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Masters report

Design And Realization of a Massive Open and Online Courses In The Field of Health

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Above all, we thank ALLAH the Almighty who gave us the strength, patience and courage to accomplish this modest work.

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DEDICATIONS

I dedicate this dissertation to my mother, then my mother, then my mother for her patience and her tiredn and everything.

and to my father, may God have mercy on him.

And to my sisters, brothers and all of my family.

my colleagues, my friends.

and all the teachers, from the beginning of my studies to the end, all thanks to them.

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RÉSUMÉ

Cette étude de recherche présente un aperçu complet des cours en ligne ouverts et massifs (MOOC) en tant que méthode d'apprentissage préférée à l'ère moderne, dépassant les approches traditionnelles. L'accent est mis principalement sur les MOOC dans le domaine de la santé, en examinant en particulier leur impact pendant les périodes difficiles provoquées par la pandémie de COVID-19. L'étude explore l'utilisation des MOOC dans l'éducation à la santé et souligne leur importance dans l'offre d'opportunités d'apprentissage continu.

Le développement de la plate-forme MOOCs est discuté, en mettant l'accent sur l'inclusion de supports de cours tels que des PDF et des vidéos, ainsi que des tests pour suivre les progrès de l'apprenant. Le rôle de la plateforme MOOCs pour faciliter l'apprentissage à distance et permettre l'accès aux ressources pédagogiques de n'importe où et à tout moment est souligné. En particulier lors de situations critiques et d'épidémies telles que l'épidémie de COVID-19, lorsque les salles de classe physiques sont inaccessibles ou dangereuses, les MOOC constituent un outil essentiel pour assurer une éducation ininterrompue. Les résultats soulignent l'importance de la plateforme MOOCs dans le contexte de l'enseignement à distance et sa pertinence en temps de crise.

Mot clés : Mots-clés : Apprentissage à distance, cours en ligne, éducation à la santé, pandémie de COVID-19.

ABSTRACT

This research study presents a comprehensive overview of Massive Open Online Courses (MOOCs) as a preferred method of learning in the modern era, surpassing traditional approaches. The focus is primarily on MOOCs in the field of health, particularly examining their impact during the challenging times brought about by the COVID-19 pandemic. The study explores the utilization of MOOCs in health education and highlights their significance in providing continuous learning opportunities.

The development of the MOOCs platform is discussed, emphasizing the inclusion of course materials such as PDFs and videos, as well as tests to track learner progress. The role of the MOOCs platform in facilitating remote learning and enabling access to educational resources from anywhere and at any time is emphasized. Particularly during critical situations and epidemics like the COVID-19 outbreak, when physical classrooms are inaccessible or unsafe, MOOCs serve as a vital tool for ensuring uninterrupted education. The findings underscore the importance of the MOOCs platform in the context of distance learning and its relevance during times of crisis.

Keywords: Distance learning, online courses, health education, COVID-19 pandemic.

ملخص

تقدم هذه الدراسة البحثية نظرة عامة شاملة على الدورات الضخمة المفتوحة عبر الإنترنت كأسلوب مفضل للتعلم في العصر الحديث ، متجاوزًا الأساليب التقليدية. ينصب التركيز في المقام الأول على الدورات الضخمة على شبكة الإنترنت في مجال الصحة ، ولا سيما دراسة تأثيرها خلال الأوقات الصعبة التي أحدثها جائحة الكوفيد. تستكشف الدراسة استخدام الدورات الضخمة على شبكة الإنترنت في التثقيف الصحي وتسلط الضوء على أهميتها في توفير فرص التعلم المستمر.

تمت مناقشة تطوير منصة الموك ، مع التأكيد على تضمين مواد الدورة التدريبية مثل الملفات ومقاطع الفيديو ، بالإضافة إلى الاختبارات لتتبع تقدم المتعلم. تم التأكيد على دور منصة الموك في تسهيل التعلم عن بعد وتمكين الوصول إلى الموارد التعليمية من أي مكان وفي أي وقت. خاصة أثناء المواقف الحرجة والأوبئة مثل تفشي جائحة الكوفيد، عندما يتعذر الوصول إلى الفصول الدراسية المادية أو تكون غير آمنة ، تعمل الدورات التدريبية عبر الإنترنت كأداة حيوية لضمان التعليم المستمر. تؤكد النتائج على أهمية منصة الموك في سياق التعلم عن بعد وأهميتها في أوقات الأزمات.

.الكلمات المفتاحية: التعلم عن بعد ، الدورات عبر الإنترنت ، التثقيف الصحي ، جائحة كوفيد –19.

GENERAL INTRODUCTION

Context of the research

MOOCs (Massiv Open Online Courses) were developed for the first time in the most prestigious universities in North America, and have not stopped spreading all over the world. MOOC is distance learning via the Internet, and it is open to a wide audience without resorting to the origin, level of education, or other criteria. It has educational goals, interaction methods, and exercises that lead to obtaining certificates in an easy and free way in the most prestigious universities. A group of courses or lessons is offered, and after a period of education and interactions with teachers, they are evaluated in several different forms.

The MOOC deals with courses and lessons on medical and health issues by specialists and doctors who share their knowledge, lessons and medical and health tips for medical students and people interested in the field of health and medicine. In 2019, Covid appeared and spread throughout the world, which led to the closure of universities, schools and everything, which made students resort to distance education and their use of the MOOC platform, as the enrollment rate increased.[3]

Issues and Contributions

Various teaching approaches are employed to educate students, employing a combination of videos, texts, and assessments. The topic is about the impact, use, and effectiveness of Massive Online Courses (MOOCs) in health education, particularly during challenging times such as the COVID-19 pandemic. It includes aspects of accessibility, learner preferences, distance learning, and the potential of MOOCs to deliver quality health education resources. Based on these considerations, two research questions arise:

- How can the learning be enhanced on the MOOC platform?
- How to design and deliver a massive open, online healthcare course?

The goals

The goals of the repport are to explore why learners in the current era prefer distance learning over traditional methods, provide an overview of MOOCs in health education assess the impact of the COVID-19 pandemic on MOOCs, This includes evaluating how MOOCs have been used during challenging times like the pandemic to ensure continuous education, and examine the role of the MOOCs platform for remote learning, and facilitating remote learning. It explores how the platform allows students to access educational resources and courses from anywhere at any time, particularly when physical classrooms are not accessible or safe.

Memory Plan

The report is composed of three chapters as follows :

In the first chapter, the concept of distance learning via the internet is presented using the MOOC platform in general, and in the field of health in particular.

In the second chapter, we present the modeling of the proposed MOOC platform with a UML (Unified Model Language) design of our MOOC using (class diagram, sequence diagram, use case diagram).

In the third chapter, we will present the development and the realization of our system. We conclude with a conclusion and some future directions.

CHAPTER01

THE MOOCs

1. Introduction

This chapter, it is divided into two parts. In the first section, we study MOOC (Massive Open Online Courses) in general by presenting its definition, characteristics, challenges, classification, advantages, and disadvantages. And in the second section, we study MOOCs for field health and the outbreak of the COVID-19 pandemic.

2. MOOCs

2.1. Definition of MOOCs

MOOCs (Massive Open Online Courses) are a popular online teaching and learning trend based on a learner-centered approach in open and distance learning. The key elements of MOOC are broad, open and online, with more interactive ways. The European Commission defines a MOOC as "an online course, fully accessible to anyone, usually structured around a set of objectives requiring study of a field of study over a period of time on an online platform that provides opportunities for interaction, Facilitates the building of a learning community. Like any online course, it provides course materials and (self-)assessment tools for independent study[1].

2.2. Characteristics and Challenges of MOOCs

Characteristics of MOOCs

Since their inception, Massive Open Online Course (MOOC) movements have experienced significant growth and gained momentum. These movements have sparked international conversations about online education, establishing it as a prominent and widely discussed subject. This progress is evident in the escalating number of MOOCs being created and made available, as well as the increasing enrollment of students who actively engage with MOOC platforms. Advocates of the MOOC movement firmly believe in its transformative potential within the realm of education. They highlight the strengths of MOOCs, which underscores the unique advantages they offer in revolutionizing learning experiences.

These potential strengths are often summarized using the acronym **[2].**

	Definition
«M: Massive»	The term "Massive" in Massive Open Online Course (MOOC) refers to the ability of these courses to accommodate a large number of participants.
«O: Open»	The term "Open" in Massive Open Online Course (MOOC) signifies the accessibility of these courses to the public. MOOCs are designed to be open to anyone, regardless of their geographical location, and are often available at little to no cost.
«O: Online»	The term "online" in the context of Massive Open Online Course (MOOC) refers to the mode of delivery and accessibility of the course through the Internet
«C: Course»	A MOOC, or Massive Open Online Course, is a structured educational course that has a defined duration. Typically, MOOCs have specific learning objectives that participants are expected to achieve by the end of the course. These objectives guide the overall learning outcomes and serve as a roadmap for the participants' progress.

Table (2.1): Characteristics of MOOC [2]

Challenges of MOOCs

MOOCs (Massive Open Online Courses) have been touted as a revolutionary force in education, but there are several challenges that need to be addressed for them to fully realize their potential, according to experts. While the characteristics of MOOCs are their greatest strengths, they also give rise to issues that require resolution.

One of the main challenges facing MOOCs is their pedagogical efficacy. Some researchers argue that providing educational content to a large number of learners without the involvement of teachers is a significant hurdle. Effectively managing the approach to

delivering educational content to thousands of students participating in a MOOC requires the guidance and support of teachers.

Furthermore, the wide accessibility and openness of MOOCs attract learners with diverse abilities, knowledge levels, learning habits, and personalities. This diversity makes it difficult to create a standardized content plan that fits all learners. Currently, most MOOCs offer the same educational content to all participants, which may not effectively cater to the heterogeneous learner base.

In addition to retention rate challenges, MOOCs also encounter other obstacles stemming from their course structure. Plagiarism becomes a significant concern, particularly during evaluation tests where identical questions are posed to all students.

