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Identification and Evaluation of the Features of the Epistemology of the MOOC (Open and Online)

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Abstract

Background: The purpose of this study is to analyze and evaluate epistemological characteristics of online and open MOOC courses in higher education.
Methods: This study was designed as an embedded mixed model research to provide a better understanding of the research problem. Throughout this research, both heuristic inquiry method and the questionnaire method were applied to obtain and analyze the data. At the primary stage, epistemology features of online and open MOOC course were identified. Content analysis method was used for qualitative data, and for quantitative data, both weighted mean and Friedman test were used. The statistical population in the qualitative section of the study includes the electronic resources related to the research subject and, in the quantitative section, 60 distance education experts in the field of planning in virtual learning environments and virtual universities, so that 36 of these experts were voluntarily selected as the study sample.
Results: Content analysis results showed 4 dimensions and 23 criteria. The evaluation results of the experts also showed that interacting with the global network, the ease of online interactions with learners and other organizations, and the possibility of receiving electronical assignments or workbooks during the course, are regarded as the most important epistemological characteristics of online MOOC courses; learning facilities for both genders, quick access to the digital libraries and databases, the ease of sharing knowledge with other participants through emails, chats, forums, etc. are the most important epistemological features of MOOC open courses.
Conclusions: Providing epistemological features of online and open course, understanding how to hold these courses, understanding and getting information about organizations, professors and learners, knowing how to register and participate in classes as well as getting information on the online and open of classes.

Keywords: MOOC, Epistemology, Analysis, Online and Open Courses

1. Background

Epistemology has always been regarded as one of the most important philosophical discussions at the time of detecting the modality of didactic practices in order to find out its related influences on the educational system, by the notion that training deals with the cognition and discovery of relevant reality (1). Educational system has always been dealt with sagacity and knowledge from the beginning of the mankind history. Epistemology, in fact, concerns with the creation of a bedside for philosophy. Within the context of philosophy, it is completely verified what kind of knowledge is derived from and how to ensure the people for sustainability and accurateness of the product, in order to flow into the lives of people for the recognition of current social patterns (2).

One of the most important features of epistemology in order to acquire the sagacity and knowledge is in the third generation of open and online learning program (3). The main important definitions of these features are listed below:

- Sagacity and knowledge is self-developed by the learner

- Sagacity development is not merely achieved through a real sublime path or a semi-device; even though it is also obtained by paving sustainable routes

- Learning is achieved, both through formal or informal learning experiences

- Both of the internalizing and externalizing capabilities are existed in the background thinking structures of the learner.

- The process of learning is institutionalized in the mind of a creative learner.

- Meaningful learning of knowledge is better with open and online learning (4, 5).

One of the forms of gaining knowledge in the present era is the open and online learning system which accordingly has altered the traditional methods of education in the modern era; it has also provided the feasibility of learning without any temporal or local limitations for everyone. It has also allowed the social justice in the universal contexts for the distribution of resources, according to the facilities which have been proposed by the receiver, for providing the necessary conditions which are aiming at the institutionalization of standard education program based on the social and individual needs. This system, by saving the time, cost, and energy, has also been regarded as a sufficient assistance to the simplicity and synchronization of the education process (6). Meanwhile, it has provided suitable possibilities for the employees in order to pursue their academic studies by enforcing the pre-acquired specialties who are aiming to enumerate their personal anxieties for obtaining the main relaxation point (7). Paying attention to the fact that open and online learning is nowadays considered as a validated and sustainable method worldwide, beside the classic or classroom education; UNESCO organization mainly focuses on the extension of open and online learning in line with all other educational institutions. Hence, it is necessary to develop pertinent functions in order to identify the basis for such epistemological contexts by the learners, programmers, and policy-makers (8).

One of the forms of gaining new knowledge in the open and online learning MOOCs is that the particular type of online training with following MOOCs attributions provide the users with new opportunities, such as learning in an informal environment, sharing knowledge, freeness, flexibility, enhancement of digital skills and information literacy (8). Thousands of users can take part concomitantly (far from pecuniary, time and place limitations). It is based on academic inculcation principles (9).

It illustrates MOOCs as a magnificent open and online learning environment which represents an open content. Therefore, anyone in the world is allowed to make a free enrolment anywhere for participation (10, 11).

Among the different features of the MOOCs, online and open ones can be pointed out. Open feature implies a kind of e-learning in which the learner and the teacher are in two different places at the same time and concurrently far apart to interact with each other as the learning procedure takes place (7).

Open access: participants in this course do not need to enroll in the school, institute or university and neither need to pay any money and all the people around the world who have access to the internet can enroll in MOOCs (12); the concept of freeness includes various meanings. Therefore, MOOC education leads to the authority in different didactic dimensions, such as the software, enrolment, curriculum, education assessment, interactions and communications, participation and cooperation, knowledge sharing, and the learning environment

MOOCs acquire the key features, although it is perceived that the concept of MOOC includes a vast area of designs. In this study, the researcher examines online and open courses of features of the MOOC (13).

