



## The Motives and Challenges of developing and delivering MOOCs courses

### Los motivos y desafíos de la elaboración e impartición de los cursos MOOC

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#### ABSTRACT

This paper described the experience of developing a MOOC at An Najah National University and how it was transferred into a SPOC from the perspective of its team developers. Learners' responses and participation had been analyzed in order to understand its content. The data collected described the motivation for developing the MOOC and then using it as a SPOC, in addition to presenting the challenges that face its development and implementation. The development of the MOOC Genetic and Society at An Najah National University went through different stages starting from offering the course to students face to face and then developing the course online and then preparing it as a MOOC, finally using it as a SPOC to student university. The findings showed the main motives for developing the MOOC such as the well to increase the online Arabic content in this area. The main challenge that faced the course designers was the lack of technical support. The paper recommends developing more MOOCs in different languages in the medical field.

#### RESUMEN

Este trabajo describe la experiencia de desarrollar un MOOC en la Universidad Nacional de An Najah y cómo ha sido transferido a un SPOC desde la perspectiva del equipo de desarrolladores. Para comprender su contenido, se habían analizado las respuestas y la participación de los estudiantes. Los datos reunidos describían la motivación para desarrollar el MOOC y luego utilizarlo como un SPOC, además de presentar los desafíos que enfrenta su desarrollo e implementación. El desarrollo del MOOC "Genética y Sociedad" en la Universidad Nacional de An Najah pasó por diferentes etapas que comenzaron con la oferta del curso a los estudiantes cara a cara y luego el desarrollo del curso en línea y su preparación como un MOOC, para finalmente utilizarlo como un SPOC para la universidad de los estudiantes. Los resultados mostraron los principales motivos para desarrollar el MOOC como un medio adecuado para aumentar el contenido en línea en lengua árabe de ciencia. El principal desafío al que se enfrentaron los diseñadores del curso fue la falta de apoyo técnico. El documento recomienda desarrollar más MOOC en diferentes idiomas en el campo de la Medicina.

##### Palabras clave:

MOOC

SPOC

Genética

Motivos

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## 1. Introduction

The intense interest and publicity concerning MOOCs has prompted almost every university to create at least one course. Therefore, there has been a significant interest in MOOCs around the world. MOOCs has been appeared since 2008 (Deng et al., 2019; Gardner & Brooks, 2018; Jordan, 2014) and still growing up providing various benefits for societies including access to high quality open sources, equity of education, accreditation from universities worldwide, and high audience engagement around interesting topics for communities (Deng et al., 2019; Ferguson & Sharples, 2014; Siemens, 2013). There are more than 11,400 MOOCs courses offered by more than 900 universities worldwide, enrolling 101 million learners (Pickard et al., 2018). The passionate interest and marketing concerning MOOCs has inspired almost every university in the world to create at least one MOOCs course. Previous studies revealed the importance of increasing numbers of enrollments and courses to motivate and engage learners with learning activities and content (Khalil & Ebner, 2018; Pickard et al., 2018); otherwise, could reduce the participation and high dropouts' rates (Alario-Hoyos et al. 2014; Jordan, 2014).

Designing, developing, and delivering a MOOC is not an easy and cheap task. It needs a collaborated team each one has advance skills to design the course as well as a technical team. Furthermore, the estimated costs of developing and delivering a MOOC course is between US\$39,000 and US\$325,000 per course (Hollands & Tirthali, 2014a). The high cost of designing and developing the course need to be justified in terms of the expected benefits to the institutions including to reach a wider audience, building and maintaining the institution's brand, reputation, and using MOOCs as a potential source of revenue (Hollands & Tirthali, 2014b). Educators and practitioners in MOOCs courses are eager to know whether the created courses are success or not (Henderikx et al., 2017). It should be noted that the prediction value of findings of previous studies especially on single MOOCs should be validated. A recent study has found that only 12 of 15 findings in five previous studies are replicated significantly across the datasets (Andre et al. 2018).

In the Palestinian higher educational institutions, many attempts have been documented to develop and deliver MOOCs courses individually or with cooperation with international universities (Affouneh et al., 2018). An interdisciplinary Massive Online Open Course (MOOC) was the first MOOC to be created in Palestine, as a collaboration project between the E-Learning Centre, Faculty from the Department of Geography, and Department of Tourism and Archaeology from An-Najah National University in Palestine with an International University in the USA (Affouneh et al., 2018). The ANNU developed and delivered a new MOOC course after the success of the first one. The motivation of designing, developing, and delivering the second course was to disseminate the public health awareness, and to increase the knowledge of genetic diseases, a MOOC course of Genetics and Society was created and taught at An Najah National University. The course content explored the genetic diseases and disorders, family tree, the human life cycle, and current issues in genetics like Cloning and medical abortion. The Genetics and Society course aims to strengthen the youth knowledge and practices in genetics due to social and health effects. However, as mentioned by previous studies that developing open courses (MOOCs) is not an easy process, the researchers seek to know the challenges of designing, developing, and delivering of MOOCs by the ANNU as well as the motivation of designing MOOCs courses. Accordingly, this study aimed to investigate the reflections of students, instructors and designers who participated in the MOOC course of Genetics and Society. In addition, the study focused on the students' interaction through their comments over the course. Therefore, two research questions have driven the current study:

