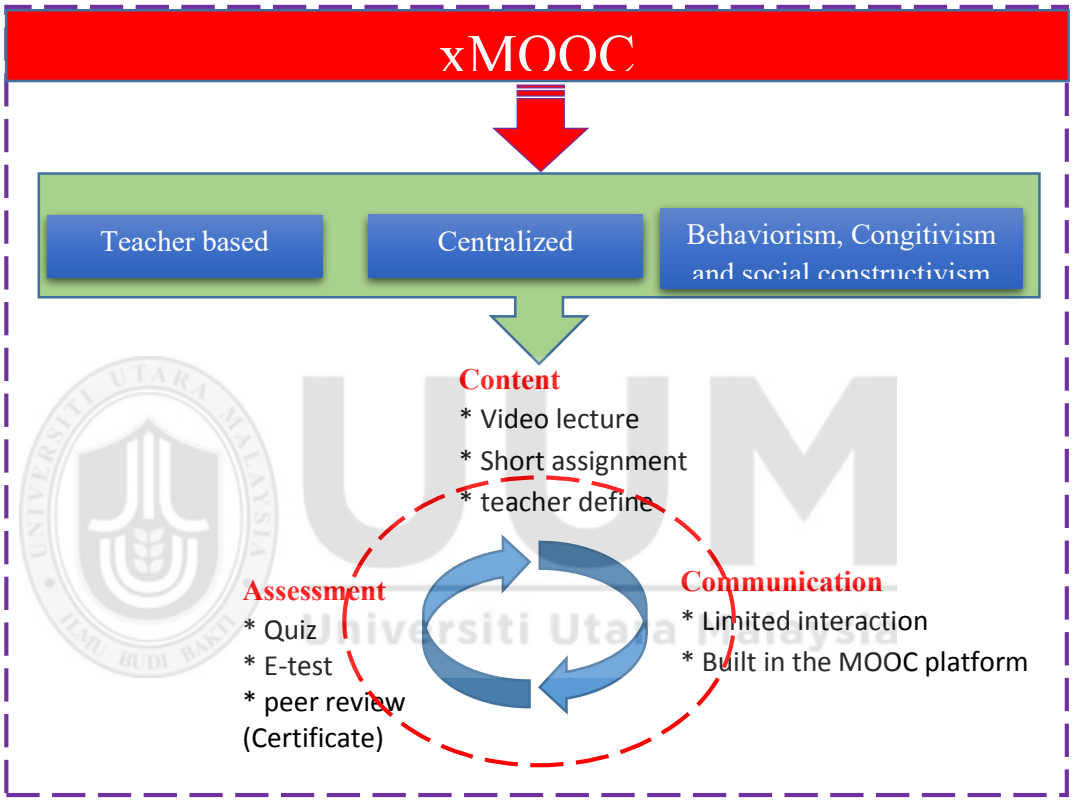


Figure 2.10. The key concepts of xMOOC

MOOC new models of MOOCs have emerged recently such as small open online courses (smOOCs) and blended MOOC model (bMOOCs). The former includes a small number of participants whereas the latter is a hybrid MOOC (i.e. mixed from classroom and online learning). These models provide the courses to the audience in a seminar form and allow the participants to discuss and explore the information about the chosen topic (Coates, 2013; Gaebel, 2013; Daniel, 2012).

2.7.1.2 Analysis of Dimensions of cMOOC and xMOOC

MOOCs still have various limitations because they apply: a. instructor-centralized learning (i.e. the same lecturer in the faculty), b. lack of effective feedback and assessment, c. centralized learning model, d. lack of interactivity among the videos of the learners and lectures, e. diversity among the MOOC respondents, and f. the lack of face-to-face communication (Yousef, 2015). Therefore, this study attempts to analyze and collect the design dimensions and criteria of current MOOCs models (cMOOC & x MOOC) to address the several limitations in the current models of MOOC. This helps provide a meaningful image of the MOOC community (Yousef, Chatti, Wosnitza, Schroeder, 2015).

Two main classes (cMOOCs and xMOOCs) run the MOOCs models. The main results of these models can be illustrated in a set of eight criteria in total. MOOC divides each model into four items as clarified in Figure 2.11. While xMOOC includes blended learning, flexibility, quality content, and educational design, cMOOC involves lifelong learning, cooperative learning, openness, and self-learning.

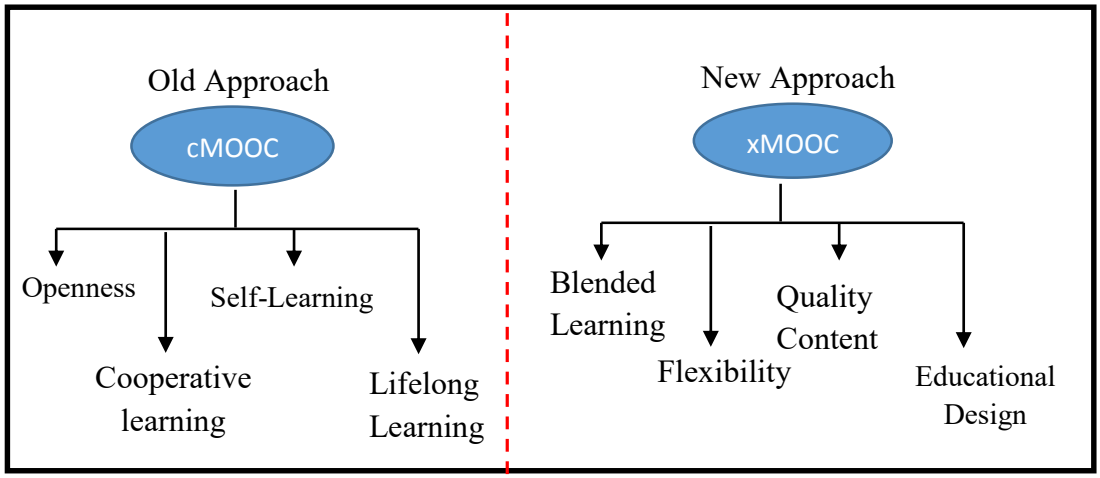


Figure 2.11. cMOOC and xMOOC Dimensions & Criteria

xMOOCs, focuses on the replication of traditional learning practices based on formal learning. In addition, they provide a flexible access to a range of materials but in

general. On the contrary, cMOOC emphasizes on informal learning such as the lifelong learning, cooperative learning, openness, and self-learning. This type is an experimental learning (Fernandez, 2013). The following describe dimension and criteria of cMOOC and xMOOC.

i. Blended Learning

In HEIs the blended MOOC is considered a significant concept by integrating the learning of online and the traditional learning of face-to-face (Yousef et al., 2015a). Thus, the major goal of bMOOC is to improve the learning inside the classroom learning, that is, face-to-face learning. In addition, it also aims to develop the teachers' and peers' interaction when they interact with each other (Griffiths et al., 2014). Furthermore, bMOOC courses are proper setting to take into account the educational needs which may suit efficiently in the higher education setting. The objectives of bMOOC are a) improving the learners' capability, b) obtaining distinctive methods of study, c) utilizing recent technologies for the learning process, d) minimizing the lecturer's effort with his/her learner in the schoolroom, e) providing space of communication, f) integrating the traditional schoolroom with the MOOCs course material, and g) supporting the face-to-face learning by enhancing it by technology.

ii. Flexibility

Flexibility is one of the effective factors in MOOCs courses. The major cause for enrolling in MOOCs courses is when an individual is able to access the data flexibly and efficiently (Mackness et al., 2010).

iii. Quality Content

The content of high-quality is important because it aims to involve the learners in all the countries to take part in MOOC courses. Hence, the major goal of such content is to obtain experience from diverse universities via communication among the universities, the learners, and the lecturers. (Yousef, 2015).

iv. Educational Design

The educational design and the learning modes characteristics can make the courses of MOOC more active and functional via highlighting an education model for private knowledge management by using recent evaluation methods.

v. Lifelong Learning

The MOOCs models make the lifelong learning chances available for their respondents who have no official education or have a break from that education. This shows that these respondents have tendency to learn via MOOCs courses to develop their knowledge. (Kop et al., 2011).

vi. Cooperative Learning

In a networking the learners have permission to contact with each other for the purpose of discussion, sharing opinions, and revealing knowledge. This can be conducted via the cooperation in learning among the learners and the interaction around the courses of MOOC. (Grünewald et al., 2013).

vii. Openness

Openness permits the participants to access the learning materials at any place and time. Hence, it provides chances of learning to a great deal of learners all over the countries irrespective of their age, educational level, and location (Peter & Deimann, 2013).

viii. Self-Learning

Most of MOOCs models concentrate on the student-centered learning (i.e. self-learning). These models promote the learners to be self-educators so as to be active in the MOOC materials and to get knowledge (Chatti, 2010b).

2.7.1.3 Analysis of Components and Features of cMOOC and xMOOC

The MOOCs pedagogy is effective in its categorisation due to the two core types of MOOCs. Each of these types defines a specific pedagogical method. The connectivist MOOC (cMOOC) model is the first type which focuses on the pedagogical norms that consider the self-organized learning. The extension MOOC (xMOOC) model is the second type which concentrates on the pedagogical norms that consider the learning-content-learning (Admiraal et al., 2015; Bulfin Pangrazio & Selwyn, 2014; Hew & Cheung, 2014; Ebben & Murphy, 2014; Bates, 2014; Rodriguez, 2012; Kop, 2011; Bell, 2010). Table 2.5 shows the main diversity among cMOOCs and xMOOCs based on components and features.

Table 2.5

Components & Features of cMOOC, xMOOC, and bMOOC

Components and Features	**xMOOC**	**cMOOC**	**bMOOC**
Learning theories	Cognitive-behaviorist.	Networking-connectivist.	Prescriptive/Emergent Social-constructivist Andragogy.
Teaching approach	Objective-oriented.	Construction-oriented.	Team-Based Learning and flipped classroom
Learning approach	Transfer of information.	Sharing of knowledge between participants.	Blended approach (MOOC + face to face)
Interaction	Limited interaction.	Student-student, student-content, and student-instructor.	Student-student, student-content, and student- instructor
Student role	Receivers, follow the instructions in video-based format, complete the assignments, quizzes and exams.	Creators, contributors through blog posts, tweets, or discussion forms.	Student and teachers study together
Teacher role	The authority who is responsible to create the content, assignments, quizzes and exams deliver the lesson.	Co-learner, create content and shape goals by working collaboratively with other learners.	Explain the important and difficult points by lecturer
Content	Subject-compelled.	Participant-compelled.	Students compelled

Table 2.5 continued

Components and Features	xMOOC	cMOOC	bMOOC
Assessment	Multiple-choice tests, quizzes, computer marked assignments, peer-review with the help of rubrics.	No formal assessment, informal feedback from knowledgeable participants.	Classroom & online presentations (Peer review by lecturer in classroom)
Teaching Materials	Lecture videos, text-based readings, slides, practice exercises, audio files, urls to other resources, and online articles	Social media; wikis, blogs, social networking sites(Facebook, Twitter, Google +),learning management systems (Moodle), Studentcreated videos and exercises	Lecture videos, social media , forum lecture materials, text, readings & practice exercises, Feedback and summary by teacher

The connectivist MOOCs (cMOOCs) model comprises the connectivism norms including nine significant design components of xMOOCs and their features are as follows:

1. The learning theories follow the cognitive-behaviorist perspective.
2. The teaching approach is an objective-oriented one.
3. The learning method is interested on sharing information among learners.
4. The interaction occurs by providing courses only.
5. The learner's role in the learning is conducted by following the courses instructions (such as, watching video, assignments, and quizzes).
6. The teacher's role is to create video content, assignments, and quizzes.
7. The content is a subject-compelled.
8. The assessment is conducted by tests, quizzes, assignments, and peer-review.

9. The lecture materials are videos, text, slides, audio, and online articles.

All these principles are the main components and features of cMOOCs (Bates, 2014; Ebben & Murphy 2014; Kop 2011; Rodriguez 2012).

On the other hand, the cMOOCs models are characterized by simplifying the learning in a step-by-step process, and explaining the material into small stages, yet, there is a little feedback and communication in the courses (Ebben & Murphy 2014).Thus, the xMOOCs models focus on the linear content with regard to the objective-oriented learning paths. The xMOOCs models show the learning courses by nine main components and their features (Ebben & Murphy, 2014; Kop 2011; Rodriguez, 2012), are listed below.

1. The learning theories are following the networking-connectivist.
2. The teaching approach follows a construction-oriented perspective.
3. The learning approach is carried out by sharing knowledge amongst the learners.
4. The interaction occurs between student with another student, student with the content, and student with the lecturer.
5. The learner's role is to participate in discussion forums, blog, and tweets. .
6. The lecturer must be cooperative with other learners in order to formulate the lecture content and the lecture objectives.
7. The content of the lecture is conducted by making the learners participate in the lecture compellingly.
8. The assessment is carried out by multiple-choice questions, assignments and quizzes.
9. The lecture materials are presented via diverse ways such as social media, social sites (Facebook, Twitter), and wikis.

These nine principles are the main components and features of xMOOCs (Ebben & Murphy 2014; Kop, 2011; Rodriguez, 2012).

Previous studies on learners satisfaction related to bMOOC were reviewed. As a result of these studies Blended MOOC increases the active learning during the learning process. According to Wang, (2016), a blended MOOC model includes a positive impact on the students' learning results. More than 80% of learners confirm that they have ve improved their level in the learning process as well as the lecturers have the opportunity to listen to the opinions of their students (Albó et al., 2015). In addition , the MOOC together with the classroom (face-to-face interaction) can make a high improvement in the student's learning as well as it can accommodate a big set of learners with different backgrounds (Chew 2015; Veronica., et al 2013; Bailey., et al 2013) based on the following points.

1. Prescriptive/Emergent Social-constructivist Andragogy.
2. Team-Based Learning and flipped classroom.
3. Blended (MOOC + face to face).
4. Student-student, student-content, and student- instructor.
5. Student and teachers study together.
6. Explain the important and difficult points by lecturer.
7. Students compelled.
8. Classroom & online presentations (Peer review by lecturer in classroom).
9. Lecture videos, social media, forum lecture materials, text, readings & practice exercises, Feedback and summary by teacher.

In summary, most of the current MOOCs models whether cMOOC models or xMOOC models are particularly remarkable as a reference of excellent content involving video lectures, discussion forums, testing, and other areas of learning features. However, these models follow the traditional lecturer-centered method in the learning process, which controls the MOOC activities without drawing attention to the components and features that are related to the learner's experience, needs, cultures, and language. Blended MOOC can achieve significant learning in the learing process by improving the students' learning, experience, and skills. In addition, blended MOOC can help students by covering a big set of flexible curriculum in the classroom. Furthermore, many studies have been revealed that blended MOOC increases the effectiveness of the interaction based on learning together with the classroom as well as improving obtaining knowledge and understanding information (Chew 2015; Veronica., et al 2013; Bailey., et al 2013).

2.7.2 Iraq Massive Open Online Courses

According to Imran, (2017) the MOOC courses in Iraq are designed and implemented for Informatics Institute of Higher Studies in Iraqi (Imran, et al., 2017). The MOOC was open for all students from different majors. The MOOC used the learning approach based on a range of techniques that include feedback, homework assignments, evaluation, testing, and certification (Bates, 2014). In addition, the syllabus also consists of a weekly schedule specifically for the assignment submissions. The instructor delivers the courses materials by video lecture. Students view video lectures online with a quiz or test of multiple choice answers that can be graded automatically. They upload the answers into the MOOC platform. These tests

may be evaluated and graded automatically or by the instructor (Hew et al., 2015) as in figure 2.12

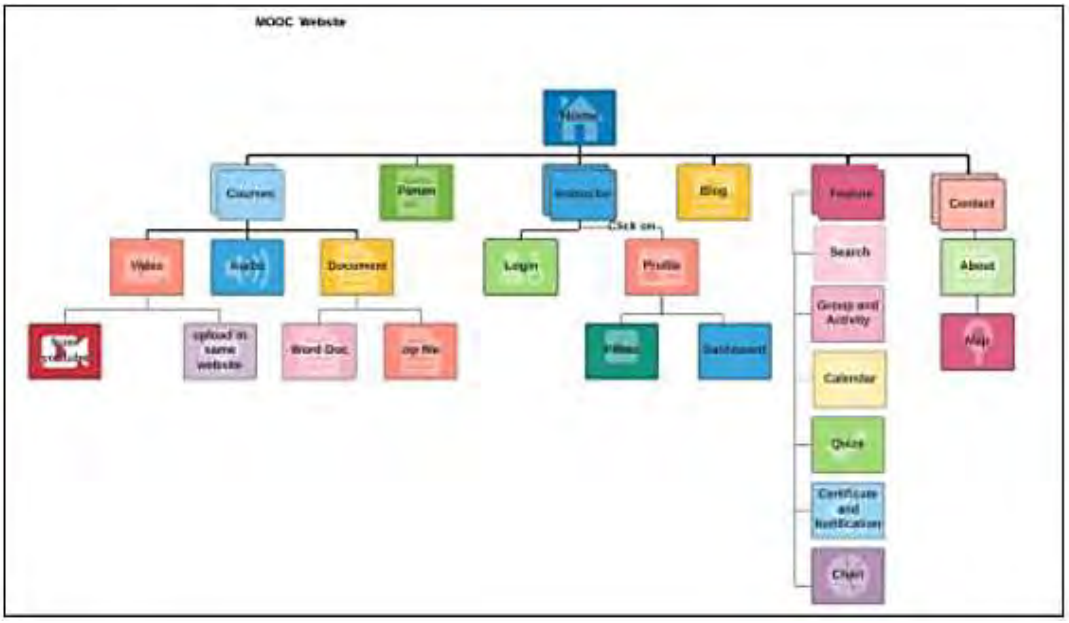


Figure 2.12. Components of Iraqi MOOC Model
Source: Imran et al., (2017)

This approach of MOOC learning is still useful in a number of environments. However, these models of MOOC learning focus on delivery mode and sometimes they are not suitable for learners because they focus only on instructor or content , rather than learner. Furthermore, this approach of MOOC still follows the traditional MOOC and ignors the connectivism and constructivist principles, where many researchers such as Chen et al. (2013), Rodriguez, (2012), and McAuley (2010) indicate that there is a need for more understanding of the connectivism and constructivist concept when designing MOOC courses. In addition, still there is an ignorance of classroom communication (face to face) with the MOOC Courses. There is a lack of integration among the iraqi universities and the MOOC courses such as semester schedule, syllabus , and curriculum for credit, as well as there is no various languages in the main system interface. Hence, the level of language skills can be a

source of misunderstanding in the courses, especially the mother language in Iraq is Arabic.

2.8 Educational models and Frameworks of Blended MOOC

The blended MOOC approach points to the integration of the classroom interactions (face-to-face) with online learning lectures (i.e., learning via technology). This improves the learning process and meets the students' educational needs (Graham, 2006; Osguthorpe & Graham, 2003).

Researchers such as Halverso et al. (2014) confirm that although the individuals are highly interested in the blended MOOC in the world, efforts have started to integrate and apply the theories in the blended MOOC field (Drysdale et al., 2013; Graham, 2013; Halverson et al., 2012). The initial research in the blended MOOC field revealed the best results for planning web-based learners' connections in the learning process (Tsai, Shen, & Tsai, 2011; Stacey & Gerbic, 2009; Bersin, 2004). This combined the systems of online learning management with the traditional syllabuses (Classroom) (Keengwe & Kang, 2011; Tamim, Bernard, Borokhovski, Abrami, & Schmid, 2011). It also identified the technology role based on learning in simplifying the diverse ways of knowledge (Tamim et al., 2011; Garrison & Kanuka, 2004b; Mayer & Moreno, 2003).

In addition, Anant Agarwal (CEO of edX) confirmed that the higher education institutions and MOOCs providers were moving for adapting and creating large MOOCs classrooms so as to create a blended model of MOOC (Agarwal, 2014). This was a great opportunity to resolve the hurdles that face MOOCs in the learning process.

Although MOOCs are open to a large number of participants without any requirements, they are not open from a copyright side. Thus, the institutions plan to integrate the MOOC courses into their educational approach to consider the copyright policy when using courses from MOOCs platforms. Schulmeister (2014), Loviscach (2013), and Sandeen (2013b) classified two scenarios for integrating MOOCs in formal university lectures as a blended MOOC:

i. Content licensing: Integrates the existing MOOC courses into the classroom lectures in the campus (formal students) based on an approval from the main institution of higher education.
ii. International campus-based courses: Universities provide their local courses to everyone by the blended MOOC website which is available for all students enrolled in the university with face-to-face classroom lectures.

In this respect, the educated MOOCs models use the blended format to get the biggest acceptance into a higher education context through credit recognition of the university's approval. However, if the MOOC models are integrated as part of a classroom course, many challenges need to be addressed such as the interaction with a video lecture, learning activities, components' learning, teaching methods, learning methods, quality assurance, learning objectives, and assessments of the MOOC development. Such challenges should be taken into account when integrating the MOOC model with the traditional face-to-face learning.

2.8.1 L2P-bMOOC Model

According to Yousef (2015), the aims of L2P-bMOOC model are to design a bMOOC at Fayoum University, Egypt. This model focuses on changing the traditional MOOC environments from showing the video content in a negative way to a more collaporatove video content (Yin, 2003). L2P-bMOOC was designed based on analyzing the collaborative video systems in the existing models of MOOC to determine the features they have in common, and which features were most frequently used as well as what additional features and components that are still required to foster collaboration into bMOOCs. Thus, this model has designed bMOOC based on a video-map as a structural way to show the video content with the collaborative annotations (Yousef, 2015). In addition, there are main functions of video content such as providing collaborative video annotation features and search function as well as providing an intuitive user interface as presented in Figure 2.13.

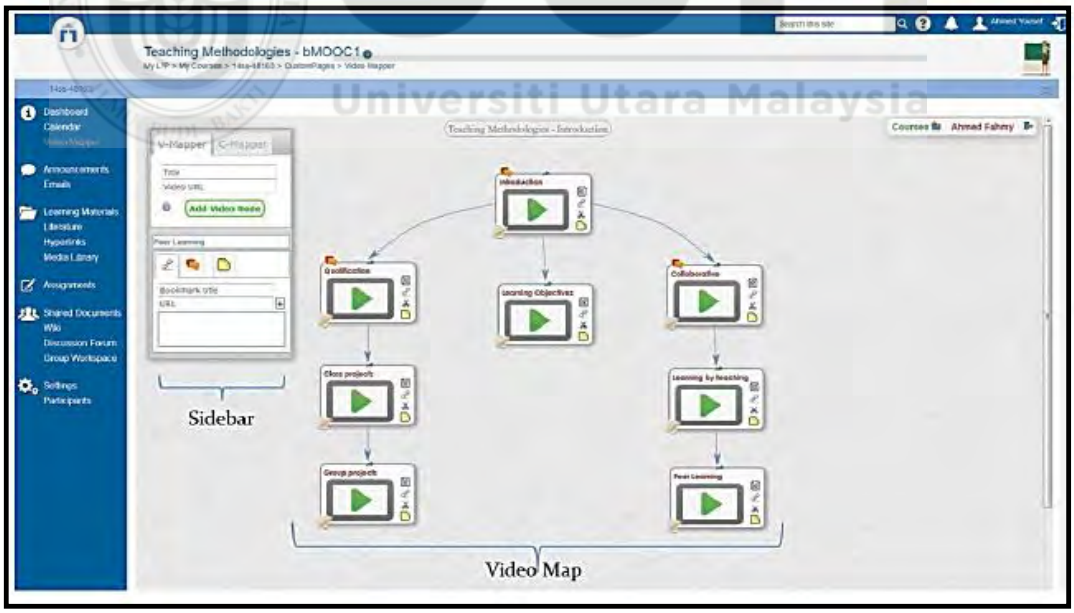


Figure 2.13. L2P-bMOOC Workspace
Source: Yousef et al., (2015)

However, this model (L2P-bMOOC) focuses on interaction around the video lectures depending on video map for one university. Actually, there are limitations and problems in this model (L2P-bMOOC) such as lack of languages variety as well as the complexity into diversity of bMOOC participants (ignorance communication with other universities) (Hollands & Tirthali, 2014; Schulmeister, 2014). This model of bMOOC can not add other universities with their staff, colleges and students to achieve the diversity of bMOOC participants (openness), i.e. lack of integration between bMOOC platform and the required other universities curriculum. Thus, this is one of MOOCs challenges that face learners in the existing MOOC courses. This point can be a gap between bMOOCs and higher education institutions.

2.8.2 Blended Learning MOOC Model (BLMM)

According to Kolukuluri (2014), the blended learning MOOC Model (BLMM) is a learning process which is simplified by the dynamic combination of diverse delivery methods and styles of teaching and learning. These models can be applied to an interactive and meaningful learning environment. They combine the online learning with the elements of face-to-face classroom. Diverse learning difficulties require diverse solutions due to the issue that each learner has a distinctive learning style and distinctive needs. Besides, the methods of delivery include two types: face-to-face learning and online learning via MOOC as illustrated in Figure 2.14. Also, the online learning may include the mobile learning too.

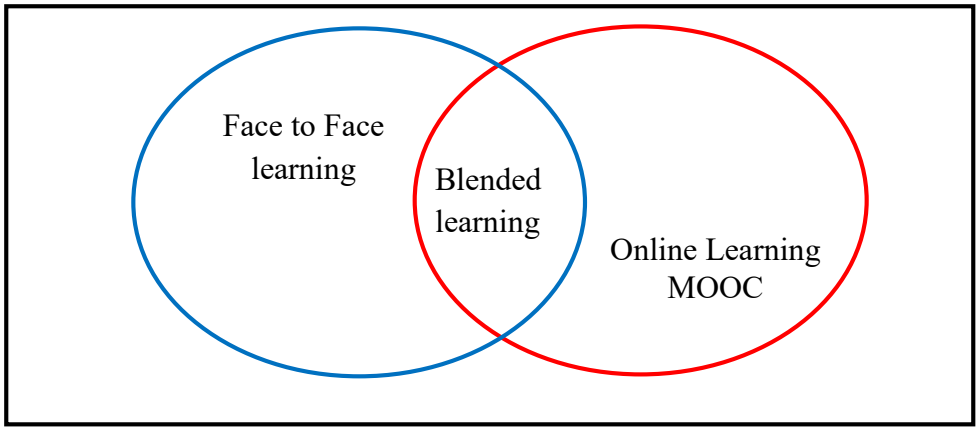


Figure 2.14. Blended Learning MOOC Model
Source: Kolukuluri, (2014)

The blended MOOC essentially relies on analyzing the learners' needs, the perception level, the learners' nature and setting, and the existing resources. The blended MOOC changes the learning activities methods such as recognizing and submitting the data. This model is advantageous in that the inactive learning setting becomes an active one. It promotes the learners to work together with the lecturers in order to support the cooperative learning by an interactive material that creates high attention, accountability and real evaluation (Almutairi, 2015). Even the corporate forms are moving from the schoolroom training techniques to the blended MOOC approach due to some points such as the advantages of charges and savings, improving resources, scale, rapidity and data. The blended MOOC approach has been used in a number of universities such as University of Botswana, University of Central Florida, University of Salford, and University of Charles Strut. The technology developments have an influence on integrating the blended MOOC models via MOOC (Kolukuluri, 2014). Figure 2.14 represents also the basic blended MOOC model. When the online courses are integrated into the faculty courses in blended MOOC g formats, the classroom time is mostly provided for the practical tasks and the group discussions.

The MOOCs models have benefited from the social connection tools that motivate the learners to interact with each other. The cooperative and learning distances of MOOCs range through numerous social nets and online resources.

2.8.3 Small Private Online Courses (SPOC) in High Education

According to Wang (2016), Small Private Online Courses (SPOC) have been applied to Universidad Carlos III de Madrid (UC3M) (Kloos, 2015). Therefore, this model context suggests two different phases (Wang., et al 2016). The first phase is a digital phase where learners interact online with the learning material, and the second phase is face-to-face where the lecturer and the students interact in the classroom (Muñoz, 2014) as in figure 2.15.

Figure 2.15. Small Private Online Courses Model
Source: Wang, (2016)

The first phase (digital phase) focuses on the use of typical MOOC courses technologies and resources that includes videos lectures, exams, exercises, and other learning features. The second phase (face-to-face phase) focuses on the learning advantages of face- to-face with the lecturer in the classroom, which are

synchronization with the learning information through the digital phase (Wang., et al 2016).

Actually, in this model the first phase (digital phase) depends on the second phase because the first phase is for local students registered in the classroom while the second phase is face-to-face lessons. Thus, MOOC courses technologies are used for a limited number of learners in what is called a SPOC. One of the important aspects of this model (SPOC) is that the learners can learen the different concepts in the courses before taking the face-to-face lessons in the classroom. This feature helps students to get knowledge in the learning process, e.g. preparing the questions (doubts) about the material during the classroom lessons.

2.8.4 Michael Blended Online Learning Model

With regard to Michael (2008), this model is described to design a blended online learning environment based on two strategies. The first one is asynchronous-mode that includes completely online, complimentary integration, simultaneous partial system-managed and partial faculty-led learning. The second strategy is synchronous-mode that involves partial system-managed and partial faculty-led learning environment (classroom environment) as shown in Figure 2.16.

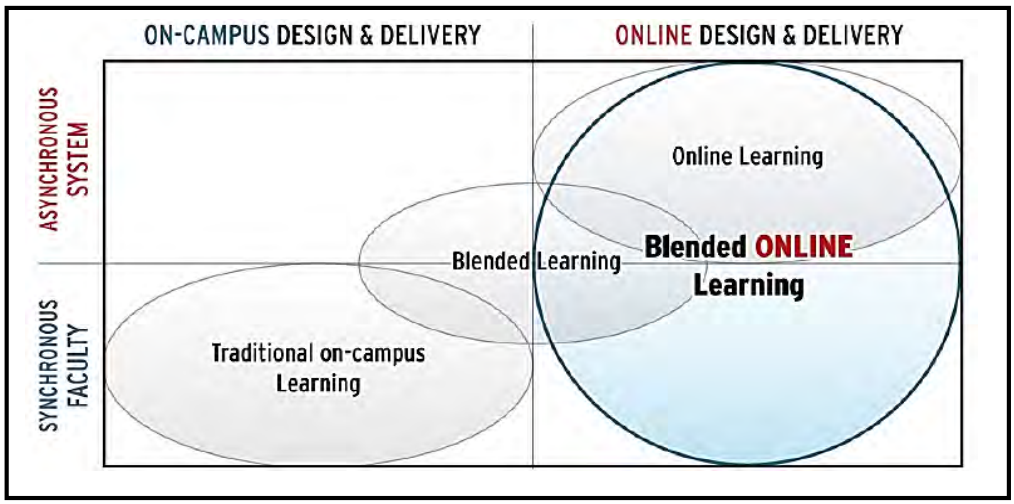


Figure 2.16. The relative position of blended online learning
Source: Michael (2008)

These model is good for blended environment because online learning (asynchronous online teaching) is taught by the same faculty staff who are teaching the traditional learning (synchronous classroom teaching) in the campus.

2.8.5 Blended Learning framework in Higher Education Context

Alebaikan (2015) presented a theoretical framework includes five factors (blended concept, implementation and support, ethical considerations, blended pedagogy and evaluation and development). These were the main factors for designing and developing a blended learning framework for the Saudi Arabia universities (Alebaikan, 2015). The aim of this framework was to determine the factors that affect the implementation of blended learning in Saudi Arabia. Also, this framework could be a theoretical contribution for the research in developing or designing a blended learning because it comprised the essential elements of a theory based on explanation and description.

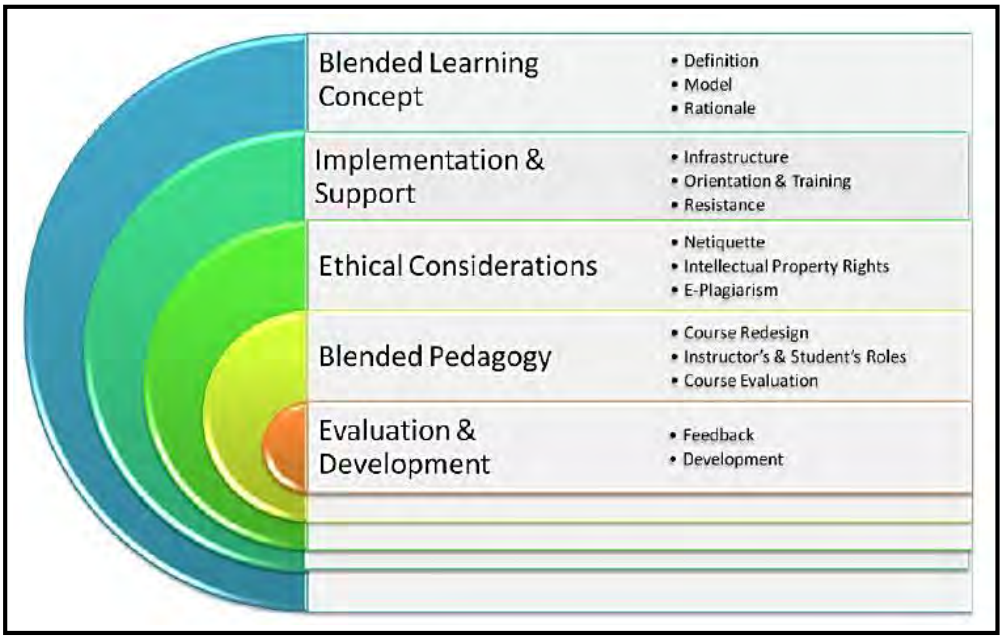


Figure 2.17. Blended Learning framework in Higher Education
Source: Alebaikan, (2015)

Figure 2. 17 above shows the five factors that formulate a blended learning framework implementation and also the relationship among them. First, the blended concept was a main factor that supported all the other factors. Next, the implementation and support, based on the concept (blended learning), affected the next other three factors. Then, ethical considerations effected many items of learning in the fourth factor of blended pedagogy. Lastly, evaluation and development factors were affected by all of these factors that started from the blended concept up to the blended pedagogy (Alebaikan, 2015).

However, these framework of blended learning was a good one with regard to the description of the five factors to formulate a framework for blended learning implementation. However, this framework focused only on community services for female.

That is, the female students had a greater emphasis on family duties did not always attend weekly face-to-face classes. That means that the focus was on a specific sample of the community. Yet, that was not enough to identify the students' learning needs from both gender (males and females) in the blended learning environment.

2.8.6 Content Analysis of Blended MOOC

A content analysis is conducted on the blended MOOC models. The analysis is based on brief descriptions of the disadvantages of 15 existing models applied the bMOOC as shown in table 2.6.

Table 2.6

Content Analysis of MOOC and blended MOOC Models

Table 2.6 continued

Models	Descriptions	Limitations
Kloos, (2015)	1. The model adopts the video lecture. 2. The strategy uses shared learning experience approach	The user interaction approach on learning process is not explained.
Alebaikan (2015)	1. The knowledge is shared among the peers. 2. The framwork utilizes the flow theory and emphasizes the flow antecedents in bMOOC design which are clear goals, feedback, and usability.	This framework is not enough to identify the students' learning needs in the blended learning environment.
Negrea, (2014)	This model (MOOCs), focuses on integration between MOOC and campus classes	This model only suggests the design to be considered when developing bMOOC but does not provide the step-by-step guidelines in developing bMOOC.

Table 2.6 continued

Models	Descriptions	Limitations
Klink (2006)	1.This model stresses out the integration of user interaction to be considered during the BMOOC design process. 2.The suggested components are Discussion boards, Notice boards, Recorded lectures, Hyperlinks, and Simulation.	This model only provides components to be considered during designing the blended learning, but does not consider the specific processes to develop BMOOC
Yousef (2015)	1.The model consists of six dimensions, which are Blended Learning, Flexibility, High Quality Content, Instructional Design and Learning Methodologies, Lifelong Learning, Network Learning, and openness. 2. This study is grounded in connectivism learning theory as a model to understand learning in the blended learning. The authors identified a bMOOC as a complex system in which the self played a key role in learning with a focus on interactive and open dialogue.	Although the model is flexible and able to help online learning designers to develop bMOOC for learning, it does not facilitate online learning designers in understanding the flow between the six dimensions.
Kolukuluri (2014)	The model represents also the basic blended MOOC model via MOOC such as content, assignments, quizzes and exams delivered in the lesson.	This model only suggests the design to be considered when developing bMOOC and does not provide the step-by-step guidelines in developing bMOOC.
Albó et. al (2015)	1. The framework defines key features and characteristics of teaching practices to be considered in bMOOC. 2.The features are divided into two perspectives: learner and lecture design.	Although the framework provides the activities to design and develop teaching in the bMOOC, the activities and phases are not well explained.

Table 2.6 continued

Models	Descriptions	Limitations
Chauhan & Goel (2015)	1. The model presents a checklist of features for video lecture incorporated in MOOC from the learner's perspective. 2.The model uses case based approach that has been followed for identifying the features of video lecture in MOOC.	This model only presents features of video player, but does not provide the step-by-step guidelines in developing the video player for bMOOC
Kidziński, (2015)	1.The model focuses on how learners view MOOC videos. 2.The model explores the interactive relationship between video patterns and learner	This model only presents different types of video interaction patterns without focusing on students needs and cultures
Smith and Eng (2013)	The model (xMOOC) is based on traditional university courses.	This model focuses on Cognitive-behaviorist but does not specify the user interaction and student's needs.
Kruiderink, (2013)	1. The model (cMOOC) is based on involving groups of people in learning together. 2.In this model, participants are all considered teachers and learners,	This model focuses on connectivism but does not specify the user interaction and student's needs.
Muñoz, 2014	The model focuses on integration among the MOOC courses and classroom	This model only suggests the design to be considered when developing bMOOC and does not provide the step-by-step guidelines in developing bMOOC.
Michael (2008)	1.This model is described to design a blended online learning environment 2.The model focuses on two strategies. The first one is asynchronous-mode and the second strategy is synchronous-mode	This model only suggests the design to be considered when developing MOOC but does not provide the step-by-step guidelines in developing MOOC.

Models	Descriptions	Limitations
Guo et al. (2014)	1.This model (EDX) focuses on Cognitive-behaviorist theory and emphasizes the flow antecedents in MOOC design which are challenges, clear goals, and usability. 1. This model stresses out the integration of components to be considered during the MOOC design process.	Although this model provides the components and features to design and develop MOOC, it ignors the face-to-face communication (classroom)
And one et al. (2015)	1.This model shows concepts and experiences on integrating MOOC courses into higher education 2.This model presents components and features of bMOOC	This model focuses on teacher-centered model only (i.e. the traditional teacher-centered education), and the user interaction approach on learning process is not explained.

When the existing bMOOC models are examined, some are found to be more complicated on university students, but in the same time the value of the bMOOC design model for motivating students to learn should not be denied. Also, some of these models focus only on the general design of the bMOOC from lecturer side without paying attention to the students needs. These limitations led to the suggestion that; a substantiated, unified user interaction method with the components of bMOOC such as video lecture, assignments, assessments, forum, comments and message (e-mail) have been overlooked.

Therefore, the primary components of MOOC and blended MOOC (bMOOC) are described in the next section.

2.9 MOOCs Components Design

The previous studies focused on the MOOC design process based on the learning management system (LMS), pedagogical design principles (i.e. engaging the learners to enroll in the courses) and technological design principles (to make the MOOCs more dynamic).

2.9.1 MOOC vs LMS

MOOC platforms are mostly one of two kinds; new platforms of MOOC, or an extension to an existing LMS in the universities. MOOC platform includes a variety of components and features that provide students with their learning method of choice. As Downes wrote when discussing the difference among a MOOCs courses and a LMS courses, "MOOC is completely voluntary" - voluntary in the participation choice, as well as in the method of participation (Downes, 2013). Although the variety of components and features is much larger in platform, there is low connection with each other. However, the benefits of MOOCs are to use the outward social media, besides, the MOOC is an open system normally available on the cloud. Furthermore, LMS are commonly proprietary enclosed solutions and their major categories are connected to the learner. But, there is a slight connection between the learner and other categories of LMS. Hence, the only connection among the data is the learner in the course material, the forum, the evaluation, and the shared data. One educational unit restricts the complete system with no connection to the external world. Accessing the course removes when the course finishes. Moreover, the categories have become so traditional and are not attractive to the learners in most cases.

2.9.2 Pedagogical Design Principles of MOOC

Most scholars think that model of MOOCs cannot fully substitute the traditional learning (Heckman et al., 2015; Ovaska, 2013). Therefore, researchers and developers focus on hybrid MOOCs, i.e. hybrid model of MOOC between online learning and traditional learning (Kloos, 2015; Szafir and Mutlu, 2013). As a consequence, Vihavainen (2012) offered bMOOCs by using an assessment based on continuous thinking between the learner and instructor. Yet, other research focused on the incorporation of the social net workings with bMOOCs to add a recent worth to the learner's activities and also to increase learner's interactions at the same time (Morris, 2013; Calter, 2013).

On the other hand, alphaMOOCs were designed by some researchers such as McCallum, Thomas and Libarkin, (2013) to mix between cMOOC and xMOOC based on collaboration teams. Guàrdia, et al., (2013) focused on analyzing the needs of learners in MOOC courses and showed a group of educational design principles that focused on the exchanges among the learners. At the same time, McAndrew (2013) designed a project-based MOOC (pMOOC) through constructing the MOOC in terms of a course pertained to a project. Bruff, et al. (2013) provided ideas about the educational design that present direction on the ways of designing bMOOCs model. Other researchers highlighted the design that depends on self-paced learning, competency, learning policies, goals, assignments, open network exchange and incorporation instruments that increase the motivation and the interaction in the course. In addition, Grünewald, et al. (2013) proposed peer-assistance via the discussions in the course to find solutions for difficulty in the learning process. Furthermore, Lim et

al. (2014) confirmed that discussions among learners and their peers could support lectures in the online collaborative learning in the bMOOC courses.

2.9.3 Technological Design Principles of MOOC

MOOCs include various technology features and criteria that support different important activities in the learning experience process such as interaction (learners, instructor, and content) , collaboration, evaluation, and self-learning (de Waard et al., 2011b; Fournier, Kop, and Sitlia, 2011). Most of the tools that are used in the reviewed literature classified into two main categories, namely collaboration and assessment. Most MOOCs provide collaboration tools in the courses that include several tools that help learners to communicate with each other such as forums, video comments, and social networks (McAndrew, 2013; Mak, Williams, and Mackness, 2010). In addition, the MOOCs use different e-assessment methods in courses. For example, most of xMOOCs use e-assessment such as short quizzes and e-tests , while cMOOCs focus on the self-assessment such as feedback questionnaires, logs or diaries (Kulkarni, 2013; Maclellan, 2001), and peer-assessment (Kellogg, 2013; Spector, 2013).

Table 2.7 shows the comparison among a number of studies (6-models) based on the learning theories, assessment, design elements, tools and structure (Malan, 2013). These six models of studies are selected to represent different MOOC types in terms of design elements, learning theories, assessment, structure and tools (Malan, 2013). Typical edX (non-profit courses) and typical coursera (profit courses) are selected to show xMOOCs (Cooper & Sahami, 2013; Portmess, 2013; Rodriguez, 2013; Subbian, 2013; Hoyos, Sanagustín, Kloos, Parada Organero, & Heras, 2013; Machun, Trau, Zaid, Wang, & Ng, 2012). In addition, OPCO11 is an example of bMOOCs courses, while COER13 and MobiMOOC are examples of smOOCs (Arnold, Kumar,

Thillosen, & Ebner, 2014; Romero, 2013; Koutropoulos, et al., 2012; de Waard et al., 2011a).

Table 2.7

MOOC Components Comparison (√ Full, (-) Partly, and - Not supported)

	Components Comparison	CCK 08	Typical EdX Course	Typical Coursera Course	OPCO 11	COER13
Learning theory	Connectivism	(-)	_	_	_	_
	Behaviorism	_	(-)	(-)	_	_
	Cognitivist	_	(-)	(-)	_	_
	Social constructivism	_	_	_	(-)	(-)
Assessment	E-Assessment	√	(-)	(-)	(-)	(-)
	Peer-Assessment	(-)	_	√	√	_
	Self-Assessment	_	_	_	_	√
Openness	Profit	_	_	(-)	_	_
	Open registration	(-)	(-)	(-)	(-)	(-)
	Download Material	_	(-)	√	√	√
Form	Formal Learning	√	√	√	√	_
	Informal Learning	(-)	(-)	(-)	(-)	(-)
Learning Tools	Video Lecture	(-)	(-)	(-)	(-)	(-)
	Face-to-Face	_	_	_	√	_
	Blogs, forums, social network	(-)	(-)	(-)	(-)	(-)
	Lecture Note, PPT and PDF	(-)	(-)	(-)	(-)	(-)

These different models of MOOCs share some common features that depends on video lectures, open registration, informal learning, formal learning and the use of social network tools. Most models of the MOOCs apply e-assessment tools such as e-tests and short quizzes. In addition, e-assessment is used in cMOOCs and bMOOCs while self-assessment is used in sMOOCs. Most of the reviewed case studies use the cognitivism, behaviorism, constructivism and learning theories.