In the open forms, there is no pre-requisites for contributors except access to a mobile/computer and internet. However, broadband access is essential for video streaming mosquitoes, and is likely to be desirable even for MOOCs. In addition, at least for the initial MOOCs, access is free for all participants, although increasing the number of MOOCs, the cost of the evaluation changes to a badge or certificate (14). MOOCs are generally quite open, but since individual MOOCs create more material, it is not always clear whether they own the rights and the length of time the MOOCs material is available. It should also be noted that other types of online materials are also free over the internet, and are often available to be reused than MOOCs materials (8).

Other types of MOOC are online courses. MOOCs are represented in a completely online procedure. Whereas, the increasing negotiations of institutions are performing in a mixed format with the owners of rights in order to apply the MOOC materials within the pertinent faculty. In other words, the institution provides sustainable support of the learner in order to apply the materials through the faculty based instructions (15, 16).

2. Objectives

Different forms of open and online learning, especially in the present era, suggest different philosophical infrastructures, especially in the field of epistemology of the learning methods. This study intends identification and evaluation of the features of the epistemology of the MOOC (online and open). For this purpose, the following questions were raised:

1. What are epistemology features of online MOOC courses?

2. What are epistemology features of open MOOC courses?

3. What are the main epistemological characteristics of online MOOC courses in Iran that should be addressed to

them?

4. What are the main epistemological characteristics of open MOOC courses in Iran that should be addressed to them?

3. Methods

The study was designed as an embedded mixed model research to provide a better understanding of the research problem. The purpose of the embedded design is to collect quantitative and qualitative data simultaneously or sequentially. In the embedded design, a secondary form of data is used to augment or provide additional sources of information which have not been provided by the primary source of data (17). Throughout this research, both heuristic inquiry method (primary source of data) and the questionnaire method (secondary source of data) were applied to obtain and analyze the data.

Regarding the subject under consideration, in the first stage, according to the research topic, epistemological features of MOOC online and massive courses were derived, based on the available scientific sources. Electronic resources related to MOOC were examined to identify the epistemological characteristics of online and mass courses. At this point, the heuristic inquiry was used. Heuristic inquiry is an experience-based technique for problem solving, learning, and discovery (18). The heuristic inquiry is defined as a search for the discovery of meaning and essence in significant human experience. The heuristic inquiry is an adaptation of phenomenological inquiry, yet it requires the involvement of the researcher in a disciplined pursuit of research process (19, 20). The research samples at this stage were all books and articles related to MOOC. Referenced in Google Scholar, the searches were Scirus, ProQuest, Scopus, IEEE, SID, Biomedical, PubMed, Medline (EBSCO and OVID), Eric, Taylor and Francis, and ScienceDirect from 1990 to 2017. A content analysis search method was applied to the coded, categorized data. The keywords used for the search were epistemological and online course, epistemological and massive course, epistemological features in online course, and epistemological features in massive course.

In heuristic inquiry, as the primary form of data, 20 distinguishing electronic resources were selected. A set of criteria were defined to be able to examine representative samples that had interactive features peculiar to electronic resources. The electronic resources included in the heuristic research were those that were most positive reviews by the critics. Resources samples that exhibited different features in terms of the interaction level and genre were selected to have maximum variation sampling.

In the second stage, after determining the main epistemological characteristics of the online and massive courses of the MOOC, a questionnaire was developed to determine the viewpoints of the experts in terms of the known characteristics for the epistemology of the online and mass courses of the MOOC to identify the most important epistemological aspects of MOOC online. In quantitative study, it was important to select experts for a purpose to apply their knowledge to a certain problem on the basis of criteria, which were developed from the nature of the problem under investigation (21). For this research, the participants were required to be experts in one of the following areas: digital books, digital publishing, content design, instructional design, interface and layout design, or e-learning. It is further required that they had a background in academic research or experience working in the field. Through literature review and purposive sampling, 60 experts were invited to the research. A total of 36 experts expressed their intention of participating.

3.1. Analysis

The first stage of research was conducted from May 2016 to March 2018. Researcher systematically noted his experiences as well as the features observed. All the gathered data were coded and categorized, using content analysis. It is salient that the 23 new criteria, emerged from heuristic inquiry, are mostly related with user experience which requires direct interaction with the products that are investigated. At the end of the heuristic inquiry process, totally 4 dimensions, and 23 criteria were identified.