To overcome these challenges, it is essential to adapt the educational content of MOOCs to cater to the diverse needs and goals of participants. This adaptation is particularly crucial in addressing issues related to the passive and open nature of MOOCs, which contribute to problems with learner heterogeneity. However, the large number of students who can enroll in a MOOC poses a challenge in terms of providing individualized support through human tutors. Finding effective ways to strike a balance between scalability and personalized assistance is key to enhancing the MOOC experience for learners.

Since the advent of the first artificial intelligence MOOC in 2011, MOOCs have evolved and faced new criticisms. While the issue of low retention and completion rates persists, the cost of MOOCs has generally decreased over time, with some offering both free and paid features. However, this trend goes against the original principle of the MOOC movement, which aimed to provide high-quality education at affordable costs, particularly for students who lack resources to attend traditional universities.

while MOOCs have the potential to revolutionize education, they must address challenges related to pedagogy, learner diversity, retention rates, course structure, plagiarism, and cost in order to fulfill their transformative promise. **[2]**

2.3. Classification of MOOCs

In the beginning, the first MOOCs had a strong and deep collaborative philosophy (cMOOCs), but this philosophy has evolved into a commercial meaning (xMOOCs). MOOC has been classified into two categories

- **cMOOC**

With the use of numerous digital tools and platforms, participants in a cMOOC actively communicate and collaborate while exchanging ideas, resources, and insights. As individuals engage and converse with one another to create a collective body of knowledge, the emphasis is on creating connections and networks among them.

It encourages individuals to talk with others, share their knowledge, and collaborate on the creation of new information. This strategy promotes the community's investigation of many points of view while acknowledging the significance of varied ideas[4].

- **xMOOC**

xMOOC, or extended Massive Open Online Course, is based on a more traditional educational model compared to cMOOCs. It often incorporates video-recorded lectures and follows a structured format. xMOOCs are typically well-funded and are associated with prestigious educational institutions or organizations **[4].**

2.4. Benefits/Drawbacks of MOOCs

- **Benefits of MOOCs**

The widespread adoption and use of online courses bring about several benefits:

_Improve knowledge and skills: People have the chance to improve their knowledge and abilities in a variety of disciplines by taking online courses. They provide open, adaptable learning opportunities that may assist with programs for lifelong learning.

_Exchange of ideas and perspectives: People have a platform to interact with like-minded people from all backgrounds and regions thanks to online courses. This promotes a culture of information, viewpoint, and idea exchange, which results in enhanced learning opportunities.

_Access to high-quality courses and renowned professors: Online courses often include material written and taught by well-known academics from prestigious educational institutions.Learners can benefit from the expertise of these educators and access high-quality educational resources that may otherwise be challenging to obtain.

_Elimination of time and place constraints: Time and geographical limitations that are often present in conventional higher education are removed by taking online courses. In order to combine their studies and other responsibilities, learners may access course materials and take part in activities at their own leisure.

_Reduction of stress and traditional education demands Online courses provide an alternative to the high-stress demands of traditional education. They offer individuals the opportunity to pursue their education without the need for extensive commuting, rigid schedules, or the financial burdens associated with traditional higher education.

_ Promotion of intercultural relations: Participants in online courses come from many nations and cultures. As a result, people may receive knowledge and viewpoints from people from other cultural backgrounds, fostering intercultural interactions and fostering a global learning community[1].

Numerous benefits result from the widespread use of online education, including the development of cross-cultural understanding, access to high-quality education, flexibility, decreased stress, and chances for lifelong learning. These advantages help explain why online education is so common and effective in modern culture**[1].**

- **<u>Drawbacks of MOOCs</u>**

While MOOCs offer numerous benefits, they are also associated with certain drawbacks:

_Lack of structure for some students: MOOCs might be difficult for those who prefer in-person learning. Some students may struggle to study without a classroom and frequent face-to-face encounters.

_Reduced instructor accessibility: Due to the high enrollment in MOOCs, teachers may have little engagement with students. Students may have trouble getting explanations or specialized help due to this restricted accessibility.

_Digital literacy requirements: MOOCs frequently need digital literacy. Online platforms, course materials, and conversations must be pleasant for students. The training may not assist those without digital literacy.

_Limited relationship-building: Students seldom get to know professors and peers in MOOCs. The lack of face-to-face encounters and mass involvement might hinder meaningful relationships and collaborative learning.

_ Lack of accommodation for disabilities: MOOC systems may not accommodate visually or auditorily disabled students. This may restrict course participation.

_Dependence on reliable internet access: MOOCs need reliable internet connectivity for course materials, assignments, and online activities. Internet connection may be a major obstacle to participation in rural or poor locations.

_Paradox of choice: Many MOOCs, especially in popular disciplines like computer science, might create a dilemma of choice. Finding the right course from many comparable ones may be daunting and time-consuming for students**[1].**

These drawbacks highlight the need for continuous improvement and addressing challenges in MOOC design and implementation to ensure inclusivity, accessibility, and enhanced learning experiences for all participants **[1].**

2.5. MOOCs Trends

The success of MOOCs has been a recent trend, with significant growth and interest over the past decade. The University of Manitoba introduced the first recognized MOOC in 2008, but it was the open online course in artificial intelligence by Stanford University and MIT in 2011 that garnered widespread public attention. This course attracted a staggering number of participants, with over 160,000 students from 190 countries.

The popularity of MOOCs continued to rise, and by 2015, Coursera emerged as the largest platform provider, offering a third of all available MOOC courses. MiriadaX, a non-US MOOC provider, also achieved a significant milestone by surpassing 1 million registered users, tapping into the vast Spanish-speaking market worldwide.

MOOC platforms are leveraging technology to deliver personalized learning experiences. Adaptive learning algorithms assess learners' abilities and adapt the content and pace of the course to their individual needs. This approach promotes personalized learning pathways and helps learners progress at their own pace.

Overall, the rise of MOOCs as a popular and accessible mode of online education has been a significant trend in recent years. It has opened up opportunities for global participation, increased access to high-quality courses, and expanded the reach of education beyond traditional boundaries.[5]

3. MOOCs in Field Health

MOOC grew in all areas of education until it got to the health field. He taught a lot of skills and gave a lot of information on a wide and global scale. He did this to raise health knowledge among health students, patients, and people all over the world.

3.1. MOOC in health

MOOCs have gained significant prominence in health education, particularly in fields like medicine, pharmacy, and nursing. Many universities and colleges worldwide have embraced the use of MOOCs to implement a "flipped classroom" model, which enhances learning outcomes. This approach has become especially valuable during the COVID-19 pandemic, where the need for medical education and interprofessional learning has been heightened.[6]

The COVID-19 pandemic has led to an increased demand for public health education, and MOOCs have emerged as a valuable supplement and extension to traditional medical education. Universities in Australia, the United States, and the United Kingdom, which played a significant role in the development of MOOCs, continue to offer coordinated and multiple courses in this domain. The Organization for Economic Co-operation and Development (OECD) recognizes that MOOCs provide an alternative pathway to traditional higher education degrees and have stimulated innovation in education, including healthcare. MOOCs have allowed various organizations to enter the higher education market and contribute to the advancement of healthcare education.[6]

However, there have been some challenges in implementing MOOCs in health promotion. In 2014, there were concerns about the practicality and management of MOOCs in the health promotion field, as there was limited interaction among participants from different structures. Despite these challenges, the potential benefits of MOOCs in health education have been recognized.[7]

A review conducted in 2021 on MOOCs in health education during the COVID-19 lockdown highlighted the presence of 117 MOOC courses targeting the general population. MOOCs

have been found to offer a wide range of health-related courses to the general population, focusing on important topics such as health promotion, nutrition, and mental health. Their flexible nature and potential for engaging diverse participants present opportunities for enhancing public health education, although more research is required to assess their true value and impact in this domain.[6]

3.2. COVID-19 Pandemic

The novel coronavirus pandemic has resulted in the closure of many medical institutions, leading to the increased utilization of online education. This trend is likely to continue due to the ongoing threat of the mutated virus. However, conducting live webinars with a large number of students (around 100 to 250) presents challenges in terms of maintaining attention, engagement, and retention in such a massive online classroom.

To address this issue, some medical schools in the US have adopted a "reverse" or "flipped classroom" model. In this model, students watch pre-recorded lectures online at their own pace before attending live class sessions. This approach allows MOOCs to play a crucial role in providing content for extracurricular activities, while live lectures are used for interactive discussions and clarifying doubts.

Moreover, advanced MOOCs that incorporate simulations can help students prepare for real-world scenarios and provide a safe and comfortable environment for taking tests. These developments in medical tools and technologies offer opportunities for selecting and developing MOOCs that cater to the specific needs of medical education.

By leveraging the strengths of MOOCs, such as flexibility, scalability, and interactive learning resources, medical institutions can enhance the delivery of educational content and promote effective learning experiences for students. **[8].**

3.3. Examples of MOOCs

The field of health in Massive Open Online Courses (MOOCs) has seen a wide range of course offerings across different platforms. These platforms provide opportunities for learners to access health-related courses online.

