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First Initiative of Higher Education Digitization in Armenia: Issues and Challenges

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ABSTRACT

The aim of this article is to describe the advantages and disadvantages of higher education digitization in Armenia. Within the framework of the Bologna process, Armenia has undertaken commitments in education area reforms where distance learning is viewed as a priority in terms of facilitating access to higher education. Making higher education more inclusive is an essential aim for the EHEA as the populations become more and more diversified, also due to immigration and demographic changes undertaking to widen participation in higher education and support institutions that provide relevant learning activities in appropriate contexts for different types of learners, including lifelong learning [1]. In parallel with the scientific and technological developments, the popularity of distance learning as lifelong education is increasing worldwide, which provides good opportunities to people wishing to get further distance education or get further qualifications online at a place and time convenient to them. Increasing numbers of MOOCs are used to train learners at scale in various transversal skills. The most important notion in online education in Armenia, besides its main advantages, is the educational content created in the Armenian language, which primarily increases the volume of online educational content in the Armenian language and promotes the involvement of young people both in Armenia and abroad to continue learning in their native language. However, many challenges require further understanding, for example, factors exploring the reasons for high MOOC dropout rates, recorded low social interaction between learners and the lack of understanding of the impact of course facilitators' presence in the course engagement. The article presents the example of the first initiative of higher education digitization in Armenia - distance learning programs with successful solutions of blended/hybrid learning.

Keywords

Distance learning, MOOC, blended/hybrid learning, higher education, online master's degree program

1. INTRODUCTION

Massive Open Online Courses (MOOCs) have appealed tens of millions of learners around the world. Theoretically, anyone with an Internet connection is able to freely access these online courses, which are often provided by professors from high-ranking universities. Nowadays, MOOCs have the potential to spread worldwide education by providing learners with access to high-quality free online courses. One of the distance learning advantages is academic freedom, where learning and teaching process between a student and a professor takes place virtually through forums, video conferences, emails, etc. Another advantage is that distance learning courses once established can be applied throughout the entire learning process, provided that they are regularly updated. Many educational online platforms use blended learning to enhance social interaction between learners and course facilitators. Blended learning at the same time refers to the use of learning activities of different types and venues for the synergistic achievement of common learning objectives. Within the Innovative Competition Fund, the International Scientific-Educational Center of NAS RA (hereinafter ISEC) together with the Public Administration Academy of RA (hereinafter PAARA) in the partnership with the Institute for Informatics and Automation Problems of NAS RA initiated organizing an online Master's degree program by applying to RA Ministry of Education and Science to be issued a license for the organization and implementation of a distance learning program with an award of a joint diploma of two HEIs including the training of the academic staff to develop teaching skills and abilities in an entirely new format and to build up-to-date skills for teaching with contemporary skills for the organization of online courses and webconferences with the use of contemporary technologies. This initiative is an unprecedented one as no HEI in Armenia has ever been granted a license to organize online/hybrid education in Bachelor or Master's degree program so far. Within this project, ISEC, PAARA and RA Education and Science Ministry signed a Memorandum of Understanding to develop online education taking into consideration the need for introduction and development of online education in the Republic of Armenia, to establish grounds for cooperation and joint events of mutual interest and to harmonize legal acts in the introduction and application of distance educational technologies. Upon RA Education and Science Minister's decree, ISEC has been issued a permit to implement distance education in "Business Administration" Master's degree program for three years together with PAARA.

The only guiding document was "Methodological Guidelines on Organization of Education in Distance Learning Format for Higher Education and Postgraduate Professional Education approved by Decree of RA Minister of Education and Science as of 27.08.2010[2], which stipulated the vague following criteria for the organization of distance education for the award of the license:

1. The bases of distance learning are case, Internet and ICT technologies.
2. An HEI is eligible to organize distance education if it has appropriately trained academic, administrative and support staff, as well as area and auditoriums equipped with relevant technologies and devices needed to organize distance education.

3. The HEI provides the students and academics staff with all the educational materials necessary to organize the educational process.

The general and broad definition of the organization of distance education laid down in this guiding document led to a number of problems persistently arising in the course of the organization of an online Master's degree program and this paper will discuss some of the problems and ways of their effective solution.