In the second stage of research, based on the known epistemological features of the MOOC for online and open courses in the first phase of the research, a questionnaire of 23 questions was formulated that asked by experts to rate each item on a five-point likert spectrum from where they seemed not very important to very important ones. After collecting the data, the weighted average was used to determine the significance of each identified feature and Friedman test was used to determine the priority of each feature. If the weighted mean was between 1 and 33.2, the feature was unimportant, if between 34.2 and 66.3, was relatively important, and if it was between 67.3 and 5, it was very important.

4. Results

The findings of the epistemological content analysis of online MOOC courses are presented in Table 1. The results showed that, according to content analysis, the four aspects of: The learner, the content, the teaching organization, and the teaching-learning environment were identified as four important epistemological aspects of online

MOOC courses which four criteria for the learner aspect, three for the content aspect, and two for both the teaching organization and the teaching-learning environment aspects were assigned.

The findings of the epistemological content analysis of open MOOC courses are presented in Table 2. The results showed that, according to content analysis, the four aspects of: The learner, the content, the teaching organization, and the teaching-learning environment were identified as important aspects of the epistemological content of open MOOC courses, for each of which, the learner, the content, the teaching organization, and the teaching-learning environment aspects, three criteria were assigned.

4.1. Question 3: What Are the Main Epistemological Characteristics of Online MOOC Courses in Iran That Should Be Addressed?

Table 3 shows the results of evaluating the epistemological characteristics of online MOOC courses by the expert. The results showed that according to the average weight, all of the epistemological features identified for online MOOC courses are so important. The determining results that showed there was a difference between the significance of the features, are the results of the Friedman test which showed that there is a significant difference between the prioritization of the importance of each of the identified features ($P < 0.05$, $\chi^2 = 16.23$). The results also showed the interaction with the global network, the ease of online interactions with the learners and other organizations, the possibility of receiving assignments or workbooks electronically during the course, the balance of all types of training exercises intended for courses with e-learning content, the ease of tracing student's activities and the ease of overall access, the possibility of designing various assignments by means of real-cyberspace facilities, adapted to the learner's learning environment, rapid feedback from online tests by computers, evaluation by the computer, and finally it showed that the evaluation should be considered as part of the learning process, not the end of it. The possibility for frequent and urgent access to a large amount of information in e-learning, the meaningfulness of learning through interaction and solving cognitive problems, and the feasibility of acquiring knowledge in both the face-to-face and acquired ways, respectively, are the most important epistemological characteristics of online MOOC courses.

4.2. Question 4: What Are the Main Epistemological Characteristics of Open MOOC Courses in Iran That Should Be Addressed?

Table 4 shows the results of evaluating the epistemological characteristics of online MOOC courses by the expert. The results showed that according to the average weight, all of the epistemological features identified for online MOOC courses are so important. The determining results that showed there is a difference between the significance of the features, are the results of the Friedman test which showed that there was a significant difference between the prioritization of the importance of each of the identified features ($P < 0.05$, $\chi^2 = 16.23$). Also, the results showed that learning opportunities for both genders, the availability of quick access to digital libraries and databases, the ease of possible exchanging knowledge with other participants through email, chats, forums, etc., the other basics of free MOOC epistemology, respectively based on the importance, includes the possibility of learning at any age, the mobile prerequisite, computer and internet for MOOC participants, encouraging the external/internal community for a lifelong learning by this method, the possibility of taking the test by the students at any time and place based on the course passed, the possibility of learning with the help of any tool, uploading content in such a way that all registrants have the ability to freely download files, having no limitation (in volume, number, time, and location) for downloading and uploading files, an overall and pervasive -based system rather than a master-centered one, the learner-made knowledge, respectively are, the most important epistemological features of the open MOOC courses.

5. Discussion

This was done as an identification-based study and evaluation of epistemological characteristics of MOOC (both open and online). The qualitative results of the study showed that the epistemology of online and open courses is measurable by means of four aspects of the learner, the content, teaching organization and learning environment. Quantitative results also showed the epistemological characteristics of MOOC online courses such as interaction with the global network, the ease of online interactions with learners and other organizations, and the availability of electronic assignments or workbooks electronically throughout the course, respectively, the most important epistemological characteristics of the educational environment, teaching organization and content. Comparing the results of the current study with Wilson and Landoni (2002) and Diaz (22), in addition to content and teaching organization defined, they were the same. However, these results showed that the distance learning curriculum of the learning environment and the learning organization and the content of the learner are more important than the learner. Also, the results showed the most important features of the epistemology of open MOOC

Table 1. The Results of Epistemological Dimensions and Features of Online MOOC Courses