After analyzing the available courses on various platforms, it was found that Coursera stands out as the top platform for Health and Medicine-related MOOCs, offering the highest number of courses in this domain. With a whopping 58% of the total courses (57 in number),

Coursera has established its dominance in this field. Following closely behind is Open2Study, which has been identified as the second-largest provider**.[8]**

The results of the analysis are in the following table (2.1)**.[8]**

Platform/Provider	No considered in review	Percentage (%)
Coursera	57	58
Open2Study	14	14
CourseSites	7	7
Canvas	5	5
edX	5	5
MiriadaX	4	4
FutureLearn	1	1
NovoEd	1	1
P2PUniversity	1	1
Rwaq	1	1
University of Tasmania	1	1
VentrueLab	1	1

Table 1.2 MOOCs by Platform/Provider (n=98) [8]

1. Coursera

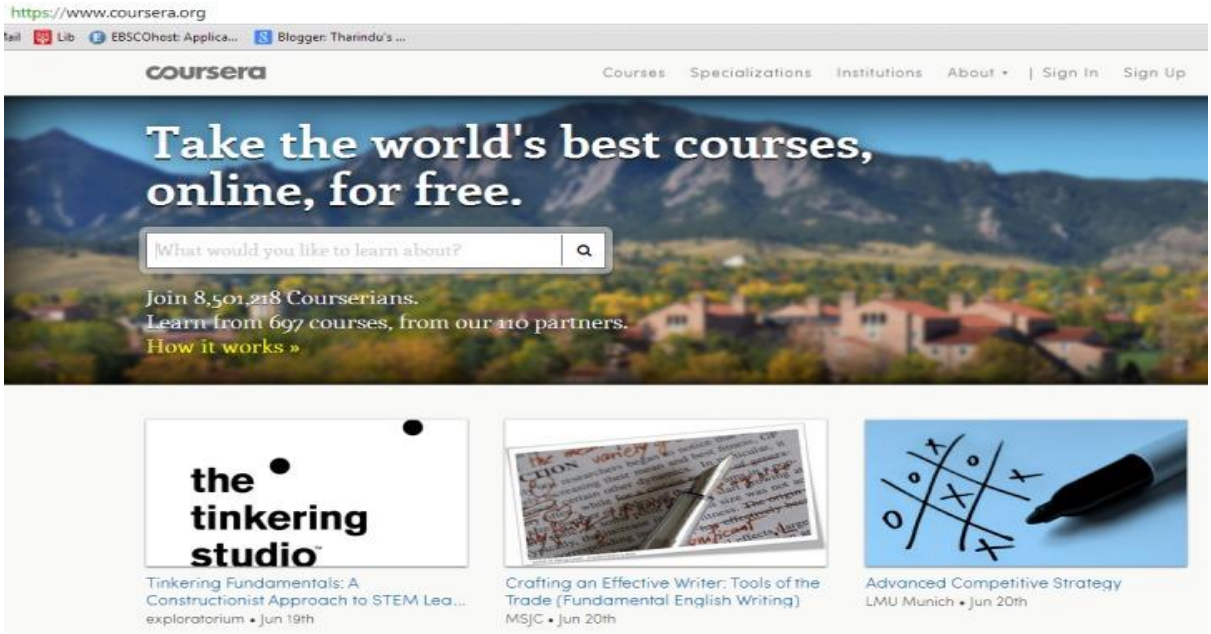


Figure 2.1 Coursera Platform [8]

2. Open2Study

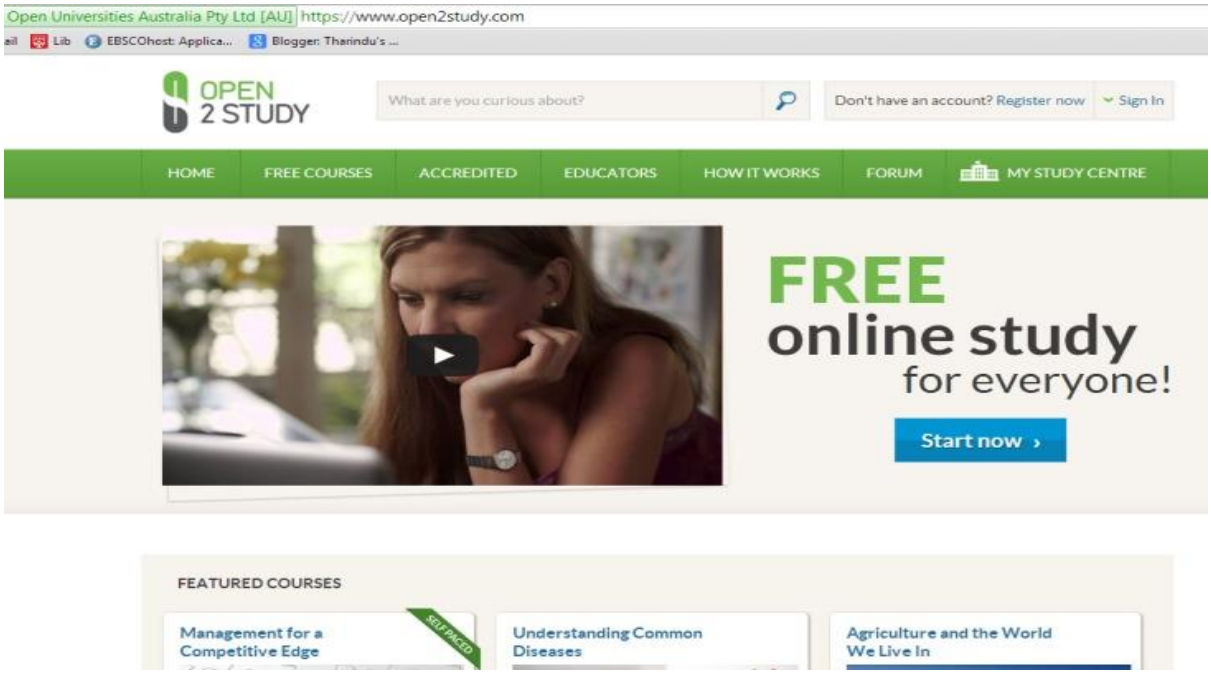


Figure 1.2 Open2Stady Platform [8]

Conclusion

The comprehensive exploration of MOOCs in this chapter has shed light on their significance and impact in the realm of education, particularly during the COVID-19 pandemic. As technology continues to advance, MOOCs offer a promising avenue for lifelong learning, bridging gaps in access to education, and fostering continuous professional development. While challenges persist, such as ensuring high-quality content and addressing the limitations of online learning, the potential of MOOCs to revolutionize education and empower individuals in various fields, including health is undeniable.

Chapter 02 Desing

1. Introduction

Design plays a critical role in the development process of any system. A well-executed design is the product of thoughtful consideration. In this chapter, we elucidate the design employed for the methodology outlined in this study. This chapter is structured as follows

General design notes this section provides an overview of the design principles and considerations underlying the methodology. It highlights the key aspects that shape the overall design approach.

Detailed description here, we delve into the intricacies of each component, providing a comprehensive breakdown of their internal architecture. Furthermore, this section includes UML class and sequence diagrams, as well as use cases, to further illustrate the design implementation.

2. General architecture of the proposed MOOC platform

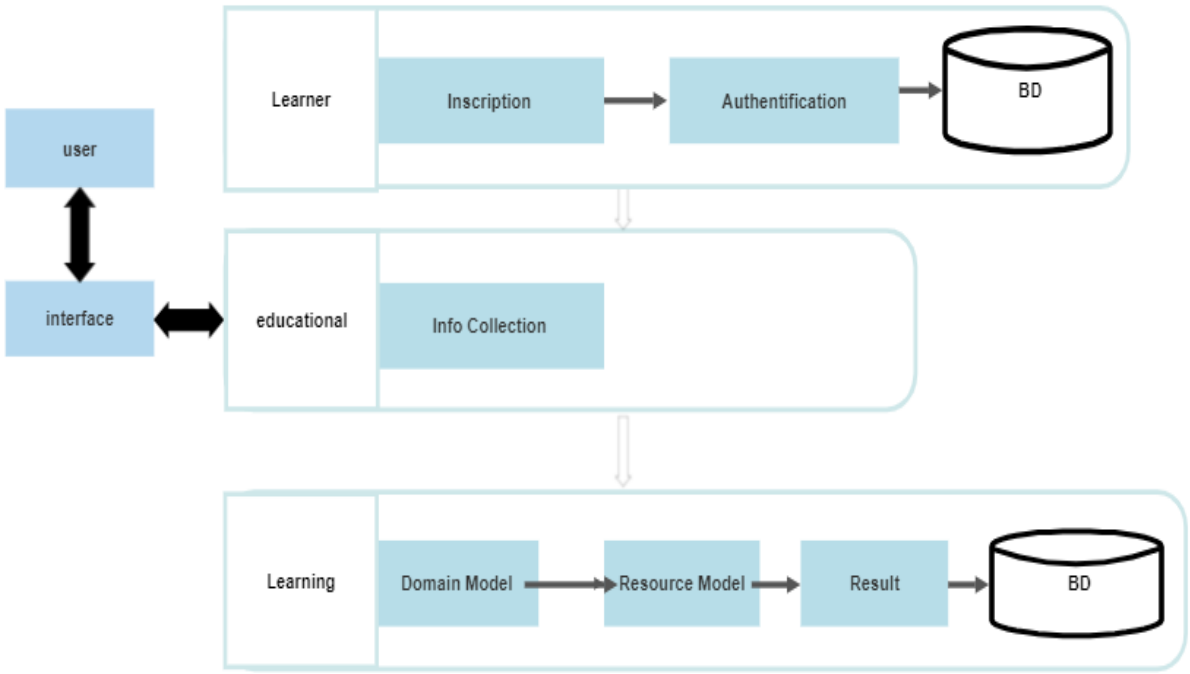


Figure (2.1): General Architecture of the MOOC

In the architectural structure, we presented the basis for creating our MOOC model by dividing it into several basic models

1\ User Interface

2\ learner The learner form was subjected to several stages

_ Inscription allows new participants to register by entering personal information(ID Number, Firstname, Lastname, password, ..). After that, it is validated to be kept in Database BD.

_ Authentification Allows registered learners to authenticate by entering correct personal information(username, password).

_ Database BD is the one that contains all the information of the subscribers to be compared between the data recorded in it, and the data entered. If it is correct, it passes to the learner's session; if it is wrong, a message appears for you « Login Failed ».

3\ Educational The aim of this model is:

_ Collecting information and data in a different way where the learners express their understanding by completing the questionnaire by answering the questions that will be examined and determined to obtain the final certificate.

_ Each part of the course PDF or the video contains questions in the first place according to the learner's attention, and then that he is aware of the thing he studied, and so on until the degree of his intelligence, attention, and awareness.

The learner can study by playing the video and simultaneously clicking on downloading the video, which also applies to the course PDF.