2.9.4 Implications of Components and Features of design to the Study

The components and features of blended MOOC design are determined based on previous models and frameworks. A skeleton is presented to this study. Because the design characteristics and components are key variables affect the blended learning. Therefore, these characteristics and components help this study to understand the features and methods of the online learning and provide the necessary issues that facilitate the efficient use of online learning resources. Design is an appropriate model. With regard to learning technology, it is an important factor to succeed a learning process in higher education. The next section focuses on the strategies of interaction in the learning process.

2.10 Learning Theories

Developing blended MOOC requires specific elements which contain online learning theories and instructional design model. Thus, a learning theories denotes to a conceptual foundation on how community learn through blended MOOC, and construct knowledge such as Connectivist and Social constructivist theory, Multimedia theory, Interaction theory, Theory and Practice of Online learning, Social learning theory, and Social interaction theory (Rodriguez, 2012). The aim of these theories is to construct knowledge by the interaction into learner networks (Bell, 2011;

Chamberlin & Parish, 2011; Cabiria, 2012). Therefore, this section largely explores how these theories contribute to blended MOOC.

2.10.1 Connectivist Theory and Social Constructivist Theory

Updated methods of the learning process have been discovered via the current invasion of internet chances. The models cMOOC and xMOOC are examples of connectivist theory and social constructivist theory. "There is a supposition in the two theories that the learning method should take place naturally but that knowledge is still something self-reliantly noticeable with a decisive start and end objective resolute by syllabus." (Cormier, 2008). Downes, (2012) defined connectivism in his Huffington Post paper by stating that, connectivism is the theory that knowledge is distributed crossways a network of contacts, and therefore that learning contains of the ability to construct and traverse those networks. Information and facts are objects but not educated (Herrick, 2013). They are not conveyed, as nevertheless they were some type of interaction (Downes, 2011). Downes (2011) affirmed the learning method of connectivism to be paralleled to a networked education. The courses of connectivism are additional materials, with regard to knowledge and comunication with other individuals, than about the course itself. Downes (2011) stated that all of us are learners who really practice education to create and promote it. Downes, (2012) also added that "knowledge has many authors, knowledge has many facets, it looks different to each different person, and it changes moment to moment. A piece of knowledge is not a description of something, it is a way of relating to something." Moreover, Downes, (2012) argued that connectivism is not related to the construction of facts and information, but more focus is specified to the growth and progress of it. Also, Downes (2012) stated that: this denotes that a teaching (a) searches to designate fruitful net

systems (as recognized by their possessions, which Downes have categorized as variety, independence, openness, and connectivity) and (b) searches to define the trainings that guide to such net systems, both in the learners and in society (which is categorized as modeling and manifestation (going on the teacher) and training and reflection (going on the learner (Stephen, 2012). Besides, connectivism means an access to the facts from any place in the universe. Thus, using IT, on the basis of connectivism systems, minimizes the price in the learning processes in the HEIs (Rodriguez, 2012). In addition, it decreases the prices needed to improve the traditional learning (classroom) (Rodriguez, 2012; Milligan, Littlejohn, & Margaryan, 2013).

Hence, connectivism in the learning process can be happened at any period and place. On the other hand, learning in social constructivist theory promotes considerable reflection on experience and allows setting and content reliant facts construction. It also assists the cooperative structure of knowledge through social interaction and does not promote competition among the learners. In other words, constructivism is correlated to cognitive psychology (Blom et al., 2013).

2.10.2 Multimedia Theory

The cognitive theory of multimedia for learning was generalized by Mayer (2005) and some other scholars who confirmed that the multimedia helps the human brain in learning. They also confirmed that the multimedia source (e.g. video and pictures) is better than the words alone in teaching the students deeply (Mayer 2005a). A great deal of scholars of multimedia defined it as the text and image mixture and these scholars propose that the multimedia learning takes place when it formulates rational shows from this mixture (Mayer, 2005b). The texts are either oral or written and the

images are any formula of graphical photos (comprehensive and illustrative), photos, animation, or video. Multimedia design tries to utilize the cognitive approach to join between texts and images so as the learning would be more effective via internet.

The multimedia theory relies on several cognitive theories including Baddeley's model of working memory, Paivio's dual coding theory, and Sweller's Theory of Cognitive Load. As a cognitive theory of learning, it falls under the larger framework of cognitive science and the information processing model of cognition (Baddeley, 1992). The information-processing approach proposes some data stores in the memory, as shown Figure 2.18, that are controlled by procedures which transform stimuli to data (Moore, Burton & Myers, 2004). Cognitive science examines the individual's brain and the way it learns by receiving from research in varied fields such as artificial intelligence, psychology, neuroscience, linguistics, computer science, and philosophy.

The cognitive term points to how we perceive and know. Cognitive scholars search for comprehending the mental processes such as perceiving, thinking, remembering, understanding language, and learning (Stillings, Weisler, Chase, Feinstein, Garfield, & Rissland, 1995).

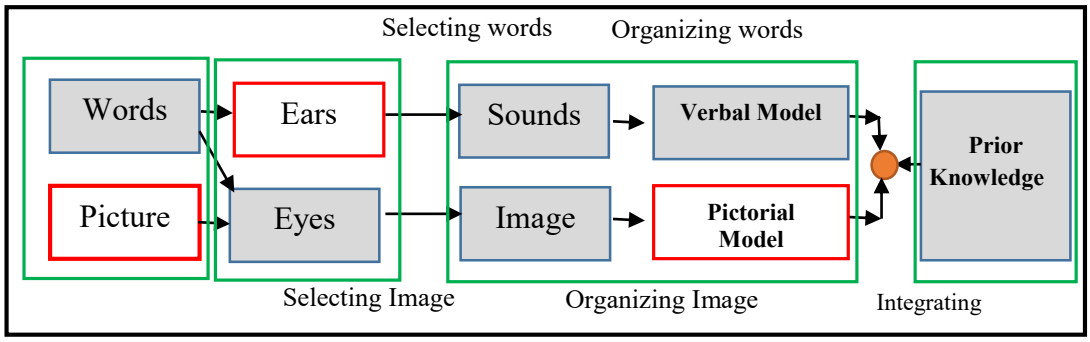


Figure 2.18. Cognitive Theory of MM Learning (Mayer, 2001)
Source: Mayer (2001)

The cognitive theory of multimedia learning (CTML) highlights the issue that students try to construct reasonable relations between texts (words) and pictures (images). Besides, the students would not learn more deeply with either texts or pictures alone (Mayer, 2009). In relation to CTML, a major aim of multimedia data is to support the learner to construct a unified rational representation from the provided data. The learner's task is to ensure that the material is provided as a dynamic participant, eventually structuring recent knowledge.

Multimedia theory can be summarized with regard to the following points: 1) It is a cognitive theory 2) It provides ways to construct learning practices, via making the cognitive strategies more effective so that the learners learn more effectively 3) It focuses on the construction of visually and auditory 4) It has capacity in providing the cognitive processes for selecting and organizing the selected texts and images, and organized work and images.

2.10.3 Interaction theory

The interaction theory attempts to make people's experience with peers and content more productive based on the learning theory. In other words, the interaction theory fits the behavioral goals. Examples of the interaction theory are stimulation (i.e., personal interaction and an increase of knowledge, as well as skills), identification (i.e., self-expression and interaction with relevant materials) (Chatti, 2010a; Chatti, Schroeder & Jarke, 2012c). Therefore, learners should build their knowledge based on the interaction levels such as learners' interaction with content, with the interface, with instructors, and with other learners. Knowledge construction is facilitated by good interactive online instruction with MOOC, in particular. This is because the aim of

the MOOC model is to build knowledge through the interaction in the learner's networks to improve the learner's motivation (Bell, 2011; Chamberlin & Parish, 2011; Cabiria, 2012). Therefore, most of the researchers in the literature place much emphasis on MOOCs as a new model of learning and teaching in higher education through bMOOC (Rodriguez, 2012; Milligan, Littlejohn & Margaryan, 2013) as shown in Figure 2.19 (Anderson, 2010).

In addition, the interaction theory is a multidisciplinary area. It includes i) Computer Science (the application of design and engineering of user interfaces), ii) Psychology (theories application of cognitive processes and the empirical analysis of users' behavior), iii) Sociology/Anthropology (interactions among technology, work, and organization), and iv) Industrial Design (designing interactive products) (Bellamy, 1996).

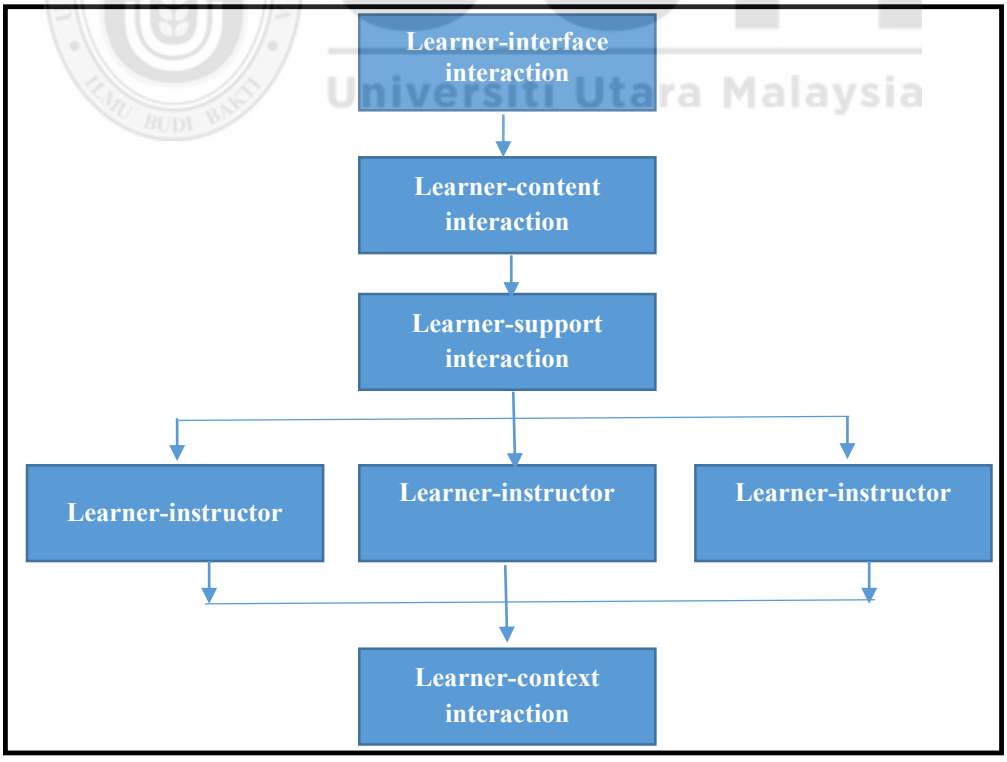


Figure 2.19. Interaction Theory Levels
Source: Anderson (2010)

The participants in the MOOC's model are many and diverse. However, the learning process for the largest number of students must be synchronized well with UX considerations that are similarly utilitarian (Disaboto, 2012). This means that they are the part of user experience design that shows the relationship between learners and content. Therefore, the interaction approach has a foundation in the theory, practice, and methodology of the interaction interface design among learners. Purser (2013) suggested that the approach of peer-to-peer in the learning process helps learners enhance their learning outcome in MOOC. It focuses on the possibilities to support the interaction among individuals. That is, the interactional design defines structures with behaviors for the interactional products and services, and people's interactions with those products and services (Lowgren, 2010).

From another perspective, the interaction theory confirmed the fact that learners need to interact with web interface when they learn via the internet, to acquire knowledge from the internet materials. Therefore, the user's interface design of the model should consider the usability principles and go through a participatory design process (Basson et al., 2015). Moreover, the interface should not be overloaded on the learners and should make it as easy as possible for them to realize the information and transfer it to the conscious store, then into the short-term memory of processing. Learners need to interact with the content to obtain information and knowledge. The consistency of interface reduces the errors of the users, who are interacting with website interface (Ozok & Salvendy, 2004, 2003). Ozok and Salvendy (2004, 2003) affirmed that the interaction happens by users when they use the information in the website interface. Crowther et al. (2004) emphasized the importance of interface design for education-related courses and how it can affect the performance of students' interaction. Other

researchers argued that the interaction between the students and the interface is an important factor in facilitating the quality of education through online learning (Cantoni, Cellario & Porta, 2004; Ellis & Blashki, 2004; Chou, 2003; Gauss & Urbas, 2003).

In summary, the interaction theory focuses on the interaction between learners, and between learners and content. It also focuses on the organizational and systematic needs with individual needs. The UX factors must be taken into account such as experience, needs, consistency, efficiency, and ease of use, pleasing, aesthetic, the enjoyable aspects of using the learning activates, and the behavioral aspects, which focus on the usefulness of the learning system. All these factors can be integrated into an effective design of blended MOOC that accommodates a larger audience and provides an engaging learning experience at the universities' level in higher education.

2.10.4 Theory and Practice of Online Learning

Present-day distance education relies on a variety of technological tools such as e-mail, synchronous and asynchronous communication, specially-designed websites, and online modules (Anderson, 2010). As a result, institutions have to adapt their distance offerings to catch up with rapid technological changes. The Theory and Practice of Online Learning (TTPOL), which is reported by Terry Anderson examines whether colleges and universities are meeting the needs of online learners and whether they can improve the services they offer to these learners (Anderson, 2004).

TTPOL addresses issues that need to be considered by administrators and educators when creating, implementing, and maintaining online courses or programs in academic institutions. Faculty, administrators, and students must be assured that web-based

instruction is a viable means of delivering courses and programs, as well as accommodating the students' needs. To create those assurances, the web-based instructional model (that is supposed to be used) should tackle a number of fundamental issues, which might have never been addressed before.

2.10.5 Social Learning Theory

Hrastinski (2009) argued that social learning theory stresses that learning occurs in interaction with others and that learning is an aspect of all human activities. Säljö, (2000) confirmed that learning and interaction are not separate activities (Wenger, 1998). Thus, students are not students just while they are in the classroom. Moreover, it is widely acknowledged that students learn and support each other both inside and outside the classroom (Rovai, Wighting, & Lucking, 2004; Brown & Duguid, 1996). Most learning in higher education occurs outside the classroom (Ramsden, 1992).

Furthermore, social learning theories view learning inseparable from the day-today practices that people carry out in their studies and work (Hislop, 2006). The learning is an interaction (participation) in the community and it is in the main theory of learning (Lave & Wenger, 1991). To understand learning via internet, individuals need a social learning theory that shows learning via internet (online) such as MOOC interaction (Blom et al., (2013). On the whole, the term of online interaction has mainly been used and developed by learners of social viewpoint of learning. Online interaction underlies learner interaction via internet with social perspective on learning.

2.10.6 Social Interaction Theory

The social interaction theories have provided new methods for learning outside the classroom. These theories are reflected in the learning process into MOOCs models. These include connectivism, which shows learning as a network learning process (Siemens, 2005; Kop, 2011; Tschofen & Mackness, 2012; Martin, 2013), i.e., learning by social network (a personal knowledge network). The xMOOCs are based on theories of behaviorism and cognitivism with some (social) constructivism components that focus on learning. Moreover, the social interaction theory emphasizes the idea of interaction between the learner and community. This helps in collaborating and participating in the shared cognition to form social networks, and help communities develop (Fahy & Ally, 2005; Moore, 1991). Therefore, the interaction between the learner and social components is essential in learning (Garrison & Cleveland-Innes, 2005; Conrad, 2005; Dilworth & Willis, 2003; Ragan, 1999; Fulford & Zhang, 1993). Hirumi (2002) proposed a framework of interaction in online learning, which consists of three levels. Level one is the learner-self interaction, which occurs among learners to help monitor and regulate their own learning. Level two is the learner-human and learner-non-human interactions, where the learner interacts with human and non-human resources. Finally, level three is the learner-social interaction, which consists of activities to achieve a learning outcome.

The social interaction theory is critical in creating a sense of presence and a sense of community for online learners and for various forms of interaction, which take place in online environments. Moreover, many researchers focus on the social interaction theory as a new model of MOOC (Viswanathan, 2013). Therefore, the social interaction theory provides an easy interaction among individuals through social

components in MOOCs such as collaboration tools, forums, and wikis (Blom et al., 2013). Accordingly, the social interaction's features are considered important for a successful learning, as well as the distance learning, because the learner interacts with knowledge through the community's environment.

2.10.7 Implications of Learning Theories on the study

Understanding the learning theories (such as cognitivism, social constructivist theory, multimedia theory, interaction theory, practice of online learning, social learning theory, and social interaction theory) is essential in supporting the construction of Iraqi-bMOOC model. Specifically the interaction theories have certain implication on this study. Developing learning model requires specific items from learning theories. Therefore, the developers are required to focus on the learning theories when designing or developing a model along with adopting the education design model during the development of blended MOOC. This stimulates the learners to achieve the knowledge skills such as interaction thinking, analysis, collaboration, problem-solving and many others in the learning process. In addition, these skills facilitate the use of Iraqi-bMOOC model in the institutions of higher education. On the other hand, the theories and principles that are discussed in this chapter are the most familiar in learning via MOOC, online learning, and distance learning. The use of the theories and principles in the learning material would promise better learning outcomes to the learners in the learning process in addition to better understanding of the learning approach. In turn, this leaves a big impact on the learners in Iraq and helps them to succeed.

2.11 Summary

The blended MOOC approach includes two types, face-to-face learning and online learning via MOOC. The blended learning can be combined together via MOOC and

face-to-face in the classroom (Traditional Learning) components. Therefore, the blended course can be used to build a successful hybrid learning course between traditional learning and learning via MOOC. This type of learning (blended MOOC) will help the lecturer to utilize lecture time for meaningful discussion, identifying and clarifying misconceptions or mentoring students. In return, it will solve the problems related to the limited interaction and increase participation in the classroom (Traditional Learning) and online learning via MOOC in the same time. On the other hand, it uses social media to support the proposed MOOC framework because social media allows the creation and exchange of information between learners. This would facilitate the interaction based on the learning interests. That is, the social media is used to create knowledge and high interaction among people, to share news, to communicate or exchange ideas, to exchange and comment among themselves anywhere and at any time.

This chapter displays the previous studies that are related to the online learning environments such as MOOC (as illustrated in Figure 2.20). The first section reviews the definitions and concepts of MOOC along with the institutions that use MOOC (Platform of MOOC). It also shows the higher education institutions that support MOOC. Moreover, it discusses the methods of developing the educational systems (e.g. OER and OCW) for the MOOC and the educational concepts that are connected to MOOC such as learners' perceptions. The second section shows models of MOOC and it focuses on the structure of these models with the related problems. Besides, the third section focuses on the nine main learning theories of MOOC, learning via internet, and distance learning which decide the correct styles of learning and interaction with learning via internet or MOOC. Furthermore, the fourth section

reviews the characteristics of MOOCs and highlights the problems and the gaps of this study.

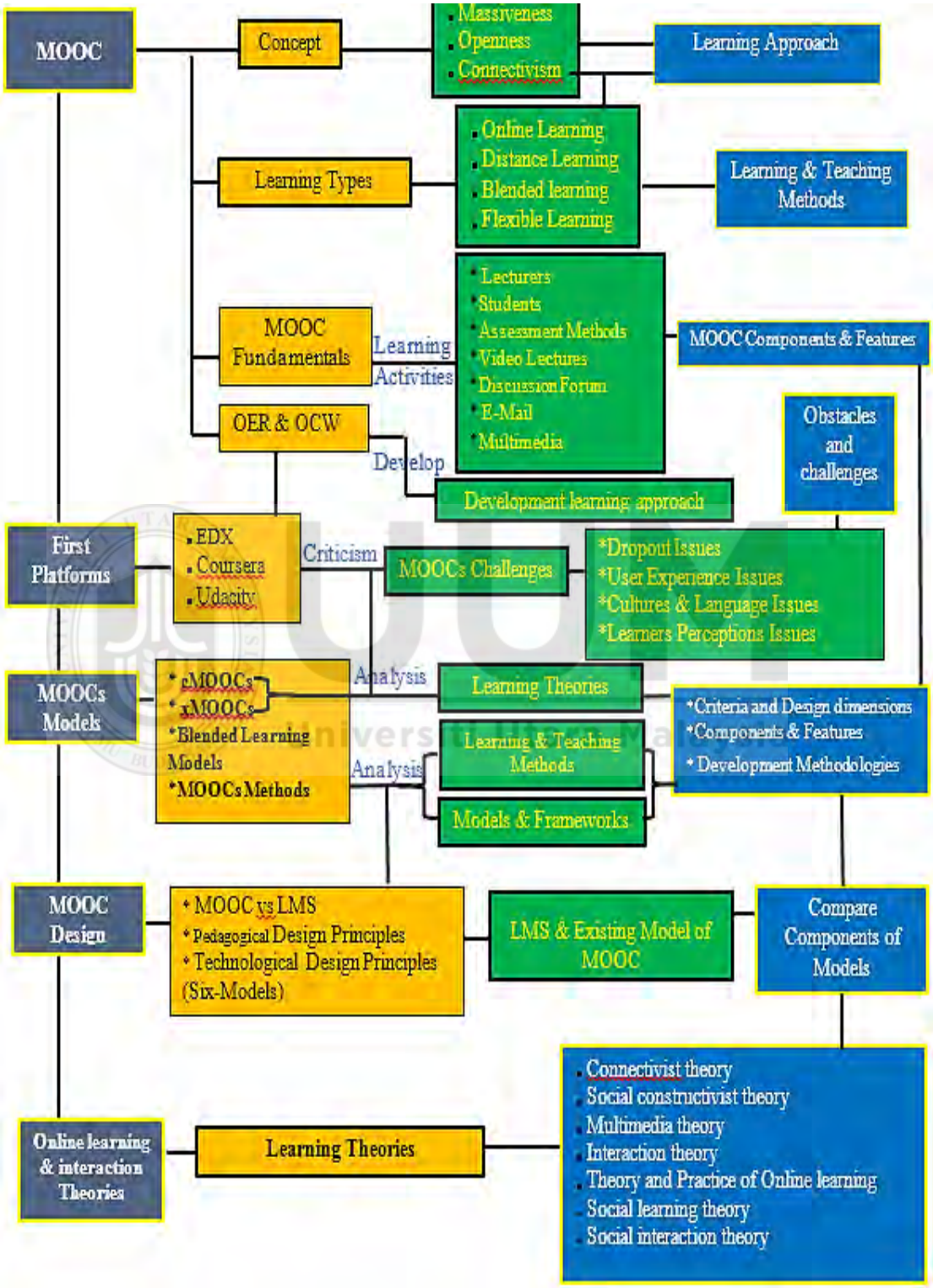


Figure 2.20. Overview of the Literature Studies

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

The main objective of this study is to propose a conceptual framework for the blended learning (bMOOC) in a way that can be equal to the traditional classroom and thus it can be applied to the Iraqi students in the Iraqi universities. This chapter presents the details of the adopted research methodology through discussing and describing the research processes and methods used to achieve the objectives of this study.

3.2 Research Design

This study uses the Design Science Research (DSR) approach to fulfill the main objective in this study as outlined in Chapter 1. The main goal of DSR is to satisfy the needs and solve the problems based on the construction an artefact (Alturki, Gable, & Bandara, 2013). Therefore, the status of environment, institution, and society would be improved (Shiratuddin & Hassan, 2013). DSR is applied to the field of information system that is related to people and artifacts (Gregor, 2006). In addition, the previous works have shown that DSR is implemented in the educational technology field (Carstensen & Bernhard, 2016; El-Masri, Tarhini, Assouna, & Elyas, 2015; Marjanovic, 2013). DSR includes two main activities which build an artefact and determine how well it performs (March & Smith, 1995). The results of DSR should be highly focused and understood to solve a real problem (Kuechler & Vaishnavi, 2011). Therefore, DSR guidelines display the reasons of adopting this paradigm (Hevner et al., 2004) as viewed in Table 3.1.

Table 3.1

Design Science Research Guidelines

Guideline	Description
Guideline 1: Design as an Artefact.	DSR must produce a viable artefact in the form of a construct, a model, a method, or an instantiation.
Guideline 2: Problem Relevance.	The objective of DSR is to develop technology-based solutions to important and relevant problems.
Guideline 3: Design Evaluation.	The utility, quality, and efficacy of a design artefact must be rigorously demonstrated via well-executed evaluation methods.
Guideline 4: Research Contributions.	Effective DSR must provide clear and verifiable contributions in the areas of the design artefact, design foundations, and/or design methodologies.
Guideline 5: Research Rigor.	DSR relies upon the application of rigorous methods in both the construction and evaluation of the design artefact.
Guideline 6: Design as a Search Process.	The search for an effective artefact requires utilizing available means to reach the desired ends while satisfying laws in the problem environment.
Guideline 7: Communication of Research	DSR must be presented effectively both to technology-oriented as well as management-oriented audiences.

Source: Hevner et al., (2004)

For obtaining more accurate results in the research process, this study uses qualitative research methods to support the quantitative research methods. The design of mixed method is very useful in the identification of issues, factors, and relevant questions that could become the focus of quantitative studies (McMillan & Schumacher, 2010).

3.3 Rationale of using DSR Methodology

The following justifications show why this study selects (DRS) methodology:

i. Every specific guideline in the design research (Table 3.1) is relevant and practical to be utilized in this study.

ii. DSR focuses on the construction, method, and model which provides the research results that are relevant to the study. Therefore, the artefact in this study is the proposed bMOOC model which is classified as a conceptual learning process model.

iii. DSR supports the research problem which is related to real-world practice and design dimensions issues. Hence, this methodology is pertinent for this study because it encompasses existing classroom practice in addition to the blended MOOC design.

iv. The domain of this study is suitable for the design research (DSR) that is relevant to the field of educational technology.

v. DSR takes into account the rigorous approaches in the development and evaluation of the artefact. The construction and evaluation of the proposed model comprise an extensive review of literature, content and comparative analysis, user participation and testing, and the expert review.

vi. DSR also produces technology-based solutions for the education. This methodology suits the context and domain of this study.

3.4 Phases in Research Methodology

Based on the discussed philosophical basis, the process concerned, and the research results, DSR provides a strong structure for testing this study. Thus, the phases of DSR, adopted from Vaishnavi and Kuechler (2007), are appropriate to accomplish the objectives of this study. The research methodology can be divided into five phases (as reported in Figure 3.1): (i) awareness of problem, (ii) suggestion, (iii) development, (iv) evaluation, and (v) conclusion.

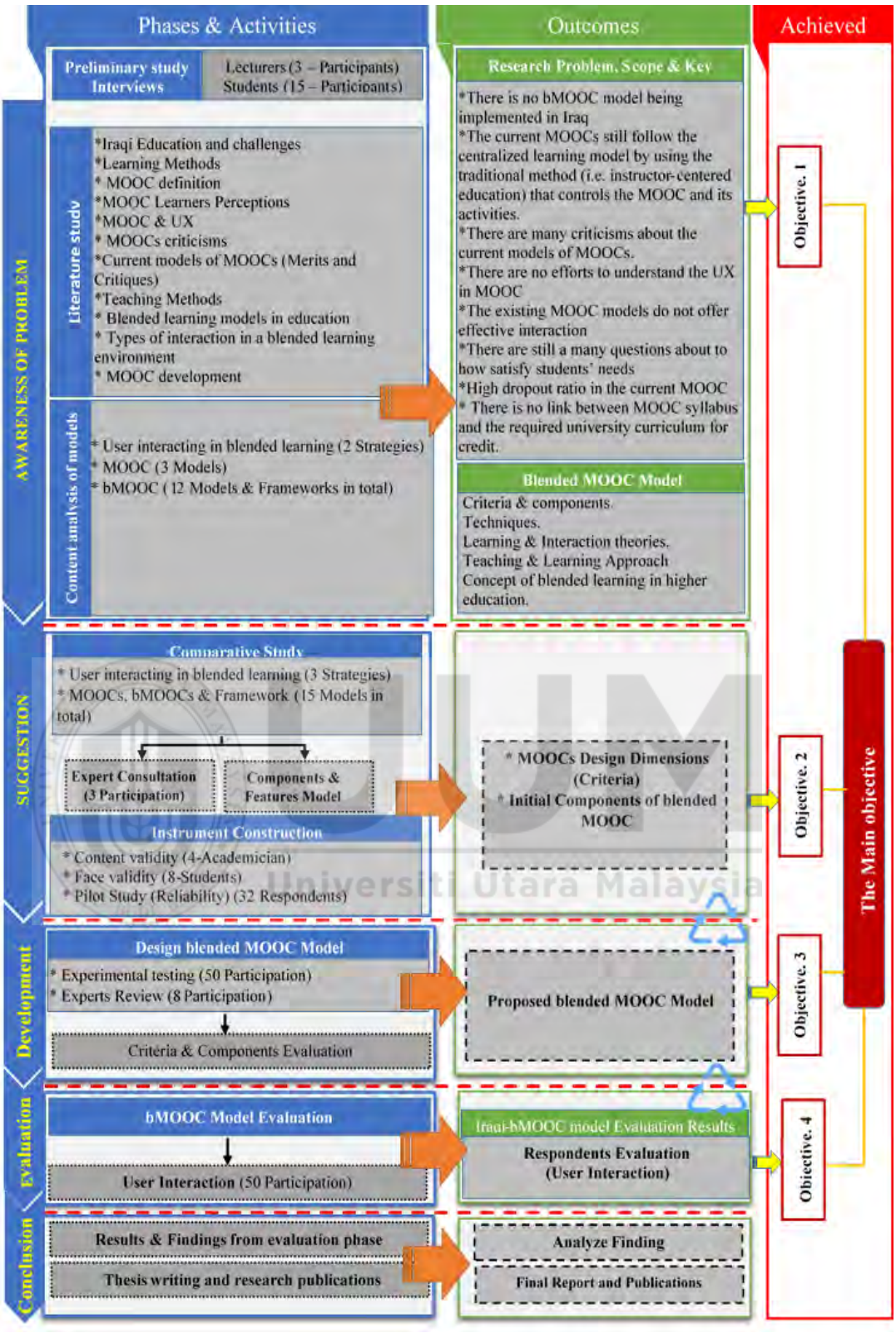


Figure 3.1. Research Methodology Phases

3.4.1 Phase 1: Problem Awareness

The awareness of problem in DSR approach is fulfilled via the problem which is stated based on the literature study, content analysis, motivation, objectives, constructing issues, and solution definition (Vaishnavi & Kuechler, 2007). The problem statement is determined depending on these activities with issues that motivate this study. Therefore, this study is conducted on four main activities to build an awareness of the problem. It comprises preliminary study, literature review, content analysis, and comparative study of models and frameworks as clarified in Figure 3.2.

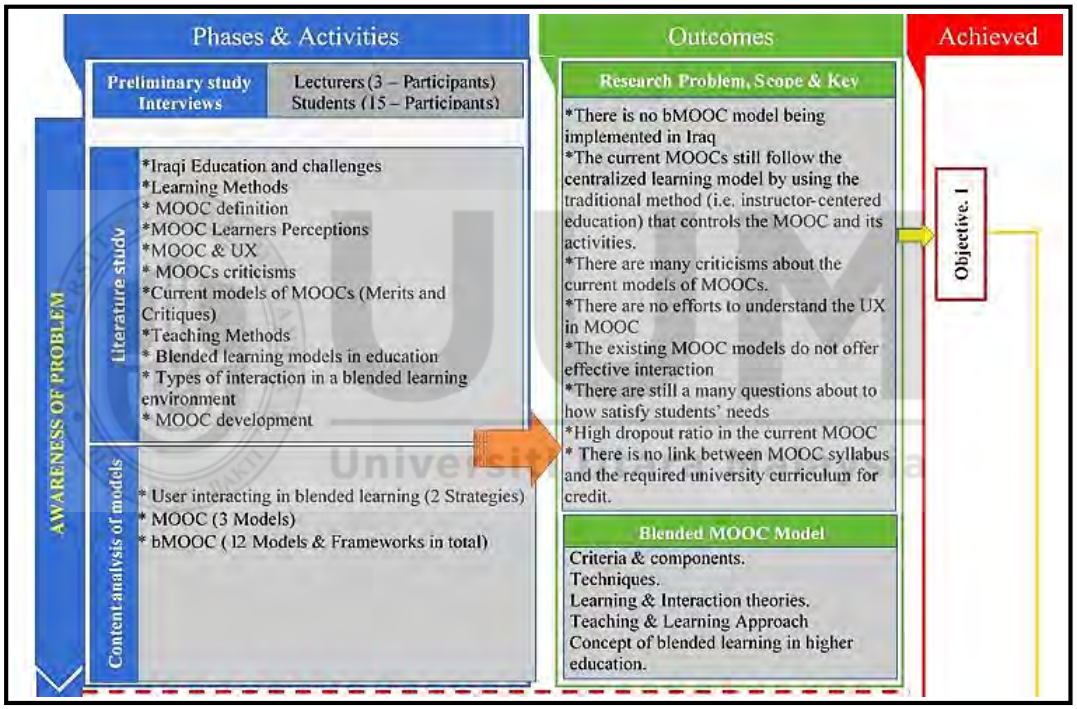


Figure 3.2. Awareness of Problem

3.4.1.1 Preliminary Study

The research field is determined through conducting a preliminary study of blended MOOC. The outcomes are used to initially support and motivate this study by examining whether Iraqi Higher Education Institutions need bMOOC to support the traditional learning. The results and discussion of this study are disclosed in Appendix A.

3.4.1.2 Literature Review

The literature review is a process used to obtain sufficient knowledge about the intended study. The components of online learning can be acquired from many sources of information including interaction, feedback, online lecture, comments and other forms of components. In this research, the aim of literature review is to determine the main issues of developing bMOOC including criteria, design dimensions, components, activities, and phases. In addition, other related issues with blended MOOC are also determined such as Blended Learning, Flexibility, Quality Content, Educational design, Cooperative Learning, and Openness. Figure 3.2 shows the materials covered in literature review with content analysis activities which include blended learning concept, MOOC concepts and characteristics, bMOOC concept and characteristics, and learning theories. The literature review (Chapter. 2) and content analysis (Section 2.7) are discussed.

3.4.1.3 Content Analysis of Models and Frameworks

Reviewing and analyzing the previous literatures is very important to provide applicable solutions to the research problem in this study (Peffers et al., 2008). The content of these studies is to compare the available developmental models proposed by several developers and researchers in terms of the performed steps and phases. Therefore, three content analyses are conducted in this phase: (a) MOOC models approach (b) bMOOC design models and (c) higher educational models and frameworks. The aim of this phase is to identify the limitations in the selected models and frameworks in the defined problem. This leads to the research gaps and also determines the main components of the bMOOC model based on the results of these

models and frameworks. The results of these comparative study are summarized in section 2.8 in Chapter 2.

3.4.2 Phase 2: Suggestion

The second phase of DSR illustrates the results of literature by comparative study, and previous studies used for comparing and identifying the components of the proposed model (as stated in Figure 3.3).

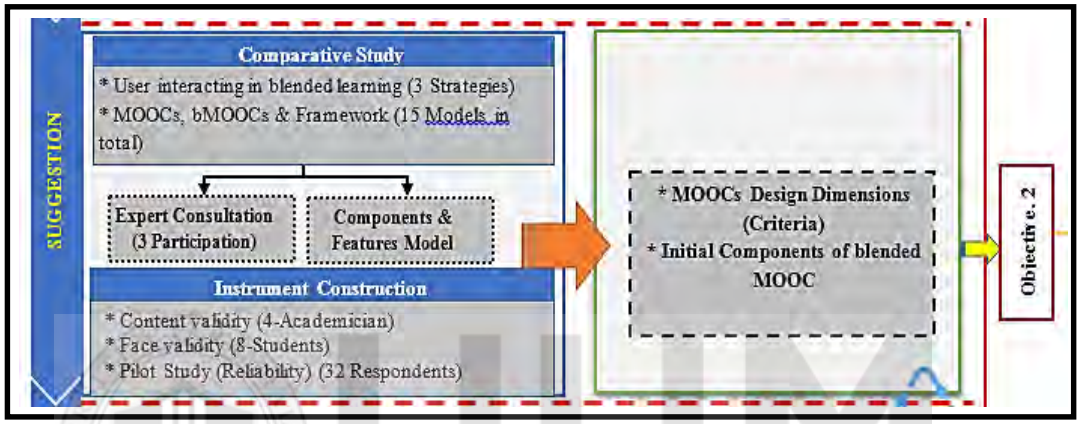


Figure 3.3. Suggestion Phase

The aim of this phase is to suggest the basic concepts necessary to solve the problem of this study (Takeda, Veerkamp, Tomiyama, & Yoshikawa, 1990) based on constructing the artefact as a solution for the problem (Peffers et al., 2008; Kuechler & Vaishnavi, 2008). As discussed in Chapter 1 (section 1.1), studies on learning methodologies are conducted to support the bMOOC model which is proposed as a solution for the learners to develop and design a blended MOOC environment. It also identifies the suitable solutions for the proposed model. Then, some phases and steps of blended MOOC methodology are identified and incorporated with the components of the model in the third phase. This combination was then converted into the proposed MOOC model. This phase includes comparative analysis, expert consultation, user participation, and evaluation of the instruments construction activities.

3.4.2.1 Comparative Study

The design dimensions and components of bMOOC model are extracted through in-depth analysis of the existing models, based on the descriptions and limitations explored in the chapter 2. Thus, this study has analyzed and compared three comparative studies: (a) MOOCs models and frameworks (see section 2.7), (b) blended MOOC development methodologies (see section 2.8), and (c) MOOC and bMOOC design models (see section 2.8.6). The main objective of these comparative studies is to explore and compare the models and development methodologies suggested by some developers and scholars based on the steps and phases to be conducted. The analyses for these methodologies are based on determining the components, functionalty and features in the existing models. The findings analyses of these models (components, functionalty and features) are developed and integrated in the proposed model (as discussed in Section 4.2, Chapter 4).

3.4.2.2 Expert Consultation

Expert consultation is a transparent approach to process uncertainties (Knol, Slottje, Van Der Sluijs, & Lebret, 2010; Nolte & Prilla, 2013b). Therefore, the expert consultation activity in this study is conducted to structure the model's components, phases and steps to develop the blended MOOC at high education institutions. This is because discussion with the experts comprises brainstorming of ideas alongside an approval on the concept and terminologies as discussed in Chapter 4 (Refer to Appendix B).

3.4.2.3 Instrument Construction

To evaluate the research artefact, instruments consisted of structured questionnaires were constructed according to Zikmund (2003)'s instrument design method that include content validity, face validity, and pilot study (Reliability). Three instruments were developed: (1) instrument for expert review, (2) instrument for dimension evaluation, and (3) instrument for user interaction evaluation.

a) Content validity

For validating the content of the questionnaire instrument items, four experts consisted of academicians in educational technology design and development were officially appointed to review the instruments (Schneiderman, 1992). These experts were needed to rate the relation of each item in the questionnaire on the basis of their knowledge, proficiency, skills, and experiences in the aforementioned area (refer to Appendix F). In addition, the experts also displayed if the items and keywords meet the proper measures. Their evaluation decided to either drop some associated items or rephrase them.

b) Face validity

The face validity was conducted by including a focus group of 8 learners who were the potential users in comprehending the questionnaire. Thus, the items of the questionnaire were modified based on these learners' feedback and agreement throughout the discussion.

c) Pilot Study

For measuring the reliability, consistency, and stability of the instruments, a pilot study was conducted involving 32 undergraduate students from Tikrit and Baghdad Universities. The number of participants was adequate to obtain reliable results based

on Sekaran (2003) who suggests employing at least 30 datasets for obtaining reliable results in statistical tests. Before collecting the data, the researcher explained the bMOOC model to the participants. During the data collection, the researcher also detected any item in the questionnaire that could not be recognized or understood by the participants. Once the questionnaire sessions were completed, a statistical test was conducted. Factor analysis and Cronbach alpha tests were used to measure the reliability of instrument.

Firstly, the value of Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity was calculated. According to Behrens (1997), the condition of factor analysis are:

i. KMO value should be larger than (0.50).
ii. Bartlett's test of spherecity must have significant value of (p) less than (0.0).

It is required that the instrument should be larger than 0.5 factor loading rule (Hair, Black, Babin, & Anderson, 2010). Then, data rotation process was done using varimax method. Finally, Cronbach's Alpha test was run to remove items which did not concur to the minimum value of 0.7 (Sekaran, 2003). Besides, to test instrument consistency, the value of Cronbach's alpha coefficient shows that $\alpha > 0.7$ to be accepted as reliable (Sekaran, 2003). All of these conditions and procedures are very important to avoid measurement error during actual study. The following subsections explain the process of developing the instruments by selecting the related dimension and statement items from literature. Validated and revised versions of the instruments after content validity and pilot study activities are also presented.

d) bMOOC Model Expert Review Instrument

This instrument is used for selected academicians and practitioners to validate and finalize the proposed model through an expert review activity. The experts phase focuses on the first three items which are based on the conceptual design model and the experts review instruments constructed by Siti Mahfuzah (2011) and Nurulnadwan (2014). The questions are about: (1) relevancy of the proposed phases which represent the main components and features of bMOOC, (2) necessity of the proposed tasks and the activities within them, (3) connections and flows of all of the components (Admin, Lecturer and Student). The rest of the items are adapted from model experts review instrument by Yousef, (2014). These instruments were adapted because their questionnaire items were particularly designed for model evaluation by domain experts. Finally, the last item is provided for additional comments by the experts (Refer to Appendix C).

e) bMOOC Model Dimensions Evaluation Instrument

Several frameworks for evaluating conceptual models have been established by prior researchers (eg: Wolff & Frank, 2005; Mehmood & Cherfi, 2009; Heidari & Loucopoulos, 2014) which may be classified into distinctive perspectives. In deployment perspective, conceptual models can be examined in association with its objectives (Frank, 2006). Since bMOOC model centralizes on the process of blended MOOC design and development, the evaluation of bMOOC model should focus on its validity and practicality. Hence, Yousef et al., (2015) components of conceptual blended MOOC model was adopted into the instrument design. It embodies a comprehensive set of six criteria that incorporates previous research in reference model field (Refer to Table 3.2).

Table 3.2

Dimensions of Conceptual Model

Conceptual Model Dimensions	Meaning and Definition
Blended Learnings	Blended MOOC model integrates together face-to-face approach with online learning approach.
Flexibility	The model is flexible and capable of being managed and controlled.
High quality content	The degree of content, concepts, and structure of the model is clear to the users. (i.e. the content is well designed and interactive).
Instructional design and learning methodologies	The proposed model is organized and structured well. The layer of the instructional design and learning methodology in the model are easily followed.
Network Learning	The model is adaptable for network learning
Openness	The model is adaptable through providing learning to a large number of participants

Source: Yousef, (2015)

Thus, the proposed model was measured in terms of blended learning, flexibility, high quality content, instructional design and learning methodologies, network learning and openness. It was implied that these dimensions would represent the criteria of bMOOC model as a valid and practical tool for blended MOOC. Basically, this instrument was utilized to measure if the proposed model has met the learner's needs and requirements (Yousef et al., (2014a).

In addition, the items from Yousef, (2015)'s blended MOOC model evaluation instrument were also heavily borrowed to assess methodology and process. This was due to his instrument is grounded on a number of evaluation dimensions proposed by prior researchers to evaluate models and approaches which were extracted from different fields such as information technology, and education. Furthermore, this study

also considered Almalki, (2011), Klink, (2006), Derek (2014), and Singh (2016), construct measurement instrument in evaluating bMOOC process. The justification was, it provides a practical evaluation framework that combined educational model variables related to perceptions of user's interaction and needs, as well as satisfaction outcomes. In summary, the instrument for assessing the proposed bMOOC model was designed as in Table 3.3. Feedback from the experts about instrument items has suggested some changes towards the items. As a result, some items were dropped because they were intricate for potential participants, besides, confusing items were rephrased and overlapping items were combined and modified, although most of statements were relevant (Refer to Appendix F).