- What is the An Najah National University (ANNU) motivation to develop and deliver MOOCs courses to the public?
- What are the challenges of designing, developing, and delivering MOOCs courses at ANNU?

In the rest of the current paper, we will introduce related studies through the literature review. Methodology including the research design, context of the study, and data analysis were introduced in the third section of the paper. Results, discussion, and the conclusion were the end of the paper.

## 2. Literature review

### 2.1. What is MOOC?

MOOC is an abbreviation for Massive Open Online Course, and it became the leading style of online learning (Li & Zhang, 2018). George Siemens and Stephen Downes introduced MOOCs in 2010 and gained a huge number of audiences. Carvalho Júnior et al. (2019) claimed that MOOCs were seen in 2008 for the first time then

became popular three years later. MOOCs are classified into four types, namely cMOOCs, xMOOCs, hMOOCs, and ahMOOCs (Fidalgo-Blanco et al. 2013; García-Peñalvo et al. 2018).

MOOCs were created to democratize learning and make more opportunities that are useful for all learners. Anyone with Internet access can use MOOC for free. MOOC is a term provided by the Open Educational Resources Movement (Sullivan et al., 2019). Larionova et al. (2018) considered MOOC implementation as it gives greater learning benefits, when it compared with the traditional teaching. McDonald and Ahern (2015) described MOOC as a unique type of online educational course which is popularized. Liu et al. (2019) added that MOOCs provide new sources of information and opportunities for large-scale experiments that can advance teaching and learning.

MOOCs are open and flexible so students can be enrolled in the courses anytime, they are not required to complete all available learning activities and they can capture in the log files what students are doing without interrupting their learning processes (Lee, 2018). Wang et al. (2016) characterized MOOC as it meets the needs of different styles of learning, open, interactive, and also has rich resources, despite of its large size. Affouneh et al. (2018) concluded that MOOC offers opportunities for sharing, understanding creative practices and cultural issues.

The motivations for the universities and higher institutions to design and deliver MOOCs are multiple and their priorities vary greatly according to the international literature. Several studies focused on the role of MOOCs in knowledge dispersion and improving technological and research skills for faculty developments in the field of online learning (Hollands & Tirthali, 2014a, Mahajan et al., 2019). Indeed, Allen and Seaman (2016) concluded that MOOCs help the universities to reach students and to create flexible learning opportunities. Furthermore, they mentioned the role of MOOCs in overcoming the cost barrier of education and improving the economics by offering free or cheap courses. MOOCs were found to have a role in providing continuous medical education (Liyanagunawardena & Williams, 2014). An important study indicated the benefits of MOOC design to develop entrepreneurial skills in the generation of new business opportunities, and to continue innovating in open instructional design (Beltrán Hernández de Galindo & Ramírez-Montoya, 2019). An interesting study pointed to the increasing role of MOOCs to improve its reputations and ranking by increasing the visibility of the institution (Jansen & Goes-Daniels, 2016).

MOOCs faced multiple challenges as adjusting and choosing the suitable activities and content, time limitations, technical complications, choosing the right assessments, designing instruction for large numbers of students, grading automatization, and different logistical, instructional, financial, and technological aspects (Sari et al., 2020). The low completion rates of MOOCs is a known challenge. In this regard, one study found that the completion rate was less than 10% of the number of initial participants. The study found that we can improve the MOOC completion rate through cooperation among MOOC participants especially by integration social networks with the course materials (Fidalgo-Blanco et al, 2016). Zhu et al. (2017) mentioned some challenges that affect MOOC design like finding and organizing quality content, creating pedagogical support, opening up access and offering autonomy to students at the same time, and providing feedback.

## 2.2. SPOC

SPOC means Small Private Online Course and it is a kind of teaching that uses MOOC resources for specific groups with small number. SPOC uses MOOC lecture video or on-line assessment to support classroom teaching in traditional classes, which uses mixed teaching to combine MOOC and traditional classroom teaching (Cheng, 2018). Wang et al. (2016) described SPOC by improving teaching effectiveness. Students start a SPOC with the intention to participate in part of the course, and they are willing to complete it. SPOC is a pattern of online learning for education that has good potential to promote deep learning (Filius et al., 2018). Petersen and Gundersen (2019) considered SPOC as a type of MOOC, the difference is that MOOCs are massive and open to anyone, while SPOC is small and limited, and is used to support classroom teaching rather than being a replacement for it.