2. APPROACHES AND METHODOLOGIES

Within this pilot project, one of the most significant problems needing urgent solution was the systematization and synchronization of the online courses developed by 26 lecturers both from ISEC and PAARA, as well as user identification, prevention of cheating and plagiarism with the use of the latest software and technologies. The main problem faced by the distance education in all over the world relates to the maintenance of academic standards. After one year of piloting in 2017-2018 academic year, there was significant inconsistency identified among the courses offered by different lecturers tremendously varying in the course load, types of assignments and online quizzes used, the synchronous and asynchronous communication time limits between lecturers and students leading to a number of complaints, misunderstanding and miscommunication. Advancement in technology does not lead to effective distance education. The best distance education practices depend on the creative, well-informed tutors [3]. In order to tackle these problems with the aim of better learning and teaching, as well as ensuring equal opportunities a regulation was developed on the organization of learning process in an distance/online format. This regulation sets the minimum criteria and components of an online/distance learning course to ensure utmost effectiveness and transparency of the learning process.

The minimum requirements posed to an online/distance learning course finally developed are as follows:

1) Name of course,
2) Information about course lecturer,
3) Brief description of the course,
4) Course calendar,
5) Course requirements,
6) Learning outcomes,
7) Main and supplementary literature,
8) Assessment and evaluation methods,
9) Examination questions,
10) Syllabus.

Through the relevant toolkit, the lecturer shall ensure the following resources in the course:

1) News forum,
2) Materials necessary for the course in any format such as Word, PDF, Excel, PowerPoint,
3) Audio or video lectures,
4) External links,
5) Calendar.

In order to ensure the interactivity of the online course, the lecturer shall upload at least 5 audio or video lectures ranging between 7 or 20 minutes. The international research carried out by researchers at the University of Wisconsin-Stout asked students about the impact of videos on their learning. The study concludes, "A majority of students believed the videos helped them learn course content and that the videos were best kept to less than 15 minutes in length." For this purpose, lecturers were recommended to produce short but content-based educational videos with the use of visuals, sound effects and background info. For the purpose of recording the educational videos, the E-Learning Center of Institute for Informatics and Automation Problems of NAS RA was used equipped with "Galicaster" Video Capture System to provide flexible, state-of-the-art solutions for recording educational multimedia contents, like lectures and conferences. All this pursued an aim to enable the academic staff to have more high-quality and interactive videos to make online courses more interesting, interactive and supportive. Galicaster can be used as an automatic in-room recording solution for the classroom, keeping the professor informed and in control or it can be used as a mobile unit, perfect for recording meetings and conferences [4].

One of the most debatable points in the syllabi and in the organization of the learning process was the number and types of graded assignments and/or online quizzes. Eventually, a consensus was reached that during one academic semester at least four graded assignments must be incorporated into an online/distance learning course with the provision of the following information regarding the topic of the assignment, the number of attempts, time limits, etc. Besides that, time limit was set for grading the assignments – 7 calendar days, which drastically reduced the Q&A sessions between the students and lecturers on the deadlines and grading of the assignments.

Moreover, each course needs to have thematic forums incorporated, which shall be closely monitored by the lecturers and all the questions posted in the forums shall be answered within one or two working days. The findings of a quasi-experimental design carried out during one academic semester at one of the leading universities in Saudi Arabia indicated that using online discussion forums is likely to lead students to gain a better achievement. In addition, statistical analyses reveal significant and positive relationships between student participation in online discussion forums and their final course mark, but no significant relationships between their participation in online discussion forums and grade point average [5].

Nevertheless, the research and analyses of the logs showed that the students don't tend to post in the forums unless they are graded (not a mandatory requirement) or are explicitly communicated by the lecturer to do so. Furthermore, logs analysis revealed problems related to students assignments, especially in case of quizzes. Using standardized quizzes is almost a waste of time as the students write off the answers from their fellow students.

Each course also needs to have a technical forum, which is monitored by the IT support group to give solutions to the technical problems that the learners may have. This solution proved to be effective as the lecturers remain free from giving technical solutions.