4\ Learning

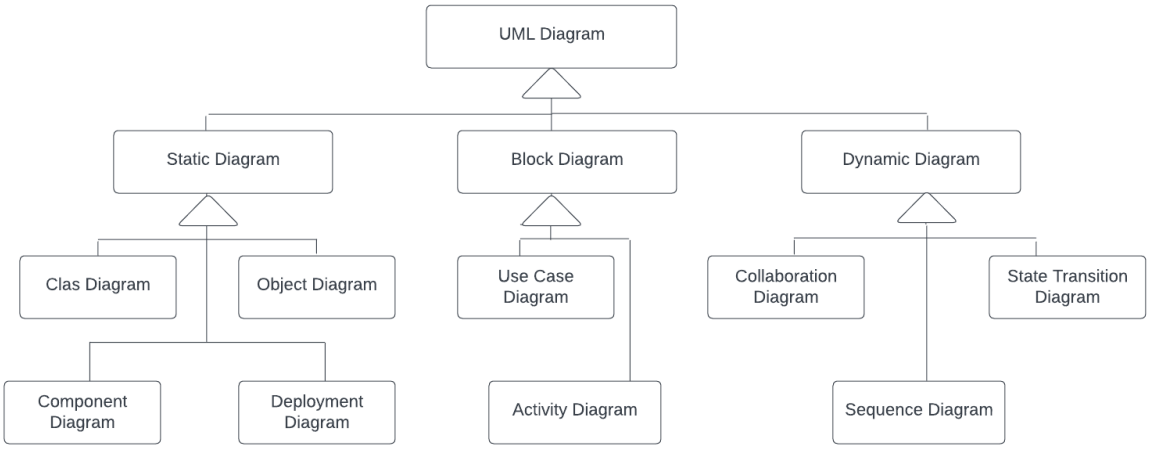
_Domaine Model In this form, the educational field and specialization are specified. In our project, we identified the field that we will study: the field of health (Covid-19).

_ Resource Model In this form, the teacher adds, modifies, and deletes educational resources(video, course pdf). It allows the learner to view and download educational resources(video, course pdf).

3. Modeling of the proposed MOOC platform

3.1. UML

UML (Unified Modeling Language) consists of several diagrams, which help organize information while creating and modeling a project. The UML consists of three principal diagrams interspersed with other sub-diagrams, as shown in the following diagram



Figure(2.2): UML Diagrams

In this project, we will study it through only three diagrams which are

- **Class Diagram**
- **Sequence Diagram**
- **Use Case Diagram**

3.2. Class Diagram

It is considered one of the most widely used diagrams in UML, and it is used to clarify and organize information by classifying it or assigning it to categories and representing it in a class diagram. Using class diagrams, you can visualize, describe, and record structural features in your models.

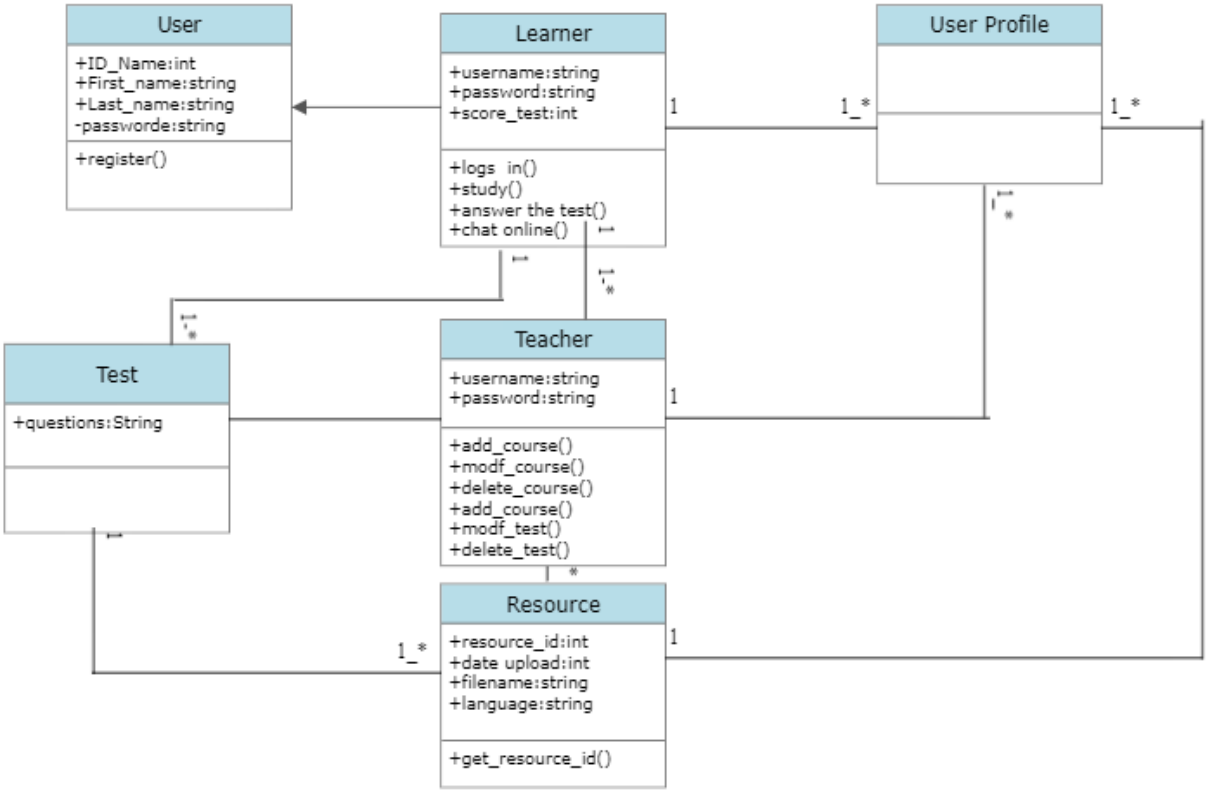


Figure (2.3): Class Daigram

3.3. Sequence Diagram

Sequence diagrams can show the interactions between objects from a time perspective. The vital point is the chronological order in which the messages are sent. The graph is structured as follows

- **Sequence Diagram for Learner**

Login to the Mooc platform is done through the entry page. the learner enters the username and password. If one of the information is incorrect, he will receive a message at the top of the page saying that “Login Failed.” If all the information is correct, then the learner’s page will be entered successfully, in which the lessons are located to be studied by the learner. And then he is subjected to the test through questions (Quiz) and finally, the result of the evaluation appears.

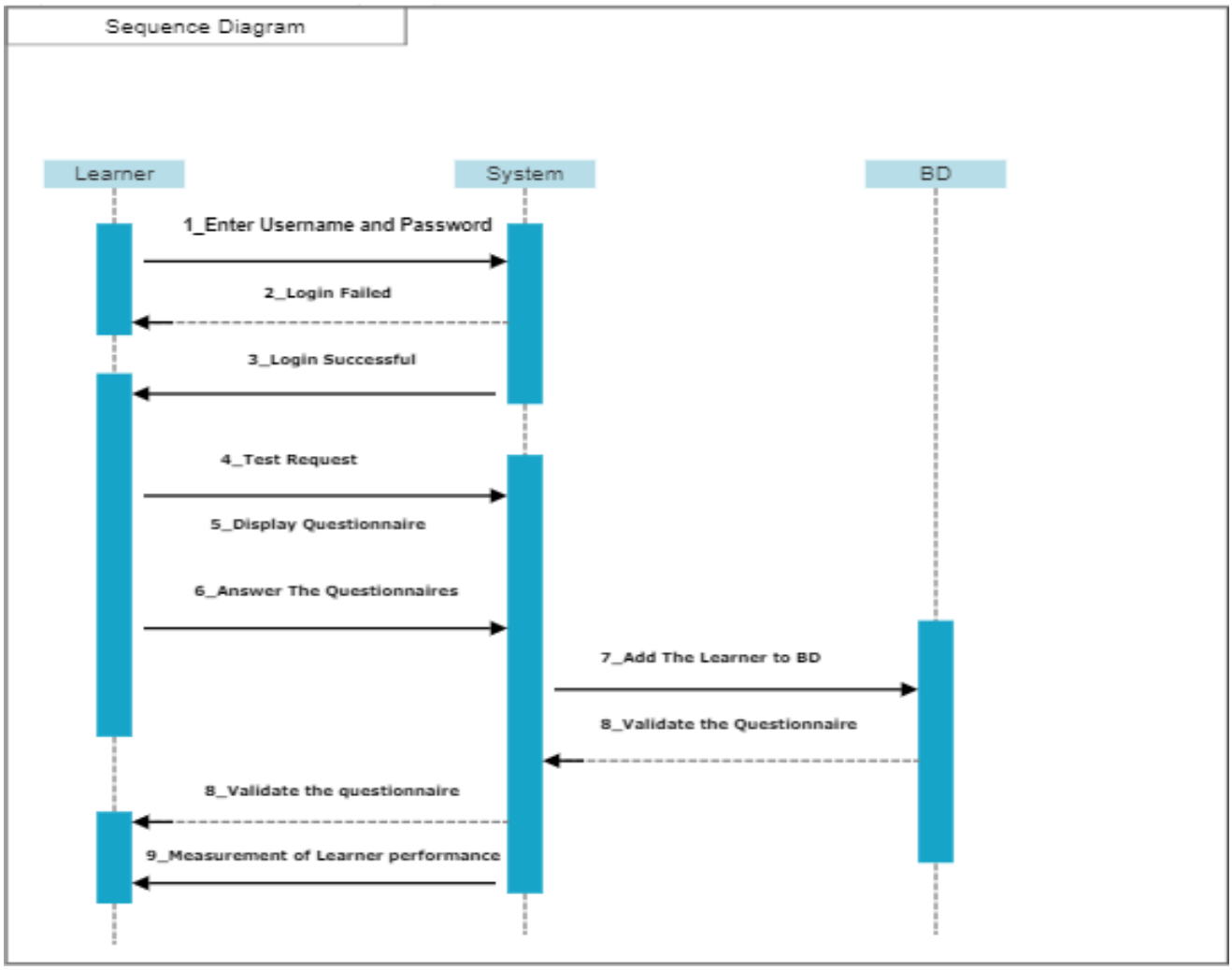
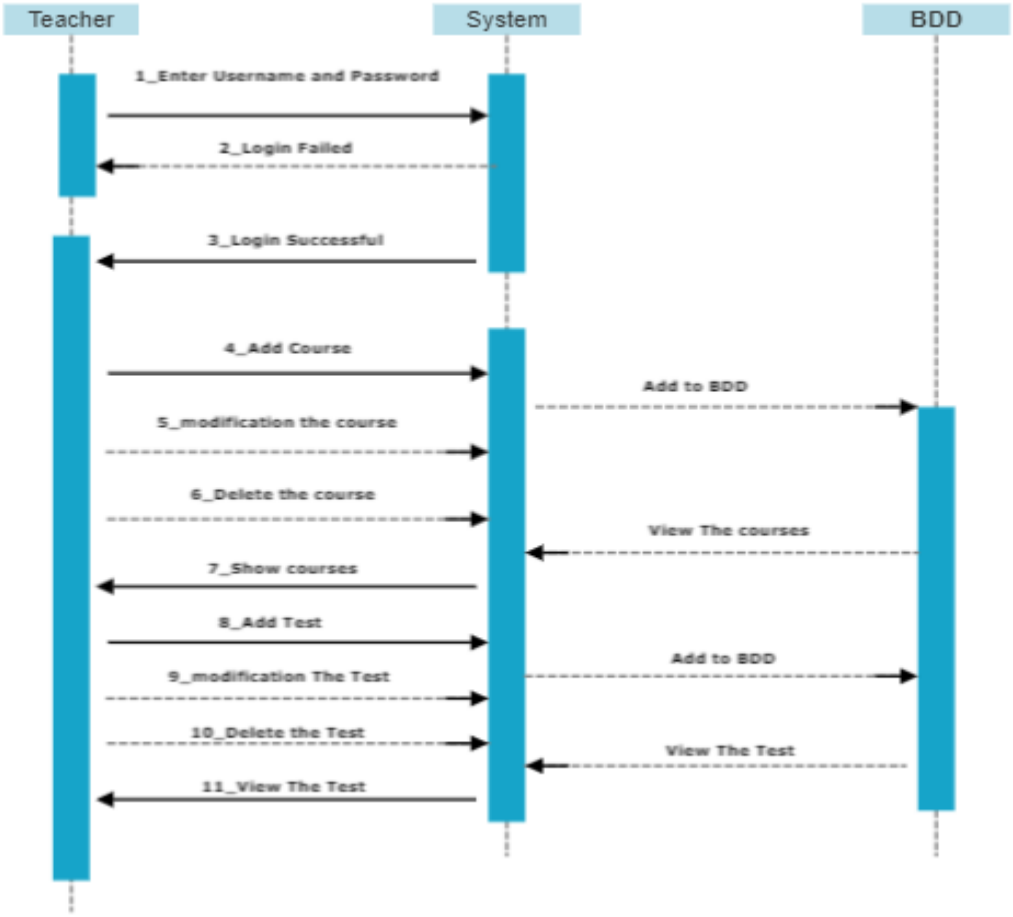