## 3. Research design

The researchers used a qualitative approach to achieve the purpose of the study.

Qualitative research is defined as an empirical research where the data are not in the form of numbers (Punch, 2013, p. 4). It is concerned with understanding human perspectives and behaviors in a real situation (Minichiello et al., 1990). Different qualitative tools have been used for data collection including critical

self-reflection, and content analysis of the online course to record learners' interactions and their learning behaviors. Critical reflection as a data collection is considered as a type of participatory action research (Reason & Bradbury, 2008). While content analysis is considered as research techniques in order to study online courses in depth (Krippendorff, 2018).

The researchers collected reflection papers from the members of the course team. The team consisted of instructional designer, subject matter experts and multimedia specialist. Each of them wrote his or her reflection where motivation and challenges were explained in their reflections. Furthermore, analyzing the interaction among learners-learners, instructor-learners, and learners- content in order to understand the type of the interactions and how students engage in the discussion through the online course.

A thematic analysis was used for data analysis from all data resources. Clarke and Braun (2013) define thematic analysis as a qualitative analytic method for categorizing, analyzing, and reporting patterns (themes) within data. The analysis process started by reading the reflection papers from the team leader of the course, which is also the instructional designer, the subject matter expert which is also the course facilitator, and the multimedia specialist. Reading of the reflection papers allow the researchers to get a clear picture about the course context, procedures to design, develop, and deliver the course, and technical issues as well as learner's engagement in the activities of the course. The researchers followed the procedures from Marshall and Rossman (2011) in data analysis. The researchers highlighted and coded repeated words, phrases, and patterns related to the challenges and motivation to develop the course. This strategy helped the researchers to divide and assign text under each main theme. In order to produce the themes and subthemes from the interview data. The following procedures were used: (1) each response read carefully and divided it into small segments according to the ideas and tentatively labelled by the researchers individually; (2) tentative labels examined to find common themes that could be designed; (3) all interview data assigned into tentative themes; and (4) all the themes were double checked for accuracy by all the researchers. A negotiation among the researchers was established to arrive at an agreement on the final themes.

### *3.1. Course context*

The study was conducted within an 8-week instructor-led MOOC offered by An Najah National University (ANNU), Palestine from March 18th to May 6th, 2015. The course was published and launched in the Moodle platform which managed by the e-Learning center at ANNU. The topic of the course was related to Genetics and Society. The course was divided on eight modules. Each module included videos, content pages, recommended readings, discussion forums and individual and collaborative activities. The activities were classified into optional activities.

For all activities, the submission was due eight days after the release of the activity although in some activities the due date was extended a few days according to the instructor criteria. The course team was composed of one instructor and two teacher assistants. Furthermore, the enrollment was closed in the second week of the course to avoid group management problems in the collaborative activities. Teaching and technical support was offered by the course team and the researchers respectively, through private messages and posts in the online forums.

### *3.2. Background of the course*

The designed course was for the Palestinian community as well as for the Arabs communities, but there were some concerns about dealing with Open resources MOOCs in Arabs countries which could reject the course. This story started in March 2015 when we launched a campaign at An-Najah National University to raise awareness about the impact of genetic disorders in Palestine. This campaign went on for one week 21<sup>st</sup> till 28<sup>th</sup> of March 2015, where it was connected to the World Down Syndrome Day on the 21<sup>st</sup> of March. In this campaign students, instructors, charities and other social activists participated in an intensive program which included lectures, workshops, street activities, media work, visits to secondary schools, meetings with stakeholders and related charities etc...

The course aims to increase public awareness about genetic diseases in general and specific disease prevention options and to reduce the practice of consanguinity as a risk factor for these disorders. This course is presented in a simple Arabic language. It is composed of eight weeks through which basic terms used in modern genetics are explained. Then, the definition of genetics and its applications in modern medicine are highlighted.

Then, stages of human life cycle are noted so as to understand the basic modes of inheritance. The course then focuses on the definition of genetic disorders, their causes, their types and suffering of affected people and their relatives. The course discusses controversial genetic issues between regions, laws and medicine in particularly therapeutic abortion. Methods of drawing family pedigree in symbols are given in a simple way. The main goal of this course is to adopt preventive methods of genetic disorders by different types of genetic counseling.