Table 3.3

Original Version of bMOOC Model Evaluation Instrument

Dimension	Items	Remark	Source
Blended Learning	Blended MOOC approach helps me to improve my academic achievements outcome.	Ok	A
	Blended MOOC approach increases my motivation to share and discover new ideas.	Ok	A
	Blended MOOC approach enables me to accomplish tasks more quickly.	Ok	B
	Blended MOOC approach can be used to enhance the traditional classroom approach.	Ok	A
	Blended MOOC enables the instructor to address individual student's needs effectively.	Delete	B
	I am satisfied with this blended MOOC environment.	Ok	A
Flexibility	I can access the learning activities at any time convenient to me.	Refinement	C
	The learning environment provides me with a wide range of learning tools that allow the learners to quickly access the required information and materials (e.g. assignment due date, grading system, exams, etc.).	Ok	D
	I am able to access the learning materials with no much difficulty.	4.4	D
	The website content makes me explore the course further.	Ok	C
	The learning environment allows me to focus on the learning activities suitable to me.	Delete	D

A- Yousef (2015), B- Almalki (2011), C- Klink (2006), D- Derek (2014), E- Singh (2016).

Table 3.3 continued

Dimension	Items	Remark	Source
Flexibility (Continued)	I can access to the social media as part of the learning process such as twitter and Facebook.	Ok	A
	The learning environment allows me to use the video lectures based on the lectures in classroom.	Ok	C
	The learning environment provides the learners with examples that can be understood by everyone based on the Iraqi-Arabic language and culture.	Ok	A
	The learning environment provides me a wide range of materials that I can choose from.	Delete	E
	The learning environment provides me with adequate communication channels with the lecturer and with other learners (e.g., email, forum, video comments).	Ok	E
	I am very comfortable with the flexible design to upload and download the files in my own devices easily (Computer, Mobile), such as Video, doc, ppt, pdf and xlsx and etc.	Ok	E
Quality Content	The presentation of the subject content is clear.	Ok	A
	The easy design helps to structure the learning content for different learners.	Ok	C
	The interactive material comments (video, audio and text) help improve the quality of the learning content.	Ok	C
	The information presented in the discussions comments helps me to better understand this course.	Ok	B
	I always know where I am in the course.	Delete	A
	The feedback from my lecturer and other learners helps me to understand the lecture content.	Ok	E

A- Yousef (2015), B- Almalki (2011), C- Klink (2006), D- Derek (2014), E- Singh (2016).

	Items	Remark	Source
Quality Content (Continued)	The search options in the system help me to find specific learning resources.	Ok	E
	This learning environment enables me to adapt the quality of the learning materials to better meet my needs.	Ok	C
	The content of this course keeps me focused on what is to be learned.	Delete	B
Educational Design	The learning objectives and scope are clearly stated in the online lecture.	Ok	A
	The structure of this course keeps me focused on what is to be learned.	Ok	A
	Blended MOOC approach can be used to supplement the traditional classroom approach.	Ok	E
	The various learning tools in this environment are effective.	Ok	C
	I have the possibility to ask my tutor about what I do not understand.	Ok	A
	The lecturer responds promptly to my queries.	Ok	C
	The grading criteria were clearly communicated at the beginning of the course.	Delete	A
	The lecturer sends me comprehensive feedback on my assignment.	Ok	A
	I can approach the teaching team in this course when needed.	Refinement	E
	The assessment in this course improves my learning process.	Ok	A

A- Yousef (2015), B- Almalki (2011), C- Klink (2006), D- Derek (2014), E- Singh (2016).

Table 3.3 continued

Dimension	Items	Remark	Source
	Different types of questions help me to provide specific and quick answers (e.g. short answers, essay, matching, Multiple Choice question and True/False question).	Ok	D
	I can interact with other learners and with the lecturer synchronously and asynchronously.	Ok	C
	It is easy to work collaboratively with other learners involved in a course.	Ok	D
	The communication tools enhance my interaction and collaboration with my mates.	Refinement	E
	I share what I have learned in this course with others outside of the learning environment such as learners from other universities.	Ok	D
Cooperative Learning	The cooperative learning helps me receive support and feedback from other participants.	Ok	A
	The blended MOOC environment encourages me to collaborate and share ideas with others.	Ok	B
	The blended MOOC environment increases my motivation to participate in class activities.	Ok	B
	The interaction environment encourages the learner to invite participants from outside the university.	Delete	A
	I am satisfied with this cooperative learning environment.	Ok	C
	The discussion forum of this course is effective.	Ok	C
	The use of email in this course is effective.	Ok	E

A- Yousef (2015), B- Almalki (2011), C- Klink (2006), D- Derek (2014), E- Singh (2016).

	Items	Remark	Source
	The use of the lectures' comments in this course is effective.	Ok	C
	The interaction (i.e. content, lecturer, and peers) is effective.	Ok	E
	I can interact with other learners and lecturers.	Refinement	E
	Feedback from the professor is timely.	Ok	A
Openness	The blended MOOC system allows the student to register free of charge.	Ok	B
	There is no academic requirements for registration in the system, i.e., it is open for all.	Ok	B
	The learning material is available for free downloading.	Ok	A
	This learning environment helps the learner to learn and receive support and feedback from any university in Iraq.	Ok	A
	This learning course enables me to adapt with learning material at any university.	Ok	E
	I can access to lectures and learning activities anywhere.	Refinement	E
	I can access to lectures and learning activities any time.	Delete	C

A- Yousef (2015), B- Almalki (2011), C- Klink (2006), D- Derek (2014), E- Singh (2016).

Overall, as depicted in Table 3.4, only 51 items remained in the revised instrument. Importantly, another review cycle with experts was carried out with two experts to approve the modified instrument before proceeding to pilot study. In general, most of the experts agreed that the proposed items assess has appropriately defined the dimensions.

Table 3.4

Revised Version of bMOOC Model Evaluation Instrument

Dimension	Items	Remark
Blended Learning	Blended MOOC approach helps me to improve my academic achievements outcome.	Ok
	Blended MOOC approach increases my motivation to share and discover new ideas.	Ok
	Blended MOOC approach enables me to accomplish tasks more quickly.	Ok
	Blended MOOC approach can be used to enhance the traditional classroom approach.	Ok
	I am satisfied with this blended MOOC environment.	Ok
Flexibility	I can access to lectures and learning activities anytime and/or anywhere that is suitable for me.	Ok
	The learning environment provides me with a wide range of learning tools that allow the learners to quickly access the required information and materials (e.g. assignment due date, grading system, exams, etc.).	Ok
	I am able to access the learning materials with no much difficulty.	Ok
	The website content makes me explore the course further.	Ok
	I can access to the social media as part of the learning process such as twitter and Facebook.	Ok
	The learning environment allows me to use the video lectures based on the lectures in classroom.	Ok
	The learning environment provides the learners with examples that can be understood by everyone based on the Iraqi-Arabic language and culture.	Ok
	The learning environment provides me with adequate communication channels with the lecturer and with other learners (e.g., email, forum, video comments).	Ok

Table 3.4 continued

Dimension	Items	Remark
Flexibility (Continued)	I am very comfortable with the flexible design to upload and download the files in my own devices easily (Computer, Mobile), such as Video, doc, ppt, pdf and xlsx and etc.	Ok
Quality Content	The presentation of the subject content is clear.	Ok
	The easy design helps to structure the learning content for different learners.	Ok
	The interactive material comments (video, audio and text) help improve the quality of the learning content.	Ok
	The information presented in the discussions comments helps me to better understand this course.	Ok
	The feedback from my lecturer and other learners helps me to understand the lecture content.	Ok
	The search options in the system help me to find specific learning resources.	Ok
	This learning environment enables me to adapt the quality of the learning materials to better meet my needs.	Ok
Educational Design	The learning objectives and scope are clearly stated in the online lecture.	Ok
	The structure of this course keeps me focused on what is to be learned.	Ok
	Blended MOOC approach can be used to supplement the traditional classroom approach.	Ok
	The various learning tools in this environment are effective.	Ok
	I have the possibility to ask my tutor about what I do not understand.	Ok
	The lecturer responds promptly to my queries.	Ok
	The lecturer sends me comprehensive feedback on my assignment.	Ok

Table 3.4 continued

Dimension	Items	Remark
Educational Design (Continued)	The approach of this blended MOOC environment encourages me to contact the teaching team in this course when needed.	Ok
	The assessment in this course improves my learning process.	Ok
	Different types of questions help me to provide specific and quick answers (e.g. short answers, essay, matching, Multiple Choice question and True/False question).	Ok
Cooperative Learning	I can interact with other learners and with the lecturer synchronously and asynchronously.	Ok
	It is easy to work collaboratively with other learners involved in a course.	Ok
	The communication tools enhance my interaction and collaboration with my course mates.	Ok
	I share what I have learned in this course with others outside of the learning environment such as learners from other universities.	Ok
	The cooperative learning helps me receive support and feedback from other participants.	Ok
	The blended MOOC environment encourages me to collaborate and share ideas with others.	Ok
	The blended MOOC environment increases my motivation to participate in class activities.	Ok
	I am satisfied with this cooperative learning environment	Ok
	The discussion forum of this course is effective.	Ok
	The use of email in this course is effective.	Ok
	The use of the lectures' comments in this course is effective.	Ok
	The interaction (i.e. content, lecturer, and peers) is effective.	Ok
	I can interact with other learners and lecturers from other universities.	Ok
	Feedback from the professor is timely.	Ok

Table 3.4 continued

Dimension	Items	Remark
Openness	The blended MOOC system allows the student to register free of charge.	Ok
	There is no academic requirements for registration in the system, i.e., it is open for all	Ok
	The learning material is available for free downloading.	Ok
	This learning environment helps the learner to learn and receive support and feedback from any university in Iraq.	Ok
	This learning course enables me to adapt with learning material at any university.	Ok
	I can access to lectures and learning activities from anywhere and anytime.	Ok

5-point semantic scale was formed for the model evaluation questionnaire. Each score represented the level of agreement for each item with 1 was the lowest score and 5 was the highest (Refer to figure 3.4).

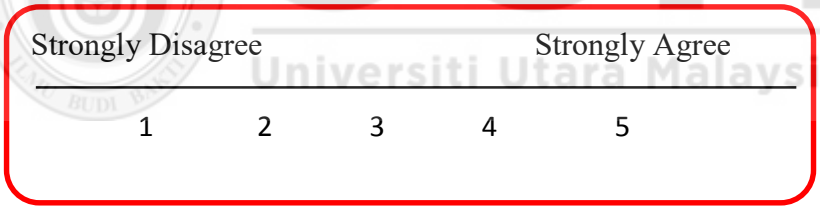


Figure 3.4. 5-point semantic scale

Firstly, the KMO test resulted in .726 for blended learning, .829 for flexibility, .857 for quality content, .829 for educational design, .790 for cooperative Learning, and .857 for openness. KMO values over .50 are generally considered suitable and acceptable for the measures (Hair et al. 2006). Secondly, the Barlett's test of sphericity also gave the significance level of .00 ($p < .05$) for all criteria. Therefore as shows in

Table 3.5. The results explain that all items with loadings above .70, made evidences of well-defined structure of the measure (Hair et al., 2006).

Table 3.5

Factor Loadings Results (Dimensions)

Dimension	Items	Loadings
Blended Learning	Blended MOOC approach helps me to improve my academic achievements outcome.	.837
	Blended MOOC approach increases my motivation to share and discover new ideas.	.808
	Blended MOOC approach enables me to accomplish tasks more quickly.	.729
	Blended MOOC approach can be used to enhance the traditional classroom approach.	.759
	I am satisfied with this blended MOOC environment.	.897
Flexibility	I can access to lectures and learning activities anytime and/or anywhere that is suitable for me.	.861
	The learning environment provides me with a wide range of learning tools that allow the learners to quickly access the required information and materials (e.g. assignment due date, grading system, exams, etc.).	.782
	I am able to access the learning materials with no much difficulty.	.772
	The website content makes me explore the course further.	.866
	I can access to the social media as part of the learning process such as twitter and Facebook.	.790
	The learning environment allows me to use the video lectures based on the lectures in classroom.	.813
	The learning environment provides the learners with examples that can be understood by everyone based on the Iraqi-Arabic language and culture.	.737

Table 3.5 continued

Dimension	Items	Loadings
Flexibility (Continued)	The learning environment provides me with adequate communication channels with the lecturer and with other learners (e.g., email, forum, video comments).	.847
	I am very comfortable with the flexible design to upload and download the files in my own devices easily (Computer, Mobile), such as Video, doc, ppt, pdf and xlsx and etc.	.813
Quality Content	The presentation of the subject content is clear.	.737
	The easy design helps to structure the learning content for different learners.	.792
	The interactive material comments (video, audio and text) help improve the quality of the learning content.	.765
	The information presented in the discussions comments helps me to better understand this course.	.829
	The feedback from my lecturer and other learners helps me to understand the lecture content.	.841
	The search options in the system help me to find specific learning resources.	.754
	This learning environment enables me to adapt the quality of the learning materials to better meet my needs.	.839
Educational Design	The learning objectives and scope are clearly stated in the online lecture.	.811
	The structure of this course keeps me focused on what is to be learned.	.788
	Blended MOOC approach can be used to supplement the traditional classroom approach.	.823
	The various learning tools in this environment are effective.	.879
	I have the possibility to ask my tutor about what I do not understand.	.857

Table 3.5 continued

Dimension	Items	Loadings
Educational Design (Continued)	The lecturer responds promptly to my queries.	.834
	The lecturer sends me comprehensive feedback on my assignment.	.820
	The approach of this blended MOOC environment encourages me to contact the teaching team in this course when needed.	.857
	The assessment in this course improves my learning process.	.840
	Different types of questions help me to provide specific and quick answers (e.g. short answers, essay, matching, Multiple Choice question and True/False question).	.814
Cooperative Learning	I can interact with other learners and with the lecturer synchronously and asynchronously.	.759
	It is easy to work collaboratively with other learners involved in a course.	.787
	The communication tools enhance my interaction and collaboration with my course mates.	.723
	I share what I have learned in this course with others outside of the learning environment such as learners from other universities.	.803
	The cooperative learning helps me receive support and feedback from other participants.	.839
	The blended MOOC environment encourages me to collaborate and share ideas with others.	.825
	The blended MOOC environment increases my motivation to participate in class activities.	.836
	I am satisfied with this cooperative learning environment.	.739
	The discussion forum of this course is effective.	.855
	The use of email in this course is effective.	.815
	The use of the lectures' comments in this course is effective.	.757

Table 3.5 continued

Dimension	Items	Loadings
Cooperative Learning (Continued)	The interaction (i.e. content, lecturer, and peers) is effective.	.798
	I can interact with other learners and lecturers from other universities.	.769
	Feedback from the professor is timely.	.856
Openness	The blended MOOC system allows the student to register free of charge.	.826
	There is no academic requirements for registration in the system, i.e., it is open for all	.864
	The learning material is available for free downloading.	.843
	This learning environment helps the learner to learn and receive support and feedback from any university in Iraq.	.865
	This learning course enables me to adapt with learning material at any university.	.813
	I can access to lectures and learning activities from anywhere and anytime.	.856

In summary, from all the tests conducted, the dimensions and items used are feasible for the study. Finally, Cronbach's Alpha test showed significant results as presented in Table 3.6 and Table 3.7. These findings showed that the instrument design was consistent.

Table 3.6

Case Processing Summary

		N	100%
Cases	Valid	32	100
	Excluded[a]	0	0
	Total	32	100

Table 3.7

Reliability Test

Dimensions	Cronbach's Alpha	N of Items
Blended Learnings	.889	5
Flexibility.	.837	9
Quality content	.723	7
Educational Learning	.866	10
Cooperative Learning	.789	14
Openness	.891	6

The final version of the instrument is presented in Appendix D. In summary, from all the tests conducted, the proposed dimensions and items were feasible for interaction evaluation of bMOOC.

f) bMOOC Model User Interaction Instrument

The perception of users on the user interaction of the proposed bMOOCwas aimed at investigating the interaction and the quality of feedback. This study involved the design of a questionnaire adapted from Yousef, (2015d), Khalil & Ebner, (2013), Balaji & Chakrabarti, (2010), and Klink, (2006), this is due to the point that these researchers are closely associated with bended MOOC and blended learning. The instrument for assessing user interaction in Iraqi-bMOOC model was designed based on 13 items as in Table 3.8. The feedback from the experts about instrument items has suggested few changes towards the items (Refer to Appendix G).

Table 3.8

Original Version of User Interaction Evaluation Instrument

No	Items	Remark	Source
1	The peer feedback helps me to recognize the errors in my own work.		A
2	The comments I received from peer feedback helped to improve the quality of my work.	Refinement	C
3	The received feedback helps me to get more information about the learning topic.		B
4	Reviewing others' work helps me to reflect it on my own work.		C
5	The peer interaction helps me to learn how to give constructive feedback to peers.		C
6	The feedback I received from peer was valid.	Delete	A
7	The lecturer interaction helps me to come up with new ideas.		D
8	The interaction with lecturer increases my ability in organizing ideas and contents in my work.		B
9	The lecturer enhances my satisfaction on this course.		A
10	I am satisfied on my interaction with the course content.		D
11	Content of course allows me to engage in the learning activities.		D
12	Course content enhances interaction between the lecturer and the learners.		A
13	Course content provides me with adequate communication channels with the lecturer and peers.	Refinement	B

A- Yousef, 2015, B- Khalil & Ebner (2013), C- Balaji & Chakrabarti (2010), D- Klink, (2006).

Finally, as depicted in Table 3.9, only 12 items remained in the revised instrument (Refer to Appendix E).

Table 3.9

Revised Version of User Interaction Instrument

No	Items
1	The peer feedback helps me to recognize the errors in my own work.
2	The received comments from peers' feedback help me to improve the quality of my work.
3	The received feedback helps me to get more information about the learning topic.
4	Reviewing others' work helps me to reflect it on my own work.
5	The peer interaction helps me to learn how to give constructive feedback to peers.
6	The lecturer interaction helps me to come up with new ideas.
7	The interaction with lecturer increases my ability in organizing ideas and contents in my work
8	The lecturer enhances my satisfaction on this course.
9	I am satisfied on my interaction with the course content.
10	Content of course allows me to engage in the learning activities.
11	Course content enhances interaction between the lecturer and the learners.
12	Course content provides me with adequate communication channels with the lecturer and peers (e.g., email, forum, comments, etc.).

The results of KMO and Bartlett‘s test were significant as they fulfilled the previously stated conditions. Thus, the KMO test resulted in .826 for user interaction. Therefore KMO values over .50 are generally considered suitable and acceptable for the measures (Hair et al. 2006). Secondly, the Barlett’s test of sphericity also gave the

significance level of .00 ($p < .05$) for user interaction items. Therefore Table 3.10 shows the factor loadings for all items from the factor analysis test.

Table 3.10

Factor Loadings Results

No	Items	Loadings
1	The peer feedback helps me to recognize the errors in my own work.	.712
2	The received comments from peers' feedback help me to improve the quality of my work.	.802
3	The received feedback helps me to get more information about the learning topic.	.726
4	Reviewing others' work helps me to reflect it on my own work.	.698
5	The peer interaction helps me to learn how to give constructive feedback to peers.	.718
6	The lecturer interaction helps me to come up with new ideas.	.734
7	The interaction with lecturer increases my ability in organizing ideas and contents in my work	.714
8	The lecturer enhances my satisfaction on this course.	.689
9	I am satisfied on my interaction with the course content.	.729
10	Content of course allows me to engage in the learning activities.	.756
11	Course content enhances interaction between the lecturer and the learners.	.751
12	Course content provides me with adequate communication channels with the lecturer and peers (e.g., email, forum, comments, etc.).	.739

Afterwards, Cronbach's Alpha test disclosed significant results as presented in Table 3.11. These findings demonstrated that the instrument design was consistent.

Table 3.11

Reliability Test

Dimensions	Cronbach's Alpha	N of Items
User interaction	.897	12

From all the tests conducted, it demonstrated that the proposed dimensions and items were feasible for Iraqi-bMOOC assessment. Therefore, the revised version of the instrument is presented in Appendix E. In summary, all instruments were rigorously developed before proceeding to the evaluation phase.

3.4.3 Phase 3: Design of Blended MOOC (Development)

Figure 3.5 shows the development process in the proposed bMOOC model which is depending on steps conducted in previous stages. The main issues of developing bMOOC have been identified based on the previous literature to collect all the phases, components, criteria and design dimensions that are suitable for bMOOC model. As such, they are integrated to form the proposed model. The development process is iterative depending on the conducted evaluation. This activity of development includes four section: (i) combining MOOC Model with the blended learning Model and (ii) bMOOC Model Development. The third section (iii) is an experimental testing that is obtained through user experience with the six dimensions of bMOOC courses (i.e. Blended Learning, Flexibility, Quality Content, Educational Design, Cooperative Learning, and Openness). That mean that the research artefact in bMOOC must be evaluated depending on its performance in a real setting (Rudmark & Lind, 2011).The fourth section (iv) is about the experts' evaluation which includes evaluation is based on components and features. Detailed descriptions on the proposed model are described in Section 4.4, Chapter 4.

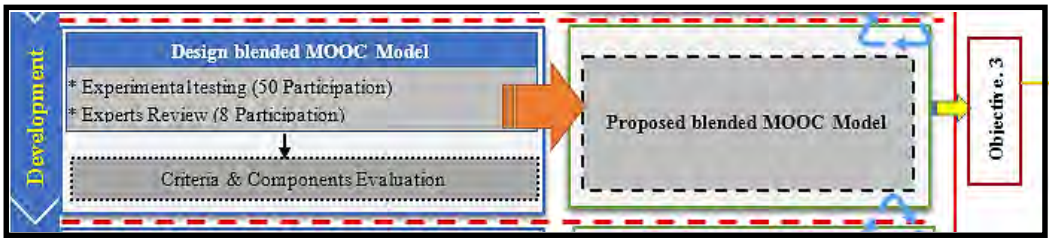


Figure 3.5. Development Phase

3.4.3.1 Combining MOOC Models with the Blended Learning Models

All components and features are gathered in this activity. They are related to MOOCs models development and compiled and integrated into the bMOOC. The combination includes: model components, sub-phases, and criteria and design dimensions to develop the initial proposed model of bMOOC (Refe to section 4.3 in chapter 2).

3.4.3.2 Blended MOOC Model Development

The development of the proposed model is based on building a prototype for the testing purposes. The advantage of a prototype is related to the fact that it is quickly provides a system with which the users can interact even if it is not ready for the widespread organizational use (Denis, Wixom, & Tergarden, 2007). Prototyping confirms that the users could see the progress and quickly help refine the real requirements. Rather than attempting to understand a system specification on paper, the users can interact with the prototype. Hence, it helps to better understand what can (not) be done. The prototype development process is iterative based on the conducted evaluation. Detailed descriptions on the proposed model are described in Section 4.5, Chapter 4.

3.4.3.3 Experts Review for the Prototype

The expert review is defined as a significant way to enhance the quality of the developed models (Wiegers, 2002) and validate and finalize the model. Therefore, this

study adopts the expert review to evaluate the proposed model. In the expert review activity, two sections are conducted: (a) expert review demographic data, and (b) expert review to evaluate the components and features. Both activities evaluate the proposed model. Eight experts from universities of Tikrit and Baghdad (Refer to 4.7 chapter 4) were involved in both activities. Schneiderman (1998) reports state that three to five experts is sufficient to participate in the expert review. The experts' backgrounds are from Human Computer Interaction, Multimedia, Online Learning E-learning, Communication, and Social Media. All the experts have more than 20 years' experience in teaching and researching in the aforementioned fields. Therefore, experts involved in the review process were selected based on the criteria described in Table 3.12.

Table 3.12

Criteria of Expert Selection

Category	**Criteria**
Academician	*Have PhD qualifications either in Human Computer Interaction (HCI) or Multimedia or online learning or e-learning or communication or Social Media and Design related area. * Have been studying/researching either in education technology, Human Computer Interaction (HCI) or online learning or e-learning or communication or social media and design related area for at least five years.
Practitioner	Have at least five years of professional experience in education technology

The procedure of expert review started with the official invitation by the dean of Computers Science College in each university (Tikrit and Bahgdad) on Jan 2017. The experts have agreed on evaluating the bMOOC. The objective and scope of the proposed model were made clear to the experts where the target users are

undergraduate students. Next, the experts are allowed to use the system to know the contents and components more accurately. The expert review instrument for bMOOC model asks about the relevancy of the proposed components and functionality, the activities within them, connections and flows of all of the components, as well as other aspects of the proposed model. The experts were required to note problematic features by inspecting the components and items relevancy in the model and predict potential problems when users interact with it. It took approximately four to eight weeks to accomplish the expert's review process started from first-Jan 2017. The procedures of the expert review are prepared to evaluate the components by the following steps:

1) Setting up the review form based on the selected evaluation dimensions (components, functionality & features)

2) Conducting the review

3) Analyzing the results

Finally, the profile of experts, analysis of results from this activity are elucidated in Chapter 4 (Section 4.7).

3.4.3.4 Experimental Testing

As discussed by Andersen (2002), the experimental testing could be constructed on an actual project to evaluate the practical part and this can validate the model. This research selects a set of dimensions to evaluate the bMOOC courses. The conditions of determining this dimensions depend on the discussion mentioned in the literature. Thus, the testing of bMOOC model are customized based on these dimensions. In particular, this study uses six dimensions for the experimental testing that are related

to the evaluation of the proposed model as stated earlier. In general, the procedures of the experimental testing are arranged in the following steps:

i. Design of the experimental testing.

ii. Selecting the group participants.

iii. Running the experimental testing by website of bMOOC.

iv. Instructing the participants to register in the courses of bMOOC.

v. Collecting the data by using constructed questionnaire.

vi. Evaluating and analyzing the data depending on the appropriate statistical tests.

Chapter 4 (Section 4.8) discusses the evaluation and data analysis in details. The next section discusses the procedure of the samples.

3.4.4 Phase 4: Evaluation

Norshuhada and Sharizan (2013) report that there are several approaches to validate artefacts in DSR such as experience, analysis, examples, persuasion and evaluation. Therefore, the evaluation phase is conducted through user interaction as indicated in Figure 3.6. The aim of this phase is to record the learners' interaction with the instructor, and peers and content.

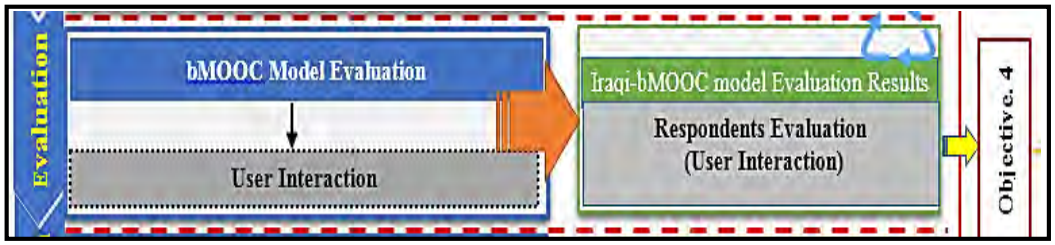


Figure 3.6. Evaluation phase

3.4.4.1 User Interaction Evaluation

Improved interaction among learners is another important factor in the efficiency of the blended MOOC environment. The learners should build their knowledge depending on the interaction levels among the learners based on interaction strategies (such as interaction with instructors, peers and content). This helps in constructing the knowledge by a good interactive online learning, as reported in Figure 2.10, (Anderson, 2010).

A questionnaire is conducted about user interaction with courses on 10th of Jun 2017 at Tikrit and Baghdad University. The courses are presented in two months at Tikrit University and in cooperation with Baghdad University on 2th of April 2017. The total targeted number of respondents in this survey is 50 (only who are aquanited with MOOC courses). Then, the participants are allowed to use the courses. The questionnaire consists of 12 questions. Participants are asked to answer all the questions to evaluate the interaction in the courses. The aim of this activity is to measure the extent of interaction inside the courses and create an interactive model for higher education institutions. Overall, the procedures of the user interaction testing are arranged in the following steps:

i. Designing the user interaction.

ii. Instructing the participants to register in the courses of bMOOC.

iii. Distributing the questionnaire by using constructed questionnaire.

iv. Collecting the data.

v. Evaluating and analyzing the data depending on the appropriate statistical tests.

Finally, the analysis of results of this activity (user interaction) is discussed in Chapter 5.

3.4.5 Phase 5: Conclusion

The final phase of this methodology is the conclusion where the results and findings of experts, experimental testing, and user interaction are construed, as described in Chapter 6. The iteration of the bMOOC model is performed for the last time to visualize the final form of the model based on the results. Once the last validation is confirmed, the model is completed. The direction and future research to promote improvement on the study are elaborated as part of the conclusion phase as in figure (3.7).

Figure 3.7. Conclusion Phase

3.4.5.1 Communicate Results and Findings

The requirements of this study are justified by breaking down the results and findings. The answers to research questions and discussion of findings are highlighted. A final form of the scholarly indorsed artefact is presented. Besides, summaries of research limitations are presented. Discussion of future research and conclusions of the study are discussed in details in the Chapter 6.

3.4.5.2 Review Documentation

After completing this phase, the obtained outcomes are established in the academic publications and this study.

3.5 Sampling

Sampling is the process of selecting the appropriate elements and number of the population (Creswell, 2013; Sekaran & Bougie, 2010). Therefore, careful selection of the sample helps obtain the right results. In addition, Roscoe (1975) propose some rules to determine the suitable sample size for most research. It must be larger than 30 and less than 500 for the experimental study with small experimental controls. Thus, the successful study is possible to be conducted with a sample as small as 30. Consequently, 50 Bachelor students were selected from universities of Tikrit and Baghdad. In addition, in this study the sample of participants should be limited to those who have only experience and skills with the previous MOOC or blended MOOC courses. For research validity purposes, the selected participants were students from the same specialization and class. This was due to the issue that the university students are stakeholders and must be homogeneous in age and education (Peterson & Merunka, 2014). Then, a group of students were divided based on each class in the college. The questionnaire was used to collect the data on Jun 2017 and the system tests were applied in the environments of universities (Tikrit and Baghdad) on April 2017. Besides, the participants had registered in the blended MOOC courses because an advertisement was announced for participating in these courses in each college. At the end of the courses, the participants were asked to fill up the questionnaire based on their experience and impressions about the courses.

To avoid misunderstanding and bias statements, it was important to provide written forms of the questionnaire in English and Arabic (Distributing Dual Language). This was because Arabic is the first language of the participants and using it helps them to avoid misunderstanding and to attract their attention for answering the questions.

Thus, researcher collected 50 responses to measure the benefit of the Iraqi-bMOOC prototypes based on the design dimensions.

3.6 Unit of Analysis

The unit of analysis is defined as the major entity to be examined during the subsequent data analysis stage (Trochim & Donnelly, 2007; Sekaran & Bougie, 2010). According to Yin (1994), the unit of analysis in a study could be of individuals, groups and artifacts. Moreover, for different analyses in the same study, different units of analysis may have been identified. The following are units of analysis identified throughout this study:

i. Respondents of preliminary study: Practitioners, lecturers, and students participated in the preliminary study. The respondents represented various backgrounds of of Tikrit & Baghdad universities.
ii. Experts in expert consultation: Experts were consulted prior to developing the components and features of bMOOC.
iii. Experts in face validity: Experts from different background in educational technology design and development
iv. Respondents of pilot study: The pilot study of the research instrument involved students for both universities.
v. Expert in expert review of the proposed model: Expert reviews were conducted to validate the proposed conceptual design model.
vi. Respondents in the Survey: The respondents from the survey involved undergraduate students' from Tikrit & Baghdad universities

3.7 Summary

In a summary, this chapter presents a description of the research methodology. It shows how DSR methodology is adopted in this study. It encompasses five phases to fulfill the research objectives: (i) awareness of problem, (ii) suggestion, (iii) development, (iv) evaluation, and (v) conclusion. In addition, this chapter also discusses the research design, data collection approach, and procedure of sampling techniques. However, the following chapter describes the procedures and results in the development of the proposed model.

CHAPTER FOUR
CONSTRUCTION OF IRAQI-BLENDED MOOC MODEL

4.1 Introduction

The design dimensions and collected components of bMOOC are explained in chapter two. The aim is to support the traditional MOOC cater the issue of lack face to face communication (Hollands & Tirthali, 2014). Even Bill Gates emphasizes the vital role of interaction in MOOC. The features of interaction and collaboration should be increased for learners to enhance the proposed bMOOCs environment (called Iraqi-bMOOC). Iraqi-bMOOC provides a good opportunity to better organize the course and lecture content and support collaborative learning by several tools of social interaction. Therefore, this chapter describes in depth the use phase of Iraqi-bMOOC based on a comparative study, an expert review, and design criteria. In addition, a presentation of technologies is also used in the Iraqi-bMOOC. Chapter four has formulated the model of Iraqi-bMOOC based on the criteria and design dimensions stated in chapter two. This chapter also describes the testing process of Iraqi-bMOOC.

4.2 Comparative Studies of MOOC and Blended MOOC Platform

The components collection is mostly conducted based on comparative studies reported in this chapter in addition to the literature review in chapter two, a document-driven approach to designing model (Andreas & Frank, 2016), the comparative analysis combines formal components from current models. Therefore, the purpose of these comparative studies was to compare and explore the available development methodologies and models proposed by several researchers and developers in terms of the phase and steps to be performed. The analyses were based on brief descriptions of the components and features in the current models. This means that this study firstly

defines the characteristics used for summarizing the components of Iraqi-bMOOC model from literature. Hence, Iraqi-bMOOC model components are defined to build the phases, tasks, and activities in the learning environment. This constructs strong foundation of the proposed Iraqi-bMOOC model.

bMOOC model has these main components (Ross et al., 2014):

(1) Topic of Study.

(2) Team.

(3) Online Platform and Activities.

(4) Registration System.

Topics is the contents to be learnt. Team refers to the personls to convey the topic and manage its full contents. Platform should always be online technology with online learning activities and features such as watching video, listening, reflecting the contents being studied, tests, assignment, and discussion forum (refer to Table 4.1). Registration system which has functionalities of such environment to cater student registration, manage courses, system login, test and reports.

To Increase Interaction the most of the MOOCs provide collaboration work spaces that include several tools to support learners in communicating with each other such as student-student interaction, student-content interaction, and student- instructor interaction, and this through forums, e-mail, blogs, video comments, and social networks (e.g. Facebook, Twitter and YouTube) (Admiraal et al., 2015; McAndrew, 2013; Mak, Williams, & Mackness, 2010).

Guàrdia et al., (2013) discussed the students' needs in a MOOC courses and presented a variety of educational design principles that focus on increasing the interactions between students. Bruff et al., (2013) also discussed educational design ideas that show guidance on how to design blended MOOC courses such as focused on competency based design, and predefinition of learning needs plans (Learning Materials, learning objectives, assignments, and schedules). They also confirmed collaborative network and interaction tools that increase motivation and avert drop out from the course. Grünewald et al., (2013) reported peer-assistance by the course to solve learning challenges. Furthermore, Lim et al., (2014) suggested that discussion groups and video online collaborative in MOOC courses.

Table 4.1

Comparative Studies for MOOC and blended MOOC Platform

No	Dimensions	Learning Theories	bMOOC Components	Features	MC 1	MC 2	MC 3	MC 4	MC 5	MC 6	MC 7	MC 8	MC 9	MC 10	MC 11	MC 12	MC 13	MC 14	MC 15
1.	**Blended Learning**	Connectivism	Formal Learning	Connect with University	-	√	√	√	√	√	-	-	-	-	-	-	-	-	√
			Learning Activities	Select Lecture Tools	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
			Faculty Calendar	Select Lesson Schedule	√	√	√	√	√	√	√	√	√	√	√	-	-	-	√
			University Time	Semesters Dates	-	√	√	√	√	√	-	-	-	-	-	-	-	-	√
2.	**Flexibility**	Behaviorism	Type of Lecture	Select Video, Audio, Text Lecture	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
			Video Media Player	Full Features: Play, Pause, Stop, Increase/Decrease Speed, Volume, Full screen mode, HD, comments and…etc.	-	-	-	-	-	-	-	√	√	-	-	-	-	-	-
			Download / Upload	Select Material Links	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
			Multi Language System	Select :Arabic, English, and …etc.	-	√	√	√	√	√	-	-	-	-	-	-	-	-	√

(**Notes:** MC: Model Components; Legend: √ Supported, - Not Supported)

MC1- Kloos, (2015), MC2- Alebaikan (2015), MC3- Negrea, (2014), MC4- Klink (2006), MC5- Yousef (2015), MC6- Kolukuluri (2014), MC7- Albó et. al (2015), MC8- Chauhan & Goel (2015), MC9- Kidziński, (2015), MC10- Smith and Eng (2013), MC11- Kruiderink, (2013), MC12- Muñoz, 2014. (2015), MC13- Michael (2008), MC14- Guo et al. (2014), MC15- Andone, et al. (2015).

Table 4.1 continued

No	Dimensions	Learning Theories	bMOOC Components	Features	DC 1	DC 2	DC 3	DC 4	DC 5	DC 6	DC 7	DC 8	DC 9	DC 10	DC 11	DC 12	DC 13	DC 14	DC 15
3.	**Quality Content**	Connective Knowledge	Material	Subject Information	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
			Lecture Activities	Illustrative Tools	√	√	-	-	-	√	-	-	-	-	-	√	-	-	-
			Feedback	Select Material Information, Assignments, and …etc.	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
			Solve Assessments	Select Type of Assessments	-	-	-	-	-	√	-	-	-	-	-	-	-	-	√
4.	**Educational Design**	Constructivism	Types of instructors	Select Lecturer	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
			Types of Lecture	Select Subject	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
			Types of Material	Video, Audio, text, Pdf, and ect…	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
			Types of Assignments	Quizzes, Testing, Projects, and etc….	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
			Assessments	Evaluation (formative / summative Assessments)	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

(**Notes:** MC: Model Components; Legend: √ Supported, - Not Supported)

MC1- Kloos, (2015), MC2- Alebaikan (2015), MC3- Negrea, (2014), MC4- Klink (2006), MC5- Yousef (2015), MC6- Kolukuluri (2014), MC7- Albó et. al (2015), MC8- Chauhan & Goel (2015), MC9- Kidziński, (2015), MC10- Smith and Eng (2013), MC11- Kruiderink, (2013), MC12- Muñoz, 2014. (2015), MC13- Michael (2008), MC14- Guo et al. (2014), MC15- Andone, et al. (2015).

Table 4.1 continued

No	Dimensions	Learning Theories	bMOOC Components	Features	DC 1	DC 2	DC 3	DC 4	DC 5	DC 6	DC 7	DC 8	DC 9	DC 10	DC 11	DC 12	DC 13	DC 14	DC 15
5.	**Cooperative learning**	Social Interactionist	Discussion Furom	Select Group Discussion	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
			Video Comments	Seclect Peer to Peer, Lecture (Interactive video)	-	-	-	-	√	-	-	√	√	√	√	-	-	-	-
			Email	Select Send or Received Files	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
			Lecture note	Interactive Lecture	-	-	-	-	-	-	-	√	√	√	√	-	-	-	-
6.	**Openness**	Connectivism	System Registration	Student Information	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
			System Login		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
			Open Resources		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
			Open Access		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
			Open Content		√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

(**Notes:** MC: Model Components; Legend: √ Supported, - Not Supported)
MC1- Kloos, (2015), MC2- Alebaikan (2015), MC3- Negrea, (2014), MC4- Klink (2006), MC5- Yousef (2015), MC6- Kolukuluri (2014), MC7- Albó et. al (2015), MC8- Chauhan & Goel (2015), MC9- Kidziński, (2015), MC10- Smith and Eng (2013), MC11- Kruiderink, (2013), MC12- Muñoz, 2014. (2015), MC13- Michael (2008), MC14- Guo et al. (2014), MC15- Andone, et al. (2015).

The next step is to investigate a set of specific criteria related to MOOC, which is presented in the next section. These criteria help in designing effective bMOOCs during learning process.

4.3 Blended MOOC Design Dimensions

Different literature reviews provide a wide range of dimensions to address the design of effective blended MOOC environments. Moreover, Yousef et al., (2015) clarifies that the final eight MOOC criteria are provided as a set to design the blended MOOC, which depends on cMOOC and xMOOC models as stated in Table 4.2 and Figure 4.1. In fact, cMOOCs focus on openness and life learning by providing space for cooperative learning and self-learning, where learners can determine their own goals and views, and share knowledge. XMOOCs support the quality content and flexibility by focus on a blended learing and clear educational design, where learning activities are determined through teachers via video lectures, and e-assessment tasks. At the same time, the learning approach via higher education offers a number of advantages that include blended MOOC contents, feedback, and training on the MOOC course, based on the integration of blended MOOC and the local LMS system in the university (Youssef et al., 2015).

Table 4.2

Design Dimension of cMOOC and xMOOC

	cMOOC	xMOOC
Dimensions	Lifelong learning	Blended Learning
	Cooperative learning	Flexibility
	Openness	Quality Content
	Self -Learning	Educational Design

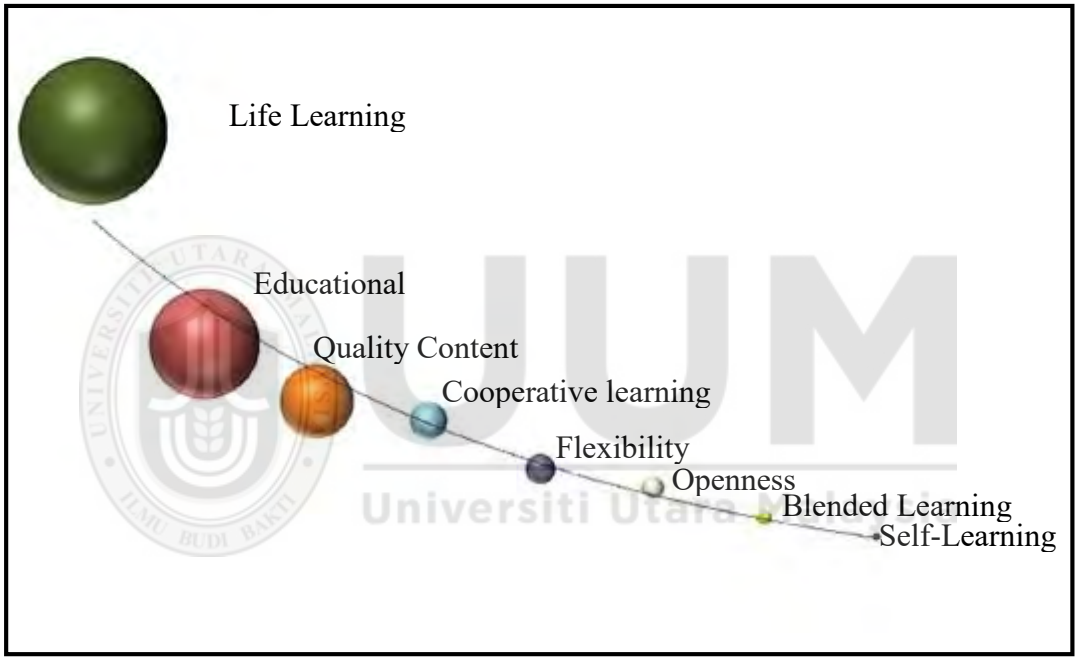


Figure 4.1. Design Dimension of cMOOC and xMOOC

Where cMOOCs focus on Lifelong learning, cooperative learning, openness, and student- centered learning are grouped together xMOOC which focus on Blended Learning, Flexibility, Quality Content, and Educational Design. This kind of blended learning is experimental, spontaneous, and free from rigid curricula; thus, it offers new opportunities for personal development (Fernández, 2013).

Therefore, an effective blended MOOC has the potential to support all the design dimensions based on the integration between the cMOOC and xMOOC criteria, (such as Blended Learning, Flexibility, Quality Content, Educational Design, Cooperative Learning, Openness, Lifelong learning, and Self-Learning) to supporting higher education learning model.