Figure (2.4) : Sequence Diagram for the Learner

- **Sequence Diagram For New Participant**

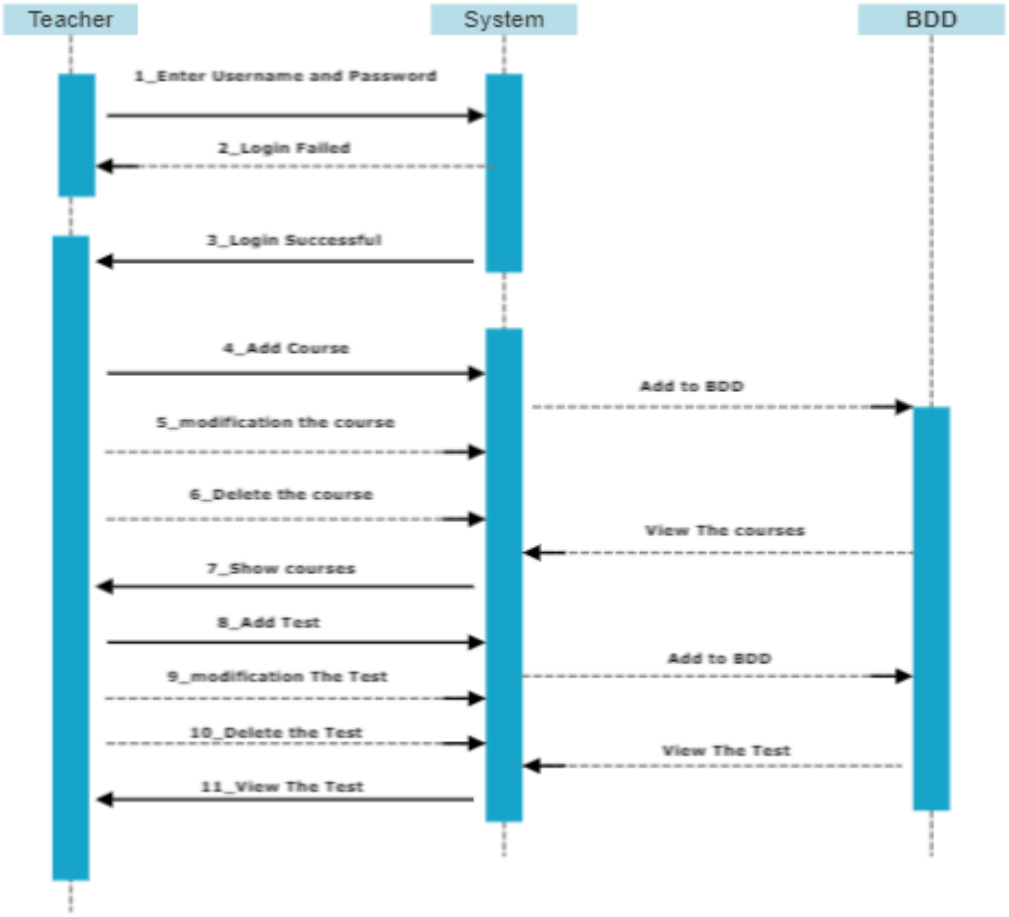
If another person wants to participate in the study on the MOOCs platform, he must enter the MOOCs platform and request a list of the required information (ID Number, First name, Last name, Class, Password, Re_type Password.) in order to fill in the correct information for him, then the entered information will be verified and saved.



Fugire(2.5): Sequence Diagram for New Participant

- **Sequence Diagram For Teacher**

The teacher goes through several stages to reach his home page on the MOOCs platform. The first stage is entering the username and password. If the information is entered incorrectly, the message “Login Failed” appears at the top of the page, and if the information is correct, the main page is entered. The teacher can add the courses (PDF, videos) and exams, and modify or remove them.



Figure(2.6): Sequence Diagram for Teacher

3.4. Use Case Diagram

A **"use case"** is a valuable tool that illustrates the functional interaction between an actor (user or external system) and the system being studied. While the representation format of use cases can vary, UML (Unified Modeling Language) offers standardized forms and concepts that are widely accepted as best practices.

In a use case, the system's operations are depicted as a sequence of actions within a rectangular box. The focus is on the outcomes produced for the principal actors, which refer to the individuals or entities interacting with the system. The inner workings of the system are not detailed in the use case, as the emphasis is on understanding the interactions and the results achieved for the actors involved**.[12]**

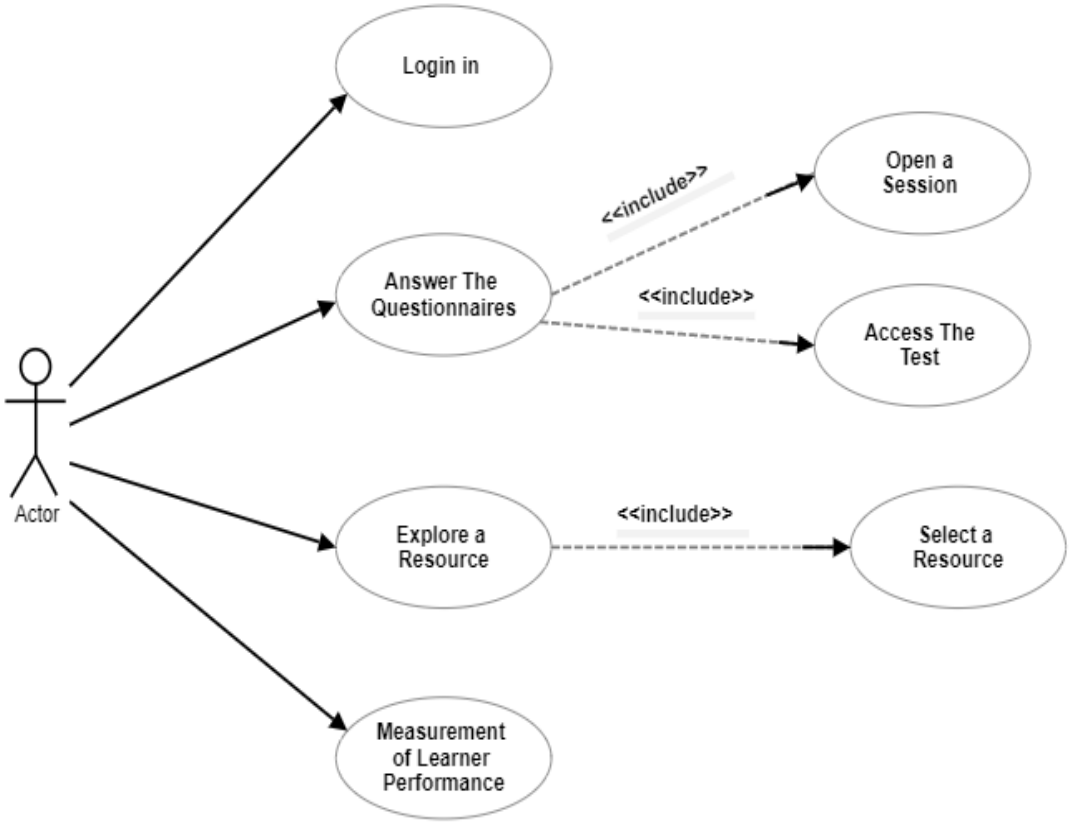


figure (2.7) : Use Case Diagram

Conclusion

In this chapter, we presented the general structure of the proposed MOOC platform. We also gave an idea about UML (Unified Modeling Language) modeling language and the necessary diagrams for modeling our project. We used three diagrams (Class Diagram, Sequence Diagram, and Use Case Diagram).