The first time MOOC was held on March 2018 it included 550 participants from all over Palestine. Since then, it was offered three additional times with participation from many different countries such as Algeria, Jordan, Yemen and Egypt. It is noteworthy that I am a medical doctor and I do not have an educational background. The many trainings I attended at the E-Learning center at the university and the training which I attended at the University of Torino in Italy in 2017 made it possible for me to accomplish my part in this project. The campaign, of which the title was: "I am from you and my place among you" was intended to increase public awareness about genetic diseases in general, and specific disease prevention options and to reduce the practice of consanguinity as a risk factor for these disorders.

A useful recommendation from participants was to maintain and sustain such activities through creating an elective course to the university students. This course should be available to students from all faculties as its topics are vital for all of them at this age. A proposal in this regard was immediately adopted at the council of deans at the university at the beginning of January 2016. The course is composed of two credit hours and is presented in simple Arabic language. The first time the course was offered for student registration was during the first semester 2016-2017. The university gave one class which was very successful, as a result many students decided to register in this class regardless of the many different options they had to choose from in their elective courses. The students admired the activities which were organized during the semester like visiting related charities, patients and hospitals. Increasing student demand to this course resulted in increasing the number of offered courses in subsequent semesters until it reached 4 classes. Students from all over the university found the course very useful and interesting and they encouraged their peers to register in it.

#### 4. Findings

##### ***Research question # 1: What is the An Najah National University (ANNU) motivation to develop and deliver MOOCs courses to the public?***

Based on the reflection papers the motivation of designing the MOOCs courses at ANNU were to fill the gap of lacking MOOCs courses in the Arabic language, the shortage of health courses for the Arabic readers, to address the need for more universities, and create open courses to sustain and maintain the university reputation in the Arabs countries.

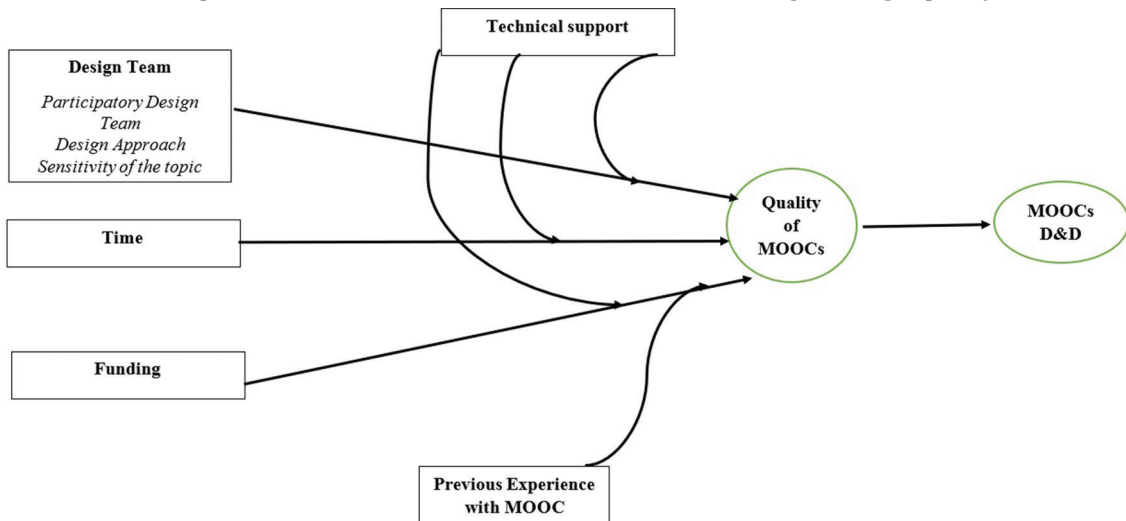
Furthermore, the motivation of designing the course was its topic and its importance for the Palestinian community as well as for Arabs people as mentioned by the team leader of the course: "*I believed in the topic importance and this gave me a motivation to support this initiative*". Moreover, the reflection of the instructors emphasized the importance of the course. The instructor found it very important to spread the benefits and virtues learned from this course to the whole community. Genetic disorders in Palestine represent a neglected priority because of the difficult political and economic situations. The widespread of the practice of consanguineous marriages in Palestine and the insufficient level of public awareness towards its consequences make it vital to organize such activities. The campaign succeeded in terms of number of participants from the university and the public, and in terms of media coverage, interaction on Facebook and the positive feedback from related charities and organizations. On February 2018, the MOOC was launched officially as the second MOOC in Palestine with a wide participation of experts, doctors, students and representatives of concerned charities. The description of this MOOC is emphasized the motivation of creating the MOOC course as well as how it will close the gap in the Arab region.