However, in this study, six out of eight criteria of cMOOCs & xMOOCs were applied based on the integration between the cMOOC and xMOOC criteria, (i.e Blended Learning, Flexibility, Quality Content, Educational Design, Cooperative Learning, and Openness). Lifelong learning and Self-Learning were excluded for the following reasons:

Lifelong learning: Most lifelong learners tend to learn informally for their personal or professional interests rather than to have an official academic degree. That is, there is no correlation with higher education. In contrast, the blended learning focuses on the formal learning in the context of higher education.

Self-Learning: This dimension refers to the central learning via the student only. This is also not in line with the blended learning as the latter refers to the teaching that depends on the lecturer and the student at the same time. The student learns through the lecturer either via the study courses or bMOOC.

Blended learning dimension determines and assesses at what level Iraqi-bMOOC model allows learner to increase the interaction with the lecturers and peers to improve learning inside the classroom. Then, a flexibility dimension evaluates how the Iraqi-bMOOC is flexible for its users. Meanwhile, quality content dimension evaluates whether the content has high quality and well designed to empower and engage the

students' universities in Iraq to participate in the blended learning. Subsequently, the educational design dimension measures its effect on increasing the interaction and motivation among learners in the learning process. Also, cooperative learning dimension assesses how the cooperative learning allowed for learners to work together, discuss and explore knowledge, and share ideas for their learning. Finally, Openness dimension determines and evaluates the level Iraqi-bMOOC provides learning for a large number of students in Iraqi regardless of their location and level of education.

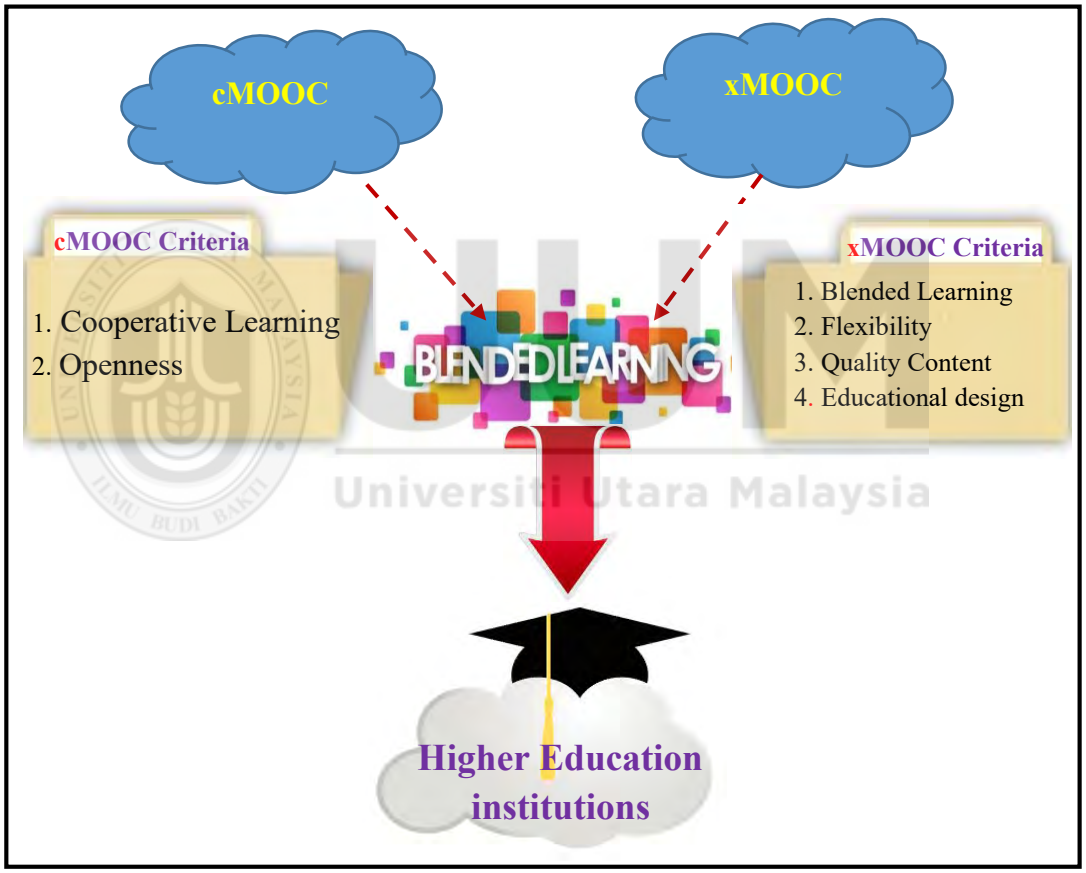


Figure 4.2. Integration Between the cMOOC and xMOOC Dimension

However, the next step elaborates a set of specific components with features related to each activities of the educational and administrative user, which is presented in the

next section. These components help in designing effective bMOOCs for Iraqi universities students.

4.4 Iraqi-bMOOC Design Model Development (Consultation)

The development of the model is based on 5 phases, as shown in figure 4.3, to characterize the overall steps required in Iraqi-bMOOC development.

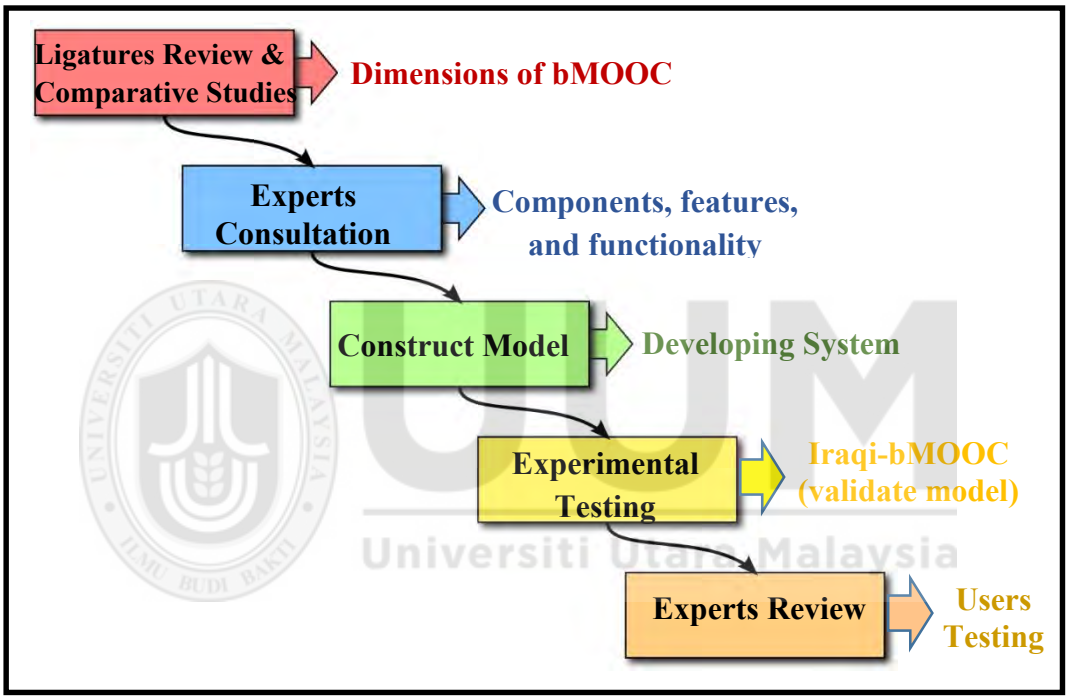


Figure 4.3. Phases of Iraqi-bMOOC Model Development

The development of the model can be presented in the following phases:

(i) Literature Review and Comparative Studies

This phase includes all dimensions of contents components, features, and functionality from literature review and comparative studies as a document-driven approach of designing model of Iraqi-bMOOC.

(ii) Experts Consultation

Experts are consulted prior for developing the components and features of Iraqi-bMOOC on April 2016. The main aim of this phase is to identify components, features, and functionality involved in developing the Iraqi-bMOOC.

(iii) Construct Model

In this phase the system has been built on Dec 2016 based on components, features, and functionality of comparative studies and experts consultation (see Section 4.5).

(iv) Experts Review

This phase has been started after building the system of Iraqi-bMOOC on Jan 2017, and experts' reviews have validated the proposed design model (see Section 4.7).

(v) Experimental testing

This phase includes testing of Iraqi-bMOOC system (April 2017), and the respondents are undergraduate students' from Tikrit and Baghdad universities (see Section 4.8).

To acquire the components and activities of Iraqi-bMOOC model, input features are collected based on literature. A semi-formal discussion is conducted during one month in the University of Tikrit on April 2016, and it has included three practitioners of expert consultation who have more than fifteen years of experience in designing learning web (online learning). The experts are firstly asked to provide their opinions on the components and features collected from the literature and used in the initial design of Iraqi-bMOOC model (Yousef, 2015; Alebaikan, 2015; Kolukuluri, 2013). User hierarchy in the Iraqi-bMOOC is a description for all the components of the final users, Administration, lecturers and students. Figure 4.4 shows users hierarchy in the Iraqi-bMOOC from the top level until the lower level. There are descriptions for all

the functions and features for each user to implement the activities of the educational and administrative user for the learning process to support the traditional learning in the real world.

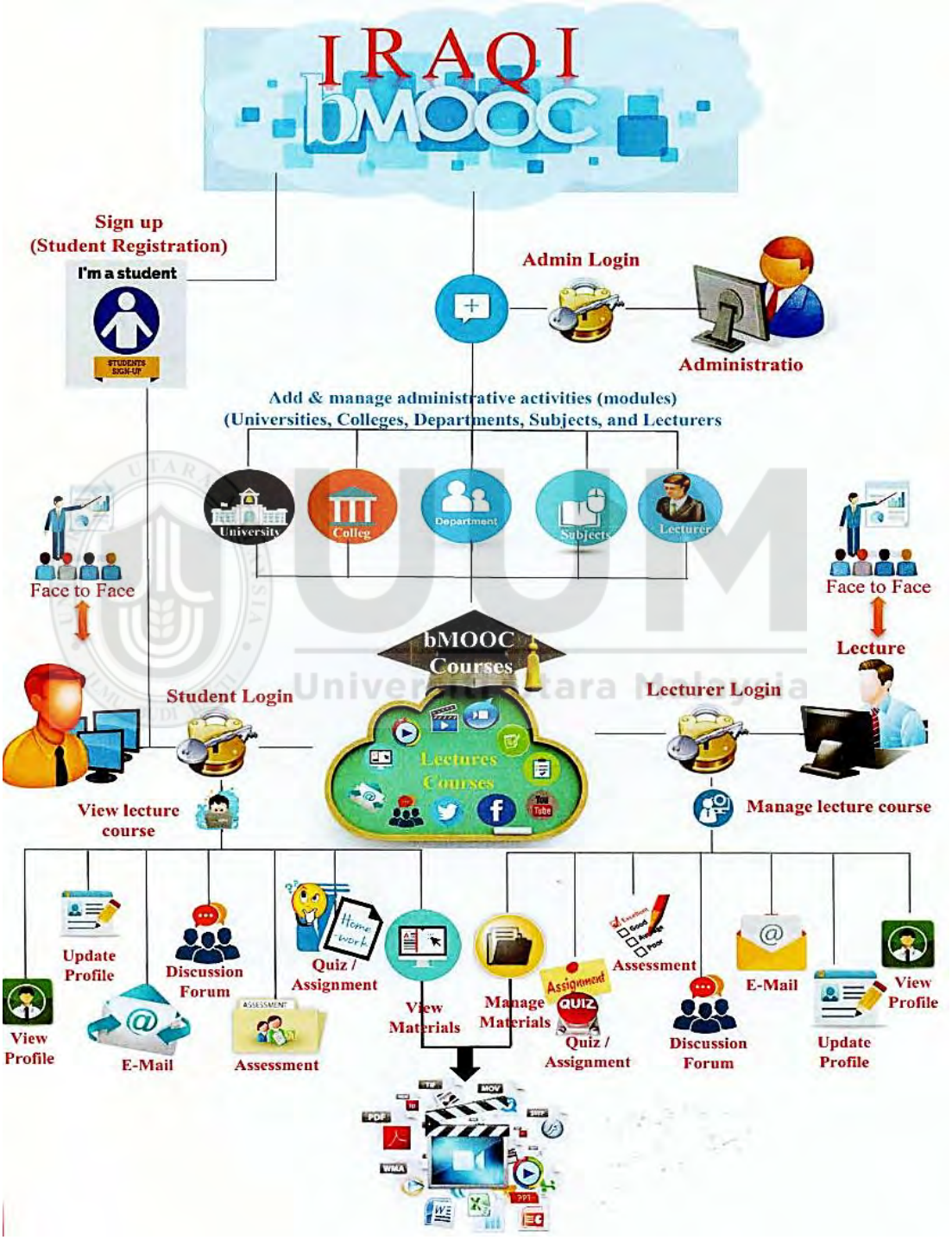


Figure 4.4. Iraqi-bMOOC Model Components

The experts are began to check Iraqi-bMOOC from user Interface in the proposed blended MOOC model. They have agreed on that the user interface should be simple, understandable, easy to use, and requires minimal user input. In addition, the user interface design of the model should consider the usability principles and go through a participatory design process (Nielsen, 1994). This is due to the point that the intuitive user interface is an important factor for user satisfaction. Therefore, the experts have recommended that the user interface of Iraqi-bMOOC should include only three types of users (student, lecturer and administration).

Apart from that, the experts have suggested that the system modules of bMOOC that related with Admin administrative activities (modules) are important indicators for designing blended MOOC such as manage universities, manage colleges, manage subject, and manage lecturers and students). These indicators focus on the importance of learning activities such as materials, assignments, assessments, forum, comments, and E-mail. The intention is to determine the main learning activities that are suitable for the Iraqi students' environment. Thus, these learning activities are considered fundamentals to be included during the model development. In turn, this may influence the interaction with the lecture content.

The most important standpoint by experts is the functionality such as update, delete, sort by (name, type & date) and search by (name, type & date) which should be available in all learning the activities. This is because these functionality are important factors that may influence the interaction and controlling of the lecture content. A case in point is that a search feature is an important tool in blended MOOC that helps learners to easily find the required course materials. In sum, the most important

interface features are the ones that are related to learning activities such as materials (video lectures), assignments, assessments, forum, comments and message (e-mail). This is due to the issue that these activities are the backbone of bMOOCs. Finally, the experts' suggestions are used in refining Iraqi-bMOOC model. Based on the aspects, suggestions, and techniques highlighted by the experts, the Iraqi-bMOOC model has been modified. Also, the components, functionality and features of Iraqi-bMOOC model are defined (as indicated in Figure 4.5).

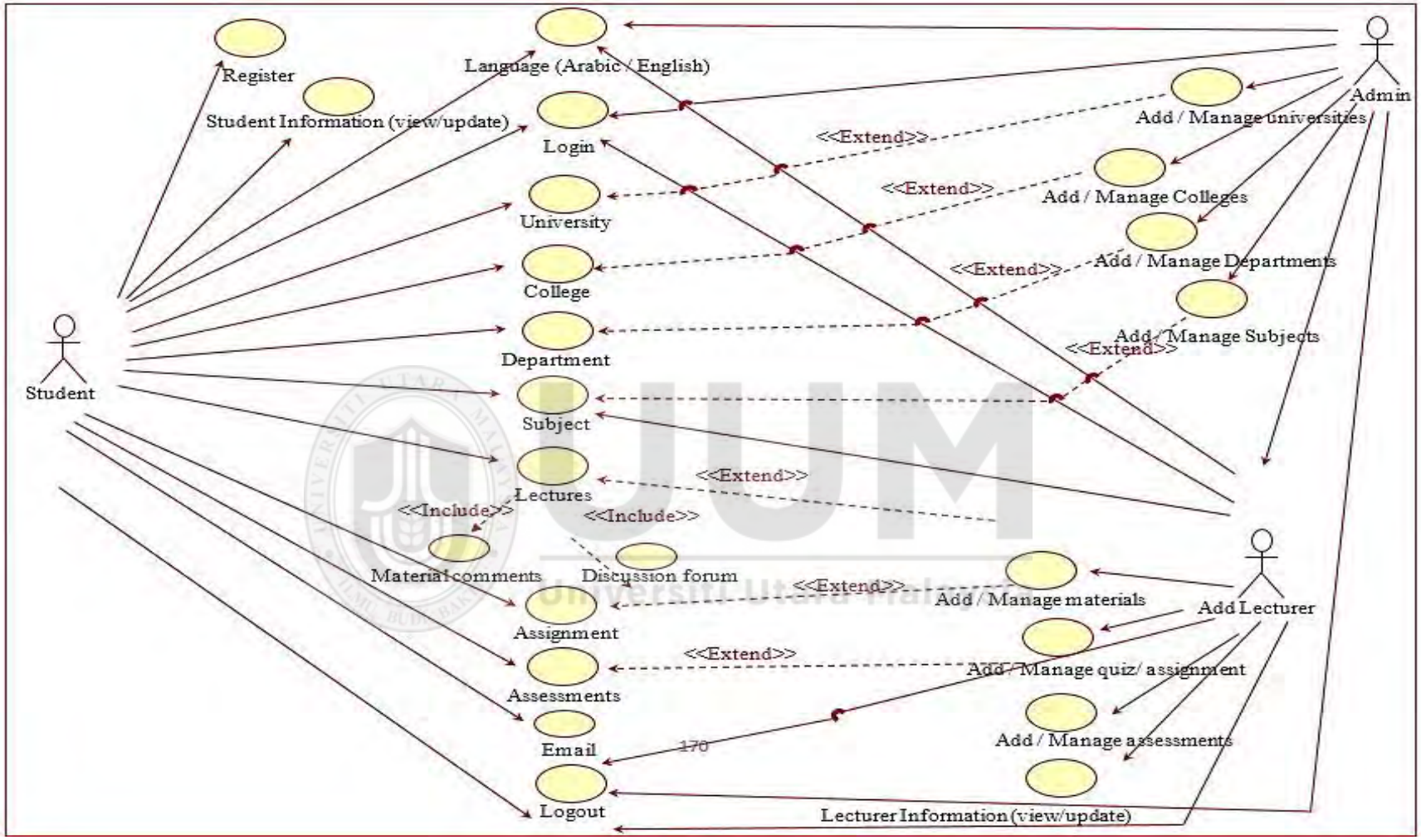


Figure 4.5. Use case Diagram of Iraqi-bMOOC Model (Components, Functionality, and Features)

4.5 Iraqi Blended MOOC System Development

4.5.1 Programming

The software prototype uses multiple JavaScript frameworks and the Node.js platform for using the application's client-side and server-side logic. The main application design paradigm underlying our system is the Model View Presenter (MVP) pattern which has been realized through using the Backbone.jsp framework. Backbone provides clear separation of the application's data and its presentation organizing the code properly for flexibility and future reuse. In order to simplify the client scripting and to make the interface more appealing to the public, JQuery and JQuery UI libraries are used for simplifying DOM element manipulations and common effects, animations and widgets.

The open source (JsPlumb) library is used to make creation, update, deletion and doctrinaire with all the database connections that are represented in the Scalable Vector Graphics (SVG) format. A tool uses the open source component in CHAP Links Library that is developed as a Google Chart in JavaScript. It is used to provide the interactive feature with the video lecture such as comments and notes during the video. In order to realize the cut function of our website, the W3C Media Fragments (URI) specification are used to address temporary the spatial media fragments in the Web page through using URIs (Troncy, Mannens, Pfeiffer, 2013 & Van Deursen, 2012; Danoyan, 2013).

The server-side technology Node.js is chosen for its event-driven, non-blocking I/O model that produces fast and scalable applications. The Socket.IO library provides editing features for the application based on Web Sockets as a main communication

protocol. The authentication middleware Passport.js library establishes persistent login sessions for each client. My SQL DB stores the map content as JSON-like documents which makes the application scalable, performing and highly available.

Besides, the application consists of a number of HTML pages. These pages communicate with the server via using the Node.js platform. More precisely, the Node.js platform handles incoming user requests and it communicates with a Mongo database via using Mongoose modeling environment.

User interaction with the system begins at the login page (Login.html). This page authenticates users and communicates with the server via AJAX calls. Once a user is authenticated, a session-based Web Socket connection is established with the server. The user then is redirected to the main application page (Editor.js). An external JavaScript file (Editor.js) includes the client side scripts that define the application's Model, collections and a set of helper functions. All application views correspond to a template defined in the Editor.html file which is used to render the content of the view's model. Whenever the user interacts with the UI, corresponding events are triggered in respective views. Moreover, a suitable response is generated by the listener functions which in turn re-render the DOM elements accordingly. The listener functions also handle the communication with server for all data manipulations. Apart from listening to events come from DOM elements, Views also bind listeners on their models. This helps to synchronize server content and achieve real time collaborative editing. Figure 4.6, illustrates the operation at the client-side. To avoid clutter, the figure does not include all existing views and relationships. It displays only the main components instead, For instance, separate views and models exist in the available

courses and the hierarchical list of courses are displayed and managed via using respective modules. In addition, all Views have their respective DOM elements, listen to their events, and manipulate the application behavior accordingly. However, some connections are omitted for the sake of readability (Danoyan, 2013).

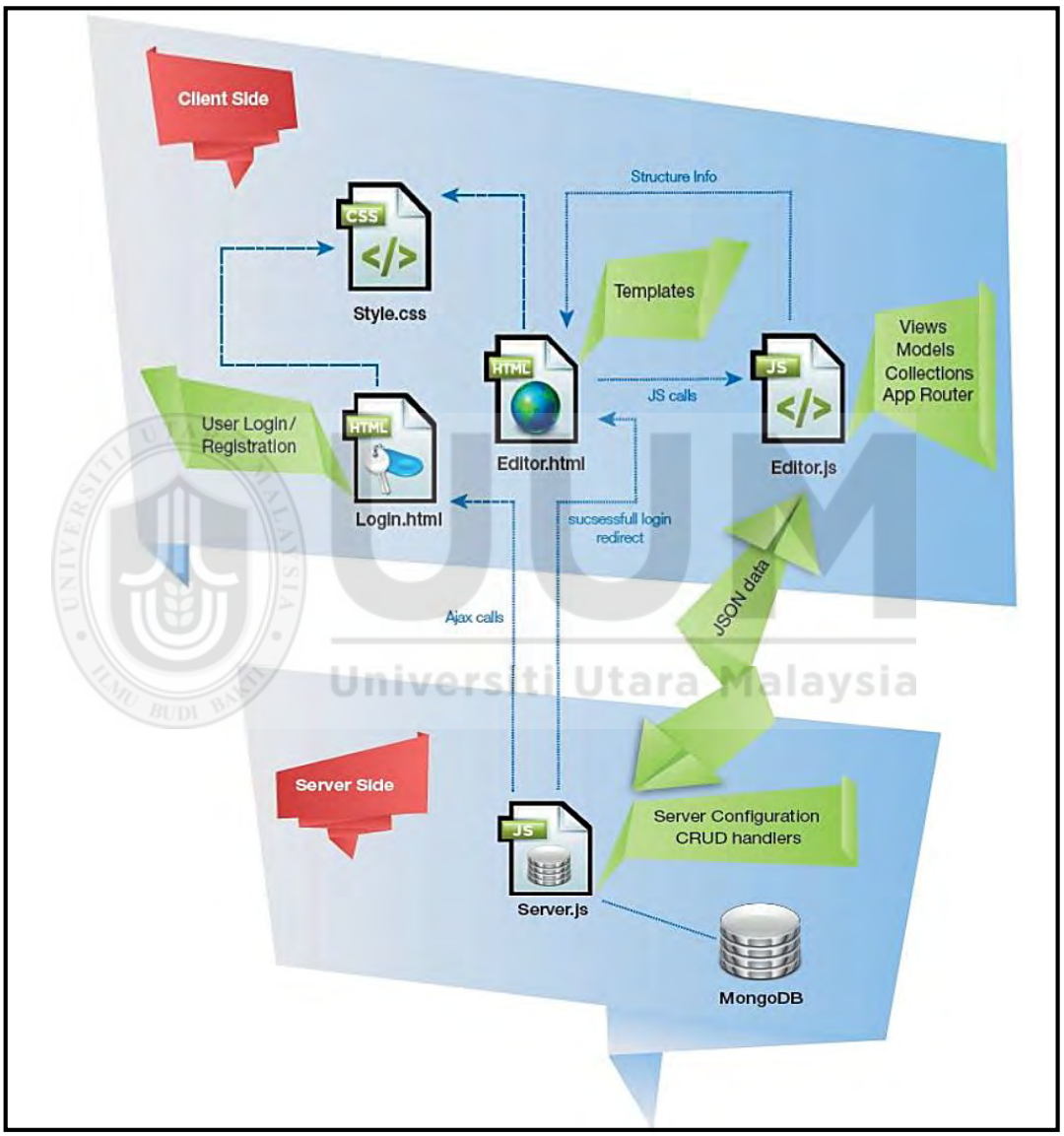


Figure 4.6. System Components of bMOOC
Source: (Yousef et al., 2015 & Danoyan, 2013)

4.5.2 Database System

Database Management Systems (DBMS) refers to a ubiquitous and critical component of modern computing, and the result of decades of research and development in both academia and industry. Historically, DBMS were among the earliest multi-user server systems to be developed, and thus pioneered many system design techniques for scalability and reliability which is currently in use in many other contexts.

Since the last few decades, the MySQL DBMS has become quite popular. This has been true especially in the web and open source communities. Similarly, MySQL's presence in the educatinal sector is now increasing as well. Among the benefits of MySQL are that it is fast, and easy to set up, use, and manage. In addition, it runs on both UNIX and Windows. In fact, MySQL-based programs can be written in many languages. On top of that, MySQL is especially heavily used in combination with a web server by javascript for constructing database in websites (Huebsch, Chun, Hellerstein, Loo, Maniatis, Roscoe, et al., 2005).

In terms of practicality, this study used MySQL to hold Iraqi-bMOOC Database. MySQL is used as the database in design of bMOOC to retrieve and show all information facilitating accessing of learning activites by the information store system. It supports information searching and comparison on the information to obtain desired. The database is the main part of the system that will provide intended information for the users (Admin, Lecturer, and Student) and update the database as in Figure 4.7 (Don & Byu, 2004).

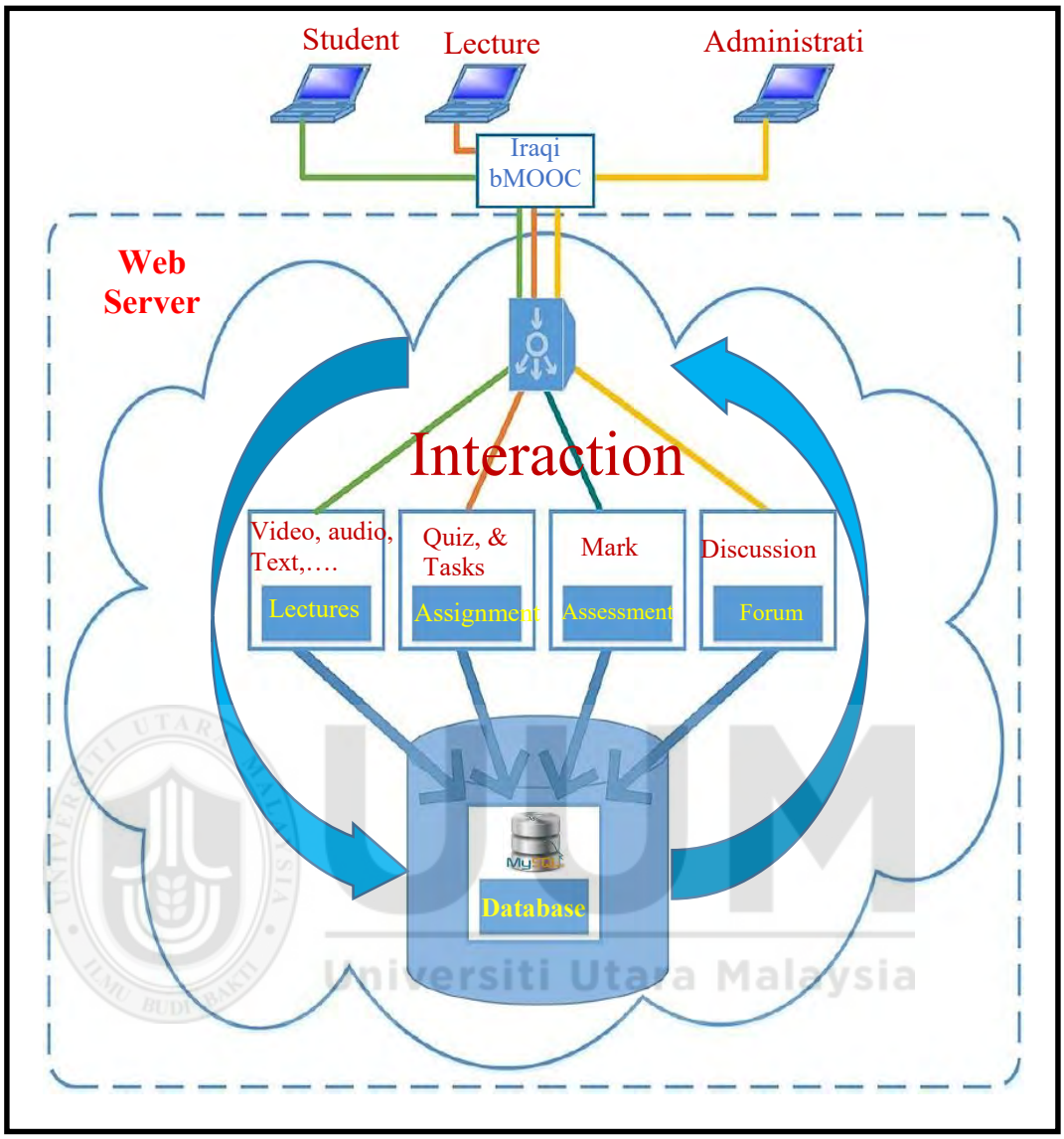


Figure 4.7. Database of Iraqi-bMOOC Model

Therefore, Iraqi-bMOOC consists of by name modules and plugins built using Java code that is setting in a web server, the web application is connected to supported databases by MySQL.

4.5.3 Architecture of Iraqi-bMOOC

The architecture of Iraqi-bMOOC platform is in Figure 4.8. The different components of this architecture such as learning pages, universities, system control (Admin), lecturers, students, and learning activities). Learning pages was developed in the Iraqi-bMOOC to attract students to the courses. The interface, consists of a main page very carefully designed to show the most relevant information about Iraqi-bMOOC, and other secondary pages with Components (learning activities). As soon as a user logs into the system, the application router creates new instances of the main collections and connects them to their views. Because the user (Admin, lecturer, and student) selects a module (such as universities, lectures, forum, Assignment, Assessment, and discussion forum.), the corresponding collection is fetched from the server and rendered on website based on this module. The latter is realized by creating a new module view for each collection node component and calling its render function. Nodes components are used either when the user interacts with system or when user makes changes to the main model components. The users are delegated to other ways if they select components that represent another module related with learning activities that allows the user to change system web pages

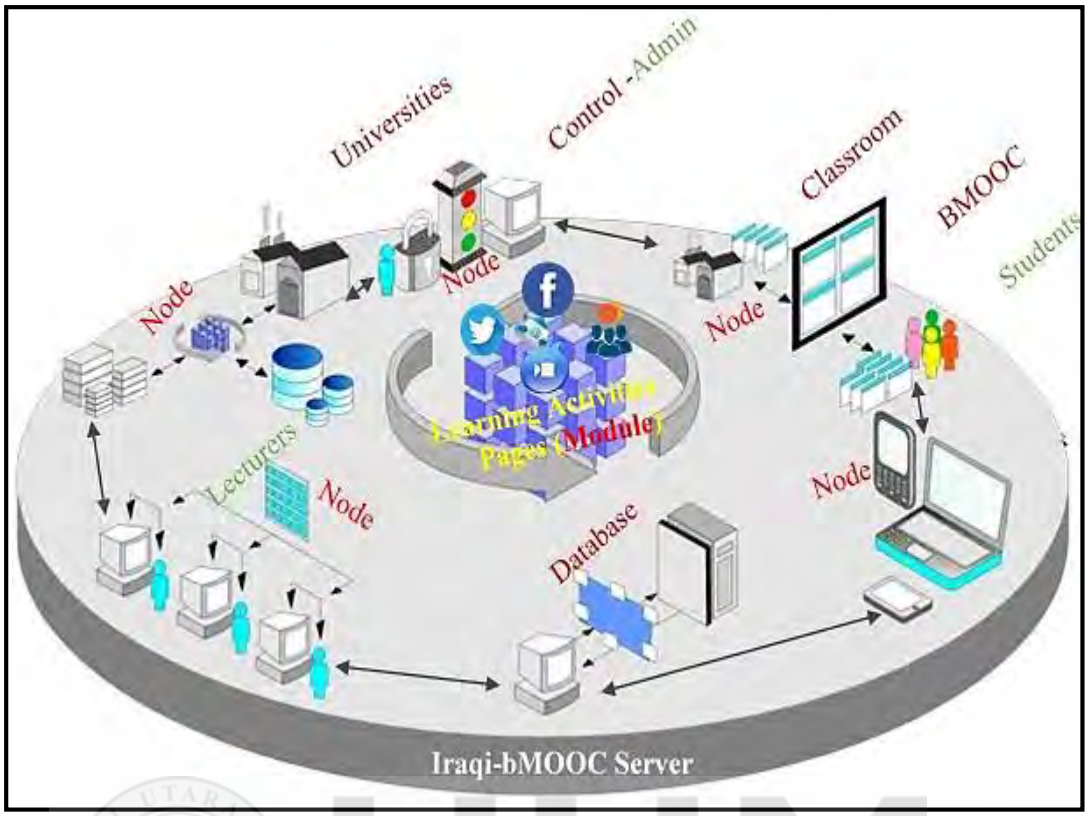


Figure 4.8. System Architecture of Iraqi-bMOOC: A Simplified Illustration of an Interaction Flow of the Main Clients-Side (Admin, Lecturer & Student) Components.

The next section is to present the Iraqi-bMOOC Implementation with more details about all system interfaces activities for all users (Admin, Lecturer and Student).

4.5.4 Iraqi-BMOOC Implementation (Interfaces System)

The features of interaction and collaboration among learners can be increased to enhance the Iraq-bMOOCs environment. Iraqi-bMOOC provides a good opportunity for better organizing the course and lecture content. It also supports the collaborative learning by several tools of social interaction. In the ensuing sections, Iraqi-bMOOC is described based on user interface with a focus on the implementation details that confirmed by experts, with a detailed description of the different functionalities and modules.

4.5.4.1 Menu Page of Iraqi-bMOOC Model

The home page of Iraqi-bMOOC module is presented in two languages (Arabic & english) via categorizing it into three groups' administration (Admin, Lecturer and student). Each one of these groups includes a set of main components of the learning process. Figure 4.9 shows the users categorization in Iraqi-bMOOC with regard to the main modules.

Figure 4.9. The Main Interface in Iraqi-bMOOC

Besides, this page also provides links for signing in. Different signs in links are presented for different user types Admin such as lecturer and students based on user name and password for each one of them. These links present a sign in the page of the users. After logging in, a typical name of the user is created in this home page at the top left corner, which indicates the sign in the page. Also, this page provides sign up links for different user types, as clarified in figure 4.10, to register and login in the system.

Figure 4.10. Registration Page

4.5.4.2 Administration Components page

The main page of admin manager is depicted in Figure 4.11. When any of the buttons is clicked, the system moves the user to the respective page.

Figure 4.11. Administration Page in Iraqi-bMOOC

This user (administration) is developed in Iraqi-bMOOC to represent the Iraqi Ministry of higher Education in real world. That is, the synchronization between the traditional learning (classroom) and the online learning via Iraqi-bMOOC. Thus, this blended model considers the top level for users in Iraqi-bMOOC in the users' hierarchy. Moreover, the registration process of this user type collects complete details of a real

world of a prime university such as colleges, departments, lecturers and subjects. Therefore, the interface is developed for this user to carry out administrative activities (modules) for the educational process. The main administrative activities of this user involves add and manage each of the universities, colleges, departments, lecturers and subjects. MOOC universities and local universities user types. The admin person in the Iraqi- bMOOC creates, activates and stores details about every specific user in the Iraqi-bMOOC system. All these are done through five components as in the following points:

i. <u>Manage Universities</u>: This module includes two parts (add universities and manage universities). By clicking on the first part which is add universities to the system, the administrator can add a university. Figure 4.12 shows components that when a university is added into Iraqi-bMOOC), a set of information for registration is given such as university code, university name, university address, and upload picture (logo) for the university.

Figure 4.12. Add University to Iraqi-bMOOC

Figure 4.13 shows the second part of this module which is manage universities. By clicking on this part, the administrator can manage the university components in Iraqi-bMOOC such as search for university, descending or ascending an order for universities, view university information, update university information, delete university information, and determine a number of universities that are shown on the page.

Figure 4.13. Manage Universities in Iraqi-bMOOC

ii. <u>Manage Colleges:</u> This module includes two parts (add colleges and Manage colleges). The administrator can add college by clicking on the first part which is add colleges to the Iraqi-bMOOC. When a college is added into Iraqi-bMOOC, some information for registration are shown such as College Code and College Name (refer to Figure 4.14.

Figure 4.14. Add College to Iraqi-bMOOC

By clicking on the second part of this module (Manage College), the administrator can manage the college components in Iraqi-bMOOC such as search for college, descending or ascending an order for college, viewe college information , update college information, delete college information, and determine a number of colleges that are shown on the page as in figure 4.15.

Figure 4.15. Manage College in Iraqi-bMOOC

iii. **<u>Manage Department</u>**: This module includes two parts (Add Department and Manage Department). The administrator can add department by clicking on the first part which is "Add departments". When a department is added to Iraqi-bMOOC, some information for registration are displayed such as Department Code and Department Name as in figure 4.16.

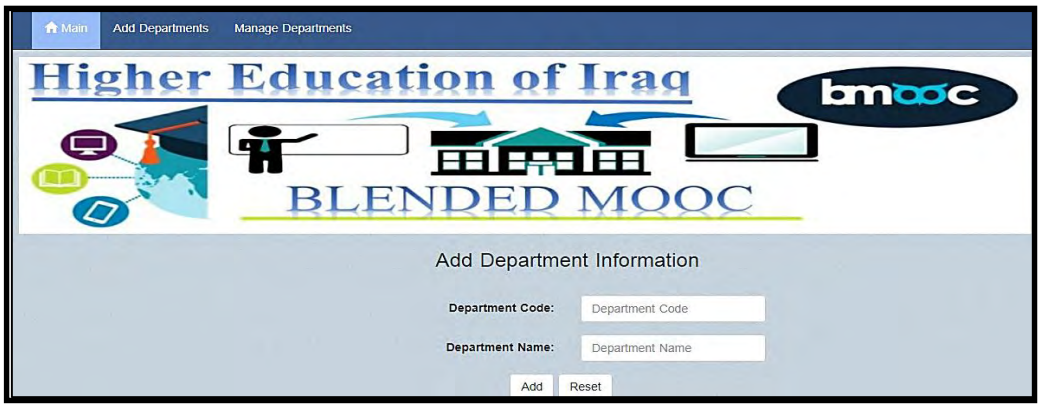


Figure 4.16. Add Department to Iraqi-bMOOC

Figure 4.17 shows the second part of this module (Manage Department), the administrator can manage the department components in Iraqi-bMOOC such as search for department, descending or ascending an order for department, view department information, update department information, delete department information, and determine a number of departments that are displayed on the page.

Figure 4.17. Manage Department in Iraqi-bMOOC

iv. <u>Manage Subject</u>: This module involves two parts (Add Subject and Manage Subject). By clicking on the first part (Add Subject), the administrator can add subject.

When a subject is added to Iraqi-bMOOC, some information for registration are displayed such as Subject Code and Subject Name (Refer to figure 4.18).

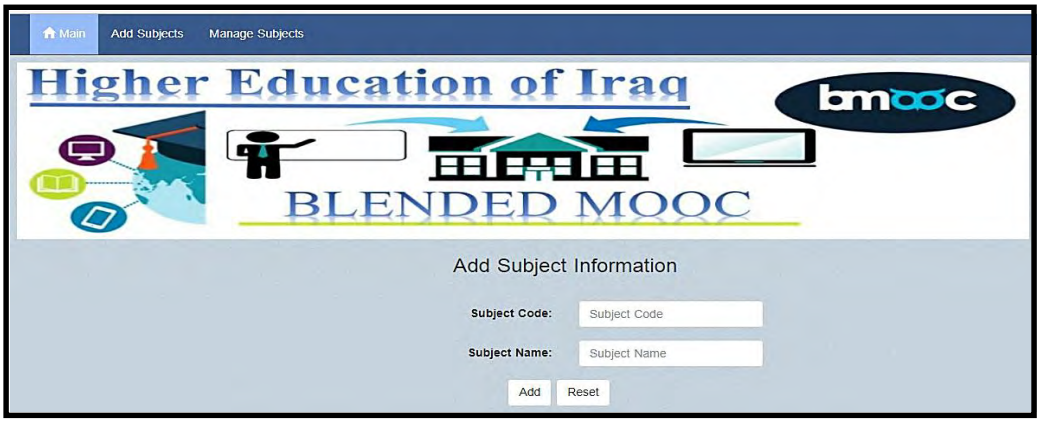


Figure 4.18. Add Subject to the Course.

While clicking on the second part of this module (Manage Subject), the administrator can manage the subject components in Iraqi-bMOOC such as search for subject, descending or ascending an order for subject, view subject information, update subject information, delete subject information and determine a number of subjects that are shown on the page as in figure 4.19.

Figure 4.19. Manage Subject in the Course

v. <u>Manage Lecturers</u>: This module comprises two parts (Add Lecturer and Manage Lecturer). While clicking on the first part which is Add lecturer, the administrator can add lecturer. When a lecturer is added to Iraqi-bMOOC, a set of information for registration is given such as lecturer name, address, university, college, department, name of subject, the system user name, the system password and upload picture for lecturer (Refer to figure 4.20).

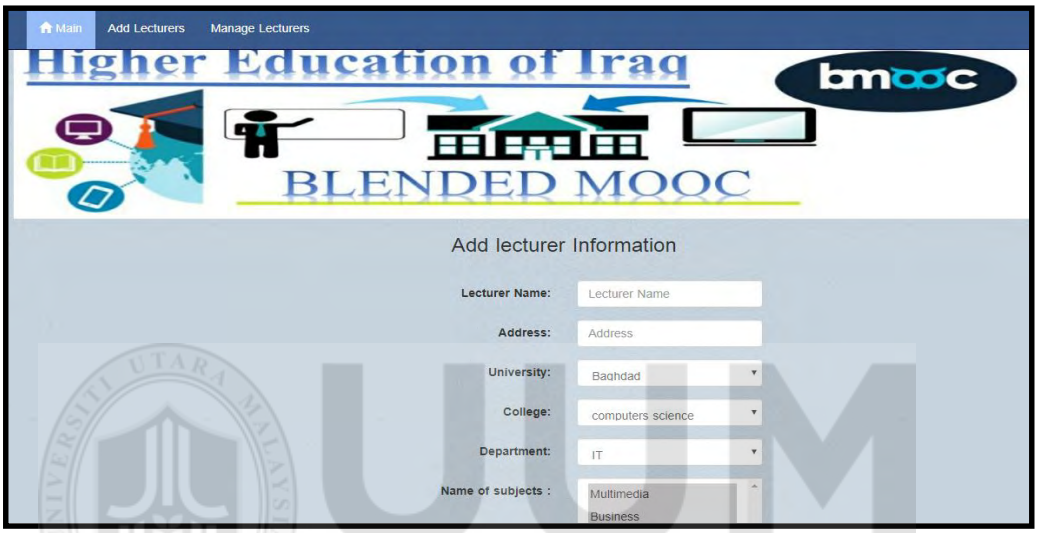


Figure 4.20. Add Lecturer to the Course

While clicking on the second part of this module which is Manage Lecturer, the administrator can manage lecturer components in Iraqi-bMOOC such as search for lecturer name, descending or ascending an order for lecturer name, view lecturer information, update lecturer information, delete lecturer information, and determine a number of lecturers' names that are shown on the page as in figure 4.21.

Figure 4.21. Manage Lecturer Information

4.5.4.3 Lecturer Components page

The main page of the lecturer shows all the learning activities via using the username and password. The lecturers can enter into their own account to manage the learning process with their students, view their profile, and update certain information if necessary. Figure 4.22 illustrates the lecturer page.