Chapter 03 Implementation

1. Introduction

This chapter will present the different phases of implementing the MOOC distance learning system. We will describe the software and programming languages used to develop massive open online courses and take exams to raise scores. And show some necessary interfaces and features in this created MOOC platform.

2. Development Environment

2.1. Development languages

1. PHP

PHP is a recursive acronym of "**PHP: Hypertext Preprocessor**." It is a free web programming language that is mainly used to produce dynamic (server/client) web pages via an HTTP server. It is a platform that is more than just a language**[9].**

2. HTML

The **HTML** or "**HyperText Markup Language**" is the standard markup language for documents designed to be displayed in a web browser.

The language allows one to formalize a written document using formatting marks; enter the main title, subtitle, and pictures, links, and more. It is also used to make pages more interactive.

HTML allows documents to be read online from different devices**[9].**

3. JAVASCRIPT

JavaScript is a computer language used on websites. The peculiarity of this language is that it is activated on the client workstation. In other words, it's your computer that receives the code and must execute it. This is in contrast to other server-side enabled languages. The code is executed by your Internet browser, such as Firefox or Internet Explorer. One of the most important things you need to know is that JavaScript is not related to another computer language,JavaScript is special in creating small scripts on HTML pages to add small animations or specific effects on the page **[9].**

2.2. Development Tools

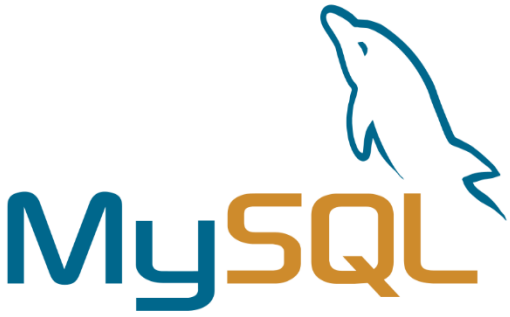
1. XAMPP

XAMPP stands for **Cross-Platform** (X), **Apache** (A), **MySQL** (M), **PHP** (P) and **Perl** (P). It is a set of software to easily set up a web server and an FTP server. It is a distribution of free software (X Apache MySQL Perl PHP) that is easy to install, offering good flexibility of use, and allowing the exploitation of an Apache server, the MySQL DBMS, and the PHP interpreter. XAMPP is also cross-platform, meaning it works equally well on Linux, Mac, and Windows**[13].**

2. MYSQL

MySQL is a relational database server based on the **SQL** query language; it is implemented in (client/server) mode with the server side: the MySQL server and the client side: the various programs and libraries.

MySQL works on storing data in an organized and non-repetitive manner. Commonly associated with web-based applications, it is easy to use, fast, free, and portable**[14].**



3. Apache

Is an HTTP server built and managed within the Apache Foundation. It is primarily used for Internet hosting on Linux but can also be used on Windows**[13].**

3. Presentation Of The Proposed MOOC Platform

3.1.The Home Page of the MOOC Platform

The home page contains the main components of the proposed MOOC platform

- **Home**
- **About**
- **Calender of events**
- **Directories**
- **Campuses**
- **History**
- **Developers**

3.2. Learner Registration Interface

It allows a users(learners, teacher, or other one) to become a member of the MOOC platform. The page contains a registration form where the user must provide information that corresponds to his data, which are (ID Number, First name, Last name, Class, Password, Re_type Password).

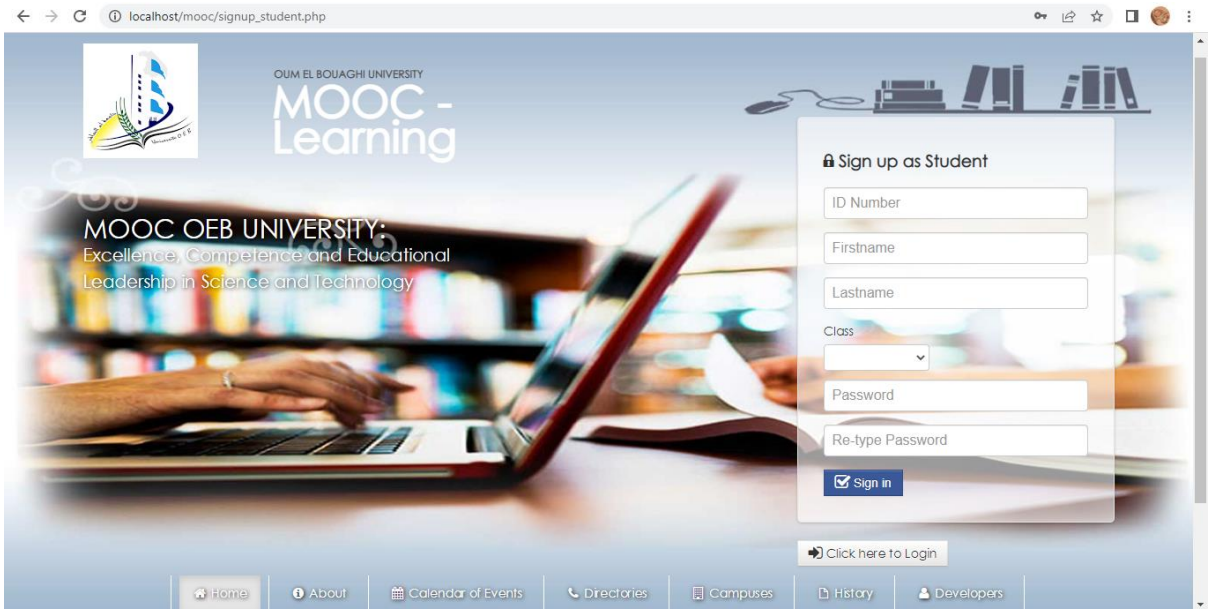


Figure (3.1): Learner sign up interface

3.3. Teacher registration interface

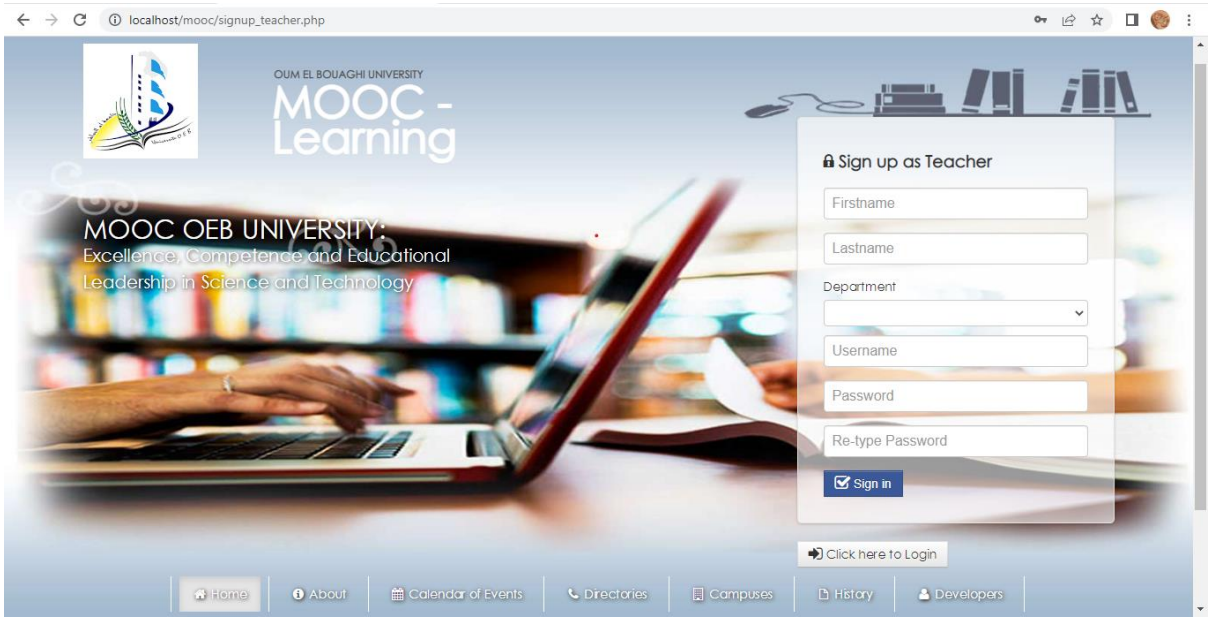
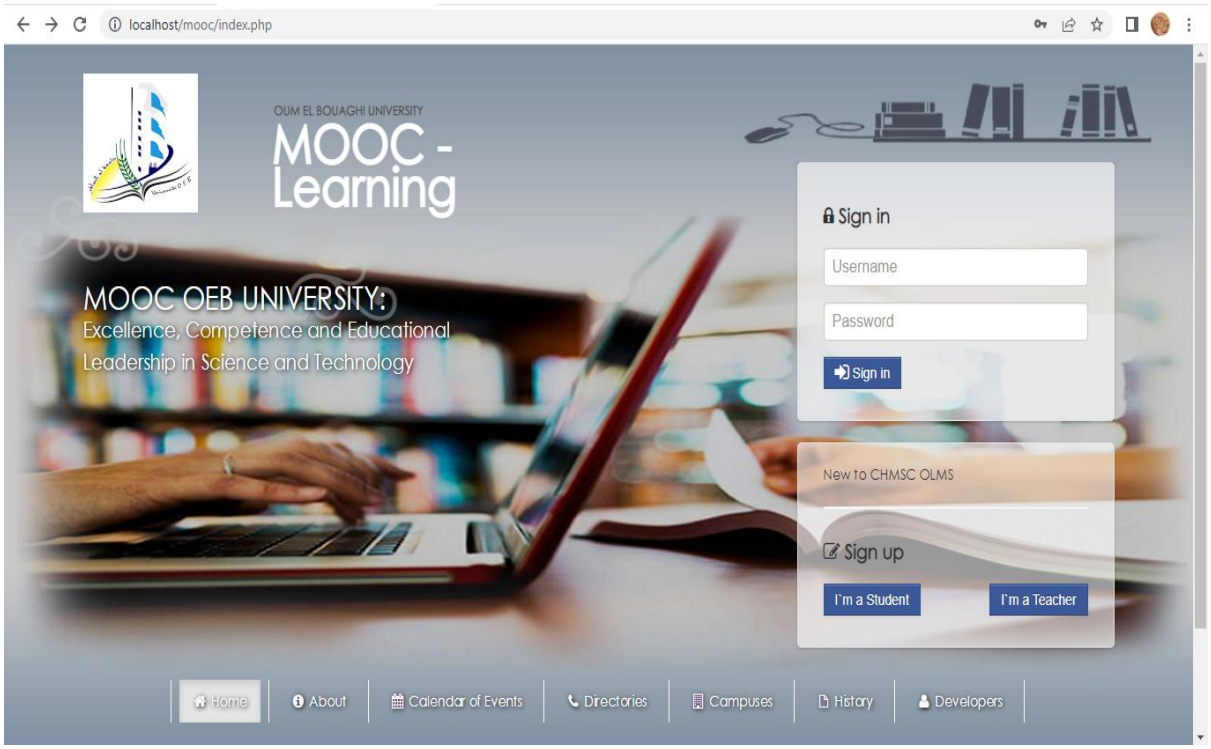


Figure (3.2): Teacher sign up interface

3.4. Learner and Teacher Authentication Interface

The consent page allows learners to access their MOOC platform by entering their username and password.