The Online Period Dimensions	Epistemology Features
Learner	
	1- Feasibility of instant and sequential access to the high volume of information in electronic education
	2- Feasibility of receiving rapid feedbacks for the online testing by the digital equipment
	3- Significance of learning through interaction and solving cognitive problems
	4- Feasibility of acquiring knowledge by applying classic and online method
The content	
	1- Feasibility of delivering the assignments plus the electronic mark sheet during the courses
	2- Feasibility of making assessments both at the beginning and during the education and learning process
	3- Feasibility of providing various assignment by applying the tools in virtual environment according to the learners' living areas
Teaching organization	
	1- Feasibility of facilitating online interaction links between the learners and the other institutions
	2- Feasibility of making coordination between the perceived practices for the courses according to the content of electronic education content
Educational environment	
	1- Feasibility of making supervisions for the learners' activities by facilitating a digital access
	2- Feasibility of interacting with global network

Table 2. The Results of Epistemological Dimensions and Features of Open MOOC Courses

The Open Period Dimensions	Epistemology Features
Learner	
	1- Feasibility of accessible learning in any age level
	2- Feasibility of learning for both genders
	3- Feasibility of making accessible test for the students due to the courses in temporal and local forums
The content	
	1- Feasibility of accessible learning for various type of learning tools
	2- Feasibility of making prerequisite devices such as the cell phone, PC and the internet for participants in MOOC.
	3- Feasibility of omitting all the limitations such as volume, quantity, plus the temporal and local facilities for downloading and uploading the files
Teaching organization	
	1- Feasibility of making a content load and open download of the files for the registered participants.
	2- Feasibility of enforcing the inner and outer environments for creating the motivation of lifetime learning by applying MOOC education system
	3- Feasibility of rapid access to digital libraries and validated information banks
Educational environment	
	1- Feasibility of replacing a learner based instead of teacher based system
	2- Feasibility of facilitating the relevant link for the interaction of knowledge with other participants via email, chat, forums etc.
	3- Easibility of achieving the required cognition out of the relevant knowledge for the learner

courses, such as the possibility of learning for both genders, the availability of quick access to digital libraries and authentic databases, and the ease of sharing knowledge with other participants by e-mail, chatrooms, etc. In terms of the learner's aspects, the teaching organization and the learning environment are evaluators. These results indicate that evaluators in MOOC online courses, learners, teaching organizations, and learning environments are more important than content in terms of open MOOC courses; these results suggest that in holding online and

Table 3. Evaluation of Epistemological Features of Online MOOC Courses

Epistemological Features of Online MOOC Course	Weighted Mean	Rank Average	Chi Square Value	Ranking Value
Feasibility of interacting with global network	4.66	6.65	23.16	1
Feasibility of facilitating online interaction links between learners and other institutions	4.61	6.43		2
Feasibility of delivering the assignments plus the electronic mark sheet during the courses	4.61	6.42		3
Feasibility of instant and sequential access to the high volume of information in electronic education	4.44	5.78		9
Feasibility of making supervisions for the learners' activities by facilitating a digital access	4.55	6.14		5
Feasibility of making coordination between the perceived practices for the courses according to the content of electronic education content	4.61	6.35		4
Feasibility of making assessments both at the beginning and during the education and learning process	4.52	5.99		8
Feasibility of providing various assignment by applying the tools in virtual environment according to the learners' living areas	4.52	6.03		6
Feasibility of receiving rapid feedbacks for the online testing by the digital equipment	4.52	6		7
Significance of learning through interaction and solving cognitive problems	4.36	5.46		10
Feasibility of acquiring knowledge by applying classic and online method	4.11	4.76		11

Table 4. Evaluation of Epistemological Features of Open MOOC Courses

Epistemological Features of Open MOOC Course	Weighted Mean	Rank Average	Chi Square Value	Ranking Value
Feasibility of replacing a learner based instead of teacher based system	4.16	5.64	25.12	11
Feasibility of accessible learning in any age level	4.44	6.75		4
Feasibility of learning for both genders	4.69	7.36		1
Feasibility of accessible learning for various type of learning tools	4.47	6.32		8
Feasibility of facilitating the relevant link for interaction of knowledge with other participants via email, chat, forums, etc.	4.61	7		3
Feasibility of making prerequisite devices such as the cell phone, PCs and the internet for participants in MOOC	4.52	6.72		5
Feasibility of making a content load and open download of the files for the registered participants	4.36	6.22		9
Feasibility of omitting all the limitations such as volume, quantity, plus the temporal and local facilities for downloading and uploading the files	4.25	5.9		10
Feasibility of enforcing the inner and outer environments for creating the motivation of lifetime learning by applying MOOC education system	4.55	6.68		6
Feasibility of rapid access to digital libraries and validated information banks	4.69	7.25		2
Feasibility of making accessible test for the students due to the courses in temporal and local forums	4.52	6.67		7
Feasibility of achieving the required cognition out of the relevant knowledge for the learner	4.11	5.49		12

open courses, different aspects of epistemology should be considered.

Footnotes

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