##### ***Research question #2 What are the challenges of designing, developing, and delivering MOOCs courses at ANNU?***

Analyzing the data from different resources revealed different challenges in the process of developing and delivering the created MOOC course at ANNU. The challenges of MOOCs course in the Palestinian context were organized into major themes: the design team, time, design approach, and sensitivity of the topic. In addition, quality

of the MOOCs courses, technical support, funding, and previous experience with MOOC was another factor as a challenge of MOOC courses. The participants confirmed that the quality of the MOOC influenced by many factors such as the participator team design, the time allocated for the design process, were these challenges organized into subthemes. Figure 1 represents the relationship between the themes and subthemes of the challenges of high-quality MOOC courses in the Palestinian context as reported by the participants.

Figure 1. Relationship between the themes and subthemes of the challenges of high-quality MOOC courses.



#### 4.1. Design Team

One of the main challenges faced developing and delivery of MOOCs in Palestine is forming team which composed from members from different backgrounds with different skills. The design based on participatory design which each member shared his experience and insight to develop the course. Each member has his own social and academic commitments. In order to mitigate the difficulties based on the differences in the team, the design team have a consultancy team in order to advise them from the public audience who are expected to learn through this course, these were a group of 30 young people aged around 20s in order to give regular feedback. And many changings have been applied accordingly. Then the course was sent to an editor for language and then for evaluator of the topic from the medical department. According to their feedback the final version was developed.

Design team has different sub-themes as follows:

##### 4.1.1. Participatory design team

Professionalism and trust among the participatory design team facilitate the design process which included from two subject matter experts from Medicine department, and a technical support expert from eLearning center and a pedagogical expert to support the instructional design and all related educational issues. To achieve this goal, a professional team from the Faculty of Medicine and Health Sciences, Faculty of education and center of E-Learning at the university worked together for around one year to prepare the MOOC. These efforts resulted in the preparation of original PowerPoint presentations, word documents, short videos and recorded interviews with related charities and experts.

Team member respect each other and develop their own way to work together after few weeks of preparation. From the beginning they developed an action plan, after the course outline was prepared. The plan described the tasks, responsibilities and time schedule while indicators of achievement of each task was also described at the end of the plan document. The main idea to develop the course was to implement micro learning strategy by dividing the course into small chunk each one serves specific learning objective and using different micro learning to facilitate the understanding of the concepts to be suitable for students' space learning. According to the reflection of the team leader, a common understanding was finally found. The work then went

smoothly where each topic was developed as a short video and then reflected in a power point presentation followed by a forum.

#### 4.1.2. Time

Team members reported that finding a suitable time for the team to meet to discuss the progress in the design process was a big challenge since each one of them has his own responsibilities in teaching and research duties. It was difficult for the team to meet on a regular schedule due to their academic and social commitments. This work was an additional voluntary work. A schedule weekly meeting was agreed on where sometimes it was conducted using Skype. Email was a main tool for communication on daily basis. The commitment of the team members was a big motivation to overcome time limitation.

#### 4.2. Design approach

Reflection papers indicated that the design process of the course followed a systematic and a well-defined procedure to create interactive courses and the design was based on interdisciplinary approach which means that different staff from different schools' work on it. Participatory design of online courses enables people to share idea, discuss, and develop based on team members. *"It was my second experience in developing a MOOC, but my first one in Arabic"*, the team leader wrote.

The instructor of the course described the collaboration between his school and e-Learning center at the university to combine with their efforts to achieve this goal as *"a distinguished experience"*. The director of the E-Learning center decided to adopt the genetics and society as one theme after the second international conference of E-Learning which was held at the university in 2017. An important recommendation of this conference was to create a new MOOC titled genetics and society to make it available for the entire community.

#### 4.3. Sensitivity of the topic

All the participants reported that they faced some challenges, including the sensitivity of the topic related to genetic diseases, and the difficulty of having real cases that wanted to talk about their situation without embarrassment. And the teachers who taught the course did not have a previous experience in developing or implementing this kind of courses. Moreover, it was difficult to design Micro learning videos and to develop evaluation and assessment tools at the end of the course.

#### 4.4. Technical support

The instructor and the designer of the course raised important challenge in the process of development and delivering of the course which technical support for both the instructor, students, and for the designer. Technical skills are important for the designer to develop video, multimedia, and to develop simulation materials to reduce the difficulties to understand these concepts. etc. And important for students to interact with the content. However, the team's member reported that they come over these difficulties through using different resources available at the university and partners. In addition, the team leader provided some privileges to the team members to work and meet at the convenient time for them. In addition, that team reported that they used a number of open resources supporting material, *"Open resources were an essential guide to support us whenever we face a serious challenge"*.