Figure(3.3) : Learner and Teacher Authentication Interface

If the login entered is incorrect, a “Login Failed check your username and password ” error message will be displayed at the top of the page.

3.5. Learner profile

The learner page has the properties it needs in the MOOC platform. On the left side, several properties are:

- **Notification**

  The learner receives notifications.
- **Message**

  Allow chatting with each other(Learners, Teachers).
- **Backpack**

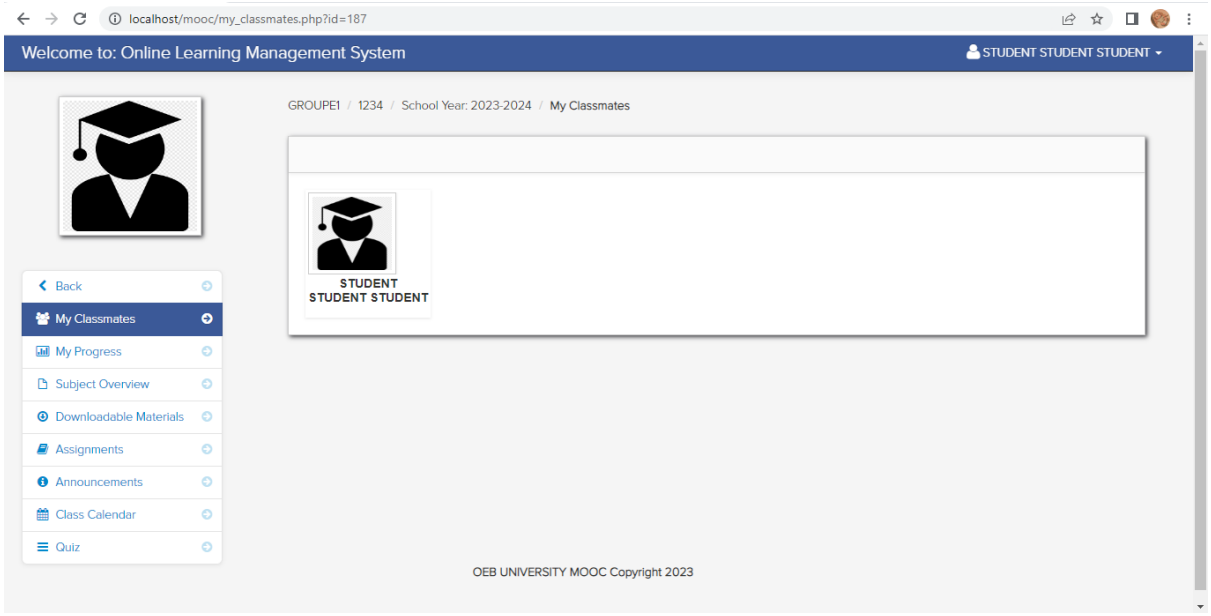


Figure (3.4): Learner profile

- **My class**

It represents the group to which the learner belongs. When entering it, a list of other features appears, which are:

- **My progress**
  For Test (Assignment Grade Progress, Practice Quiz Progress).
- **Downloadable Materials**
- **Assignment**
- **Announcements**
- **Class Calendar**
- **Quiz**

At the top right, there are three properties

- **Change password**
- **Change avatar**
- **Logout**

3.6. Teacher profile

The teacher's page consists of several essential features. They are located on the left of the page

- **Notification**
- **Message**

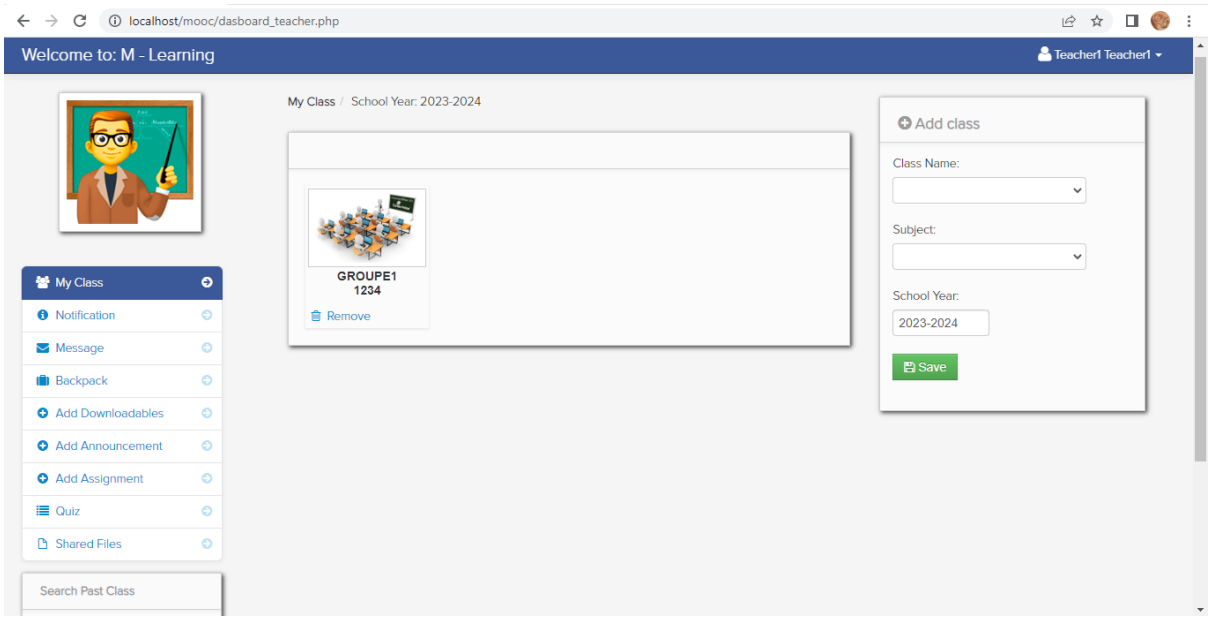
  Allow chatting with each other(Learners, Teachers).

- **Backpack**
- **Add downloadables**

  The teacher can add files (courses, videos).
- **Add Announcement**
- **Add Assignment**
- **Quiz**

  Add tests for learners.
- **Shared Files**

my class : We find learners' groups in it, and other groups can be added. When entering it, we find several characteristics:



Figure(3.5): Teacher profile

- **My class**

  In my class, learners' groups and other groups can be added. When entering it, we find several characteristics.

  - **My student**
  - **Subject Overview**

- **Downloadable Materiales**
- **Assignments**
- **Announcements**
- **Class Calendar**
- **Quiz**

3.7. Add course

The teacher can add, edit and delete courses.

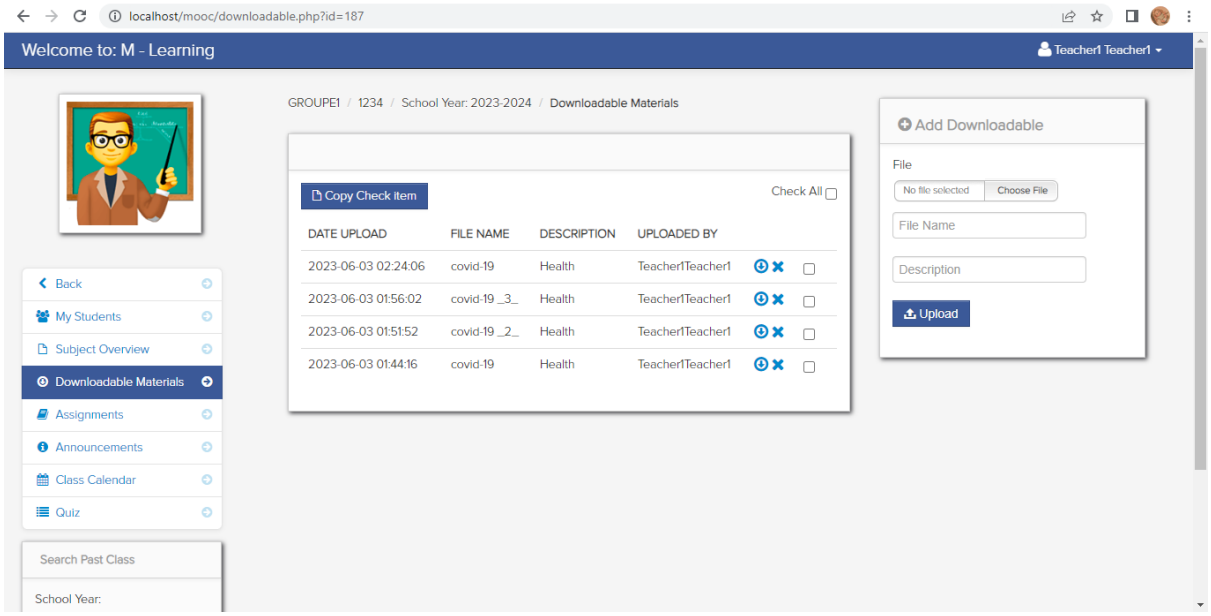
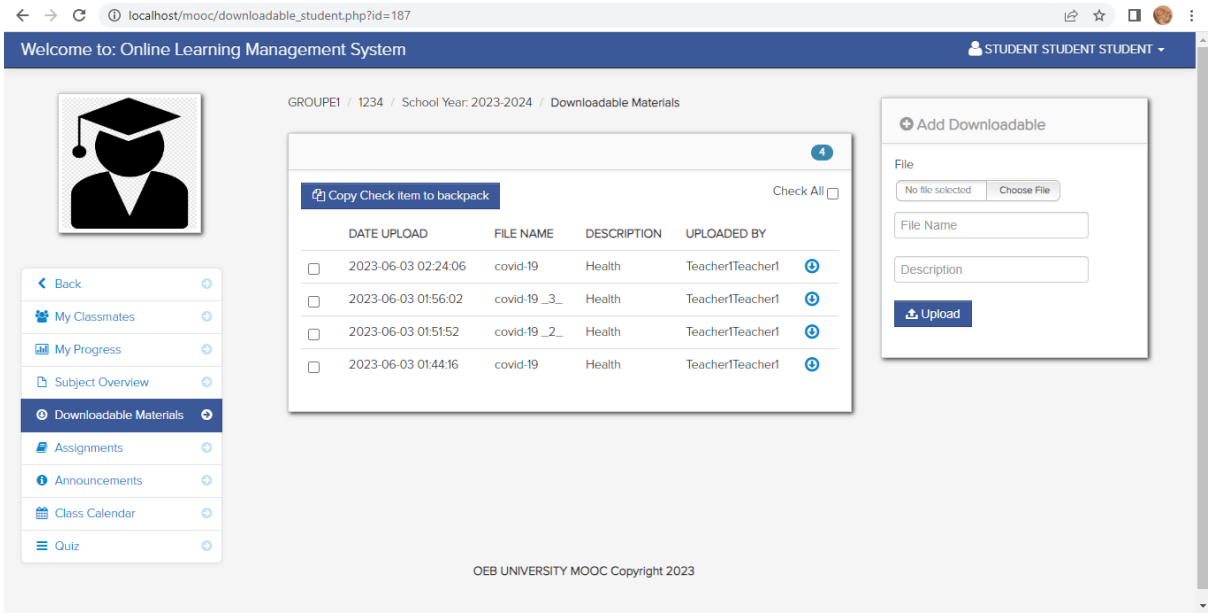