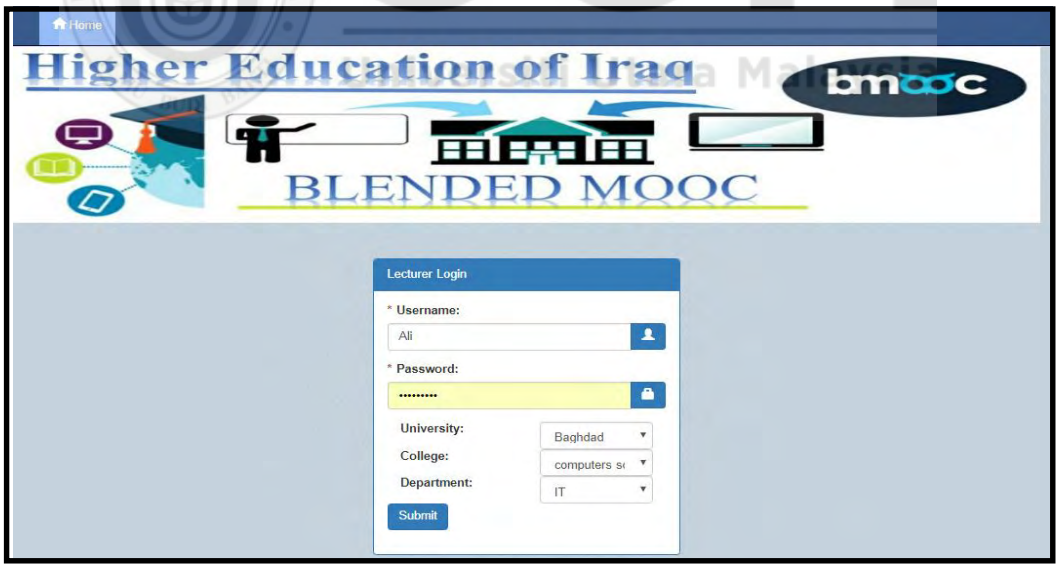


Figure 4.22. Lecturer Login Page

This user is developed in Iraqi-bMOOC to represent a professor from an affiliated college in real world (i.e. classroom) in one of the Iraqi universities. Therefore, an

interface is developed for this user to execute the different learning activities in the educational process. The main learning activities of this user manage each of following the materials: (a) Assignments, (b) Assessments, (c) Discussion Forum, (d) Messages (E-Mail), (e) Update profile, (f) View profile, and (g) Log out from system. These are illustrated in the following points:

i. <u>Managing Materials:</u> This activity includes two functions (Add Materials and Manage Materials). By clicking on the first function (Add Materials), the lecturer can add materials for his students. When a material is added to Iraqi-bMOOC, a set of information for registration is given such as material title, description, name of subjects, type of material and upload material (e.g. text, audio and video, i.e. all types of files) as presented in Figure 4.23.

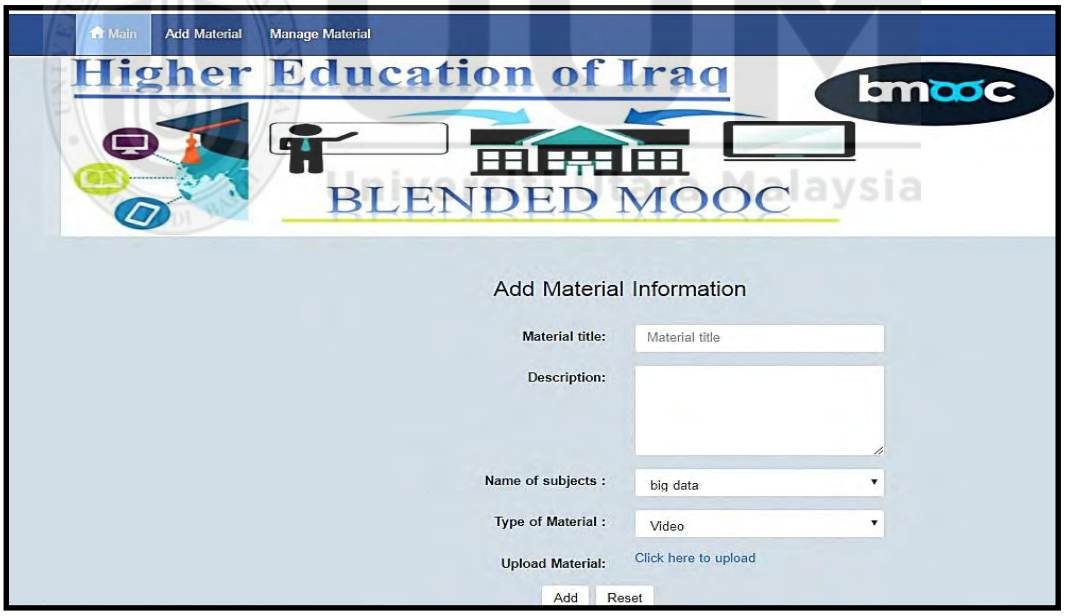


Figure 4.23. Add Material to the Course

With regard to the second function of this activity (i.e. Manage Materials), by clicking on it, the lecturer can manage the learning materials components in Iraqi-bMOOC such as search the name of subject, descending or ascending materials, view materials,

watch video, upload materials (e.g. text, audio and video, i.e. all types of files), update materials, and delete materials as displayed in Figure 4.24.

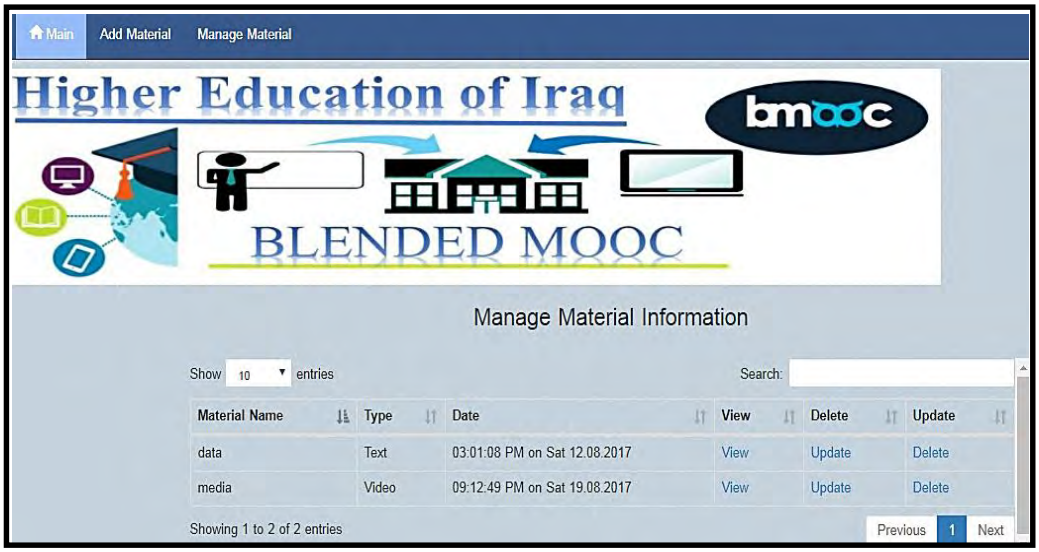


Figure 4.24. Manage Material in the Course

ii. <u>Manage Assignments</u>: This activity includes three functions: Add Quiz/Assignment, Manage Quiz/Assignment, and View Submission from Students. By clicking on the first function (Add Quiz/Assignment), the lecturer can add quiz or assignment to his students. When a lecturer adds quiz or assignment, a set of information about add the quiz or assignment is given such as title, description, name of subject, type of Material(quiz or assignment), and upload quiz or assignment as shown in Figure 4.25.

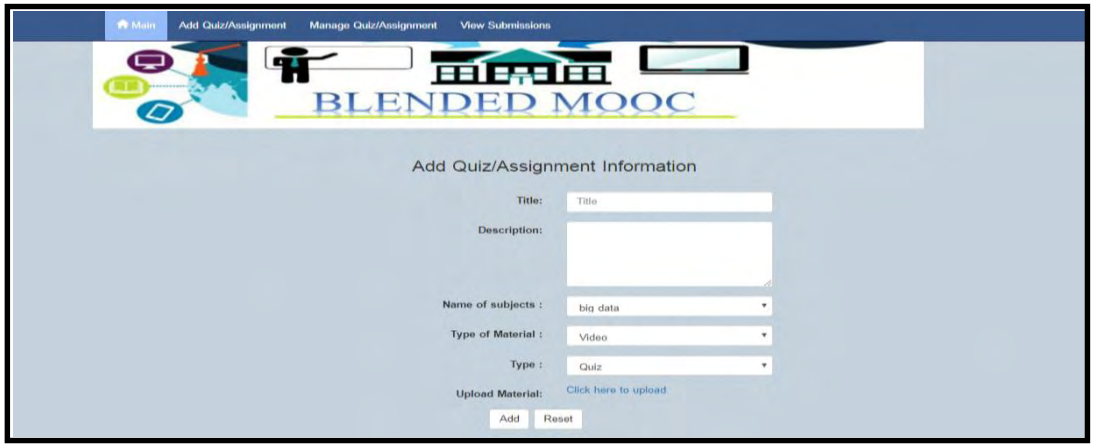


Figure 4.25. Add Assignment to the Course

While clicking on the second function of this activity (Manage Quiz or Assignment), the lecturer can manage the quiz /assignment components in Iraqi-bMOOC such as search for name of subject or type , descending or ascending sorting for quiz /assignment, view quiz / assignment, update quiz / assignment, delete quiz / assignment, view upload quiz /assignment date as illustrated in figure 4.26.

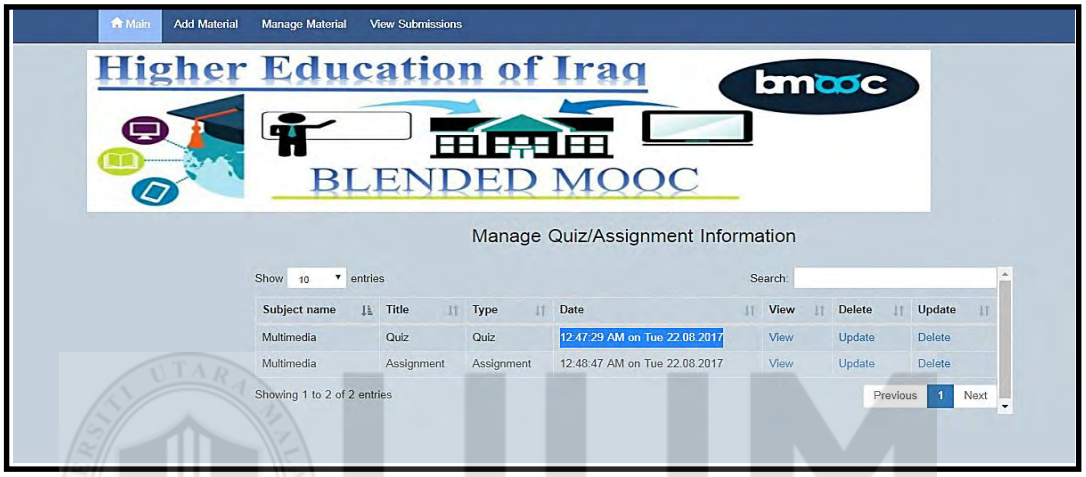


Figure 4.26. Manage Assignment in the Course

In addition, by clicking on the third function (View Submission from Students), the lecturer can view and download the students' answers based on the subject that is selected by the student such as name of subject, student's matric no., uploading date , and download file as clarified in Figure 4.27.

Figure 4.27. View Submissions from Student in the Course

iii. <u>Manage Assessments</u>: This activity includes two functions (Add Assessments and Manage Assessments). By clicking on the first function (Add Assessments), the lecturer can add assessments to his students based on the subject that is selected by the student. A set of information is also displayed such as mark, assessment and student's matric no. which are appeared in the student's page as shown in Figure 4.28.

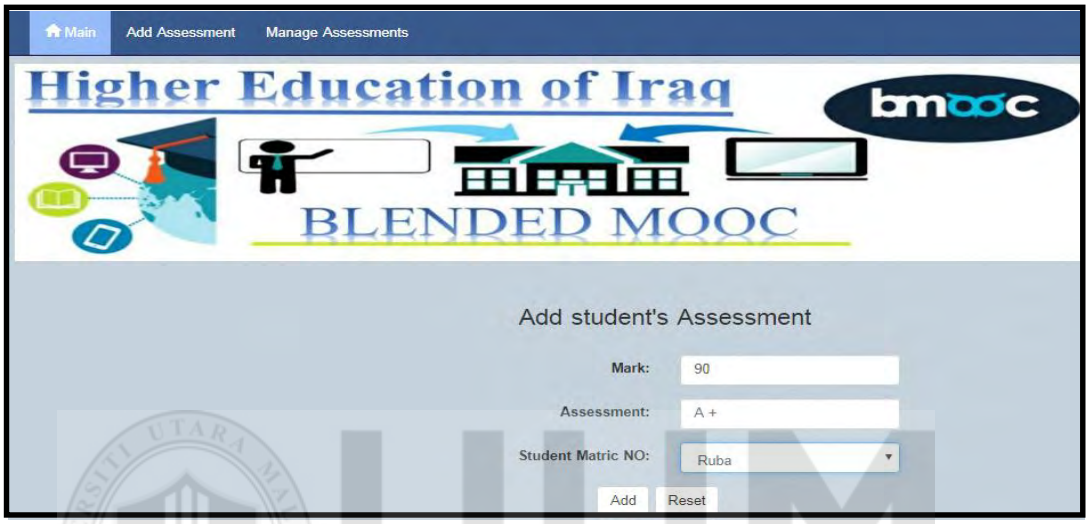


Figure 4.28. Add Assessment (Marks) to Student in the Course.

Furthermore, when the lecturer clicks on the second function of this activity (Manage Assessments), s/he can manage the assessment components in Iraqi-bMOOC such as search for student's matric no or mark, descending or ascending student's sorting for matric no or marks, view assessment , update assessment, and delete assessment as displayed in figure 4.29.

Figure 4.29. Manage Assessment (Marks) of Student in the Course

iv. <u>Forum Page:</u> The discussion section of video lecturer is displayed in the main of lecturer page and can be opened by clicking the "Forum". By clicking on this function, the lecturer can make a discussion with his students. The forum aims to make interactive discussions between learner and learners and learners and lecturer. Also, it consists of three main functions: (i) the interaction date and discussion time, (ii) list of existing discussion and, (iii) names of commentator. The interaction date and time visualize all dates and times of discussions between students and lecturers. The second function is list of discussions that include all discussions between learners and lecturer, which might be used by learners to discuss the materials, questions or suggestions related to a general concept of the video lecturer. In addition, the third function is concerned with the name of the comment commentator, whether the commentator is a student or a professor as shown in Figure 4.30.

Figure 4.30. Discussion Forum Page

v. <u>Message (E-mail):</u> The e-mail section is displayed in the main page for the lecturer and can be opened by clicking on the "Message". By clicking on this function, the lecturer can send or receive message from his students. The message function aims to increase the learners' motivation through self-directed and collaborative learning. Thus, the learners can communicate quickly with other learners and lecturers in the Iraqi-bMOOC system as presented in Figures 4.31 and 4.32.

Figure 4.31. E-mail Page

Figure 4.32. Send Message by E-Mail

vi. <u>Update Profile Page</u>: By clicking on this activity (Update profile) in Iraqi-bMOOC, the lecturer can update his/her profile. The system provides a set of information to update the lecturer's information such as lecturer name, address, university, and college, and department, name of subject, user name, and password and upload picture as clarified in Figure 4.33.

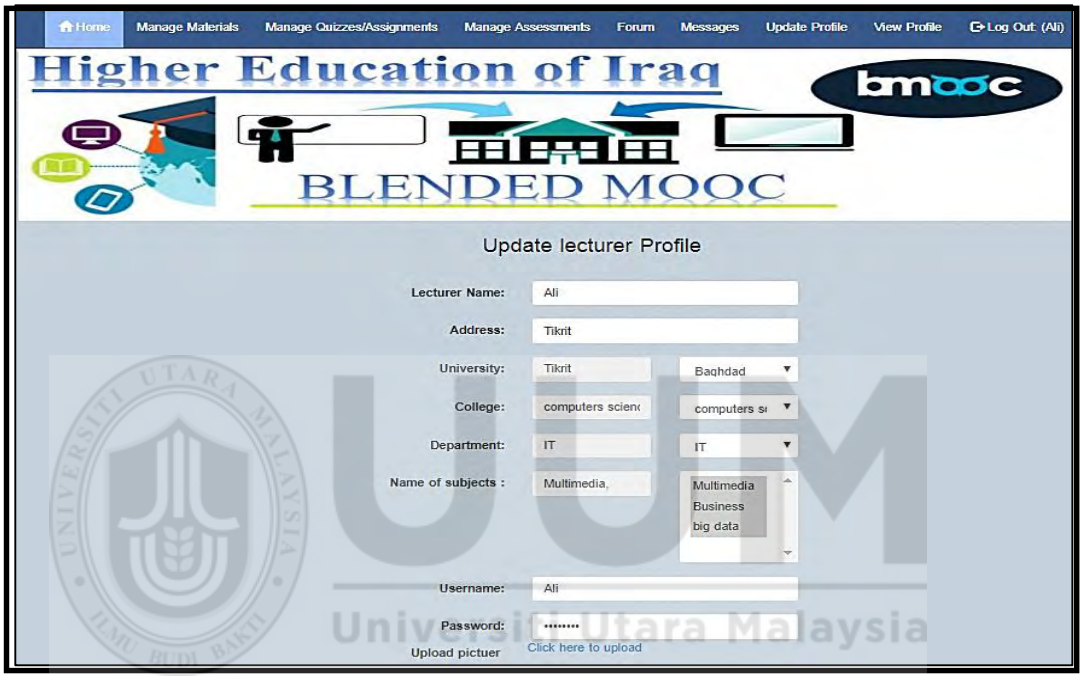


Figure 4.33. Update Lecturer Information

vii. <u>View Profile Page:</u> By clicked on this activity (View profile) in Iraqi-bMOOC, the lecturer can view his/her profile. The system involves a set of information about the lecturer such as lecturer name, address, university, college, and department, name of subject, user name and password as illustrated in Figure 4.34.

Figure 4.34. View Lecturer Information

4.5.4.4 Student Components page

The main page of the student shows all the learning activity via using the username and password. The student can enter into his/her own account to start the learning process with his class, view profile, and update certain information if necessary. Figure 4.35 depict the related student page.

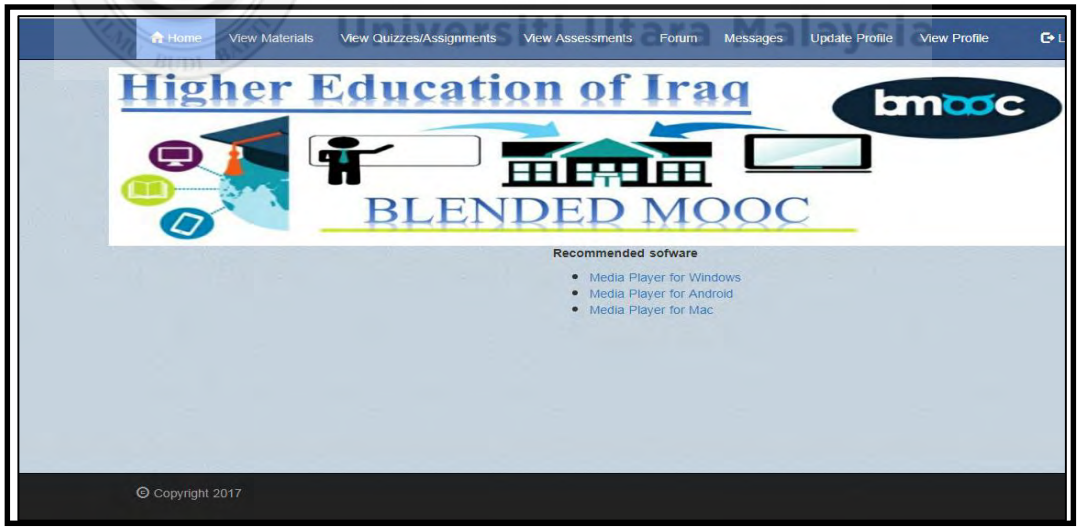


Figure 4.35. Student Main Page

This user is developed in Iraqi-bMOOC to represent a college student in real world (i.e. classroom) in one of the Iraqi universities. Therefore, an interface is developed for this user to carry out different learning activities in the educational process. The

main learning activities of this user involve certain materials such as view quizzes / assignments, view assessments, discussion forum, messages (E-Mail), update profile, view profile and logout from system.

i. **View Materials**: Based on the subject that is selected by student, the student can view and download the materials such as video, word, excel, power point, PDF and all types of files that can be uploaded by professor. In addition, Iraqi-bMOOC provides advance features for the student to make the learning process more flexible and easy such as search for material (by name, type or date), descending or ascending materials, view files and watch video, download materials (text, audio and video, i.e. all types of files), determine the number of data (learning material) that are displayed on the page, name of the professor who uploads the materials, and date and time of uploading the material as illustrated in Figures 4.36, 4.37 and 4.38.

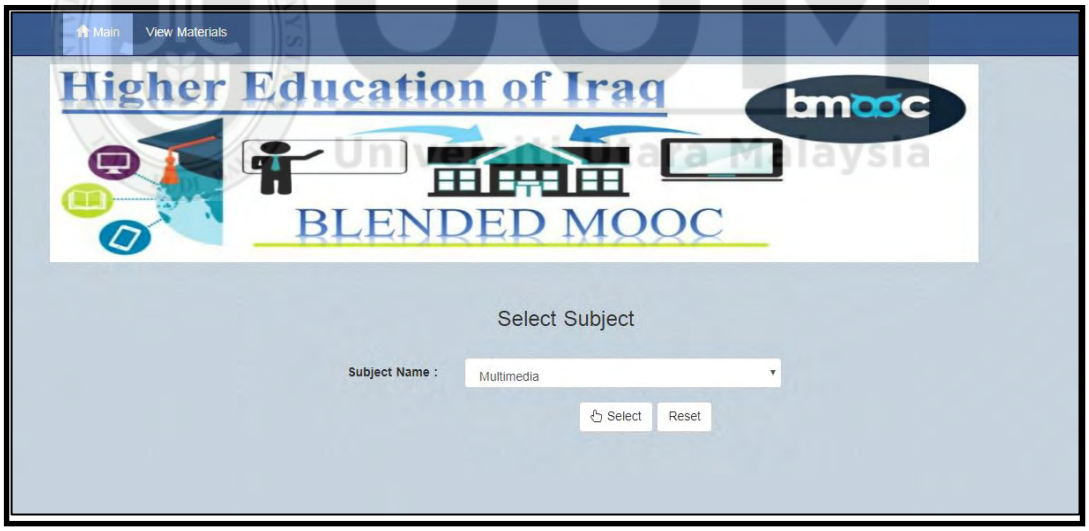


Figure 4.36. Select Subject to View Material

Figure 4.37. View Course Subjects

Figure 4.38. Video Lecture

i. <u>Add comments or Notes on Video Lecture</u>: This section allows students or lecturer to add notes or comments on the video lecture which is displayed in a separate layer inside the page. This section aims to make more interaction between learners and

lectures through making the learners watch the video or view the materials with add notes or comments in the same time. The interactive material comments help learners to add comments on video lecture besides, they are synchronized with the list to view all the comments such as suggestions, questions and important notes between the learners and lecturers as indicated in Figure 4.39.

Figure 4.39. Watch Video Lecture with Add or Discussion Comments

ii. <u>View Quizzes/Assignments</u>: This activity includes two functions (View and Download Quiz/Assignments and Upload the Answers). By clicking on the first function in the Iraqi-bMOOC, the student can view and download quiz or assignments

based on the subject that is selected by student. In addition, advance features are available to the student such as quiz /assignments name, quiz /assignments search by (name, type or date), descending or ascending sorting for quiz / assignments, view files and watch video, download quiz /assignments (text, audio and video, i.e. all types of files), determine the number of data displayed on the page, name of the professor who uploads the quiz /assignments, and date and time of uploading the quiz / assignments. All the aforementioned features are shown in Figure 4.40. .

Figure 4.40. View Assignments

iii. <u>Upload quiz / assignments</u>: By clicking on the second function (upload the answers), the student can upload answers on the questions (such as text, audio and video, i.e. all types of files) as indicated in Figure 4.41.

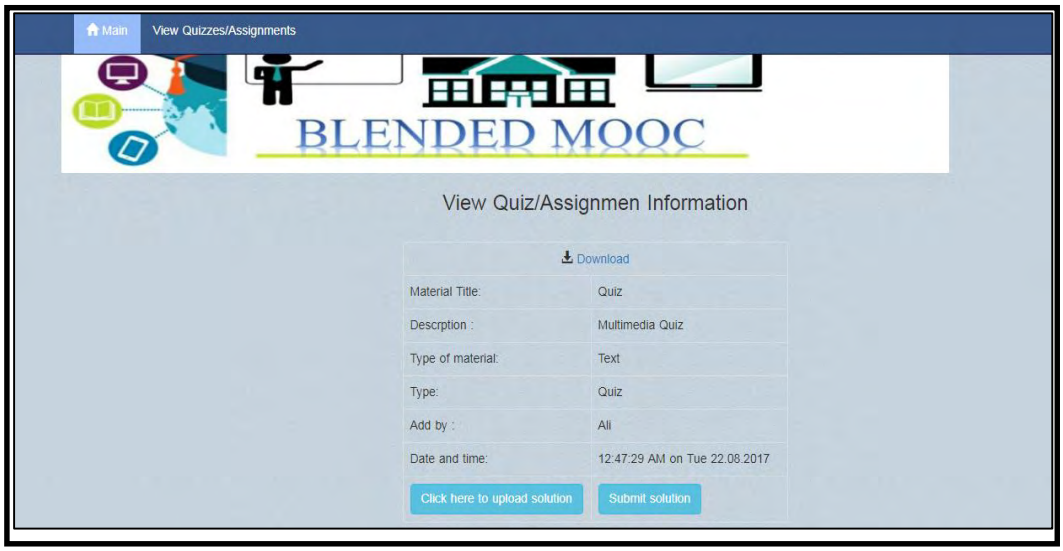


Figure 4.41. Submission the Answers of Assignments

iv. <u>View Assessments</u>: This function in the Iraqi-bMOOC allows the student to view the assessment on the subject that is selected by student. In addition, advance features are available to the student such as subject name, mark, assessment, search by (subject name, mark or date), descending or ascending sorting for assessment, name of the professor who uploads the assessment, and date and time of uploading the assessment as displayed in Figure 4.42 and 4.43.

Figure 4.42. View Assessment by Student

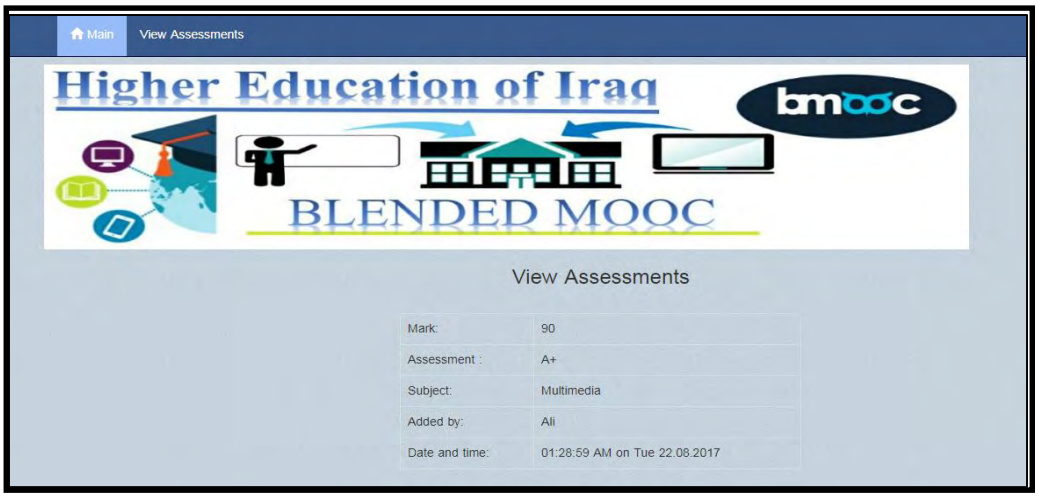


Figure 4.43. View More Detail about Student Assessment

i. **Discussion Forum Page:** This section is very important to the learners because it aims to increase the learners' motivation to interact with the learning process. Discussion forum is displayed above the main page and can be opened by clicking on the "Forum". By clicking on this function, the student can make discussion with learners and lecturers. The forum aims to make interactive discussions between learner and learners - learner and lecturer, to discuss the material, questions or suggestions related to a general concept of the subject. In addition, the learners can return and open these comments at any other time. It also consists of three main functions: Interactive date and time, discussion, list of existing discussion, and names of commentator. The interactive date and time visualize all dates and times of discussions between students and lecturers. The second function is list of discussion that includes all the discussions between learners and lecturer. It might be used by learners to discuss the material, questions or suggestions related to a general concept of the video lecturer. In addition, the third function is concerned with each comment name of commentator, whether the commentator is a student or a professor as shown in Figure 4.44.

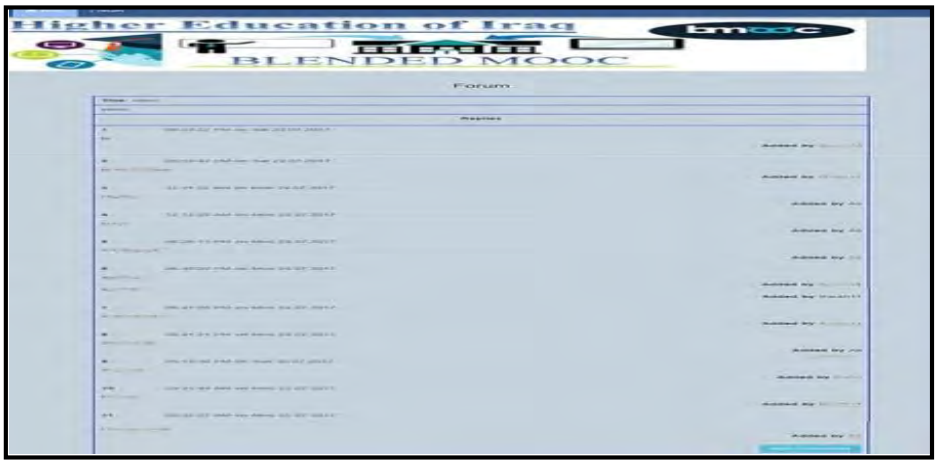


Figure 4.44. Discussion Forum in Student Page

vi. <u>Message (E-mail):</u> The e-mail section is displayed above the main page of the student. By clicking on this function, the student can send or receive message from his lecturer and all learners in the system in the same time. The message function aims to increase the learners' motivation via self-directed and collaborative learning. Thus, the learners can communicate quickly with other learners and lecturers in the Iraq-bMOOC system as presented in Figures 4.45 and 4.46.

Figure 4.45. E-mail in Student Page

Figure 4.46. Send E-Mail by Student

vii. <u>Update Profile Page</u>: By clicking on this activity (Update profile) in Iraqi-bMOOC, the student can update his/her profile. The system provides a set of information to update the student information such as student name, address, university, college, department, name of subject, user name, password, and upload picture. Figure 4.47 illustrated the aforementioned features.

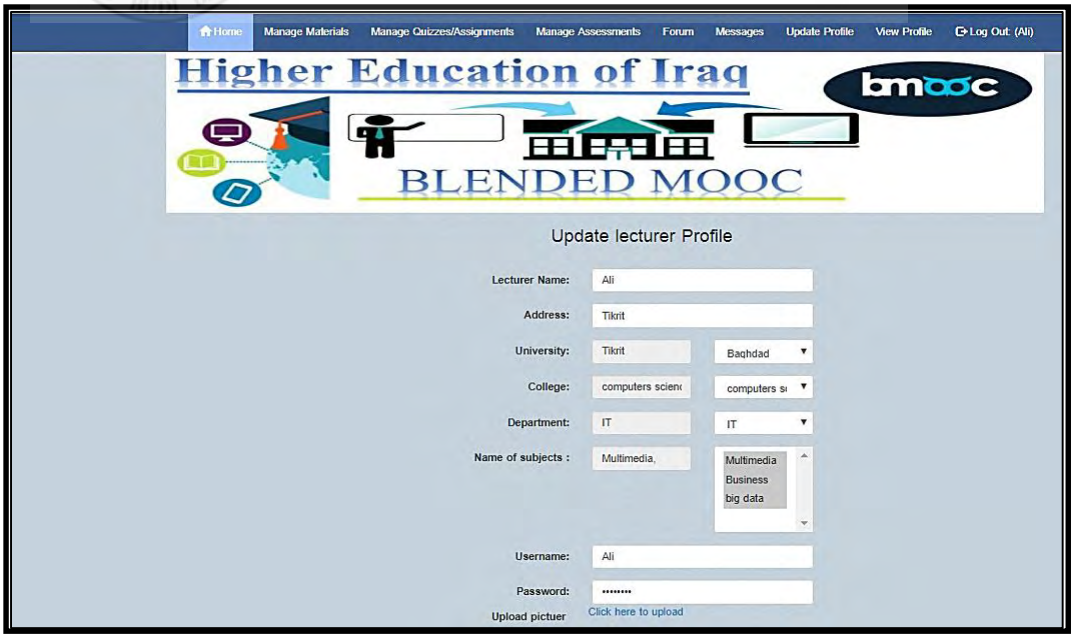


Figure 4.47. Update Student Information Page

viii. <u>View Profile Page:</u> By clicking on this activity (View profile) in Iraqi-bMOOC, the student can view his/her profile. The system provides a set of information about the student such as student name, address, university, college, and department, name of subject, user name, and password as displayed in Figure 4.48.

Figure 4.48. View Student Information Page

4.5.4.5 Social Media Page

New learning technologies integrates between MOOC platforms and social media to increase the interaction among learners (McCarthy, 2010; Snelson, Rice, & Wyzard, 2012). Thus, Iraqi-bMOOC integrates between the blended learning platform (e.g. classrooms, interactive digital video and online lectures) and social media (such as YouTube, Facebook and twitter) to increase the online social interaction as in figure 4.49.

Figure 4.49. Social Media Page

4.5.4.6 Recommended Software page

Iraqi-bMOOC provides video media player that works on a different operating system (windows, Android and Mac OS). The student can use it to view the video lecture. This program provides the learners with a number of useful features which make watching the digital video easy and pleasant. Where the video player provided for learner a full tools during view video lectures whether on a personal computer or mobile. In addition, video player allow for students to make change in video settings during view video lecture as shown in the Table 4.3:

Table 4.3

Features of Recommended Video Player

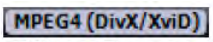
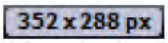
Feature (setting)	Description
 Play	It is used to start the media file playback. Once you click it, it will turn into the Pause button to let you pause the playback when needed.
 Stop	It is used to stop the media file during playback.
 Next File	It is used to go to the next file in the playlist.
 Previous File	It is used to go to the previous file in the playlist.
 Repeat	It is used to playback the media files added to the playlist from the beginning once the playback is over.
 Shuffle	It is used to randomize the media files playback order.
 Snapshot	It is used to take a snapshot of the current video file frame.
 Cut	It is used to cut part of video and save it
 Playlist	It is used to hide or open the **Playlist** window.
 Preferences	It is used to open the **Preferences** window to let the user set the program parameters.
 Mute	It is used to switch the sound on or off during the media file playback.
 Volume slider	It is used to change the sound volume during the media file playback.
 Video Format	It is used to show the video format of the currently played video file.
 Resolution	It is used to show the video resolution (width and height) of the currently view played.

Table 4.3 continued

Feature (setting)	Description
 Channels	It is used to display the number of channels in the currently played video file.
 Speed	It is used to change the speed during the video file playback. You can click on this field by the mouse and select one of the available speed values: 2x, 4x, 16x, 32x.
 Full Screen	It is used to make the **Playback** window occupies all the available screen space.
 Normal Mode	It is used to return from the **Full Screen** to the **Normal** mode.
Navigation slider	It is used to navigate through the media files during playback.
Elapsed/Remaining Time indicator	It is used to show the elapsed/remaining time during the media file playback.
 Add Files	It is used to add some audio/video files to the current playlist.
 Add Folder	It is used to add some folder containing audio/video files to the current playlist.
 Remove Selected	It is used to remove the currently selected file from the playlist.
 Sort List by Name	It is used to sorting for the current playlist alphabetically.
 Show All Playlists	It is used to all playlist.
 Hide All Playlists	It is used to hide the All Playlists panel.
 New Playlist	It is used to create a new playlist.
 Load Playlist	It is used to load the previously saved playlist into the program.
 Remove Playlist	It is used to remove the currently selected playlist.
 Rename Playlist	It is used to rename file in the currently selected playlist.
 Save Playlist	It is used to save the currently created playlist.

4.6 L2P-bMOOC vs Iraqi-bMOOC Model

Many methodologies for developing the bMOOC and MOOC models have been discussed in section 2.7 in chapter 2. However, the development of the methodologies might be different. Some methodologies try to process many parts that relate to the system components in the development process, while some other methodologies attempt to focus on more details in the development processes such as structure, tools, and assessment for developing the system. Therefore, table 4.4 describes the comparative study between Iraqi-bMOOC and L2P-bMOOC model to compare and explore the components, features and functionality, design elements, structure, and tools.

Table 4.4

L2P-bMOOC vs Iraqi-bMOOC model (√ Supported, (-) Partly, and - Not Supported)

No	Dimensions	bMOOC Components	Features	L2P-bMOOC	Iraqi-bMOOC
1.	Blended Learning	Formal Learning	Connect with University	√	√
		Learning Activities	Select Lecture Tools	√	√
		Faculty Calendar	Select Lesson Schedule	√	√
		University Time	Semesters Dates	√	√
2.	Flexibility	Type of Lecture	Select Video, Audio, Text Lecture	√	√
		Video Media Player	Full Features: Play, Pause, Stop, Increase/Decrease Speed, Volume, Full screen mode, HD, comments and…etc.	(-)	√
		Download / Upload	Select Material Links	√	√
		Multi Languages System	Select :Arabic, English, and …etc.	-	√
		Admin page	Manage System	√	√
		Lecturer Page	Manage Material	-	√
		Students Page	View Learning Activities based on Subject	-	√
3.	Quality Content	Material	Subject Information	√	√
		Lecture Activities	Illustrative Tools	√	√
		Feedback	Select Material Information, Assignments, and …etc.	√	√
		Solve Assessments	Select Type of Assessments	√	√

Table 4.4 continued

No	Dimensions	bMOOC Components	Features	L2P-bMOOC	Iraqi-bMOOC
4.	Educational Design	Lecturer	Manage Learning Activities	-	√
		Types of Lecture	Select Subject by Student	-	√
		Types of Material	Video, Audio, text, Pdf, and ect…	√	√
		Assignments Activities	Quizzes, Testing, Projects, and etc….	√	√
		Assessments	Evaluation (formative / summative Assessments)	√	√
		Assessments Activities	View/Submit Solution	-	√
5.	Cooperative Learning	Discussion Forum	Select Group Discussion	√	√
		Video Comments	Seclect Peer to Peer, Lecture (Interactive video)	√	√
		Email	Select Send or Received Files	√	√
		Lecture Note	Interactive Lecture	-	√
		Social Media	Select FB, twitter, Youtub.	-	√
6.	Openness	Registration System	Student Information	√	√
		Login System	Username & Password (Student/Lecturer)	√	√
		Add universities	Manage University	-	√
		Add Colleges	Manage Colleges	-	√
		Add Departments	Manage Departments	-	√
		Add Lecturer	Manage Lecturers	-	√

Based on the six dimensions displayed in the table 4.4, the following points of limitations can be summarized:

1. This L2P-bMOOC model only provides components, features, and functionality to be considered during designing bMOOC, but this does not involve the specific processes to develop bMOOC.

2. Although this model provides the main phases of system, it is not very comprehensive to provide guideline to the online education designers to develop bMOOC.

3. This model focuses only on video mapping based on comments without paying attention to the relation between lecturer and student in the classroom (i.e. there is no lecturer page to communicate with his/her students and the student can see only the video lecturer based on video mapping).

4. This model only provides components to be considered during designing bMOOC, but not the specific processes to develop bMOOC.

5. It seems similar to the traditional rapid prototyping model and does not clearly define the educational aspects to be embedded in the bMOOC design component.

6. This model is not flexible because it supports only one university (Alfauum University) and this is contrary to the openness. That is, it cannot support to add or update the main system components such as adding universities, colleges, and departments (i.e. bMOOC must be flexible to add or update departments and subjects to keep up with the development of the world day after day).

7. This model offers the design features that are related to the education components but does not specify the phases and activities to be followed in designing and developing bMOOC.

8. This model only shows the components to be considered when developing bMOOC and does not provide guidelines to develop the bMOOC such as step-by-step guidelines.

9. Although this model is flexible and able to help students by showing video lecture, it does not allow student to select the same subject into classroom and it just allows toselect and show video lecture from video mapping in the system.

4.7 Experts' Review Evaluation

This section of the experts review includes the demographic information about experts and evaluating the components and features of Iraqi-bMOOC model such as administration, lecturer, and students' in the system. Eight academic experts are involved and they are from Tikrit and Baghdad universities. The criteria of selecting the qualified experts to review Iraqi-bMOOC model is primarily based on having more than 10 years of experience in teaching certain topics such as online learning, e-learning, social media multimedia, and website design. Four professors and four assistant professors are participated; that is, eight participants have tested the learning activities in the Iraqi-bMOOC course. The number of experts' review are considered adequate based on the conditions set by Nielsen (1989).

4.7.1 Demographic Data (Experts Review)

Table 4.13 shows the first phase of experts' review. It is about a demographic information of eight experts from two universities (Tikrit & Bahgdad). The experts' information such as age, gender, position, university and experience are collected to support the reliability of the selected experts in evaluating Iraqi-bMOOC.

Table 4.5

Demographic Data (Experts Review)

Expert	Gender	Age (year)	position	Academic Qualification	University	Experience (Year)
A	Male	54	Professor	Online learning	Tikrit University	30
B	Male	55	Professor	E- learning	Tikrit University	32
C	Female	47	Professor	Online learning	Bahgdad University	28
D	Male	51	Professor	Communication	Bahgdad University	28
E	Female	45	Professor	Website design	Bahgdad University	31
F	Male	54	Professor	E- learning	Tikrit University	28
G	Female	38	Ass. Professor	Social Media	Bahgdad University	22
H	Male	36	Ass. Professor	Multimedia	Tikrit University	19

4.7.2 Findings of Expert Review

4.7.2.1 Evaluation of Experts' Review Based on Components & Features

The researcher has asked the experts in the second phase to answer the survey on the components of Iraqi-bMOOC. Besides, the variables in this evaluation relate to administration, lecturer, and learner.

More specifically, all experts have agreed on that the features in the main components of admin page (such as Manage universities, Manage Colleges, Manage Department, Manage Subject and Manage Lecturers) in the admin components page are highly

useful (Essential). But, some experts have evaluated that the sort feature in most components is useful only. With regard to the lecturer components page, all experts have agreed on that features in the main components of lecturer page are highly useful (Essential). Yet, three experts have stated that the upload image in the lecturer profile is only useful.

Finally, all experts have noted that the features in student's components page are highly useful (Essential), except for three experts who have stated that upload image in the student profile is useful only.

On the whole, the results of the evaluation unveil that the majority of the experts approved on most of the components, features and sub features in the proposed Iraqi-bMOOC. In addition, the majority of experts also agreed on that the Iraqi-bMOOC is applicable, clear, and understandable for everyone, as well as the terminology of components used is clear and understandable.

The data is also plotted in the clustered column charts (see Figure 4.50, Figure 4.51and Figure 4.52) which provide a straightforward way to illustrate the different frequency of responses based on admin, lecturer, and students components.