#### 4.5. Funding

Availability of funding is important for developing a high-quality course as well as to recruit more people to participate in the developing process. All the team members reported that the lack of funding negatively influenced the design process of the course. All of the team reported that they were working on a *"voluntary basis"*, on their own time and capacity. Their will was the only motives to finish this work, but many times they lost the

track and get less enthusiasm due to the workload. The course was awarded later on by getting the excellence Award for eLearning.

#### 4.6. Previous experience influenced development of the course

Based on the experience of instructor, team leader, and the designer of the course, the experience was provided an insightful to develop a high-quality MOOCs courses in the Arabic Language which could serve different societies in the Arab world since the Palestinian share the same language, culture and religions with other Arabs countries. Different themes were raised in the analysis process including the design of the course.

All the team members confirmed that the main criterion of developing the course is to be simple and to use easily readable language in order to understand a complicated subject like genetics for different levels of the attendance. Furthermore, all of the team members except the subject matter experts, expressed their grateful for their previous technical experience in a previous course to design the new one. The purpose of the previous course was to explore Palestine and the work went to facilitate the scientific material. Meetings were held with officials of different associations concerned with some genetic diseases, including Down syndrome, to add a realistic nature to the course "My knowledge is not far from society, as I have been holding support for meetings and interviews with people who have actually suffered from genetic diseases or even their children", the instructor said. "We have also been directed to conduct interviews in the Palestinian street to measure the extent of society's knowledge and knowledge of genetic diseases", as mentioned by the team leader.

While designing the course, it was divided into 9 weeks, and each week has a different topic with a forum that present an interview with experts from the field through which students are activated by presenting their opinions. Each week, participants need to set for self-tests and in the end of the course in the ninth week participants need to submit their final project in order to obtain a certificate of enrollment in the course.

#### 4.7. Quality of the MOOCs courses

All the participants agreed that the main challenge of MOOCs design and development is to achieve a high-quality course with the challenges mentioned in the previous section. The quality of the courses also influenced by instructors and instructional designers as reported by all the participants as well as with the technical support of the team design as illustrated in Figure 1.

### 5. Discussion

The purpose of the study was to explore the challenges associated with the design, development, and delivery of MOOCs courses at ANNU in Palestine. The findings of the study congruent partially with previous studies especially with lack of technical support, funding, time. However, the motivation of designing MOOCs courses was to reduce the gap of lack of MOOCs courses in the Arabic language.

Genetics and Society MOOC course opened the doors to think socially and medically at the same time. Students strengthened their knowledge in some critical issues which considered hot topics in the international and the local contexts. The students observed several medical practices for preventing from genetic diseases and disorders. Moreover, the students engaged in social events related to genetics awareness and how to protect individuals and the society from genetics future risks. Genetics and Society MOOC course offered students rich opportunities for learning through dual and group interactions. The course motivates the students to express their feeling about genetics and releases their thinking toward social responsibility.

### 6. Conclusion

The purpose of the study was to investigate the motivation of developing online courses and to explore the challenges of developing open courses at ANNU in Palestine. The motivation of designing and developing MOOCs were to maintain and sustain the reputation of the university, to reach more audience, to mitigate the gap of lack of MOOCs in the Arabic language, and to provide the Arabic readers with important courses relate to health issues. The main challenges were the lack of technical support, lack of funding and the limitation of time.



The limitation of the study was focused only on one course from instructors and teams design perspective. Further research should include more courses from different universities to analyze the similarities and differences among universities. And it is recommended to develop more MOOCs in Arabic language in different disciplines.