Figure (3.6): course page in the teacher profil

3.8. Discreption The course

The courses are available in pdf format and video format so that the learner can choose what suits him to study.



Figure(3.7): Discreption the course in the learner profil

3.9. Add Test

The teacher can add a test for the learners, where there are two types of questions(Multiple choice, True and False), and sets the period that the learner must answer the question.

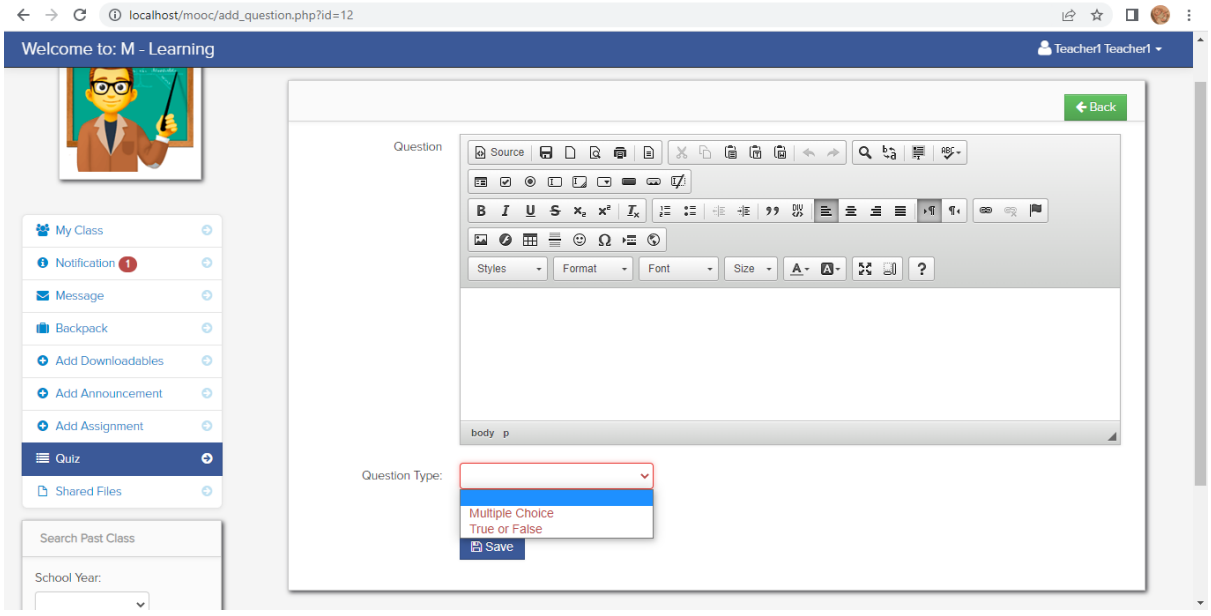


Figure (3.8): Interface to add a Test for the learner

3.10. resultant the test

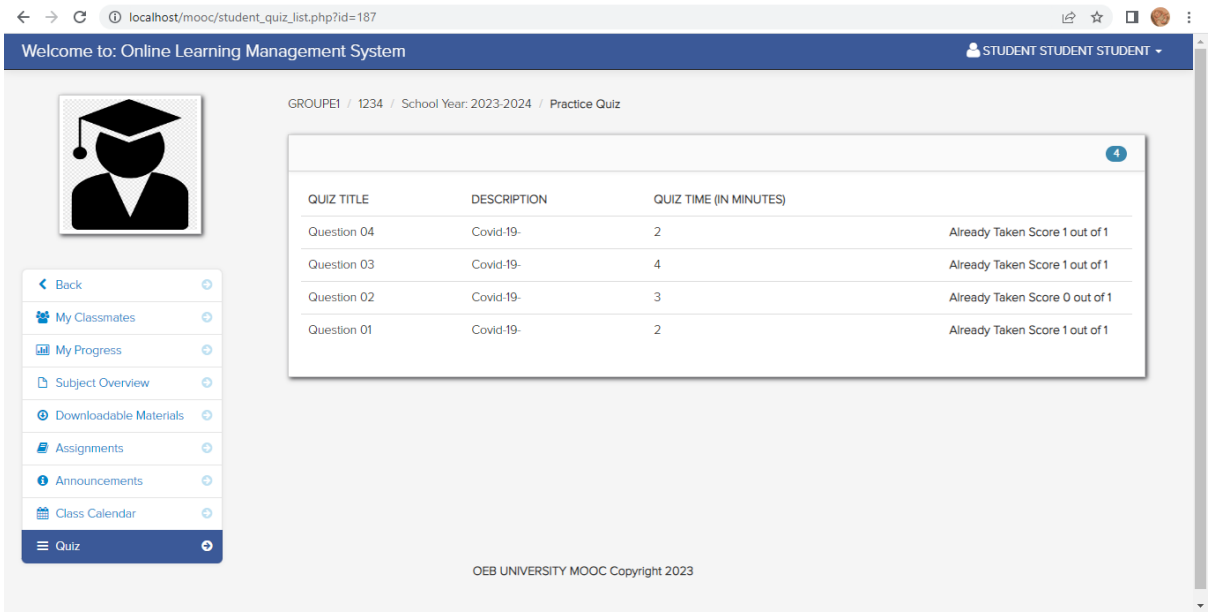


Figure (3.9): The finaly score of the test

The learner is evaluated through the tests presented to him after completing his studies. He is given a test for each part and for every information in the course, so that he can obtain a large amount of useful information for him and so that the teacher can know whether the learner completed his course or not, and understand it correctly or not, to obtain the certificate.

CONCLUSION

In this chapter, we have implemented our MOOC system by introducing the technical development environment and explaining the tools used in development that helped us create the course, and take the assessment test to raise scores. For this purpose, we were keen to reveal the implementation stages of the application by showing the most important interfaces.

General Conclusion

In our current era, learners preferred a new learning method that is better and better than the traditional learning method. This new method of learning is distance learning through Massive Open Online Courses (MOOCs). We have provided a comprehensive overview covering MOOC Open Online Courses. Especially in the field of health and the impact of the COVID-19 pandemic on MOOCs. We explored how MOOCs can be used in health education during these challenging times, especially during the COVID-19 pandemic.

The development of the MOOCs Platform was crucial from both the teacher's and the learner's perspective. Where we developed it by the teacher add the courses(PDF, videos), and add the tests for each piece of information present in the courses so that the teacher knows that the learner has completed the entire course.

The MOOCs platform plays a vital role in facilitating remote learning, allowing students to access educational resources and courses from anywhere at any time. During critical cases and epidemics, such as the Covid-19 outbreak. when physical classrooms may not be accessible or safe, the MOOCs platform becomes an essential tool for continuing education.

However, there are a few weaknesses that could be addressed to enhance the system

- **Lack of Interactivity** While the system incorporates course materials and tests, it may lack interactivity and engagement elements that can enhance the learning experience. Incorporating interactive components like quizzes, discussions, and simulations can improve learner engagement and knowledge retention.
- **Limited Personalization** The system may benefit from incorporating personalized learning paths based on individual learner needs and preferences.
- **Assessment Methods** While tests are included, the system could consider incorporating diverse assessment methods beyond traditional tests, such as project-based assignments, peer assessments, and real-world case studies.
- **Collaboration and Social Learning** Encouraging collaboration and social learning among learners can foster a sense of community and facilitate knowledge sharing.

For future work, it is suggested to:

- Continuously improve the interactivity and engagement aspects of the platform by incorporating interactive elements and multimedia resources.
- Explore adaptive learning technologies to personalize the learning experience and cater to individual learner needs.
- Diversify assessment methods to evaluate learners' skills and knowledge comprehensively.
- Foster collaboration and social learning by integrating features that encourage interaction and knowledge sharing among learners.
- Regularly update and refine the system based on user feedback and emerging trends in online education.

By addressing these weaknesses and considering the suggested future work, the MOOCs platform can further enhance the learning experience and meet the evolving needs of learners in the field of health education and beyond.

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