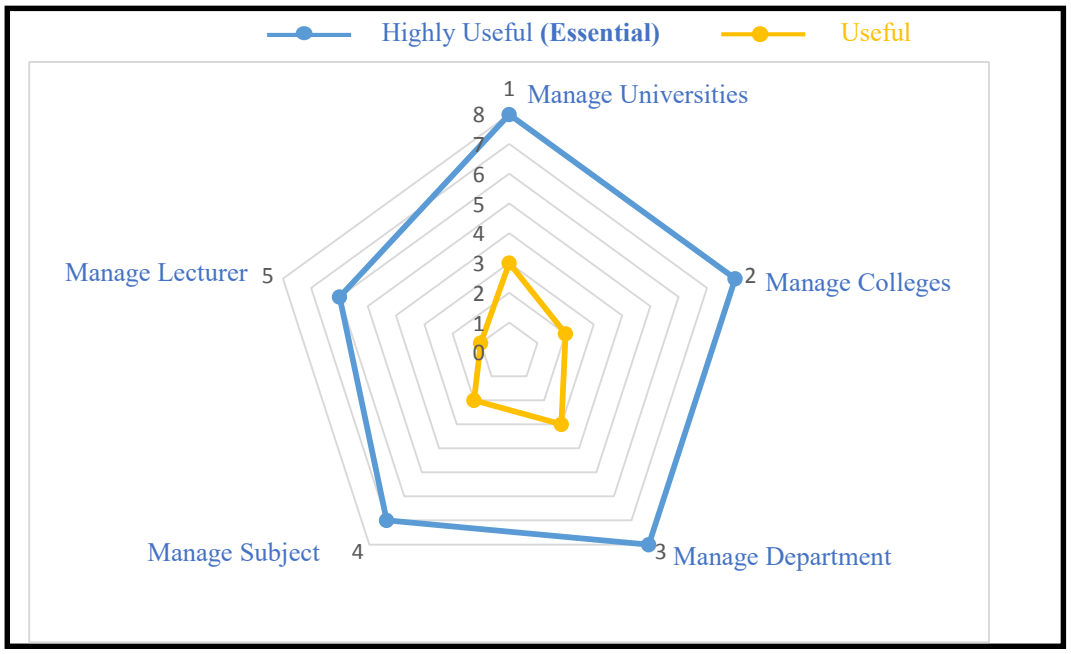


Figure 4.50. The Proposed Components Relevance in Iraqi-bMOOC Model (Admin Page).

In precise, the results exhibited in Figure 4.50 (admin page) showed that all experts had come into agreement that the Manage universities, Manage Colleges, Manage Department, Manage Subject and Manage Lecturers) in the admin components page are highly useful (Essential). On the other hand, three experts rated sort feature are useful only in the manage university, college, and department.

Next, only two out of eight experts stated that search feature in manage university, college, and department component is useful only. However, only one out of eight experts stated that search feature in manage department component is useful only. However, only one experts stated that sort feature in the manage lecturer components is useful only.

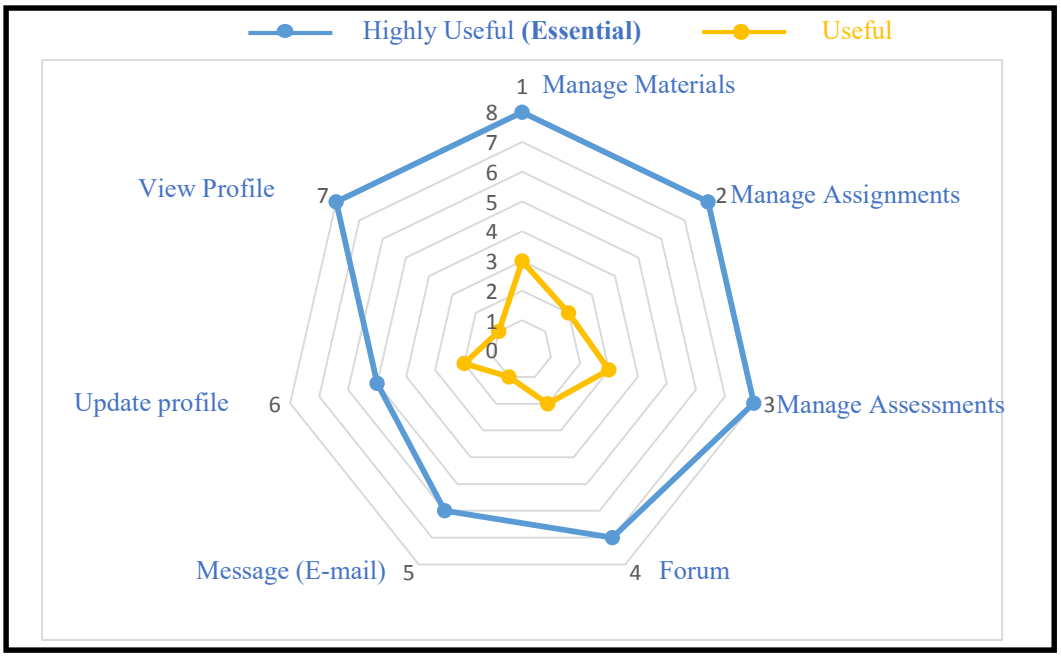


Figure 4.51. The Proposed Components Relevance in Iraqi-bMOOC Model (Lecturer Page).

As depicted in Figure 4.51, (lecturer page) all experts (8) agreed that Manage Materials, Manage Assignments, Manage Assessments, Forum, Message (E-mail), Update profile, view profile are highly useful (Essential) to be incorporated in the proposed model. Meanwhile, two out of eight experts rated lecturer Image upload as useful only in lecturer profile update. On the other hand, three experts rated the sort email by (Name, date and type) is useful only in the component of admin page. Finally, one expert noted that the sort by (name, type & date) into manage assignments component is useful only.

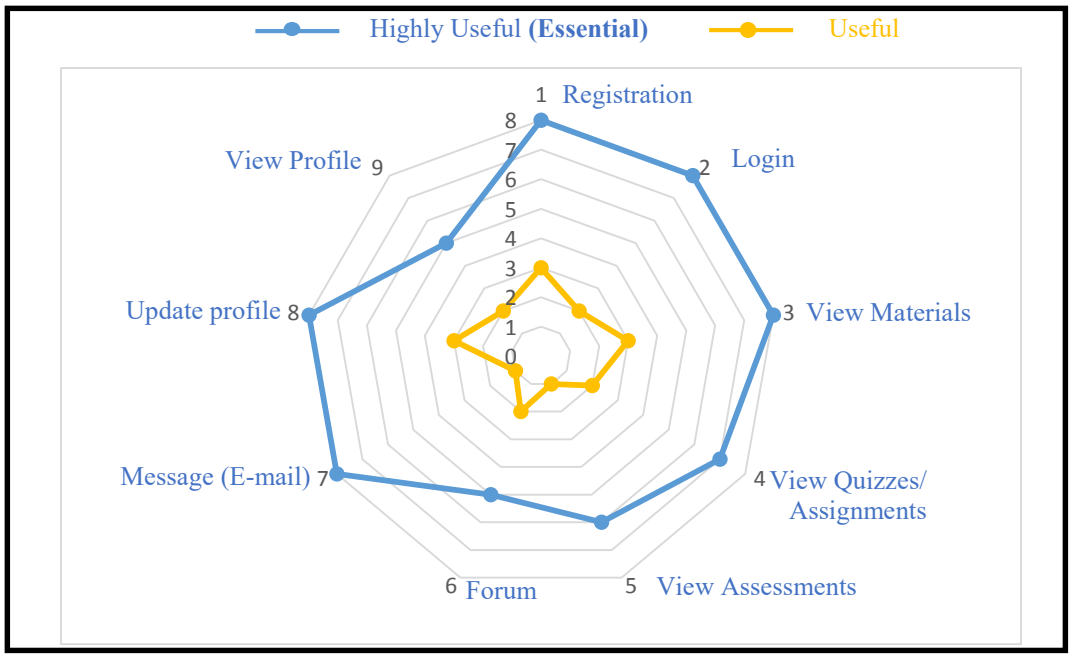


Figure 4.52. The Proposed Components Relevance in Iraqi-bMOOC Model (Student Page).

As shows in Figure 4.52, (student page) all experts agreed that Registration, Login, View Materials, View Quizzes/Assignments, View Assessments, Forum, Message (E-mail), Update profile, and View profile are highly useful (Essential) in the proposed model. However, two experts rated the sort assignments by (name, date and type) is useful only in the quizzes/assignments component. Next, the sort email by (Name, date and type) were considered useful only by three experts. However, only one experts regarded upload student Image is useful only in the components of student page. Finally, all expert noted that the proposed model of Iraqi-bMOOC have logical flow, and can used it in the high education context.

4.8. Experimental Testing Results

The testing system is applied to students at Tikrit and Baghdad universities for two months on April 2017. These students have taken more than three courses in the proposed Iraqi-bMOOC. A questionnaire is distributed to all students who are undergraduates at Tikrit and Baghdad universities on Jun 2017. Ten colleges are visited by the researcher who has distributed 50 hard copies of the questionnaire to the two universities. That is, 25 copies are distributed to each university. The total number of participants in the experimental testing is fifty undergraduate learners from different colleges (refer to Figure 4.53, as explained in section 3.9, chapter three). A suitable sampling (universities students) is adopted and the data is obtained from learners who are students in the university (Sekaran & Bougie, 2016).

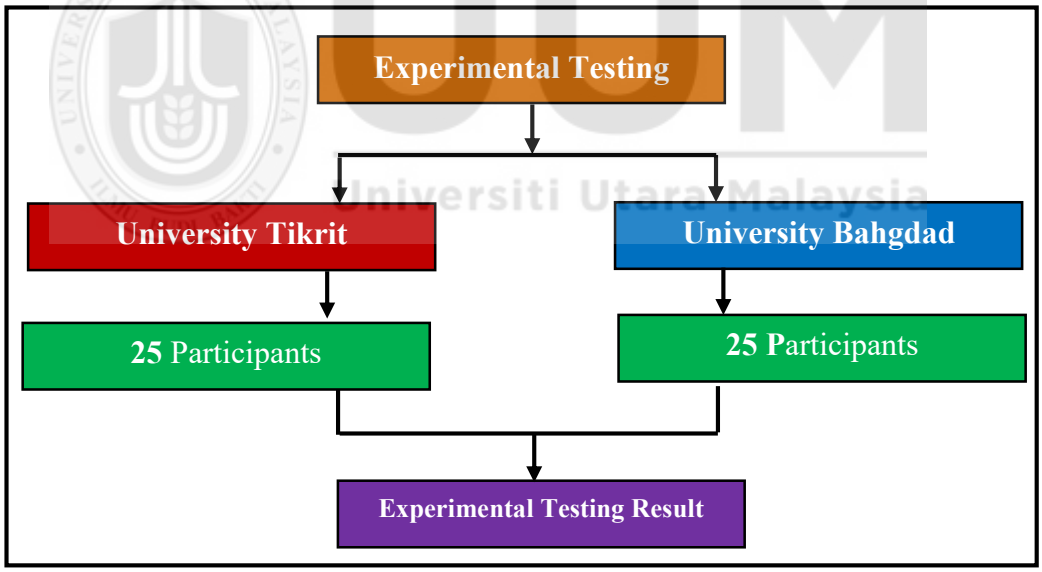


Figure 4.53. Experimental Testing Method

The participants' number of this study is adequate for the quality and evaluation of Iraqi-bMOOC model because at least thirty data sets should be employed to obtain reliable results in the statistical tests (Sekaran & Bougie, 2016). Then, the experimental group in each college is instructed to assess their experience about the

blended learning dimension that are available in Iraqi-bMOOC (i.e Blended Learning, Flexibility, Quality Content, Educational design, Cooperative learning, and Openness). This is conducted by filling the questionnaire instrument (refer to Appendix D) with regard to Tikrit and Baghdad universities. After collecting the data and coding the database in SPSS (Version 23), each item in the questionnaire is analyzed by using descriptive statistics and standard deviation.

4.8.1 Demographic Data

The first part of the questionnaire focuses on the general information of the participants. With reference to the Table 4.6 and Figure 4.54, out of fifty participants, twenty five (50%) ones are male, and the remainder is female 25(50%). The distribution between male and female is considered equal. This makes the following results free from gender-bias.

Table 4.6

Demographic Data

Age	Frequency	Percent %
19 – 20	22	44.0%
21 – 22	28	56.0%
Total	50	100 %

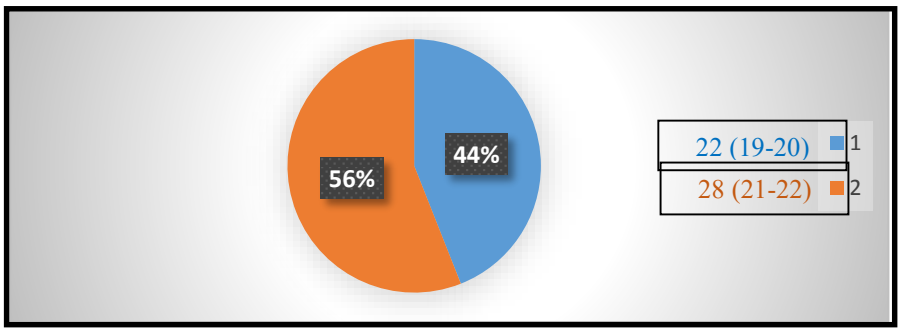


Figure 4.54. Demographic Data

A. **Ages of participation**

The participants are selected from undergraduates whose age is between 19 and 22 years old. These are the target ages to participate and join the blended MOOC. Hence, they are the suitable learners to provide feedback about the Iraqi-bMOOC. For more details, twenty two (44.0%) of them are between nineteen and twenty years old, and the rest is twenty eight (56.0%) who are between twenty one and twenty two years old (as stated in Table 4.7 and Figure 4.55).

Table 4.7

Ages of Participation

Gender	Frequency	Percent
Male	25	50%
Female	25	50%
Total	50	100 %

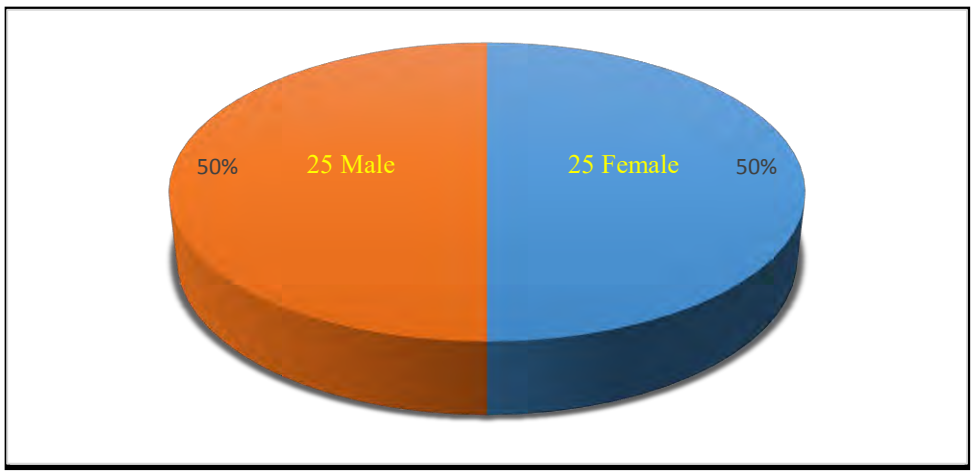


Figure 4.55. Ages of Participation

B. Level of Participants

Table 4.8 and Figure 4.56 show the distribution of the sample in the blended course levels. The participants represent different undergraduates' levels (Classes) from the first year until the fourth year at the universities of Tikrit and Baghdad. Each university has 50% of the participants' total number and they are divided into four levels based on their classes.

Table 4.8

Undergraduates' Level

Class (Years)	Uni.Tikrit (Frequency)	Uni.Bahgdad (Frequency)	Total	Percent %
First	5	5	10	20%
Second	6	6	12	24%
Third	7	7	14	28%
Fourth	7	7	14	28%
Total	25	25	50	100 %

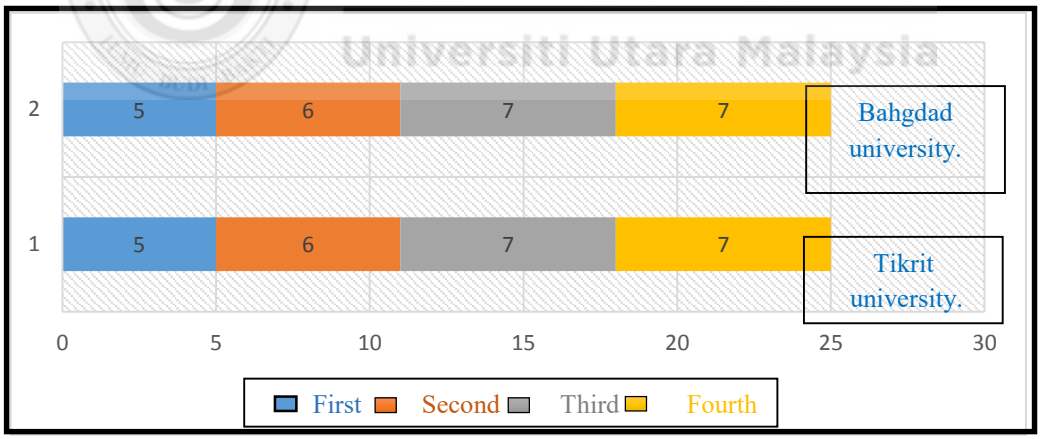


Figure 4.56. Undergraduates' Level

However, the next section reports the findings and results of Iraqi-bMOOC evaluated by the participants based on the criteria (i.e. design dimensions).

4.8.2 Analysis and Findings

The design of blended MOOC environments integrates together face-to-face approach with online learning approach. This can be an effective and flexible model to enhance the classroom learning and improve the interaction with the lecturers and peers (Bruff et al., 2013). The participants are asked to registered and login into Iraqi-bMOOC courses to view online learning activities such as video lectures, audio, text, assignments, assessments, discussion forum, and messages. They also have to discuss the lectures content with peers and lecturers. The face-to-face classroom are then used to explain more about the concepts presented in the Iraqi-bMOOC courses.

To analyse and descriptively interpret the data from the 5-point semantic scale instrument items, a five scale measurements with the range of interval 0.8 from strongly disagree to strongly agree was formulated as the scale (see Figure 4.57). This number was achieved by dividing the range of scale with number of scale as suggested by Dawes, (2008).

Interval = (Highest score – Lowest score) / Number of scale
= ((5-1) / 5) = 0.8
List of Scale (Level of Agreement)
Strongly Disagree = (1.00 – 1.79),
Disagree = (1.80 – 2.59),
Neither agree nor disagree = (2.60– 3.39),
Agree = (3.40 – 4.19),
Strongly Agree = (4.20 – 5).

Figure 4.57. Conversion of Numerical Scale for Data Analysis

4.8.2.1 Blended Learning in Iraqi-bMOOC Model

Table (4.9) show the five evaluation items on the blended learning part in Iraqi-bMOOC courses environment.

The mean score of item no. 1 is 4.4 by which the participants have reported that face-to-face and online learning together help them to improve their academic achievements outcome. In relation to learners' motivation, the mean score of item no. 2 is 4.3. This indicates that the Iraqi-bMOOC increases the course participants' motivation. Besides, the mean score of item no. 3 is 4.4 which reveals that face-to-face and online learning enable learners to accomplish tasks more quickly in the learning process. Item 4 concerns the aspect of synchronization between blended MOOC and classroom. The mean score of it is 4.4 which means that the blended MOOC approach supports and completes the traditional classroom approach. Finally, mean score of item no. 5 is 4.5 which refers to the issue that most participants have reported a high satisfaction with the learning environment in the Iraqi-bMOOC.

Table 4.9

Results of Blended Learning

Blended Learning Evaluation in Iraqi-bMOOC			
No	**Evaluation Item**	**Mean**	**SD**
1	Blended MOOC approach helps me to improve my academic achievements outcome.	4.4	0.60
2	Blended MOOC approach increases my motivation to share and discover new ideas.	4.3	0.63
3	Blended MOOC approach enables me to accomplish tasks more quickly.	4.4	0.50
4	Blended MOOC approach can be used to enhance the traditional classroom approach.	4.4	0.50
5	I am satisfied with this blended MOOC environment.	4.5	0.58
	Blended Learning Average	**4.4**	**0.56**

Scale: Strongly Disagree = (1.00 – 1.79), Disagree = (1.80 – 2.59), Neither agree nor disagree = (2.60– 3.39), Agree = (3.40 – 4.19), Strongly Agree = (4.20 – 5)
No of Respondents : 50

The final result of mean score is 4.4. This finding is consistent with the finding Bruff et al.'s (2013) finding. In return, it unveils that MOOC can improve the learning process outcome because the participants in bMOOCs can benefit from learning opportunities into blended learning.

4.8.2.2 Flexibility in Iraqi-bMOOC Model

Flexibility is one of the important factors in MOOC (Mackness et al., 2010).The ten evaluation items stated in Table 4.8 assess the flexibility level of the Iraqi-bMOOC.

Table 4.10 show the first item that discusses the access flexibility to the learning activities and lectures and the mean score of it is 4.4. The participants have reported

that there is no difficulty to access the lectures and learning activities. This means that the courses are flexible and helpful for the participants to access the learning activities anytime and anywhere. Then, the mean score of the second item is 4.4 which provides a wide range of learning tools for the learners. This reveals that the participants have found that the learning environment in the courses provides a wide range of learning tools that allow them to quickly access the required information and materials. The mean score of item no. 3 is 4.4 which refers to the point that the learners are able to access the learning materials with no much difficulty. This indicates that the learners can get lectures and access the learning materials by an easy way without any difficulty. Moreover, item no. 4 is related to website content whereby the participants' answers have a slightly higher percentage mean 4.6. This means that most of the participants are satisfied on the website content and design because the interface content should be simple for learners to locate the learning resources in an efficient way. As for item no. 5, its mean score is 4.5 which is related to the social media whereby the participants have also found that access to the social media increases the learning process.

Concerning item no. 6, its score mean is 4.4 by which the online video lecture with face-to-face lecture are tested. The participants have reported that using the video lectures based on the lectures in classroom enables the learners to accomplish tasks more quickly. In relation to language and culture, the mean score of item no. 7 is 4.5. This reveals that the language and culture have an effective impact on the learners during the learning process. The mean score of the item no. 8 is quite high at 4.6. This shows that the learning environment provides the learners with multi communication channels with the lecturer and also with other learners (e.g., email, forum, and

discussion comments). Finally, the mean score of item 9 is 4.5 which means that the website has flexibility in uploading or downloading files during the learning process.

Table 4.10

Results of Flexibility

Flexibility Evaluation in Iraqi-bMOOC			
No	**Evaluation Item**	**Mean**	**SD**
1	I can access to lectures and learning activities anytime and/or anywhere that is suitable for me.	4.4	0.50
2	The learning environment provides me with a wide range of learning tools that allow the learners to quickly access the required information and materials (e.g. assignment due date, grading system, exams, etc.).	4.4	0.54
3	I am able to access the learning materials with no much difficulty.	4.4	0.54
4	The website content makes me explore the course further.	4.6	0.49
5	I can access to the social media as part of the learning process such as twitter and Facebook.	4.5	0.54
6	The learning environment allows me to use the video lectures based on the lectures in classroom	4.4	0.54
7	The learning environment provides the learners with examples that can be understood by everyone based on the Iraqi-Arabic language and culture.	4.5	0.50
8	The learning environment provides me with adequate communication channels with the lecturer and with other learners (e.g., email, forum, video comments).	4.6	0.49
9	I am very comfortable with the flexible design to upload and download the files in my own devices easily (Computer, Mobile), such as Video, doc, ppt, pdf and xlsx and etc.	4.5	0.50
	Flexibility Average	**4.5**	**0.51**

Scale: Strongly Disagree = (1.00 – 1.79), Disagree = (1.80 – 2.59), Neither agree nor disagree = (2.60– 3.39), Agree = (3.40 – 4.19), Strongly Agree = (4.20 – 5)
No of Respondents : 50

Most of the participants in Iraqi-bMOOC courses have answered by mean (4.5) as a final result of the flexibility part. This result unveils that the participants have confirmed that the learning activities are very flexible & satisfying in the courses (Iraqi-bMOOC), this shows the effect of language and culture on the learning process. This is confirmed by many re-searchers such as Hollands, (2014) and Yousef et al. Cases in point are that the access to: the learning activities and lectures, the learning tools, the learning materials, website content, and the social media.

4.8.2.3 Quality Content in Iraqi-bMOOC Model

The Quality Content is one of the important factors to empower and engage the learners to participate in the MOOC all over the world (Yousef et al., 2014c). Shee (2008) confirms that the learners give a great value for MOOC courses where the content is well designed and interactive as well as the content of the subject is clear and at the right length. The six evaluation items provided in Table 4.11 aim to test the content quality of the Iraqi-bMOOC. The mean score of item no. 1 is 4.5 by the participants which reveals that the subject content is clear in the courses and helps them to understand the materials. Besides, the mean score of items no. 2 is high 4.6 which uncovers that the structure of website is suitable for the different levels of learners. In relation to the interactive material comments, the mean score of item no. 3 is 4.4. This shows that the participants have reported that the interactive material comments are helpful for them to improve the learning content. Next, the mean score of item no. 4 is 4.5. That is, the participants have indicated that the information presented in the comments part is very useful for them to understand the course content by feedback and notifications from their lecturers and peers. Moreover, the mean score of item no. 5 is 4.3, which is related to feedback. This means that the participants are

satisfied on the feedback in the course provided by either the lecturer or the learners as well as it is helpful for them. Furthermore, the mean score of item no. 6 is 4.4 which examines the search options in the system. This shows that the participants get benefit from search options which help them to find various learning activities and lectures. The mean score of item no. 7 is 4.5 which reveals that the learning environment enables the learners to adapt the quality of the learning materials and better meet their needs.

Table 4.11

Results of Quality Content

Quality Content Evaluation in Iraqi-bMOOC			
No	**Evaluation Item**	Mean	SD
1	The presentation of the subject content is clear.	4.5	0.50
2	The easy design helps to structure the learning content for different learners.	4.6	0.48
3	The interactive material comments (video, audio and text) help improve the quality of the learning content.	4.4	0.50
4	The information presented in the discussions comments helps me to better understand this course.	4.5	0.50
5	The feedback from my lecturer and other learners helps me to understand the lecture content.	4.3	0.47
6	The search options in the system help me to find specific learning resources.	4.4	0.53
7	This learning environment enables me to adapt the quality of the learning materials to better meet my needs.	4.5	0.50
	Quality Content Average	**4.5**	**0.50**

Scale: Strongly Disagree = (1.00 – 1.79), Disagree = (1.80 – 2.59), Neither agree nor disagree = (2.60– 3.39), Agree = (3.40 – 4.19), Strongly Agree = (4.20 – 5)
No of Respondents : 50

In relation to the findings stated in Table 4.11, the final result of mean score of this part is 4.5. This finding means that most of the participants have agreed on the quality of courses contents. These courses contents (such as course materials content, discussions, comments, feedback, search options, and quality of learning material) are very helpful to better understand the course concepts in the Iraqi-bMOOC. In particular, viewing a video lecture helps the learners to receive suggestions and comments on the lecture. In return, this helps to improve the quality of the course content (McCallum et al., 2013). This indicates that the learning environment in the Iraqi-bMOOC enables the learners to adapt the quality of the learning materials and better meet their needs.

4.8.2.4 Educational Design in Iraqi-bMOOC

The learning methods environment affect positively on the learning process as they increase the interaction and motivation for the learners (Yousef et al., 2015a). Table 4.12 show the effectiveness of the educational design on the Iraqi-bMOOC. Item no. 1 has mean score 4.4, which indicates that the learning objectives and scope are clear for the learners in the online lecture. Also, this is one of the important factors in the educational design. Besides, item no. 2 has mean score 4.4. This shows that the structure of the course helps the learners to focus on their needs in the learning process. This is also one of the important elements for the user interaction with bMOOC content. The participants have reported on item no. 3 and their answers show that the mean score of that item is high 4.6. This reveals that there is strong synchronization between blended MOOC and classroom.

In addition, item no. 4 has mean score 4.5 because the participants have stated that the learning tools are effective in this course. Moreover, they have noted that the learning tools improve collaboration and interaction among them. As for the interaction between the learner and the lecturer in the course, the participants' answers to items 5, 6, 7 and 8 are 4.4, 4.3, 4.4, and 4.4 respectively. This means that most participants are satisfied on the interactional features between the lecturer and the learner, which are advantageous for them in the learning process. Moreover, item no. 9 has a slightly higher mean score which 4.5. This shows that the assessment of this course enhances the learning process for the learners. Finally, item no. 10 has mean score 4.3 which refers to the point that the questions methods used in the course help the learners to provide specific and quick answers.

Table 4.12

Results of Educational Design

Educational Design Evaluation in Iraqi-bMOOC			
No	**Evaluation Item**	**Mean**	**SD**
1	The learning objectives and scope are clearly stated in the online lecture.	4.4	0.49
2	The structure of this course keeps me focused on what is to be learned.	4.4	0.53
3	Blended MOOC approach can be used to supplement the traditional classroom approach.	4.6	0.49
4	The various learning tools in this environment are effective.	4.5	0.50
5	I have the possibility to ask my tutor about what I do not understand.	4.4	0.57
6	The lecturer responds promptly to my queries.	4.3	0.55
7	The lecturer sends me comprehensive feedback on my assignment.	4.4	0.49
8	The approach of this blended MOOC environment encourages me to contact the teaching team in this course when needed.	4.4	0.53
9	The assessment in this course improves my learning process.	4.5	0.54
10	Different types of questions help me to provide specific and quick answers (e.g. short answers, essay, matching, Multiple Choice question and True/False question).	4.3	0.52
	Educational Design Average	**4.4**	**0.52**

Scale: Strongly Disagree = (1.00 – 1.79), Disagree = (1.80 – 2.59), Neither agree nor disagree = (2.60– 3.39), Agree = (3.40 – 4.19), Strongly Agree = (4.20 – 5)
No of Respondents : 50

Overall, the participants are positive towards the course in a number of issues related to defined objectives, clear structure, the learning tools, interaction with the lecturer, assessment, and learning activities. Therefore, the final result of mean score of this

part is 4.4. The good educational design increases the students' interaction in the class and also saves their time to understand the learning concepts (Yousef et al., 2015d).

4.8.2.5 Cooperative Learning (Connectivity) in Iraqi-bMOOC

Cooperative learning is very important in online learning environments (e,g. Blended MOOCs) (Chatti et al., 2012a). Table 4.13 illustrate a set of 14 items that evaluates the Iraqi-bMOOC in terms of cooperative learning and connectivity.

The mean score of item no. 1 is 4.4 whereby the participants have reported that there is an interaction synchronously and asynchronously with the lecturer and peers. Concerning the collaboration among the learners, the mean score of the participants' answers is 4.3. This means that there is collaboration among the learners in group work in the course. Besides, item no. 3 has mean score 4.4. This uncovers that most of the participants are satisfied on the communication tools in the course which enhance their interaction. This is accomplished by comparing the participants' results with their peers' and sharing their knowledge with them. Furthermore, item no. 4 has mean score 4.4 which is unveiled by investigating the communication with other learning environments such as other universities, learners and lecturers. Thus, this item indicates that the participants benefit from sharing their knowledge with other learners from other universities in addition to learning from more than one lecturer which is very advantageous for them. Moreover, item no. 5 has mean score 4.5 which reveals that most of the participants agree on this item. In other words, there are support and feedback among the learners. In addition, the participants have agreed on item no. 6 which has mean score 4.4. This demonstrates that the participants find blended MOOC environment encouraging as it promotes them to collaborate and share ideas with others. Item no. 7 has mean score 4.5 whereby the participants have confirmed that

their motivation has been increased in the class activities after using the blended MOOC model. As for item no. 8, its mean score is high 4.6. This means that the most of the participants are satisfied on the blended MOOC environment. Items 9, 10, and 11are related to the interaction tools and which have mean score 4.5, 4.4, and 4.5 respectively. This shows the effectiveness of the interaction tools in the course. Moreover, item no. 12 is pertained to the type of interaction in the course. It has mean score 4.5 which means that most of the participants are satisfied on the interaction (i.e. content, lecturer, and peers) in the course. Item no. 13 is related to the interaction with other peers outside the university. It has mean score 4.5 which refers to the point that the blended MOOC environment increases and encourages the interaction with other learners from other universities. This is a useful feature that helps learners to exchange experiences with their peers from other universities. The final item is no. 14 which has mean score 4.3. It is related to the tested feedback issue in the course. However, the results are positive based on the participants' perspective.

Table 4.13

Results of Cooperative learning

Cooperative learning Evaluation in Iraqi-bMOOC			
No	**Evaluation Item**	Mean	SD
1	I can interact with other learners and with the lecturer synchronously and asynchronously.	4.4	0.53
2	It is easy to work collaboratively with other learners involved in a course.	4.3	0.48
3	The communication tools enhance my interaction and collaboration with my course mates.	4.4	0.52
4	I share what I have learned in this course with others outside of the learning environment such as learners from other universities.	4.4	0.54
5	The cooperative learning helps me receive support and feedback from other participants.	4.5	0.57
6	The blended MOOC environment encourages me to collaborate and share ideas with others.	4.4	0.57
7	The blended MOOC environment increases my motivation to participate in class activities.	4.5	0.49
8	I am satisfied with this cooperative learning environment.	4.6	0.49
9	The discussion forum of this course is effective.	4.5	0.50
10	The use of email in this course is effective.	4.4	0.57
11	The use of the lectures' comments in this course is effective.	4.5	0.54
12	The interaction (i.e. content, lecturer, and peers) is effective.	4.5	0.54
13	I can interact with other learners and lecturers from other universities.	4.5	0.54
14	Feedback from the professor is timely.	4.3	0.47
	Cooperative learning Average	**4.4**	**0.52**

Scale: Strongly Disagree = (1.00 – 1.79), Disagree = (1.80 – 2.59), Neither agree nor disagree = (2.60– 3.39), Agree = (3.40 – 4.19), Strongly Agree = (4.20 – 5)
No of Respondents : 50

In this part, the mean average of 4.4 is high and this refers to the effectiveness of the Iraqi- bMOOC in supporting the cooperative learning & connectivity. The participants

have agreed on that the interaction and communication possibilities are offered in Iraqi-bMOOC. For instance, video lecture comments, discussion forums, email, social media, and collaborative comments allow the learners to interact and share knowledge. They also allow the learners to discuss and exchange experiences, collaborate, and construct knowledge in addition to receiving feedback and support from peers and lecturers. Thus, this indicates that the participants benefit from sharing their knowledge with other learners from other universities in addition to learning from more than one lecturer which is very advantageous for them. Thus, this finding is consistent with the views of researchers (such as Yousef et al. (2015) and Chatti et al. (2014)) about cooperative learning based on the connectivity theory.

4.8.2.6 Openness in Iraqi-bMOOC

Openness is one of MOOC criteria. It provides learning to a large number of participants around the world regardless of their level of education and location, Table 4.14 show the participants' high satisfaction on the field of openness in the Iraqi-bMOOC. The offered Iraqi-bMOOC enables the participants to register in the course for free and without any academic requirements. It also enables them to reuse all the course materials any time. The openness process of learning is shown in Table (4.11). As for registering for free in the course, item no. 1 has mean score 4.4. This reveals that the blended MOOC system allows the learners to register with no charge. With regard to items no. 2 and 3, the mean score of the option 'agree' in both items is slightly high; i.e., 4.3 and 4.4 respectively. That means that there are no academic requirements for registration in the system as it is open for all and also the learning material is available for free downloading. However, item no. 4 concerns the aspect of learning and receiving support and feedback. This item has a high mean score 4.4. The

participants have confirmed that support and feedback help them to interact with various universities in the learning environment. These participants are able to get notifications and have discussions from/with their peers in other universities. Besides, item no. 5 has mean score 4.3. Most participants have reported a high satisfaction on their adaptation with the learning material in the course. As for item no. 6, the mean score of it is high 4.5. This item is associated with the access to course lectures in Iraqi-bMOOC. Most participants agreed on that the access to lectures and learning activities is available anywhere and anytime.

Table 4.14

Results of Openness

Openness Evaluation in Iraqi-bMOOC			
No	**Evaluation Item**	Mean	SD
1	The blended MOOC system allows the student to register free of charge.	4.4	0.50
2	There is no academic requirements for registration in the system, i.e., it is open for all	4.3	0.58
3	The learning material is available for free downloading.	4.4	0.50
4	This learning environment helps the learner to learn and receive support and feedback from any university in Iraq.	4.4	0.49
5	This learning course enables me to adapt with learning material at any university.	4.3	0.53
6	I can access to lectures and learning activities from anywhere and anytime.	4.5	0.50
	Openness Average	**4.4**	**0.51**

Scale: Strongly Disagree = (1.00 – 1.79), Disagree = (1.80 – 2.59), Neither agree nor disagree = (2.60– 3.39), Agree = (3.40 – 4.19), Strongly Agree = (4.20 – 5)
No of Respondents : 50

The final result average of openness part has mean score 4.4. Most participants have highly agreed on that the openness system in the Iraqi-bMOOC is advantageous. For instance, registration, academic requirements, learning material, support and feedback, adapting with the learning material, and access to course lectures are useful for them to determine the learning resources in an efficient way. This provides a learning opportunity to a large number of participants from different universities in the world (Peter & Deimann, 2013). This means that most participants have agreed on that the access to the lectures and the learning activities in the Iraqi-bMOOC platform is available anywhere and anytime.

Next, all data from the dimensions were pulled together to describe more accurate reflection on participants' perception towards the dimension (Melnick, 1993) where they are visualized in Figure 4.58 and summarized in Table 4.14.

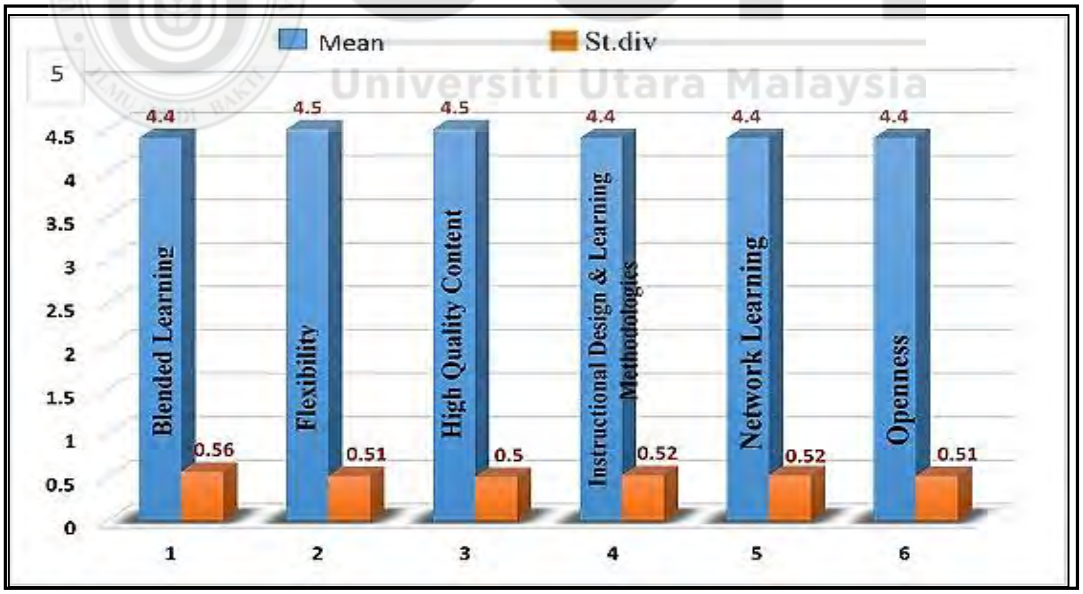


Figure 4.58. Descriptive Statistics of Dimensions.

Table 4.15

Descriptive Statistics of Dimensions

Dimensions Evaluation in Iraqi-bMOOC						
No	**Evaluation Item**	**Mean**	**SD**	**Median**	**Skewness**	**Kurtosis**
1	Blended Learning	4.4	0.56	4.000	-0.3074	-1.1686
2	Flexibility	4.5	0.51	5.000	-0.1295	-1.6514
3	Quality Content	4.5	0.50	5.000	-0.0735	-1.7051
4	Educational Design	4.4	0.52	4.000	-0.0649	-1.3312
5	Collaborative Learning	4.4	0.52	4.500	-0.207	-1.1704
6	Openness	4.4	0.51	4.000	-0.12	-1.6225

According to the results in Table 4.15, all dimensions scored 4.000, excluding "flexibility, and quality content" scored 5.000 for the $\tilde{x}$ scores, and collaborative learning scored 4.500. So far, the findings had hinted participants' positive acceptance towards the proposed model. These numbers implied that majority of the participants have come to an agreement that Iraqi-bMOOC model is blended learning, flexibility, quality content, educational design, collaborative learning and Openness. To strengthen the validity of the results, evaluation of the user interaction in Iraqi-bMOOC model is explained in the chapter 5, based on the user experience with courses.

4.9 Summary

The researcher in this chapter has explained and described the implementation approaches for developing Iraqi-bMOOC based on the components and design dimensions. The implementation has started by focus on video lectures approach to increase the interaction between learners and lecturers and video content. Consequently, data collection for constructing the proposed model involved information from literature, and experts. The components were determined step by step

through phases that included Comparative study, Design criteria (Design Dimensions), activities and technologies to description the proposed model. After that, the main modules of Iraqi-bMOOC are presented which include: The main interface, administration, lecturer, student, discussion forums, comments lecture, social media, recommended software, and all the features of online lecture from the top-down level. This chapter also provided the test results of Iraqi-bMOOC platform. It describes the results based on two sections of the Experimental Testing, and Experts' review. The first section highlights the testing and evaluation on Iraqi-bMOOC by users. The evaluation has been based on the main criteria of Iraqi-bMOOC, (such as Blended learning, Flexibility, Quality Content, Educational Design, Cooperative learning, and Openness). The results reveal that the majority of users are satisfied on the components, functionality, and features in the Iraqi-bMOOC platform that include video lectures, discussion forums, assessment, assignment, email, social media, and collaborative comments. This is confirmed by the participants who have shown positive acceptance towards the proposed model. Moreover, the majority of the participants (experts' review) have approved on most of the components, features, learning activities, and criteria proposed in Iraqi-bMOOC model. On the whole, this means that the proposed Iraqi-bMOOC is well approved on by all experts. Therefore, the next chapter (5) focusses on the evaluation of the user interaction in the proposed model.

CHAPTER FIVE
EVALUATION & RESULTS

5.1 Introduction

Chapter four has formulated the model of Iraqi-bMOOC based on the components and design dimensions stated in chapter two. In addition to the testing the proposed model of Iraqi-bMOOC. This chapter describes the strategies of Interacting in blended MOOC environment, and evaluation process of user interaction in the proposed model. The learner-centered evaluate approach is selected, which puts the learner in the center of the evaluation phase (Abras, Maloney-Krichmar, & Preece, 2004; Gabbard, Hix, & Swan, 1999; Karat, 1997). Therefore, this chapter highlights on the user interaction evaluation with the Iraqi-bMOOC platform based on the learners' experiences with the courses (Peers, Lecturer, and Content). Finally, shows the analysis of results which relates to students interaction in an Iraqi-bMOOC environment at the universities of Tikrit and Baghdad.

5.2 Strategies of Interacting in Blended MOOC Environment

According to Klink, (2006), Interaction is a critical concept in a learning process especially in the online environment. The word of interaction, either oral or written, is used between two or more individuals in addition to the interaction with content (Daniel, 1996). There are different types of interaction in the blended MOOC, when developers are designing courses delivered into blended MOOC environment. Therefore, strategies of interaction into blended environment can be classified into three strategies, they are as follows (Moore, 2004):

i. Student and Students: Refers to the interaction among students.

ii. Student and instructors: Refers to the interaction between students and instructor by exchanging knowledge between them. Also the instructor aims to converse with the student, clarify questions, stimulate interest, guide and motivate.

iii. Students and content: Refers to the interaction between students and the content of courses.

However, Hanna, Glowacki-Dudka & Conceição-Runlee (2000) classified the strategies of interaction in the online blended environment from a different perspective based on two strategies of interactions (human interactions and non-human interaction). The former focused on student with lecturer interaction, student with student interaction, and student with guest expert or student with community member interaction. While the non-human interaction emphasized student with content interaction and student with tool and student with environment interaction (Cruz et al., 2015; Klink, 2006).

In the online blended MOOC environment a set of these types of interaction must be used to address the different learning modes of students (Cruz et al., 2015; Moore, 2004; Hanna et al., 2000).

5.2.1 Human Interactions Strategies

These Strategies of human interaction focus on three methods namely (Student with lecturer, Student with student and Student with Guest Expert or Students with Community Member during learning process (Cruz et al., 2015; Klink, 2006).