## References

- Affouneh, S., Wimpenny, K., Ghodieh, A. R. F., Alsaud, L. A., & Obaid, A. A. (2018). Reflection on MOOC Design in Palestine. *The International Review of Research in Open and Distributed Learning*, 19(2). <https://doi.org/10.19173/irrodl.v19i2.3469>
- Alario-Hoyos, C., Pérez-Sanagustín, M., Delgado Kloos, C., Parada G., H. A., & Muñoz-Organero, M. (2014). Delving into participants' profiles and use of social tools in MOOCs. *IEEE Transactions on Learning Technologies*, 3, 260–266. <https://doi.org/10.1109/tlt.2014.2311807>
- Allen, I. E., & Seaman, J. (2016). *Online Report Card: Tracking Online Education in the United States*. Babson Survey Research Group. Babson College, 231 Forest Street, Babson Park, MA 02457.
- Beltrán Hernández de Galindo, M. J., & Ramírez-Montoya, M. S. (2019). Innovation in the Instructional Design of Open Mass Courses (MOOCs) to Develop Entrepreneurship Competencies in Energy Sustainability. *Education in the Knowledge Society*, 20, 5. [https://doi.org/10.14201/eks2019\\_20\\_a5](https://doi.org/10.14201/eks2019_20_a5)
- Carvalho Júnior, G. L., Cebrián Robles, D. C., Cebrián de la Serna, M., & Raposo Rivas, M. (2019). Comparative Study SPOC vs. MOOC for Socio-Technical Contents from Usability and User Satisfaction. *Turkish Online Journal of Distance Education*, 20(2), 4-20. <https://doi.org/10.17718/tojde.557726>
- Cheng, H. (2018). The application research of SPOC mode in mobile terminal application development course teaching. In *International Conference on E-Learning, E-Education, and Online Training* (pp. 227-231). Springer, Cham. [https://doi.org/10.1007/978-3-319-93719-9\\_30](https://doi.org/10.1007/978-3-319-93719-9_30)
- Clarke, V., & Braun, V. (2013). Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The psychologist*, 26(2), 120-123.
- Deng, R., Benckendorff, P., & Gannaway, D. (2019). Progress and new directions for teaching and learning in MOOCs. *Computers & Education*, 129, 48-60. <https://doi.org/10.1016/j.compedu.2018.10.019>
- Ferguson, R., & Sharples, M. (2014). Innovative Pedagogy at Massive Scale: Teaching and Learning in MOOCs. In C. Rensing, S. de Freitas, T. Ley, & P. J. Muñoz-Merino (Eds.), *Open Learning and Teaching in Educational Communities* (pp. 98-111). Springer International Publishing. [https://doi.org/10.1007/978-3-319-11200-8\\_8](https://doi.org/10.1007/978-3-319-11200-8_8)
- Fidalgo-Blanco, Á., García-Peñalvo, F. J., & Sein-Echaluce Lacleta, M. L. (2013). A methodology proposal for developing adaptive cMOOC. In F. J. García-Peñalvo (Ed.), *Proceedings of the First International Conference on Technological Ecosystems for Enhancing Multiculturality (TEEM'13)* (pp. 553-558). New York, NY, USA: ACM. <https://doi.org/10.1145/2536536.2536621>
- Fidalgo-Blanco, Á., Sein-Echaluce, M. L., & García-Peñalvo, F. J. (2016). From massive access to cooperation: Lessons learned and proven results of a hybrid xMOOC/cMOOC pedagogical approach to MOOCs. *International Journal of Educational Technology in Higher Education (ETHE)*, 13, 24. <https://doi.org/10.1186/s41239-016-0024-z>
- Filius, R. M., de Kleijn, R. A., Uijl, S. G., Prins, F. J., van Rijen, H. V., & Grobbee, D. E. (2018). Strengthening dialogic peer feedback aiming for deep learning in SPOCs. *Computers & Education*, 125, 86-100. <https://doi.org/10.1016/j.compedu.2018.06.004>
- García-Peñalvo, F. J., Fidalgo-Blanco, Á., & Sein-Echaluce, M. L. (2018). An adaptive hybrid MOOC model: Disrupting the MOOC concept in higher education. *Telematics and Informatics*, 35, 1018-1030. <https://doi.org/10.1016/j.tele.2017.09.012>
- Gardner, J., & Brooks, C. (2018). Student success prediction in MOOCs. *User Modeling and User-Adapted Interaction*, 28(2), 127-203. <https://doi.org/10.1007/s11257-018-9203-z>
- Henderikx, M. A., Kreijns, K., & Kalz, M. (2017). Refining success and dropout in massive open online courses based on the intention-behavior gap. *Distance Education*, 38(3), 353-368. <https://doi.org/10.1080/01587919.2017.1369006>
- Hollands, F. M., & Tirthali, D. (2014a). MOOCs: Expectations and reality. *Center for Benefit-Cost Studies of Education, Teachers College, Columbia University*, 138.
- Hollands, F. M., & Tirthali, D. (2014b). Why Do Institutions Offer MOOCs?. *Online Learning*, 18(3), <https://doi.org/10.24059/olj.v18i3.464>