A. Student with Lecturer:

i- Self-regulated learning: A web-based conferencing environment may require students to manage their time, process information, plan, their resources, and evaluate their own work. Students can seek help when they need it.

ii- Collaborative problem solving: The lecturer posts a problem to be solved by students.

iii- The lecturer and the students participate in the collective activities and shared knowledge.

iv- The lecturer observes, monitors, and provides feedback to the students.

v- The lecturer facilitates group processes by responding to questionable situations such as discussion problems, group dynamics issues, or misunderstandings.

B. Student with student:

i- Students complete group-work to improve their social and critical thinking skills.

ii- Students access into group knowledge and support by collaborative problem solving.

iii- Students design a website for an instructional program

C. Student with Guest Expert or Students with Community Member:

i- Students collaborate with guests on projects to gain diverse expertise.

ii- Students discuss real-life situations with practitioners in the community.

iii- Students work together with community members to solve problems and share knowledge.

5.2.2 Non-human interactions Strategies

These Strategies of non-human interaction also focus on three methods namely (Students with Tools, Student with Content and Student with Environment in the learning process (Cruz et al., 2015; Klink, 2006).

A. Students with Tools:

i- Students operate software (such as text copying and pasting, file transferring, image grabbing, brainstorming, outlining, and flow charting)

ii- Students manipulate software (e.g. changing contents, values, and/or parameters to verify test and extend understanding).

iii- Students communicate by using the software (such as promoting discourse, sharing ideas, reviewing work, asking questions, and collaborating).

B. Student with Content:

Students work to make sense of the information available on the web, in books, and in databases.

C. Student with Environment:

Students work with the resources (such as web-based searches, image libraries, source documents, and online databases).

5.2.3 Implications of Interaction Strategies to the Study

The interaction of learners with Iraqi-bMOOC model is a very important issue in this study. Learners must interact with a model whether the interaction is with peers,

instructor, or contents. Therefore, a good interaction design can determine how helpful blended MOOC is in the learning process. Hence, understanding strategies of user interaction can improve the results in the performance of the university students and provide useful innovations in the higher education environment.

5.3 User Interaction Evaluation

The researcher has conducted a thorough evaluation of the user interaction with peers, lecturers, and content in Iraqi-bMOOC courses. This accomplishes the main objective of this study and increases the interaction among learners. Therefore, the researcher has designed this questionnaire as a user interaction evaluation for the Iraqi-bMOOC platform (refer to table 3.9, chapter 3). The questionnaire consists of 12 questions as explained in Table 5.1. The participants are asked to respond to every question to evaluate the interaction in the courses. Fifty questionnaires are collected. The participants are male and female from the same sample used in the experimental testing in chapter four (Undergraduate students at Tikrit and Baghdad universities) on Jun 2017. These learners can access to Iraqi-bMOOC platform for two months as a blended MOOC resource on April 2017.

Table 5.1

Results of User Interaction Evaluation

Unser Interaction Evaluation in Iraqi-bMOOC			
No	**Evaluation Item**	Mean	St.div
1	The peer feedback helps me to recognize the errors in my own work.	4.3	0.51
2	The received comments from peers' feedback help me to improve the quality of my work.	4.5	0.50
3	The received feedback helps me to get more information about the learning topic.	4.4	0.54
4	Reviewing others' work helps me to reflect it on my own work.	4.4	0.57
5	The peer interaction helps me to learn how to give constructive feedback to peers.	4.5	0.54
6	The lecturer interaction helps me to come up with new ideas.	4.5	0.57
7	The interaction with lecturer increases my ability in organizing ideas and contents in my work	4.4	0.50
8	The lecturer enhances my satisfaction on this course.	4.3	0.52
9	I am satisfied on my interaction with the course content.	4.4	0.50
10	Content of course allows me to engage in the learning activities.	4.4	0.57
11	Course content enhances interaction between the lecturer and the learners.	4.4	0.54
12	Course content provides me with adequate communication channels with the lecturer and peers (e.g., email, forum, comments, etc.).	4.5	0.54
	Interaction Environment Average	**4.4**	**0.53**

Scale: Strongly Disagree = (1.00 – 1.79), Disagree = (1.80 – 2.59), Neither agree nor disagree = (2.60– 3.39), Agree = (3.40 – 4.19), Strongly Agree = (4.20 – 5)
No of Respondents : 50

The first five items of the evaluation process are about feedback (peers: student - student) and each has mean score 4.3, 4.5, 4.4, 4.4, 4.5, respectively. This high ratio shows that the interaction of peer feedback is helpful for learners to increase their understanding of the materials. It also corrects the misconceptions on the learning topic

and also expands their knowledge about the learning topic. It can be concluded that the interaction among learners is useful for them by comparing their work with others works. In addition, it is obvious that the interaction in the course helps learners to give constructive feedback to peers.

Moreover, items no. 6, 7 and 8 have mean scores of 4.5 and 4.4, and 4.3 respectively. They are about the interaction between the lecturer and the learner (student - lecturer). These high ratios uncover that there is an interaction between learners and lecturers in the course. This also means that the participants find that the interaction environment in the course encourages them to collaborate and share ideas with lecturers and peers.

Items no. 9, 10, 11and 12 have mean scores of 44, 4.4, 4.4 and 4.5 respectively. They discuss the interaction of the learner with the content (student - content). Such results indicate that most of participants are very satisfied with the course content. In addition, the content engages them and increases their interaction with the learning activities. The final result of the interaction part has mean score of 4.5. This reveals that most participants have highly agreed and satisfied on the interaction in the course (peers, lecturer and content) and this is useful for them to learn by an efficient way.

5.4 Summary

This chapter provides the evaluation results of user interaction in Iraqi-bMOOC platform. The first section highlighted on the evaluation of Iraqi-bMOOC by user interaction with courses. The results revealed that the majority of users are satisfied on the interaction in the Iraqi-bMOOC platform that include interaction with peers, instructor and content. Therefore, Iraqi-bMOOC provided an opportunity for learners to interact, discuss, exchange, share knowledge, and collaborate with each other along with receiving feedback and support from lecturers and peers. This is confirmed by the participants who have shown positive acceptance towards the user interaction in the proposed model. This implies that the proposed model could be implemented based on all dimensions in the Iraqi-bMOOC such as (flexibility, quality Content, educational design, collaborative learning, and openness). Which means that everything is on the right way currently and there is no reason to make changes to the system.

CHAPTER SIX
CONCLUSION

This chapter presents the important aspects that can be derived from the study of Iraqi-bMOOC model. The answers to the research questions, objectives and discussion of findings are highlighted in this chapter. This chapter also provides summaries of research limitations. Finally, the chapter ends up with a discussion of future research and conclusions of the study.

6.1 Answers to Research Questions

This study aims to develop a blended learning of MOOC that includes the fundamental components for learners to develop the traditional learning in Iraq. Accordingly, this study is conducted with regard to four research questions:

i. What are the current limitations and challenges of MOOC in the higher education context from the perspective of Iraqi learners?
ii. What are the design dimensions of a blended MOOC?
iii. How to construct and develop a blended MOOC model?
iv. How to evaluate the user interaction element of the proposed blended MOOC model based on the user experience?

6.1.1 Research Question 1

What are the current limitations and challenges of MOOC in the higher education context from the perspective of Iraqi learners?

Research question one has directed to a number of challenges that require to be addressed such as: a) integrating the blended MOOC with the university system,

b) considering the local curriculum, c) increasing online and offline human interactions, and d) shifting from the centralized lecturer-centered learning model to a student-centered one.

For answering the first research question, a preliminary study (qualitative study) of the stakeholder is conducted in order to create a meaningful picture of the Higher Education Institutions needed for the blended MOOC to support the traditional learning. It is a major step forward for understanding deeply the stakeholder perspectives (Iraqi students). The results of the Preliminary study uncover that there is an urgent need for the blended MOOC in the Higher Education Institutions, which has been confirmed by the stakeholders.

6.1.2 Research Question 2

What are the design dimensions of a blended MOOC?

The main purpose of research question two is to identify the design dimensions of bMOOC which are content components, activities, functionality, features, and technologies involved in developing the blended MOOC, and they are currently practiced by the MOOC developers. The activities include literature content analysis (section 2.8.6), comparative study of the blended MOOC models (Section 4.2), expert's consultation (Section 4.4), MOOC Methodologies and strategies, and MOOCs Models and frameworks (section 2.8).

All these activities contributed to identifying a set of design dimensions of bMOOC (namely, blended learning, flexibility, quality content, educational design, cooperative learning, and openness). Therefore, the activities have identified the criteria and design dimensions of Iraqi-bMOOC model. The dimensions of the Iraqi-bMOOC model are

described in Section 4.3, Chapter 4. Then, the learning components evaluation is obtained via the expert's consultation along with online learning practitioners and literature review. The components are described as constituent parts of the model which contribute to each dimension and provide specific activities of each dimension of the design dimensions, such as learning material (Video lectures), feedback, assignment, assessment, lectures comments, discussion forum, and e-mail (refre to figure 4.4 & 4.5). Finally, the model of blended MOOC is determined by the users' participation in the blended courses which better meet their needs (Youssef et al., 2015).

6.1.3 Research Question 3

How to constru. ct and develop a blended MOOC model?

Few phases are conducted to construct and develop a bMOOC and have been discussed in this study. The first phase states that many bMOOC models have been proposed and these models of bMOOC identify an outline by presenting specific guidelines for developing bMOOC that are reviewed in chapter 2 (section 2.7). The main purpose of these models is to identify the design dimensions that include components, functionality, phases, and learning activities involved in developing bMOOC which are currently practiced by the online learning developers. The second phase is based on objective 2 to construct and develop a bMOOC that includes 3 steps such as expert consultation (Section 4.4), content analysis of the literature (Section 4.8.6), and comparative study of the bMOOC models (Section 4.2). Consequently, these phases have identified the core components and learning activities of bMOOC model such as video lectures, assignments, assessments, forum, comments and message (e-mail), for

the development of bMOOC system. The detail of the proposed model is described in Chapter 4 (section 4.4).

The third phase includes the design and implementation of Iraqi-bMOOC based on six dimensions. Each dimension includes components identified through a comparative study of bMOOC strategies. The design dimensions are distinct stages of the education model that can be performed in order (from dimension one to six). In addition, the components can be described as parts of the model that contribute to each dimension and give specific activities of each dimension of the design dimensions. Therefore, these components are considered essential to be included. Finaly, all these phases have constructed and developed the basis of Iraqi-bMOOC platform. Next, the tasks, functionalities, and features are acquired into learning activities through a comparative study of bMOOC models and frameworks. Subsequently, the dimensions components are attained by the expert's consultation with online learning practitioners and literature review. Thus, Iraqi-bMOOC has changed the traditional MOOC models concept from only watching the video content to a collaborative and flexible one. In addition, Iraqi-bMOOC provides a good deal of learning activities that encourage the learners to organize their learning, collaborate with peers, share and create their knowledge with others. Finally, the proposed Iraqi-bMOOC model has been testing and evaluating through two stages namely, expert's review and experimental testing. The expert's review process is conducted as a conformity evaluation of Iraqi-bMOOC. Principally, the outcomes of the expert's review describe that the majority of the experts approved on most of the components, functionalities, features, and learning activities proposed in Iraqi-bMOOC model. Moreover, the experimental testing results are positive with the learning activites in the Iraqi-bMOOC model.

These two combined evaluation methods make certain that the final use of the Iraqi-bMOOC model represents an approach for the development of blended MOOC. Furthermore, the model has been confirmed advantageous in terms of its applicability. These dimensions and components align with Kolukuluri's (2013) and Albó's (2015) assertion that the bMOOC must comprise the learning activities based on student-centered learning.

6.1.4 Research Question 4

How to evaluate the user interaction element of the proposed blended MOOC model based on the user experience?

The proposed Iraqi-bMOOC model has been evaluated through the user interaction. The participantsof the experimental testing activity have rated their experience of using the proposed model in terms of the user interaction. It is classified into three elements, namely students - students, students - lecturer, and student- content. On the whole, the user interaction into proposed Iraqi-bMOOC model has been well-approved on by all respondents who have participated in this study. The findings in in this study reveal that the user interaction scored means is above 4.4 (out of 5) for all dimensions. Overall, this means that the proposed Iraqi-bMOOC is well approved on by stakeholders. This shows sufficient evidences to conclude that the proposed Iraqi-bMOOC model is helpful in terms of interaction and obtaining knowledge. Moreover, the null hypothesis was rejected which concluded that the Iraqi-bMOOC model is significant in terms of user interaction. . Essentially, this study has provided criterion of interaction and learning as advocated by Yousef (2015), Alebaikan (2015), and Kolukuluri (2013).

6.2 Objective of the Study – Revisited

The main aim of this study is to propose a blended MOOC model for HEIs in Iraq. At the end of this study, the primary aim has been accomplished via completing the four supporting objectives: 1) To determine the current limitations and challenges of MOOC in the higher education context from the perspective of Iraqi students. 2) To identify the design dimensions and components of a bMOOC model. 3) To construct and develop bMOOC model based on objective ii. 4) To evaluate the user interaction of a bMOOC prototype based on the user experience. Research objective one is fulfilled by the preliminary study to identify the need of Iraqi Higher Education Institutions for Iraqi-bMOOC so as to support the traditional learning. Research objective two is accomplished via identifying the Iraqi-bMOOC model criteria (design dimensions) and components from content analysis, comparative studies, and expert's consultation. Subsequently, research objective three is fulfilled by the construction of the proposed Iraqi-bMOOC model via combining all the identified design dimensions and components. Next, testing and evaluation strategies through two stages namely, expert's review, and experimental testing. The results confirm that the users (i.e. learners) have realized the Iraqi-bMOOC model as a learning source. This concludes that the proposed model has significantly supported their learning in the traditional learning. Justifications for approving on the proposed model by experts have been presented. The results are positive and satisfactory from all phases. Research objective four is achieved by performing the evaluation strategies through user interaction.

Particularly, by using Iraqi-bMOOC model, learners are able to interact significantly with the lectures and peers either by online or offline learning. Overall, the results also conclude that Iraqi-bMOOC model is not only significant in terms of interaction

quality; rather, it also supports the learners to develop and build their knowledge in their university life. Results from hypothesis testing confirmed that users have perceived Iraq-bMOOC model as having educational feature which concludes that the proposed model has significantly served as blended MOOC resource for students to interaction and develop traditional learning (Face to Face).

6.3 Contributions

As discussed above, the core point of this study is to investigate the user interaction of the Iraqi-bMOOC platform in the higher education context. Therefore this study has delivered several noteworthy theoretical and practical contributions. They are described in the following subsections.

6.3.1 Theoretical Contribution

Fundamentally, this study has contributed to MOOC and blended MOOC of knowledge by the following points:

1. Collecting, analyzing and summarizing the literature on MOOCs to construct a deeper and better understanding of the key concepts in this field.
2. Identifying the future research chances in the field of bMOOCs that must be taken into account in the future development of bMOOC environment.
3. Analyzing the diverse categories of MOOC stakeholders to construct a deeper and better understanding of their behaviors.

This study has comprehensively formulated a holistic blended model of MOOC, which includes the main components of video lectures, discussion forums, assessment, assignment, email, social media, and collaborative comments that hold in literature. The proposed Iraqi- bMOOC model reflects novelty and practicability of the relevant

theories that are related to education technology and multimedia. Moreover, the model provides comprehensive methodologies from the beginning of the Iraqi-bMOOC application development until the testing phases.

6.3.2 Practical Contribution

Essentially, the aim of the proposed Iraqi-bMOOC model is not to replace existing theories or frameworks but to draw on them in order to present a systematic guideline that would be of value for developers to construct blended MOOC in the higher education context. Therefore this study provides guidelines for the designers and developers to conduct a research and develop a new bMOOC model for the Iraqi environment or any other environment in the future. The needs also could be utilized as a model or case study by the developers (Kloos, et al., 2015). This study adds some ideas about the users' experiences with MOOC or bMOOC, which elaborate the learning process and increases the interaction effectively. In addition this study has analytically provided a new understanding about main components and criteria (Design Dimensions) for effective bMOOC environments based on the pedagogical and technical requirements.

6.3.3 Empirical Contribution

Based on the findings obtained in this study, there were indications that the Iraqi-bMOOC model is significant as an online learning resource (blended MOOC) for learners in the HEIs. Primarily, the Iraqi-bMOOC increased the interaction of the Iraqi learners with the learning materials through six evaluative dimensions that were proposed to evaluate the user interaction with the model, namely, blended learning, flexibility, Quality Content, educational design, Cooperative Learning, and openness. This modal includes video lectures, discussion forums, assessment, assignment, email,

social media, and collaborative comments. These dimensions were collected from the previous literature which considered the criteria of good development in the empirical design model. These criteria of this study can also be used by the future research to evaluate a new bMOOC design model that is suitable for the Iraqi educational environment.

6.3.4 Educational Contribution

The students at HEIs in Iraq are looking for using a learning method in the MOOC to help reintegrate the civilian life and to continue their education depending on their needs. Therefore, this study contributes via using the bMOOC platform to provide real-time services through downloading / uploading files, and an accessing the educational materials at any time and any place. In turn, this helps to display the educational materials such as the lectures and feedback for the students and making them available 24-hours per day. This is considered an important advantage to decrease the tuition fees of the Iraqi students in the traditional learning environment. In addition, it reduces the students' problems in the traditional learning such as class interaction, cooperation, shared knowledge, and others problem as mentioned in the motivation section.

6.4 Limitations of Study and Recommendations for Future Research

There are certain limitations that should be taken into account in this study. These include few aspects that are suggested for improvements. First, the considered number of models and frameworks is limited only to ten. The selection represents the design model and methodologies of the last 8 years ago (i.e. 2008- 2015). Therefore, a future research can be carried out to further analyze other available models and framework related to blended MOOC development and user-centered methods.

Despite the issue that the implementation of proposed model is conducted successfully, it has been applied at the natural setting of few colleges in two Iraqi universities only due to lack of time. Hence, this study suggests that the proposed Iraqi bMOOC can be applied to more Iraqi universities in future to develop the blended environment in Iraq. Moreover, all experts have participated in the initial design and development of Iraqi-bMOOC model. Although the model design dimensions and components are acquired successfully, the experts' inputs are limited to a certain extent because they have focused more attention on online learning techniques in constructing the blended MOOC. Therefore, this study suggests that a future research can be conducted to show a comparative analysis with experts with regard to blended environments. Thus, consultations of educational designers have generated a broad range of elements for blended MOOC in learning and education perspectives. Besides, it might be possible that a focus group study, that involves a group of both MOOC experts and academics, substantially leads to diverse components of blended MOOC. Another limitation of the current study is related to the participants' selection for the experimental testing. That is, an appropriate sampling is adopted for the homogeneity purposes. Thus, the conclusions of Iraqi-bMOOC model quality might not be generalized to a broader cross-sectional population because this study is restricted to a particular group of learners (Iraqi undergraduates and postgraduates in two universities only). Consequently, replication studies for measuring the quality of blended MOOC model can be carried out by involving all Iraqi universities so as to add more conclusions.

In addition, the participants' demographic background takes into account their past experience with MOOC only rather than blended MOOC. This indicates that a future study can deeply reveal in what way the existing and previous experience in blended

MOOC influences the users' perception and attitude towards Iraqi-bMOOC model. Furthermore, this study does not observe the participants' precise steps and proficiency in using Iraqi-bMOOC model during the stated time frame. Thus, an upcoming research can direct the users to express their views more comprehensively to itemize the process or components that support the users on learning through blended environments. Finally, a future study can be carried out to associate the proposed model with new learning components that suite the blended MOOC environment in Iraqi.

6.5 Conclusion

Massive Open Online Courses (MOOCs) are accessible for a large number of participants from different countries. MOOCs help the learners to actively engage in the learning process and create their own learning experience in a set of fields regardless of any tuition fees, entry requirements, age, location, income, and education background (Yousef et al., 2014b).

Different models of MOOCs have been discussed in the literature of MOOC. Daniel (2012) and Siemens (2013) classify MOOCs into the connectivist MOOCs (cMOOCs) and extension MOOCs (xMOOCs). The idea of cMOOC depends on the theory of connectivism, which promotes knowledge sharing, cooperation, and connections among the participants of the course. Yet, xMOOCs follow the virtue of cognitivist and behaviorism theories along with several social constructivism features. xMOOC platforms are developed via diverse faculties and commonly distributed via third party providers such as Coursera, edX, and Udacity. Different criticisms on the MOOCs use have been highlighted despite their popularity. In addition, chapter two presents a

comprehensive review of the MOOC literature and it stresses the idea of MOOCs that aims to eliminate the difficulties in education (Yousef et al., 2014b).

Yet, most MOOC models still focus on the traditional education models (i.e. traditional lecturer-centered) so far. They neglect the learner-centered model (Hollands & Tirthali, 2014; Schulmeister, 2014). For addressing these limitations, this research proposes and produces an Iraqi-bMOOC model. It has been constructed via an extensive literature review, expert guidance, user participation, analysis of theories, elements, technological and systematic approaches of MOOC, and online learning.

This Model of blended MOOC aims to bring together the face-to-face interaction with MOOC criteria in a blended MOOC environment. This blended model resolves some of the obstacles that face MOOCs (Bruff, et al., 2013; Ghadiri et al., 2013; Ostashewski & Reid, 2012). Moreover, the Iraqi-bMOOC model brings the human interaction to the natural MOOC environment. It also promotes student-centered learning, supports the interactive design of the video lectures, provides effective assessment and feedback, and considers the diverse perspectives of the MOOC participants. Besides, the Iraqi-bMOOC model clarifies many aspects that should be taken into account to develop MOOC and blended environments. In conclusion, it is hoped that this study does not only demonstrate the potential and impact of blended MOOC in technology-enhanced and student-centered learning, but also provides a capstone for MOOC research in the field of blended MOOC and multimedia studies.

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Appendix A

1) Preliminary study (Interviews)

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Interviews (English)

Dear Participant,

We appreciate your participation in this survey. This study aims to proposing Iraqi Blended Massive Open Online Course (bMOOC) Model for the institutions in Iraq. Through examine whether Iraqi Higher Education Institutions need blended MOOC to support the traditional learning. The researcher believes that the outcome of this study will be of a great importance to improve the performance in higher educational system as a whole in Iraq. Your effort in answering the questions in this interview is highly appreciated because your answers would provide a distinguished quality to the research. In addition, the information you provide below is only to be used for this study and is to remain confidential. Through the following points:

1. Your participation in this research is voluntary. You may withdraw and discontinue participation at any time without penalty. If you decline to participate or withdraw from the study, no one in my campus will be told.

2. If you feel uncomfortable in any way during the interview session, you have the right to decline to answer any question or to end the interview.

3. The interview will last approximately 30-60 minutes. Notes will be written during the interview.

4. Your identity will be confidential in this study. The researcher will not identify your name in any reports via using information obtained from this interview and thus your confidentiality as a participant in this study will remain secure. Subsequent uses of records and data will be subject to standard data use policies which protect the anonymity of individuals and institutions.

5. I have read and understand the explanation provided to me depending on the points above

6. I have answered all the questions with satisfaction and I voluntarily agree to participate in this study.

Please indicate your consent to participate in the interview:

( ) **I agree**. ( ) **I do not agree**.

Please answer the following by either writing responses to the required information or by ticking (√) in the box

Section 1: Includes Q1-Q6 to collect the demographic data about the participants:

Q1	Gender:	Male ( ) , Female ( )
Q2	How old you:	( ) Years
Q3	Nationality	Iraqi students ( ) International ( )
Q4	Your language?	Arabic ( ), English ( ) , other ( )
Q5	Specialty	
Q6	Occupation	

Section 2: Interview Guidelines

The purpose of this interview is to examine whether Iraqi Higher Education Institutions need blended MOOC to support the traditional learning. You are kindly to be honest as much as possible when you answer this interview because your responses are valuable to this study. Please pay attention to each question and answer as truthfully as possible. In the following section, please answer the intended information.

Section 3: Interview Questions:

1. What challenges or obstacles have you encountered in the classroom or with your lecturers? (Can you cite some specific instances of these obstacles?)

2. Do you use social media or internet technology to discuss the learning material with your friends or lecturer (Email, viber, whatsApp and facebook)?

3. How do you describe the current MOOC courses? Explain the positive and negative issues, please?

4. Do you think the blended learning via MOOC will help you to manage your time, information, plan and resources, and evaluate your own work?

5. Do you support the existence of blended learning in your university based on language and cultural factors? (Please clarify your opinion on this issue).

6. Do you agree the design of blended MOOC courses in your university that can help you to increase the interaction with your friends and other learners from other universities in Iraq? (Please explain your opinion on this point).

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( )

عزيزي المشارك ،

نحن نقدر مشاركتك في هذا ا ت عت. تهدف هذه الدراسة إلى اقتراح نموذج للدورات الشاملة المفتوحة على ا نترنت (bMOOC) العراقية لمؤسسات في العراق. من خ ل فحص ما إذا كانت مؤسسات التعليم العالي العراقية بحاجة إلى MOOC مدمج لدعم التعليم التقليدي. يتوقع الباحث أن نتائج هذه الدراسة ستكون ذات أهمية كبيرة لتحسين ا داء في نظام التعليم العالي ككل في العراق. إن مجهودك في ا بة على سلسلة في هذه المقابلة هو موضع تقدير كبير إجاباتك ستوفر جودة تميزه للبحث بالإضافة إلى ذلك سيتم استخدام المعلومات التي توفرها أنا فقط لهذه الدراسة وسيتم الحفاظ على سريتها. من ل النقاط التالية:

1. مشاركتك في هذا البحث طوعية يمكنك انسحاب والتوقف عن المشاركة في أي وقت دون عقوبة. إذا رفضت المشاركة أو انسحاب من الدراسة فلن يتم إخبار أي شخص في الحرم الجامعي.

2. إذا كنت تشعر بعدم ا رتياح في أي وقت خ ل جلسة المقابلة فلديك الحق في رفض ا بة عن أي سؤال أو إنهاء المقابلة.

3. تستغرق المقابلة حوالي 03-63 دقيقة. سيتم كتابة الا ت ل المقابلة.

0. هويتك ستكون سرية في هذه الدراسة. لن يحدد الباحث اسمك في أي تقرير يعتمد استخدام المعلومات التي تم الحصول عليها من هذه المقابلة وبالتالي ستبقى سريتك كمشارك في هذه الدراسة آمنة. سوف تخضع ا تخدامات ق ة ت والبيانات للسياسات استخدام البيانات القياسية التي تحمي إخفاء هوية افراد والمؤسسات.

4. لقد قرأت وفهمت الشرح المقدم لي حسب النقاط المذكورة أع

5. لقد أجبت على جميع ا تفسيراتي وأوافق طواعية على المشاركة في هذه الدراسة.

يرجى ا لإلى موافقتك على المشاركة في المقابلة:

( ) أنا اوافق. ( )انا اوافق.

يرجى ا بة على ما يلي إما بكتابة ردود على المعلومات المطلوبة أو بوضع مة (√) في المربع الصحيح:

القسم 1: يشمل س1-س6 لجمع البيانات الديموغرافية حول المشاركين

س1	الجنس	ذكر ( ) , أنثى ( ) ( )
س2	كم عمرك	( ) (سنة)
س0	الجنسية	عراقي ( ) , اجنبي ( ) ( )
س4	اللغه	العربية ( ) , الكردية ( ) , اخرى ( ) ( )
س5	التخصص	
س6	المهنة	

القسم 2: إرشادات المقابلة

الغرض من هذه المقابلة هو فحص ما إذا كانت مؤسسات التعليم العالي العراقية بحاجة إلى MOOC المخلوط لدعم التعليم التقليدي. يرجى الفحص بصدق ب ة على جميع أسئلة هذه المقابلة إجاباتك ستكون ذات قيمة لهذه الدراسة. يرجى ا نتباه إلى كل سؤال وا جابة على كل سؤال بصدق في القسم التالي، يرجى ا بة على المعلومات المقصودة.

القسم 3: أسئلة المقابلة:

1. ما هي التحديات أو العقبات التي واجهتها في الحصول على الدراسة التقليدية أو مع محاضرك؟) هل يمكنك ذكر بعض أمثلة المحددة لهذه التحديات او العقبات؟

2. هل تستخدم وسائل ا ت ماعية أو تكنولوجيا ا نترنت لمناقشة المواد التعليمية مع أصدقائك أو مع استاذك بالبريد لكتروني ، viber ، whatsApp ، facebook (؟

0. كيف تصف دورات MOOC الحالية؟ لرجاء شرح العرض ايا ا بية والسلبية ؟

4. هل تعتقد أن التعليم المخلوط بواسطة MOOC سيساعدك على إدارة وقتك وعلومك وتخطيطك ومصادرك وتقييم عملك الخاص؟

5. هل تؤيد وجود التعليم المدمج بواسطة MOOC في جامعتك بناء على عوامل اللغة والثقافة؟ يرجى توضيح رأيك في هذه القضية(.

6. هل تدعم تصميم دورات التعليم المختلط بواسطة MOOC في جامعتك والتي يمكن أن تساعدك على زيادة التفاعل مع أصدقائك وغيرهم من المتعلمين ا ين من الجامعات ا رى في العراق؟ يرجى توضيح وجهة نظرك حول هذه النقطة(.

2) Method of Preliminary study

This study is conducted in different colleges at Tikrit & Baghdad Universities. The participants of this study consist of 18 respondents. They are as follows: (a) 12 undergraduates, (b) 1 MA and 2 PhD postgraduates, and 3 lecturers. All of them are native speakers of Iraqi Arabic. The researcher has posted an announcement in the colleges of Tikrit & Baghdad universities about blended MOOC. The interviews are semi-structured. They are conducted with the interviewees by face to face, viber, facebook and skype. The researcher has gathered a demographic information about each participant (e.g., gender, age, occupation and specialty) as stated in Table (1.1).

Respondents	Occupation	Gender	Age	Nationality	Interview	Specialty	Traditional learning subject
R1	Undergraduate Student	M	22	IRAQI	Fact to Face	Computers science	Java programming
R2	Undergraduate Student	F	23	IRAQI	Skype	Computers science	Human Computer Interaction (HCI)
R3	PhD student	F	30	IRAQI	Fact to Face	Accounting	financial
R4	PhD student	M	34	IRAQI	Fact to Face	Economy	International economy
R5, R6, R7	Prof, Ass. Prof, Ass. Lec.	M,M,F	38,36,29	IRAQI	Fact to Face	Business Computers science Pharmaceutics	Management, Networking, Pharmaceutics
R8	Undergraduate Student	F	22	IRAQI	Whatsup	Business management	Human Resource Management
R9	Undergraduate Student	F	22	IRAQI	Skype	Computers science	Social Network Analysis
R10	Undergraduate Student	M	23	IRAQI	Fact to Face	Computers science	Basic JavaScript
R11	Undergraduate Student	F	21	IRAQI	Fact to Face	Mathematics	statistics
R12	MA student	M	27	IRAQI	Fact to Face	Computers science	IT (Research methodology)
R13	Undergraduate Student	M	22	IRAQI	Facebook	Engineering	architectural design
R14	Undergraduate Student	F	22	IRAQI	Fact to Face	Computers science	Web Development
R15	Undergraduate Student	M	24	IRAQI	Viber	Engineering	Communication
R16	Undergraduate Student	M	21	IRAQI	Fact to Face	Computers science	Database (sql server)
R17	Undergraduate Student	M	22	IRAQI	Fact to Face	Computers science	Java programing
R18	Undergraduate Student	F	23	IRAQI	Fact to Face	English	Grammar

Furthermore, the researcher has interviewed the participants to investigate the needs of Iraqi Higher Education Institutions for blended MOOC to support the traditional learning. Each interview took around thirty minutes to an hour. All of the interviews are written. The interviews have provided rich information about the respondents' opinions based on six questions as reported in Table (1.2).

Table 1.2. Interviews Questions

Issues	Factors	NO	Questions
Classroom Challenges	1. Fulfilling Current Needs	**Q1**	What challenges or obstacles have you encountered in the classroom or with your lecturers? (Can you cite some specific instances of these obstacles?)
	2. Connecting with Others	**Q2**	Do you use social media or internet technology to discuss the learning material with your friends or lecturer (Email, viber, whatsApp and facebook)?
Current MOOC Challengings	1. Course Content 2. Lack of Pressure 3. Communicating with Community	**Q3**	How do you describe the current MOOC courses? Explain the positive and negative issues, please?
Blended MOOC as an Opportunity	1. Manage Learning time	**Q4**	Do you think the blended MOOC will help you to manage your time, information, plan and resources, and evaluate your own work?
	2. The bMOOCs as in Classroom	**Q5**	Do you support the existence of blended MOOC in your university based on language and cultural factors? (Please clarify your opinion on this issue).
	3. Interaction with Peers	**Q6**	Do you support the design of blended MOOC courses in your university that can help you to increase the interaction with your friends and other learners from another universities in Iraq? (Please explain your opinion on this point).

1.3.2. Findings

This section shows the findings of the interviews which highlight the main issues arised from the interviewees' responses based on the following six questions:

(I) CLASSROOM CHALLENGINGS

1. Fulfilling Current Needs

Q1/ What the challenges or obstacles have you encountered in the classroom or with your lecturers? (Can you cite some specific examples of these obstacles?)

Traditional learning content is often difficult and fast-paced by lecturers. This might make it difficult for the student to keep it up. bMOOCs can cover the areas of similar themes to provide high-level overview that helps the students to understand the content of their college material more quickly. For instance, R1 has taken the Java subject. He has stated that he finds it difficult to completely understand the program concepts during the period of the traditional education. Thus, he is encouraged to engage in MOOC, to help him succeed in the Java programming. He has stated that,

"*The traditional education in the college, cannot cover all the knowledge in particular and the students have their own perspectives about the subject content. Thus, we need an approach parallel to the traditional study to help us understand the class material more accurately*" [R1].

"إن الطلبة الذين يتلقون في الكلية يمكن أن يشمل جميع المعارف على وجه الخصوص لدى ال ب وجهات نظرهم الخاصة حول محتوى الموضوع وبالتالي، نحن بحاجة إلى نهج موازي للواستقلالية في المساعدة لنا على فهم المواد الصفية بشكل أكثر دقة" [R1]

In addition, some students have noticed that the content of the subject in class does not meet their needs well enough and they want to know more about it. A case in point is R2 who is an undergraduate student who has taken HCI subject in the classroom. She has stated that, "*I do not understand some of the concepts in the subject HCI, so I need to repeat the lecture again until I can understand the other concepts and this is not always available in the classroom*." [R2].

"أنا أفهم بعض المفاهيم في الموضوع HCI، لذلك أحتاج إلى تكرار المحاضرة مرة أخرى حتى يمكنني فهم المفاهيم ا ری وهذا يتوفر دائما في الفصل الدراسي" [R2] .

2. Connecting with Others

Q2/ Do you use social media or internet technology to discuss the learning material with your friends or lecturer (Email, viber, whatsApp and facebook)?

Most of the participants have illustrated that they prefer to ask questions, search for answers, help others, or cooperate with the members of the group through the tools or the internet sites without depending on Facebook, Viper, whatsApp. This is due to the issue that these tools are not suitable for learners. For example, R14 is an undergraduate student who has stated that, "*When I encounter a problem in my studies, I search in Google first. If there is no answer, then I use Facebook or Viber to communicate with my friends. This is mainly due to the absence of some means (such as MOOC or bMOOC) whereby one can*

communicate with others in spite of the availability of the internet and all the means of information technology such as laboratories, computers and others in the university" [R14].

"عندما أواجه مشكلة في دراستي، أقوم بالبحث في Google أو . إذا لم تكن هناك إجابة فيه، أستخدم Facebook أو Viber للتواصل مع أصدقائي ويرجع ذلك للأسف إلى غياب بعض الوسائل (مثل MOOC أو bMOOC في العراق حيث يشكل للمرء التواصل مع ا ين على الرغم من توفر ا نترنت وجميع وسائل تكنولوجيا المعلومات مثل المختبرات وأجهزة الكمبيوتر وغيرها في الجامعة " [R14]

Also, R9 is an undergraduate student who has used YouTube and observed lectures on Monday morning. She solved the exercises during the lecture in the classroom, but faced some problems such as the different concepts in networks between YouTube and lecture in class. Thus, she participated in one of MOOCs or bMOOC to get knowledge in networking.

(II) CURRENT MOOC CHALLENGINGS

1. Course Content

Q3/ How do you describe the current MOOC courses? Explain the positive and negative issues, please?

The common motivation for students to enroll in MOOC is the current conventional completion that are taken by that. For instance, R9 has clarified that, "*I was so excited to resolve exercises during the lecture. I do not know some of the concepts in the social network analysis, but recently I have enrolled to the one of MOOC courses. Based on this course, I am able to solve some of the duties and discussions at the same time. Yet, not everything available in MOOC is linked to my classroom. In addition, I look again to participate in*

one of MOOCs such as coursera and EDX courses, but I'm afraid of the problems I might face with regard to different lecturers and language" [R9].

لقد كنت متحمسة جدا لحل التمارين خلال المحاضرة لكنني أعرف بعض المفاهيم في تحليل المشكلات التامة
لكنني قمت مؤخرا بالتسجيل في دورة MOOC ولم أتمكن من الذهاب إلى هذه الدورة، لا أستطيع أن أحل بعض التمارين والواجبات
ولكن ليس لكل شيء مثل تأخري في دورات MOOC يرتبط بالفصول الدراسية الخاصة بي بالإضافة إلى ذلك،
أستطيع مرة أخرى المشاركة في إحدى دورات MOOC مثل كورسيرا ودورات EDX، لكنني أخشى من المشاكل
التي أواجهها في ما يتعلق باختلاف المحاضرين واللغة" [R9]

Through the survey of this study, the researcher has found also that some participants have already joined the MOOC; yet, they have left some courses after few days. This is because they are too hard to follow due to certain reasons such as the language, the high level of the courses, time constraints, and they are not linked to the traditional academic classroom in Iraq.

R15 has joined one of the MOOC courses (communication) and he states that, "*I joined the communication course in one of MOOC courses, but after a week I decided to discontinue with this course. This was attributed to some reasons such as travelling, preparing for the final exams during the final weeks of the semester, and there was no link between the traditional classroom in my college and the MOOC course. In addition, I was suffering from the language differences and the high level of the course*" [R15].

لقد التحقت بدورة الاتصالات في إحدى دورات MOOC ولكن بعد أسبوع من ذلك قررت التوقف عن هذه
الدورة. وقد نُسب هذا إلى بعض الأسباب مثل السفر، والتحضير للامتحانات النهائية خلال الأسابيع الأخيرة من الفصل
الدراسي، ولا يوجد رابط بين الفصول الدراسية التقليدية في كليتي ودورة MOOC بالإضافة إلى ذلك،
كنت أعاني من الاختلافات اللغوية والمستوى العالي للدورة "[R15].

2. Lack of Pressure

The other reason for leaving MOOC is the absence of pressure or urgency to complete the free course. That is, there is no link between MOOC course and classroom. For instance,

the learners who joined a one-time MOOC can usually access to study materials at any time and even after the formal course. They do not need to finish the course in the limited time if their goal is to learn a certain issue. R16 has illustrated that, "*I joined the database course in the MOOC, and you know that the video does not disappear if you miss the deadline of the course. You still have access to it. There is no pressure by the lecturers in the semester to fulfill this course, so I feel free to join or not join this course*." [R16].

"انضممت إلى دورة قواعد البيانات في MOOC، وتعلم أن الفيديو يختفي إذا فاتك الموعد النهائي للدورات الدراسية. يمكنك الوصول إليه. يوجد أي ضغط من قبل المحاضرين في الفصل الدراسي لتحقيق هذه الدورة، لذلك أشعر بالحرية أو عدم الانضمام إلى هذه الدورات الدراسية." [R16].

Furthermore, most of the participants have decided to leave the MOOCs because they have no effect on their academic marks at the college, or they do not provide an assessment on their jobs at the college also. Besides, they find that there is no need to complete the course and there is no connection between these courses and the classes at the college, which will be a strong factor to leave the course content. Besides, R17 has illustrated that, " *I joined the MOOC as nobody asks you to complete the course. In addition, the results of the session do not affect the outcome of the GPA at the college and the reward in these courses is just a certificate at the end of the day*" [R17].

"انضممت إلى MOOC حيث أنه لا يطلب منك إكمال الدورة وبالإضافة إلى ذلك فإن نتائج الدورة لا تؤثر على نتائج GPA في الكلية ، والمكافأة في هذه الدورات هي مجرد شهادة في نهاية اليوم "[R17].

3. Communicating with Community

The sense of community helps the students to be involved in a particular session and to strengthen the ability of learning (Kizilcec, et al., 2013). In this respect, **we** have also found that the lack of community interaction may lead to a lack of education. For example, R18

has demonstrated that, "*When you answer the question correctly, the instructor will praise you (encourage you) in the classroom. Also when you do an excellent work to achieve a particular task, all the friends in the class will provide comments to encourage you. Besides, when you have a good idea, you will feel proud of it. Yet, you feel nothing in the current MOOCs because you are alone*" [R18].

"*عندما تجيب على السؤال بشكل صحيح، سوف يثني عليك المدرب (يشجعك) في الفصل الدراسي. أيضا عندما تقوم بعمل ممتاز لتحقيق مهمة معينة، سيقدم جميع الأصدقاء في الفصل تعليقات لتشجيعك. بالإضافة إلى ذلك، لديك فكرة جيدة، ستشعر بالفخر بها، ومع ذلك فأنت لا تشعر بأي شيء في MOOCs الحالي لأنك وحدك*" [R18].

However, the majority of respondents stated that they do not feel that there is a sense of community when they join the MOOC. Therefore, most of the participants would like to find a bMOOC to connect between the classroom and MOOC.

(III) BMOOCS AS AN OPPORTUNITY

Many exciting learning patterns from the interviews have showed that different participants may have different motivations to take any particular MOOC. Some participants prefer that bMOOCs be a regular classroom and in the same college timetable. Other participants prefer to have an appropriate blended of learning (bMOOCs) based on their current needs.

1. Manage Learning Time

Q4 / Do you think the blended MOOC will help you to manage your time, information, plan and resources, and evaluate your own work?

There is another motivation to the interview which is more typical for the PhD and MA students and others to gain knowledge that will allow them to achieve the best for the current study. For example, a new project or an innovative idea may require a new kind of skill or

need the use of a new tool to create specialized and detailed data analysis environments. Participants felt that the material available on the internet were more effective and efficient to acquire knowledge.

Two rationale issues underlie this motivation: (a) although the students join regular classes to acquire the necessary knowledge, but the traditional classroom requires a lot of time and effort. For example, R3 is an employee who is a PhD student and works in the university at the same time. She needs to learn the statistical analysis to analyze the data of her study. She joined the class of statistics, but she abandoned it in the second week because the class required her to attend three times a week. That is, she needed to spend 60 minutes to go to each class. After the end of the school day, she needed to return to work in the campus quickly to manage the work and meetings for her work. The time was running out very fast, so she abandoned the group and bought a book of statistics to learn and rely on herself. In addition, she used the internet to get information quickly. She has clarified that,

"*Currently, I study in a college to learn something on my research, but the classroom lecture does not answer all my questions and the time passes quickly. So I use the internet materials (Google Search) on the basis of research needs to learn whatever I want. Many of my friends (they are also PhD students) use the internet for research purposes, but there is no link between the internet and the lecture at the college. So I encourage to use the blended learning by MOOC*. "[R3].

"أنا أدرس في الكلية لتعلم شيء ما في بحثي ، ولكن محاضرة الفصل لا تجيب على جميع أسئلتي وهي تمر الوقت بسرعة. لذلك أستخدم مواد الإنترنت (بحث Google) على أساس احتياجات البحث لتعلم ما أريد ، الكثير من أصدقائي (هم أيضا طلاب الدكتوراه) يستخدمون الإنترنت لأغراض البحث ، ولكن لا يوجد رابط بين الإنترنت والمحاضرة في الكلية ، لذلك أشجع استخدام التعلم المدمج بواسطة MOOC " [R3].

Moreover R4 is also a PhD student who has stated that, "*I always use the internet (Google) to find concepts about my research in international economy. Yet, not all the concepts are available in the internet; therefore, I ask my friends or go to the library to find the information I need. This takes time for collecting the information. I'm looking forward to shorten my time through designing a model on Internet for connecting all the students in the college to share their ideas and opinions, and this will help us to get the information we need*"[R4].

"طالما أستخدم الإنترنت (Google) للعثور على مفاهيم حول بحثي في اقتصاد الدولي. ومع ذلك ، ليست جميع المفاهيم في الإنترنت ؛ لذلك أسأل أصدقائي أو أذهب إلى المكتبة للعثور على المعلومات التي أحتاجها ليستغرق وقتا لجمع المعلومات ، وأنا أتطلع إلى تقصير وقتي من خلال تصميم نموذج على الإنترنت لربط جميع الطلاب في الكلية لمشاركة أفكارهم وآرائهم ، وهذا سيساعدنا في الحصول على المعلومات التي نحتاجها "] R4[.

(b) With regard to blended MOOC, learners and lecturers tend to blended MOOC but on condition that the blended MOOC lecturer is the same lecturer of the traditional classroom. This encourages the learners to learn and it provides them with confidence for developing their skills and accomplishing better results in their universities.

Prof, Ass.Prof, and Ass. Lec. are lecturers at Tikrit & Bahgdad University. They have clarified that, "*We are unable to explain and cover all the details of the material in class because the time is limited. So, we recommend that the blended MOOC supports the traditional learning in the classroom*" [R5, R6 and R7].

لا نستطيع شرح وتغطية كل تفاصيل المادة في الفصل الوقت محدود لذا ، نوصي باستخدام الموك المدمج لدعم التعلم الإلكتروني في الفصل الدراسي "]R5 و R6 و R7[.

2. The BMOOCs as in Classroom

Q5 / Do you support the existence of blended MOOC in your university based on language and cultural factors? (Please clarify your opinion on this issue).

Students strongly support the existence of blended MOOC within their university or other universities. This is what has been identified in most of the interviews conducted in this survey. This is due to the issue that language and culture factors have an important role in the learning process. Students wish to have lectures in the same language (Arabic), which in turn will increase the interaction in the classroom and gain knowledge more quickly.

Furthermore, blended MOOC supports the traditional learning in the classroom particularly when it links with language and cultures. Hence, blended can be used to build a successful hybrid between traditional learning and bMOOC. This type of learning (i.e. blended MOOC) helps the lecturer to take advantage of the lecture time to discuss practicably, identify and clarify misconceptions, or guide the students' concepts based on their language. In contrast, it solves the problems related to the limited interaction and increases the participation in the traditional classroom. On the other hand, it sheds light on the use of social media to support the education because the social media allows the creation and exchange of information among the educators. This facilitates the interaction on the basis of the learning interests.

In some cases, the participants prefer to learn something in terms of their specific needs such as understanding the basic concepts, learning a specific algorithm, getting a general idea about a particular subject, or simply learning new material. For example, R10 only needs to know the basic concept of JavaScript. He has stated that, "*I just want to learn the*

basic rules of JavaScript in Arabic without participating in competitions, duties, and discussions. This is because I need to learn in the classroom. So I just want to watch the lectures and understand the Java basic. That's all." [R10].

أري فقط تعلم القواعد الأساسية للغة الجافا باللغة العربية دون المشاركة في المسابقات والواجبات والمناقشات. هذا لأنني بحاجة إلى التعلم في الفصل الدراسي. لذلك أريد فقط مشاهدة المحاضرات وفهم أساسيات اللغة. هذا كل شيء". [R10].

At the same time, R11 is an undergraduate student and she has also illustrated that, "*I need to learn the linear regression but in Arabic language from another resource to support the traditional learning in order to analyze the data only*". [R11]

أحتاج إلى تعلم موضوع الانحدار الخطي ولكن باللغة العربية من مورد آخر لدعم التعلم التقليدي من أجل تحليل البيانات فقط" [R11].

2. Interaction with Peers

Q6/ Do you support the design of blended MOOC courses in your university that can help you to increase the interaction with your friends and other learners from another universities in Iraq? (Please explain your opinion on this point).

Some participants feel lonely when studying in the classroom, so they prefer to organize their own local study groups. For instance, there is a group of postgraduates from different departments such as Computer Engineering, Chemistry and Science information and technology. All these students have a same subject in their study (Research Methodology). A case in point is that R12 joined a study group consisting of 12 friends (MA Students). He has stated that, "*I organized a study group and sent an e-mail to all members to meet at the university library for studying the research methodology. We always meet to discuss the*

research methods, but every time someone from the group does not attend the meeting. Thus, I hope that if there is a way via internet we can meet by without bothering ourselves to attend the meeting ". [R12].

قمت بتنظيم مجموعة دراسة وأرسلت رسالة إلكترونية إلى جميع الأعضاء لنلتقي في المكتبة الجامعة لدراسة منهجية البحث لنلتقي لمناقشة أساليب البحث، ولكن في كل مرة لا يحضر فيها شخص من المجموعة الاجتماع. آمل إذا كان هناك طريق عبر الإنترنت يمكننا من أن نجتمع دون أن نحمل أنفسنا عناء الحضور للاجتماع ". [R12].

Moreover, R13 is another example who studies the subject of architectural designs systems. He has stated that, "*I organized a study group of friends in the classroom. Architectural designs systems require to solve the assessment every day, so I invite all members of the group to my home to discuss the exercises. We hope that this meeting can be conducted through the Internet, rather than bothering friends to meet at home or anywhere else to learn something*." [R13].

قمت بتنظيم مجموعة دراسة من الأصدقاء في الفصل. تتطلب أنظمة التصاميم المعمارية حل التمارين كل يوم، لذلك أدعو جميع أعضاء المجموعة إلى منزلي لمناقشة الواجبات. نأمل أن تتم هذه الجلسة عبر الإنترنت بدلاً من إزعاج الأصدقاء للاجتماع في المنزل أو في أي مكان آخر لتعلم شيء ما " [R13]

One of the important topics is that the learners are encouraged to engage in bMOOCs sometimes to find peers with common interests. This is attributed to the point that meeting someone with someone else has the same mutual interests can make the learners feel happy.

R8 is a student who studies in the College of Management and Economics to get a Bachelor degree. After she had finished her study, she felt that she had a lot of spare time at her home and she felt that she was isolated from her friends. She had a friend in the same classroom

and college, but in a different university and city. She was looking forward to share her knowledge with her friend by any way. She has demonstrated that "*My education by the traditional way was not enough to answer certain questions in my mind. At the same time I know some friends in other universities, and we have some interesting discussions by e-mail, Viber, Facebook, and WhatsApp. Yet, all of these tools are not sufficient in our scientific discussion and they are tiring at the same time. So I would be very happy to share my thoughts with another person through the educational means via the internet such as discussion forum.*" [R8].

"دراستي بالطريقة التقليدية لم تكن كافية للإجابة على بعض الأسئلة في ذهني. في الوقت نفسه ، أعرف بعض الأصدقاء في الجامعات الأخرى ، ولدينا بعض النقاشات المثيرة للاهتمام عن طريق البريد الإلكتروني ، فيبر ، وفيسبوك ، و WhatsApp. ولكن كل هذه الأدوات ليست كافية في نقاشنا العلمي وهي تتعب في نفس الوقت ، لذا سأكون سعيدًا للغاية لمشاركة أفكاري مع شخص آخر من خلال الوسائل التعليمية عبر الإنترنت مثل منتدى النقاش." [R8].

A preliminary study was showed conducted and that the majority of the interviewees need the blended MOOC to reduce the obstacles and challenges in the traditional learning. The findings also disclose that students prefer learning through blended MOOC based on their environment (language and culture) rather than the current MOOCs courses. Consequently, this preliminary study provides evidences that show that there is a big need to use the blended MOOC in Iraq. Thus, it displays that a further study should be carried out in understanding the learners approach in blended MOOC.

Appendix B
Expert Consultation Form

I am Qusay Abboodi Ali and I'm currently pursuing PhD study in Multimedia at Universiti Utara Malaysia (UUM) Malaysia. My PhD research proposes the Iraqi Blended Massive Open Online Course Model (bMOOC) which aims to provide a systematic method for learners to increase interactions with learning materials and gain knowledge.

You will see that the question below give you ample opportunity to use your expertise, experiences, interests and creativity. It would be greatly appreciated if you could complete the form.

The information supplied will be treated as confidential and will be used for
Research purposes which may be reported anonymously in academic publications.

Please feel free to contact me by email Qa_matrix8@uum.edu.my in regards to any queries or my supervisor at shuhada@uum.edu.my.

Thank you for your time and assistance.

Q1/ What are the phases, and tasks involved in developing online learning or blended learning via MOOC based on your experience?

Q2/ What are the components, and features involved in developing online learning or blended learning via MOOC based on your experience?

Q3/ What are the learning activities involved in developing online learning or blended learning via MOOC based on your experience?

THANK YOU

Appendix C

Expert Review Form

I am Qusay Abboodi Ali and I'm currently pursuing PhD study in Multimedia at Universiti Utara Malaysia (UUM) Malaysia. I am delighted to inform you that you have been exclusively selected to participate in this research.
My PhD research proposes the **Iraqi Blended Massive Open Online Course (bMOOC) Model**, which aims to provide a systematic method for learners to increase interactions with learning materials and gain knowledge.

The target users of the proposed model will be undergraduate students who will use the blended MOOC as strategy to support their learning and knowledge in the traditional learning. This is because the university students are stakeholders in this research. Hence, to evaluate the proposed Iraqi-bMOOC model, you are invited to review the proposed model according the items as listed in the review form. Your review is important to determine the main components, features and learning activities in model for learners to develop traditional learning in Iraqi higher education institutions. Therefore, based on your knowledge, expertise, skills, and experiences in online learning design and development, it would be greatly appreciated if you could complete this evaluation form. The information supplied will be healed as confidential and will be used for research purposes which may be reported anonymously in academic publications.

Please feel free to contact me by email (Qa_matrix8@yahoo.com) in regards to any queries or my supervisors (shuhada@uum.edu.my).

Instruction
Please read all the items carefully (Rate the Relevance of the components and features as a learning activities). Once this is done, with the expertise you possess, please provide feedback for all questions by filling in the provided spaces.

Queries or Concerns
Please feel free to contact me by email (Qa_matrix8@yahoo.com) in regards to any queries or my supervisor at shuhada@uum.edu.my.
Thank you for your time and assistance.

In the following section, please answer the personal information:

Section 1: Please answer the following by either writing responses to the required information or by ticking (√) in the box

Expert Information	
Gender:	Male ( ) , Female ( )
How old you:	( ) Years
Degree professor	Prof ( ), Assist.Prof ( ), Lect. ( ), Assist. Lect ( ).
Academic Qualification	
Univirsity	Bahgdad ( ), Tikrit ( )
Years of Experience	( ) Years

Section 2: Items to Review

Based on the proposed Iraqi-bMOOC model, please tick (√) on your choice.

(1) Are the following proposed components (system modules), functionality & features (and the learning activities within them) relevant to represent the phases of Admin component development into Iraqi-bMOOC?						
No	**System Modules**	**Functionality**	**Features**	**Essential**	**Useful**	**Not Useful**
1.	**Manage Universities**	Add uni	University Code			
			University Name			
			University address			
			About University			
			Upload Picture			
		Manage uni	Update			
			Delete			
			Sort by (name, type & date)			
			Search by (name, type & date)			
2.	**Manage Colleges**	Add college	College Code			
			College Name			
		Manage college	Update			
			Delete			
			Sort by (name, type & date)			
			Search by (name, type & date)			
3.	**Manage Department**	Add Department	Department Code			
			Department Name			
		Manage Department	Update			
			Delete			
			Sort by (name, type & date)			
			Search by (name, type & date)			
4.	**Manage Subject**	Add subject	Subject Code			
			Subject Name			
		Manage Subject	Update			
			Delete			
			Sort by (name, type & date)			
			Search by (name, type & date)			

Are the following proposed components (system modules), functionality, & features (and the learning activities within them) relevant to represent the phases of Admin component development into Iraqi-bMOOC?						
No	**System Modules**	**Functionality**	**Activities**	**Highly Useful**	**Useful**	**Not Useful**
5.	**Manage Lecturers**	Add lecturer	Lecturer Name			
			Address			
			University			
			College			
			Department			
			Name of subjects			
			Update			
			Delete			
			User name & Password			
		Manage Lecturer	Update			
			Delete			
			Sort by (name, type & date)			
			Search by (name, type & date)			

(2) Are the following proposed components (system modules), functionality, & features (and the learning activities within them) relevant to represent the phases of Lecturer component development into Iraqi-bMOOC?						
No	**Learning Activities**	**Functionality**	**Features**	**Highly Useful**	**Useful**	**Not Useful**
1.	**Manage Materials**	Add Materials	Material title			
			Name of subjects			
			Type of Material			
			Upload Material			
		Manage Materials	Update			
			Delete			
			Sort by (name, type & date)			
			Search by (name, type & date)			
2.	**Manage Assignments**	Add quiz/ assignment	Title assignment			
			Name of subjects			
			Type of Material			
			Upload Material			
		Manage Quiz/ Assignment	Update			
			Delete			
			Sort by (name, type & date)			
			Search by (name, type & date)			
		View Submission	Subject Name			
3.	**Manage Assessments**	Add Assessments	Subject Name			
			Mark			
			Assessment			
			Student Matric NO			
		Manage Assessments	Update			
			Delete			
			Sort by (name, type & date)			
			Search by (name, type & date)			
4.	**Forum**	Discussion forum	Subject Name			
			Title Chat			
5.	**Message (E-mail)**	Send /Received Message	Search message			
			Delete message			
			Sort email by (Name, date and type)			
			Update lecturer information			

Are the following proposed components (system modules), functionality, & features (and the learning activities within them) relevant to represent the phases of Lecturer component development into Iraqi-bMOOC?						
No	**Learning Activities**	**Functionality**	**Features**	**Highly Useful**	**Useful**	**Not Useful**
7.	Lecturer Information	Update/ View Lecturer Information	Lecturer Name			
			Address			
			University			
			College			
			Department			
			Name of subjects			
			Username			
			Password			
			Upload Lecturer Image			

(3) Are the following proposed components (system modules), functionality, & features (and the learning activities within them) relevant to represent the phases of Student component development into Iraqi-bMOOC?						
No	**Learning Activities**	**Functionality**	**Features**	**Highly Useful**	**Useful**	**Not Useful**
1.	**Registration**	Enter basic information	Student Name			
			Student ID			
			University			
			College			
			Department Name of subjects			
			Matric			
			Password			
			Upload Image			
2.	**Login**	Sign in	User name & Password			
			University			
			College			
			Department			
3.	**View Materials**	Select Subject	Open / download lecture (text, video lecture, audio)			
			Add / view lecture comments			
			Search materials by(Name, date and type)			
			Sort lectures by (name, date and type)			
4.	**View Quizzes/ Assignments**	Select Subject	Open /download assignments (text, video, audio…ect)			
			Search assignments (Name, date and type)			
			Sort assignments (name, date and type)			
		Upload Solation	Select file			
			Upload file			
5.	**View Assessments**	Select Subject	View mark			
			Search Assessments by (name, date and type)			
			Sort Assessments by (name, date and type)			
6.	**Forum**	Discussion Forum	Subject Name			
			Title of discussion			

Are the following proposed components (system modules), functionality, & features (and the learning activities within them) relevant to represent the phases of Student component development into Iraqi-bMOOC?						
No	**Learning Activities**	**Functionality**	**Features**	**Highly Useful**	**Useful**	**Not Useful**
7.	**Message (E-mail)**	Send/ Received Message	Search message			
			Delete message			
			Sort email by (Name, date and type)			
8.	Student Information	Update / View Student Information	Student Name			
			Student Id			
			University			
			College			
			Department			
			Name of subjects			
			Matric			
			Password			
			Upload student Image			

(4) The connections and flows of all the components are logical?

Yes ( ), No ( ).

(5)The Iraqi-bMOOC model is usable to the development of traditional learning?

Yes ( ), No ( )

(6)The terminology used in the Iraqi-bMOOC model is understandable?

Yes ( ), No ( )

Appendix D

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Appendix D: Experimental Testing Questionnaire

Dear Participant,

We appreciate your participation in this survey. This study aims to design Iraqi Blended Massive Open Online Course (bMOOC) Model for the institutions in Iraq. The researcher believes that the outcome of the study will be of a great importance to improve the performance in the higher educational system as a whole in Iraq. Please answer the whole questions completely. Your effort in filling the questionnaire is highly appreciated because your answers will contribute in providing a distinguished quality to the research. You can quit any time from the survey and you have the right to skip any question that you do not want to answer because your participation is voluntary.

Researcher
Qusay Abboodi Ali
PhD. Student
University Utara
Malaysia

Please indicate your consent to participate in this survey:

( ) **I agree**.

( ) **I do not agree**.

Please answer the following by either writing responses to the required information or ticking (√) in the box:

Section 1:

Q1	Gender:	Male ( ) , Female ( )
Q2	How old you:	( ) Years
Q3	Univirsity	
Q4	Class	
Q5	Academic study	Bachelor ( ), Master ( ), PhD. ( )

SECTION 2: Criteria Evaluations Form

Instruction: Please answer the following Questions by ticking (√) on the appropriate scale for each item to evaluate the criteria of Iraq-bMOOC.

Blended Learning Evaluation in Iraqi-bMOOC						
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Q6	Blended MOOC approach helps me to improve my academic achievements outcome.					
Q7	Blended MOOC approach increases my motivation to share and discover new ideas.					
Q8	Blended MOOC approach enables me to accomplish tasks more quickly.					
Q9	Blended MOOC approach can be used to enhance the traditional classroom approach.					
Q10	I am satisfied with this blended MOOC environment.					

Flexibility Evaluation in Iraqi-bMOOC						
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Q11	I can access to lectures and learning activities anytime and/or anywhere that is suitable for me.					
Q12	The learning environment provides me with a wide range of learning tools that allow the learners to quickly access the required information and materials (e.g. assignment due date, grading system, exams, etc.).					
Q13	I am able to access the learning materials with no much difficulty.					
Q14	The website content makes me explore the course further.					
Q15	I can access to the social media as part of the learning process such as twitter and Facebook.					
Q16	The learning environment allows me to use the video lectures based on the lectures in classroom.					
Q17	The learning environment provides the learners with examples that can be understood by everyone based on the Iraqi-Arabic language and culture.					
Q18	The learning environment provides me with adequate communication channels with the lecturer and with other learners (e.g., email, forum, video comments).					
Q19	I am very comfortable with the flexible design to upload and download the files in my own devices easily (Computer, Mobile), such as Video, doc, ppt, pdf and xlsx and etc.					

Quality Content Evaluation in Iraqi-bMOOC						
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Q20	The presentation of the subject content is clear.					
Q21	The easy design helps to structure the learning content for different learners.					
Q22	The interactive material comments (video, audio and text) help improve the quality of the					
Q23	The information presented in the discussions comments helps me to better understand this					
Q24	The feedback from my lecturer and other learners helps me to understand the lecture content.					
Q25	The search options in the system help me to find specific learning resources.					
Q26	This learning environment enables me to adapt the quality of the learning materials to better meet my needs.					

Educational Design Evaluation in Iraqi-bMOOC						
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Q27	The learning objectives and scope are clearly stated in the online lecture.					
Q28	The structure of this course keeps me focused on what is to be learned.					
Q29	Blended MOOC approach can be used to supplement the traditional classroom					
Q30	The various learning tools in this environment are effective.					
Q31	I have the possibility to ask my tutor about what I do not understand.					
Q32	The lecturer responds promptly to my queries.					
Q33	The lecturer sends me comprehensive feedback on my assignment.					
Q34	The approach of this blended MOOC environment encourages me to contact the teaching team in this course when needed.					
Q35	The assessment in this course improves my learning process.					
Q36	Different types of questions help me to provide specific and quick answers (e.g. short answers, essay, matching, Multiple Choice question and True/False question).					

Cooperative learning Environment in Iraqi-bMOOC						
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Q37	I can interact with other learners and with the lecturer synchronously and asynchronously.					
Q38	It is easy to work collaboratively with other learners involved in a course.					
Q39	The communication tools enhance my interaction and collaboration with my course mates.					
Q40	I share what I have learned in this course with others outside of the learning environment such as learners from other universities.					
Q41	The cooperative learning helps me receive support and feedback from other participants.					
Q42	The blended MOOC environment encourages me to collaborate and share ideas with others.					
Q43	The blended MOOC environment increases my motivation to participate in class activities.					
Q44	I am satisfied with this cooperative learning environment.					
Q45	The discussion forum of this course is effective.					
Q46	The use of email in this course is effective.					
Q47	The use of the lectures' comments in this course is effective.					
Q48	The interaction (i.e. content, lecturer, and peers) is effective.					
Q49	I can interact with other learners and lecturers from other universities.					
Q50	Feedback from the professor is timely.					

Openness Environment in Iraqi-bMOOC						
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Q51	The blended MOOC system allows the student to register free of charge.					
Q52	There is no academic requirements for registration in the system, i.e., it is open for all					
Q53	The learning material is available for free downloading.					
Q54	This learning environment helps the learner to learn and receive support and feedback from					
Q55	This learning course enables me to adapt with learning material at any university.					
Q56	I can access to lectures and learning activities from anywhere and anytime.					

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استبيان اختبار الدراسة التجريبية

عزيزي المشارك ،

نحن نقدر مشاركتك في هذا الاستبيان. تهدف هذه الدراسة إلى تصميم Iraqi Blended Massive Open Online Course (bMOOC) Model لمؤسسات التعليم العالي في العراق. يتوقع الباحث أن نتائج الدراسة ستكون ذات أهمية كبيرة في تحسين الأداء في نظام التعليم العالي في العراق. الرجاء الإجابة على الاستبيان بالكامل تماما. جهدك في ملء الاستبيان هو موضع تقدير كبير. إجاباتك ستساهم في توفير جودة متميزة للبحث. يمكنك إنهاء الاستبيان في أي وقت، ولديك الحق في تخطي أي سؤال تريد الإجابة عليه. مشاركتك تطوعية.

الباحث

قصي عودي علي

طالب دكتوراه

جامعة اوتارا الماليزية

يرجى ا لى موافقتك على المشاركة في ا بتيان:

( ) أنا اوفق. ( )انا اوفق.

يرجى ا بة على ما يلي إما بالكتابة ردود على المعلومات المطلوبة أو بوضع م)√(في المربع الصحيح:

القسم 1: يشمل س1- س5 كل جمع البيانات الديموغرافية حول المشاركين

س1	الجنس	ذكر) (, أنثى) (
س2	كم عمرك	) (سنة
س0	الجامعة	
س4	الصف	
س5	مستوى الدراسة	البكالوريوس) (, ماجستير) (, دكتوراه) (

القسم 2: نموذج تقييم المعايير

التعليمات: يرجى الإجابة على الأسئلة التالية عن طريق وضع علامة (√) على المقياس المناسب لتقييم معايير Iraqi-bMOOC:

Blended Learning Evaluation in Iraqi-bMOOC بيئة التعلم المدمج في دورة Iraqi-bMOOC						
NO.	الفقرات (الأسئلة)	أوافق بشدة	غير موافق	محايد	موافق	موافق بشدة
س1	يساعدني الموك المدمج على تحسين نتائج الإنجازات الأكاديمية					
س2	إن الموك المدمج يزيد من فاعلية المشاركة والكشف عن أفكار جيدة .					
س0	يمكنني الموك المدمج من إنجاز المهام بسرعة أكبر					
س4	يمكن استخدام نهج bMOOC كما في نهج الفصل الدراسي التقليدي					
س5	أنا راض عن عملية bMOOC هذه					

Flexibility Evaluation in Iraqi-bMOOC المرونة في نموذج Iraqi-bMOOC						
موافق بشدة	موافق	محايد	غير موافق	لا اوافق بشدة	(الفقرات)	NO.
					يمكنني الوصول إلى المحاضرات والأنشطة التعليمية في أي وقت ومن أي مكان يناسبني	س1
					توفر بيئة التعلم مجموعة كبيرة من أدوات التعلم التي تسمح للمتعلمين بالوصول بسرعة إلى المعلومات والمواد المطلوبة على سبيل المثال تاريخ المهام, نظام الدرجات, الاختبارات, إلخ	س2
					أنا قادر على الوصول إلى المواد التعليمية دون صعوبة	س0
					محتوى الموقع يجعلني أستكشف الدورة أكثر	س4
					يمكنني الوصول إلى وسائل الإعلام الاجتماعية كجزء من عملية التعلم مثل تويتر وفيسبوك.	س5
					بيئة التعلم تتيح لي استخدام محاضرات الفيديو بناء على المحاضرات في الفصول الدراسية.	س6
					توفر بيئة التعلم للمتعلمين أنشطة يمكن فهمها من قبل الجميع على أساس اللغة والثقافة العربية العراقية	س7
					توفر بيئة التعلم قنوات اتصال مناسبة مع المحاضر ومع المتعلمين الآخرين (مثل: البريد الالكتروني، المنتدى، تعليقات الفيديو).	س8
					أنا مرتاح جدا مع التصميم المرن لتحميل وتنزيل الملفات في أجهزتي الخاصة بسهولة (الكمبيوتر، الجوال) ، مثل الفيديو، doc، ppt، pdf و xlsx وغيرها.	س9

Quality Content Evaluation in Iraqi-bMOOC محتوى لجودة في نموذج Iraqi-bMOOC						
موافق بشدة	موافق	محايد	غير موافق	غير موافق بشدة	الأسئلة (الفقرات)	NO.
					عرض محتوى الموضوع واضح	س1
					يساعد التصميم السهل على التنقل في المحتوى التعليمي لمختلف المتعلمين	س2
					تساعد تعليقات المواد التفاعلية (الفيديو والصوت والنص) على تحسين جودة محتوى التعليمي	س0
					تساعد المعلومات المعروضة في تعليقات المناقشات على فهم أفضل للدورة .	س4
					تساعدني التغذية المرتدة من محاضرين والمتعلمين آخرين في فهم محتوى المحاضرة.	س5
					تساعدني خيارات البحث في النظام في العثور على مصادر تعليمية محددة	س6
					هذه البيئة التعليمية تمكنني من التفكير في جودة المواد التعليمية التفاعلية الخاصة بي بشكل أفضل.	س7

Educational Design Evaluation in Iraqi-bMOOC التصميم التعليمي في نموذج Iraqi-bMOOC						
موافق بشدة	موافق	محايد	غير موافق	لا أوافق بشدة	الفقرات (الأسئلة)	NO.
					تم تحديد الأهداف التعليمية والنطاق بوضوح في المحاضرة عبر الإنترنت.	س1
					تركيبة هذه الدورة تعززني وتركز على ما يمكنني تعلمه	س2
					يمكن استخدام النهج المدمج بواسطة MOOC لتكملة نهج الفصل الدراسي التقليدي	س0
					أدوات التعلم المتنوعة في هذه البيئة فعالة.	س4
					لدي إمكانية أن أسأل أستاذي حول ما أفهمه.	س5
					يستجيب المحاضر على الفور لاستفساراتي.	س6
					يرسل المحاضر تعليقات شاملة حول مهمتي.	س7
					إن منهجية MOOC المدمجة هذه يشجعني على الاتصال بالفريق التدريسي في هذه الدورة عند الحاجة.	س8
					يعمل التقييم في هذه الدورة على تحسين عملية التعلم الخاصة بي.	س9
					تساعدني أنواع الأسئلة المختلفة في تقييمي إجابات محددة وسريعة)على سبيل المثال ، إجابات قصيرة ، اختيارات متعدد ، وسؤال الصواب / خطأ(.	س13

موافق بشدة	موافق	محايد	غير موافق	وافق بشدة	الفقرات	NO.
					Cooperative learning Evaluation in Iraqi-bMOOC **التعلم التعاوني في نموذج Iraqi-bMOOC**	
					يمكنني التفاعل مع المتعلمين الآخرين ومع المحاضر بشكل متزامن وغير متزامن.	س1
					من السهل العمل بشكل تعاوني مع المتعلمين المشاركين في الدورة.	س2
					أدوات التواصل تحسن التفاعل التعاوني مع زملائي في الدورة	س0
					أشارك مع المتعلمين في هذه الدورة مع ين خارج بيئة التعلم مثل المتعلمين من الجامعات ری.	س4
					يساعدني التعلم التعاوني في تلقي الدعم والتعليقات من المشاركين الآخرين.	س5
					تشجعني بيئة MOOC المدمجة على التعاون وتبادل الأفكار مع الآخرين.	س6
					تزيد بيئة MOOC المدمجة من فاعلية المشاركة في الأنشطة الصفية	س7
					أنا راض عن بيئة التعلم التعاوني هذه.	س8
					منتدى النقاش في هذه الدورة فعال.	س9
					استخدام البريد الالكتروني في هذه الدورة فعال.	س13
					استخدام تعليقات المحاضر في هذه الدورة فعال.	س11
					التفاعل (المحتوى والمحاضر والأقران) فعال.	س12
					يمكنني التفاعل مع المتعلمين والمحاضرين الآخرين من الجامعات الأخرى	س10
					ردود الفعل من الأستاذ في الوقت المناسب.	س14

Openness Evaluation in Iraqi-bMOOC تقييم انفتاح نموذج Iraqi-bMOOC						
NO.	الأسئلة (الفقرات)	لا أوافق بشدة	غير موافق	محايد	موافق	موافق بشدة
س1	يسمح نظام ال MOOC للطلاب بالتسجيل مجانا.					
س2	توجد متطلبات أكاديمية للتسجيل في النظام , أي أنه متوفر للجميع					
س0	المواد التعليمية متاحة للتنزيل المجاني					
س4	هذه البيئة التعليمية تساعد المتعلمين على التعلم وتلقي الدعم وردود الفعل من أي جامعة في العراق.					
س5	هذه الدورة التعليمية تمكنني من التكيف مع المواد التعليمية في أي جامعة					
س6	يمكنني الوصول إلى المحاضرات والأنشطة التعليمية من أي مكان وزمان.					

Appendix E

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Appendix E: User Interaction

Dear Participant,

We appreciate your participation in this survey. This study aims to design **Iraqi Blended Massive Open Online Course (bMOOC)** Model for the institutions in Iraq. Please answer all questions. You can quit any time from the survey and you have the right to skip any question that you do not want to answer because your participation is voluntary.

Researcher
Qusay Abboodi Ali
PhD. Student
University Utara
Malaysia

<u>Section 1</u>: **Please indicate your consent to participate in this survey**:

( ) **I agree.**

( ) **I do not agree.**

<u>Section 2</u>: **User Interaction Evaluation Form**

<u>Instruction:</u> Please answer the following Questions by ticking (√) on the appropriate scale for each item to evaluate the user interaction.

User Interaction Evaluation in Iraqi-bMOOC						
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Q1	The peer feedback helps me to recognize the errors in my own work.					
Q2	The received comments from peers' feedback help me to improve the quality of my work.					
Q3	The received feedback helps me to get more information about the learning topic.					
Q4	Reviewing others' work helps me to reflect it on my own work.					
Q5	The peer interaction helps me to learn how to give constructive feedback to peers.					
Q6	The lecturer interaction helps me to come up with new ideas.					
Q7	The interaction with lecturer increases my ability in organizing ideas and contents in my work.					
Q8	The lecturer enhances my satisfaction on this course.					
Q9	I am satisfied on my interaction with the course content.					
Q10	Content of course allows me to engage in the learning activities.					
Q11	Course content enhances interaction between the lecturer and the learners.					
Q12	Course content provides me with adequate communication channels with the lecturer and peers (e.g., email, forum, comments, etc.).					

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أستبيان تفاعل المستخدم

عزيزي المشارك ،

نحن نقدر مشاركتك في هذا ا ست ع تهدف هذه الدراسة إلى تصميم Iraqi Blended Massive Open Online Course (bMOOC) Model للمؤسسات التعليمية في العراق. يرجى ا بة على جميع ا ة. يمكنك إنهاء أي وقت من ا ت ع ، ولديك الحق في تخطي أي سؤال تريد ا بة عليه مشاركتك طوعية.

الباحث
قصي عودي علي
طالب دكتوراه
جامعة اوتارا الماليزية

يرجى ا إلى موافقتك على المشاركة في ا ستبيان:

( ) أنا اوافق. ( ) انا اوافق.

القسم 2: نموذج تقييم تفاعل المستخدم

التعليمات: يرجى ا بة على ا التالية عن طريق وضع مة (√) في المربع.

User Interaction in Iraqi-bMOOC
تفاعل المستخدمين في نموذج Iraqi-bMOOC

أوافق بشدة	أوافق	محايد	غير موافق	لا أوافق بشدة	الفقرات	NO.
					تساعدني ملاحظات الزملاء في التعرف على الأخطاء في عملي	س1
					ساعدني التعليقات المستلمة من الزملاء على تحسين جودة عملي	س2
					ساعدني التعليقات المستلمة في الحصول على مزيد من المعلومات حول موضوع التعلم	س0
					مراجعة عمل الآخرين يساعدني على عكس ذلك في عملي الخاص.	س4
					يساعدني التفاعل مع الزملاء على التعلم على كيفية إعطاء ملاحظات بناءة للأقران.	س5
					يساعدني التفاعل مع المحاضر في الخروج بأفكار جيدة.	س6
					التفاعل مع المحاضر يزيد من قدرتي في تنظيم الأفكار والمحتوى في عملي.	س7
					المحاضر يعزز ارتياحي في هذه الدورة	س8
					أنا راض عن تفاعلي مع محتوى الدورة التدريبية هذه	س9
					محتوى الدورة يسمح لي بالانخراط في أنشطة التعلم.	س13
					محتوى الدورة يعزز التفاعل بين المحاضر والمتعلمين.	س11
					يوفر لي محتوى الدورة قنوات للاتصال الفعلية مع المحاضر والأقران (على سبيل المثال، البريد الإلكتروني، المنتدى، تعليقات المناقشة، وما إلى ذلك).	س12

Appendix F

Expert Review of Instrument for Iraqi Blended Massive Open Online Course Model

Researcher's Name: Qusay Abboodi Ali
Supervisors : Prof. Dr. Norshuhada Shiratuddin
Department : School of Multimedia & Communication Technology, Universiti Utara Malaysia

Introduction and Background

Thank you for your interest to review the proposed instrument. My PhD research proposes the Iraqi Blended Massive Open Online Course Model (bMOOC) which aims to aims to provide a systematic way of developing the traditional learning in Iraqi higher education institutions. One part of this research is to construct an instrument in a form of questionnaire to evaluate the proposed model. Therefore the items asked in the questionnaire seek to identify the significance of proposed model in serving as an educational model that enables the students to increase interactions with learning materials and gain knowledge.

Instruction

Through this review, I sincerely require your expertise to assess the content validity of the questionnaire. Based on your knowledge, expertise, skills, and experiences in online learning design and development, it would be greatly appreciated if you could review the validity of the items in the given questionnaire.

Please "circle" the appropriate scale for each item, and fill in the (Remarks) sections of the evaluation form. Please indicate whether the items of instrument in the model meet the appropriate standards of blended MOOC accurately. And you will see that the review questions give you ample opportunity to use your expertise, experiences, interests and creativity. It would be greatly appreciated if you could complete this evaluation form.

Consent

The information supplied will be treated as confidential and will be used for research purposes which may be reported anonymously in academic publications.

Queries or Concerns

Please feel free to contact me by email (Qa_matrix8@yahoo.com) in regards to any queries or my supervisor at shuhada@uum.edu.my.

Thank you for your time and assistance.

1. Blended Learning in Iraqi-bMOOC							
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**Remarks**
Q1	Blended MOOC approach helps me to improve my academic achievements outcome.	1	2	3	4	5	
Q2	Blended MOOC approach increases my motivation to share and discover new ideas.	1	2	3	4	5	
Q3	Blended MOOC approach enables me to accomplish tasks more quickly.	1	2	3	4	5	
Q4	Blended MOOC approach can be used to enhance the traditional classroom approach.	1	2	3	4	5	
Q5	Blended MOOC enables the instructor to address individual student‘s needs effectively.	1	2	3	4	5	
Q6	I am satisfied with this blended MOOC environment.	1	2	3	4	5	

2. Flexibility Evaluation in Iraqi-bMOOC							
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**Remarks**
Q7	I can access the learning activities at any time convenient to me.	1	2	3	4	5	
Q8	The learning environment provides me with a wide range of learning tools that allow the learners to quickly access the required information and materials (e.g. assignment due date, grading system, exams, etc.).	1	2	3	4	5	
Q9	I am able to access the learning materials with no much difficulty.	1	2	3	4	5	
Q10	The website content makes me explore the course further.	1	2	3	4	5	
Q11	The learning environment allows me to focus on the learning activities suitable to me.	1	2	3	4	5	
Q12	I can access to the social media as part of the learning process such as twitter and Facebook.	1	2	3	4	5	
Q13	The learning environment allows me to use the video lectures based on the lectures in classroom.	1	2	3	4	5	

2.Flexibility Evaluation in Iraqi-bMOOC							
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**Remarks**
Q14	The learning environment provides the learners with examples that can be understood by everyone based on the Iraqi-Arabic language and culture.	1	2	3	4	5	
Q15	The learning environment provides me a wide range of materials that I can choose from.	1	2	3	4	5	
Q16	The learning environment provides me with adequate communication channels with the lecturer and with other learners (e.g., email, forum, video comments).	1	2	3	4	5	
Q17	I am very comfortable with the flexible design to upload and download the files in my own devices easily (Computer, Mobile), such as Video, doc, ppt, pdf and xlsx and etc.	1	2	3	4	5	

3. Quality Content Evaluation in Iraqi-bMOOC							
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**Remarks**
Q18	The presentation of the subject content is clear.	1	2	3	4	5	
Q19	The easy design helps to structure the learning content for different learners.	1	2	3	4	5	
Q20	The interactive material comments (video, audio and text) help improve the quality of the	1	2	3	4	5	
Q21	The information presented in the discussions comments helps me to better understand this	1	2	3	4	5	
Q22	I always know where I am in the course.	1	2	3	4	5	
Q23	The feedback from my lecturer and other learners helps me to understand the lecture content.	1	2	3	4	5	
Q24	The search options in the system help me to find specific learning resources.	1	2	3	4	5	
Q25	This learning environment enables me to adapt the quality of the learning materials to better meet my needs.	1	2	3	4	5	
Q26	The content of this course keeps me focused on what is to be learned.	1	2	3	4	5	

4. Educational Design Evaluation in Iraqi-bMOOC							
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**Remarks**
Q27	The learning objectives and scope are clearly stated in the online lecture.	1	2	3	4	5	
Q28	The structure of this course keeps me focused on what is to be learned.	1	2	3	4	5	
Q29	Blended MOOC approach can be used to supplement the traditional classroom approach.	1	2	3	4	5	
Q30	The various learning tools in this environment are effective.	1	2	3	4	5	
Q31	I have the possibility to ask my tutor about what I do not understand.	1	2	3	4	5	
Q32	The lecturer responds promptly to my queries.	1	2	3	4	5	
Q33	The grading criteria were clearly communicated at the beginning of the course.	1	2	3	4	5	
Q34	The lecturer sends me comprehensive feedback on my assignment.	1	2	3	4	5	
Q35	I can approach the teaching team in this course when needed.	1	2	3	4	5	
Q36	The assessment in this course improves my learning process.	1	2	3	4	5	

4. Educational Design Evaluation in Iraqi-bMOOC							
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**Remarks**
Q37	Different types of questions help me to provide specific and quick answers (e.g. short answers, essay, matching, Multiple Choice question and True/False question).	1	2	3	4	5	

5. Cooperative Learning Evaluation in Iraqi-bMOOC							
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**Remarks**
Q38	I can interact with other learners and with the lecturer synchronously and asynchronously.	1	2	3	4	5	
Q39	It is easy to work collaboratively with other learners involved in a course.	1	2	3	4	5	
Q40	The communication tools enhance my interaction and collaboration with my mates.	1	2	3	4	5	
Q41	I share what I have learned in this course with others outside of the learning environment such as learners from other universities.	1	2	3	4	5	
Q42	The cooperative learning helps me receive support and feedback from other participants.	1	2	3	4	5	
Q43	The blended MOOC environment encourages me to collaborate and share ideas with others.	1	2	3	4	5	
Q44	The blended MOOC environment increases my motivation to participate in class activities.	1	2	3	4	5	
Q45	The interaction environment encourages the learner to invite participants from outside the university.	1	2	3	4	5	
Q46	I am satisfied with this cooperative learning environment	1	2	3	4	5	
Q47	The discussion forum of this course is effective.	1	2	3	4	5	

5. Cooperative Learning Evaluation in Iraqi-bMOOC							
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**Remarks**
Q48	The use of email in this course is effective.	1	2	3	4	5	
Q49	The use of the lectures' comments in this course is effective.	1	2	3	4	5	
Q50	The interaction (i.e. content, lecturer, and peers) is effective.	1	2	3	4	5	
Q51	I can interact with other learners and lecturers.	1	2	3	4	5	
Q52	Feedback from the professor is timely.	1	2	3	4	5	

6. Openness Evaluation in Iraqi-bMOOC							
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**Remarks**
Q53	The blended MOOC system allows the student to register free of charge.	1	2	3	4	5	
Q54	There is no academic requirements for registration in the system, i.e., it is open for all	1	2	3	4	5	
Q55	The learning material is available for free downloading.	1	2	3	4	5	
Q56	This learning environment helps the learner to learn and receive support and feedback from [illegible]	1	2	3	4	5	
Q57	This learning course enables me to adapt with learning material at any university.	1	2	3	4	5	
Q58	I can access to lectures and learning activities anywhere.	1	2	3	4	5	
Q59	I can access to lectures and learning activities any time.	1	2	3	4	5	

Appendix G

User Interaction of Instrument for Iraqi Blended Massive Open Online Course Model

Researcher's Name: Qusay Abboodi Ali
Supervisors : Prof. Dr. Norshuhada Shiratuddin
Department : School of Multimedia & Communication Technology, Universiti Utara Malaysia

Introduction and Background

Thank you for your interest to review the proposed instrument. My PhD research proposes the Iraqi Blended Massive Open Online Course Model (bMOOC) which aims to aims to provide a systematic way of developing the traditional learning in Iraqi higher education institutions. One part of this research is to construct an instrument in a form of questionnaire to evaluate the proposed model. Therefore the items asked in the questionnaire seek to identify the significance of proposed model in serving as an educational model that enables the students to increase interactions with learning materials and gain knowledge.

Instruction

Through this review, I sincerely require your expertise to assess the content validity of the questionnaire. Based on your knowledge, expertise, skills, and experiences in online learning design and development, it would be greatly appreciated if you could review the validity of the items in the given questionnaire.

Please "circle" the appropriate scale for each item, and fill in the (Remarks) sections of the evaluation form. Please indicate whether the items of instrument in the model meet the user interaction in blended MOOC accurately. And you will see that the review questions give you ample opportunity to use your expertise, experiences, interests and creativity. It would be greatly appreciated if you could complete this evaluation form.

Consent

The information supplied will be treated as confidential and will be used for research purposes which may be reported anonymously in academic publications.

Queries or Concerns

Please feel free to contact me by email (Qa_matrix8@yahoo.com) in regards to any queries or my supervisor at shuhada@uum.edu.my.

Thank you for your time and assistance.

User Interaction Evaluation in Iraqi-bMOOC							
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**Remarks**
Q1	The peer feedback helps me to recognize the errors in my own work.	1	2	3	4	5	
Q2	The comments I received from peer feedback helped to improve the quality of my work.	1	2	3	4	5	
Q3	The received feedback helps me to get more information about the learning topic.	1	2	3	4	5	
Q4	Reviewing others' work helps me to reflect it on my own work.	1	2	3	4	5	
Q5	The peer interaction helps me to learn how to give constructive feedback to peers.	1	2	3	4	5	
Q6	The feedback I received from peer was valid.	1	2	3	4	5	
Q7	The lecturer interaction helps me to come up with new ideas.	1	2	3	4	5	
Q8	The interaction with lecturer increases my ability in organizing ideas and contents in my work	1	2	3	4	5	
Q9	The lecturer enhances my satisfaction on this course.	1	2	3	4	5	
Q10	I am satisfied on my interaction with the course content	1	2	3	4	5	

User Interaction							
No.	**Items/Questions**	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**Remarks**
Q11	Content of course allows me to engage in the learning activities.	1	2	3	4	5	
Q12	Course content enhances interaction between the lecturer and the learners.	1	2	3	4	5	
Q13	Course content provides me with adequate communication channels with the lecturer and peers.	1	2	3	4	5	