- Jansen, D., & Goes-Daniels, M. (2016). Comparing Institutional MOOC strategies. *Status report based on a mapping survey conducted in October–December 2015*. European Association of Distance Teaching Universities (AEDTU). <https://bit.ly/3jCL3EJ>
- Jordan, K. (2014). Initial trends in enrolment and completion of massive open online courses. *International Review of Research in Open and Distance Learning*, 15(1), 133–160. <https://doi.org/10.19173/irrodl.v15i1.1651>
- Khalil, M., & Ebner, M. (2018). Can Learning Analytics Find Success in Didactical Measurements? Results from a MOOC Case Study. In D. Ifenthaler (Ed.) *Digital Workplace Learning*. Springer, Cham. [https://doi.org/10.1007/978-3-319-46215-8\\_12](https://doi.org/10.1007/978-3-319-46215-8_12)
- Krippendorff, K. (2018). *Content analysis: An introduction to its methodology*. 4<sup>th</sup> Ed. Sage publications.
- Larionova, V., Brown, K., Bystrova, T., & Sinitsyn, E. (2018). Russian perspectives of online learning technologies in higher education: An empirical study of a MOOC. *Research in comparative and international education*, 13(1), 70-91. <https://doi.org/10.1177/1745499918763420>
- Lee, Y. (2018). Using Self-Organizing Map and Clustering to Investigate Problem-Solving Patterns in the Massive Open Online Course: An Exploratory Study. *Journal of Educational Computing Research*, 57(2), 471-490. <https://doi.org/10.1177/0735633117753364>
- Li, Y., & Zhang, Y. (2018). MOOC Guider: An End-to-End Dialogue System for MOOC Users. In L. Hou U, & H. Xie (Eds.), *Web and Big Data. APWeb-WAIM 2018 International Workshops: MWDA, BAH, KGMA, DMMOOC, DS, Macau, China, July 23–25, 2018, Revised Selected Papers*. Springer, Cham. [https://doi.org/10.1007/978-3-030-01298-4\\_23](https://doi.org/10.1007/978-3-030-01298-4_23)
- Liu, S., Peng, X., Cheng, H. N. H., Liu, Z., Sun, J., & Yang, C. (2019). Unfolding Sentimental and Behavioral Tendencies of Learners' Concerned Topics from Course Reviews in a MOOC. *Journal of Educational Computing Research*, 57(3), 670-696. <https://doi.org/10.1177/0735633118757181>
- Liyaganawardena, T. R., & Williams, S. A. (2014). Massive open online courses on health and medicine. *Journal of medical Internet research*, 16(8), e191. <https://doi.org/10.2196/jmir.3439>
- Mahajan, R., Gupta, P., & Singh, T. (2019). Massive Open Online Courses: Concept and Implications. *Indian pediatrics*, 56(6), 489-495. <https://doi.org/10.1007/s13312-019-1575-6>
- Marshall, C., & Rossman, G. B. (2011). Managing, analyzing, and interpreting data. *Designing Qualitative Research*, 5, 205-227.
- McDonald, P., & Ahern, T. (2015). Exploring the Instructional Value and Worth of a MOOC. *Journal of Educational Computing Research*, 52(4), 496-513. <https://doi.org/10.1177/0735633115571927>
- Minichiello, V., Aroni, R., & Minichiello, V. (1990). *In-depth interviewing: Researching people*. Longman Cheshire.
- Petersen, A. K., & Gundersen, P. (2019). Challenges in Designing Personalized Learning Paths in SPOCs. *Designs for Learning*, 11(1), 72-79. <https://doi.org/10.16993/dfl.112>
- Pickard, L., Shah, D., & De Simone, J. J. (2018). Mapping micro credentials across MOOC platforms. In *2018 Learning with MOOCs (LWMOOCs)* (pp. 17-21). IEEE. <https://doi.org/10.1109/lwmoocs.2018.8534617>
- Punch, K. F. (2013). *Introduction to social research: Quantitative and qualitative approaches* (3<sup>rd</sup> Ed.). Sage.
- Reason, P., & Bradbury, H. (2008), *Handbook of Action Research* (2<sup>nd</sup> Ed.). Sage
- Sari, A., Bonk, C. J., & Zhu, M. (2020). MOOC instructor designs and challenges: what can be learned from existing MOOCs in Indonesia and Malaysia? *Asia Pacific Education Review*, 21, 143–166. <https://doi.org/10.1007/s12564-019-09618-9>
- Siemens, G. (2013). Massive open online courses: Innovation in education. *Open Educational Resources: Innovation, Research and Practice*, 5, 5–15.
- Sullivan, R., Fulcher-Rood, K., Kruger, J., Siple, G., & van Putten, C. (2019). Emerging Technologies for Lifelong Learning and Success: A MOOC for Everyone. *Journal of Educational Technology Systems*, 47(3), 318-336. <https://doi.org/10.1177/0047239518821065>
- Wang, X. H., Wang, J. P., Wen, F. J., Wang, J., & Tao, J. Q. (2016). Exploration and Practice of Blended Teaching Model Based Flipped Classroom and SPOC in Higher University. *Journal of Education and Practice*, 7(10), 99-104.
- Zhu, M., Bonk, C. J., & Sari, A. (2017, October). Instructor experiences in designing and delivering interactive MOOCs in higher education. In *E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education* (pp. 509-515). Association for the Advancement of Computing in Education (AACE).