The next most important item to be incorporated into the online/distance learning courses was conducting webconferences/online conferences, which was ultimately needed to keep the interactivity of the course so a requirement was imposed to conduct one webconference/online conference per two weeks to replace standard brick-and-mortar classroom lectures the students were used to have. This measure was added in response to student satisfaction survey, which showed that students need to have a systematized course of webconferences/online conferences to raise the questions they are concerned with and to receive questions to their answers.

BigBlueButton open-source software is used for running webconferences/online conferences and also has a function of recording them. The only drawback mentioned by the students was the inability to join webconferences/online conferences via their smartphones and tablets, which is due to the limitation of the technical capacity of the

BigBlueButton. Nevertheless, current BigBlueButton 2.0 runs on Android smartphones integrated with Puffin web browser, which gave a solution to this problem.

Another recommendation is to use another virtual classroom that has plug-ins for Moodle. Though the BigBlueButton can record the live sessions and interactive webinars, our recommendation is to test WizIQ Virtual Classroom plug-in for Moodle. Uploading PDFs, Word/PowerPoint/Excel documents, audio/video files, and other formats takes time: time that had better be spent interacting with your attendees. In this respect, WizIQ offers functionality allowing lecturers to upload content to their Content Library before the class begins, right from within Moodle. When in WizIQ Virtual Classroom, you then can access your Content Library from the WizIQ classroom's dashboard, and share anything within it with your students. Besides that, the WizIQ Virtual Classroom records every time students log in and out. It then generates an attendance report by the end of class, which lecturers can download to use for their own records. Besides that, the recordings can not only be viewed but also downloaded for the ease of the course participants. Naturally, this feature is not an open-source one, but if there are extra funds, it is definitely worth considering [6].

Webconferences/online conferences give more room for personalization of learning and teaching, as well as differentiation and individualization of instruction. Here the course lecturers are able to cater to the individual learners' needs and learning styles, thus keeping the learners motivated throughout the whole course. A key to successful online course and retention of students is a personalized feedback. The course lecturers who responded in a timely manner to individual questions or issues that had been raised in discussion groups, gave students regular feedback on their assignments and their comments, were flexible enough to make changes to the course mid-stream based on student feedback.

One of the innovations in the online/distance learning was the introduction of a multi-component grading system. The analyses of the logs and online behavior of the students in the courses showed that students didn't tend to go through those course items, which were not graded and eventually didn't appear in their gradebook so here a more flexible approach needed to be developed with the incorporation of several components such as participation in webconferences, etc.

The formula for the participation in the conferences and online quizzes has been developed in the following manner:

$$G = \frac{x + y}{a} * 100$$

where G is the participation in webconferences and accomplishment of online quizzes/assignments, x is the number of participation in webconferences, y is the number of the accomplished online quizzes/assignments and a is the total number of webinars and online quizzes/assignments.

The components of the course assessment and evaluation are as follows:

1.	Interim Examination	25%
2.	Participation in webconferences and accomplishment of online assignments	30%
3.	Final examination	45%
GPA		25% + 30% + 45% = 100%

The minimum threshold - 40 %

One of the key amendments made in the course of the first academic year was shifting face-to-face midterm examinations into an online format. The underlying problem was that over half of the students doing online MBA course were from different regions of Armenia, while almost 95% of all students were full-time employed making it impossible for them to take leaves for two weeks and take part in face-to-face midterm examinations. Based on students' complaints and feedback, already in the second term of the first academic year all midterm examinations were converted into an online format with mandatory recording of the midterm webconferences, which, in its turn, raises transparency and objectivity of evaluation and assessment as recordings can be watched at any time by an independent commission in case of any complaints and appeal of grading fairness. As for now, the only face-to-face component remaining is final examinations held at the end of the academic semester, nevertheless, discussions are currently in progress to convert examination resitting also into an online format for the ease and convenience of the students.

As mentioned earlier, user identification was one of the key issues, which pertains to any online or virtual learning environment. For this project only, for the first time in Armenia, Proctortrack, the most advanced and patented automated remote proctoring software offering continuous identity verification of online test-takers, anytime and anywhere at scale was used for the identification of the learners and the reliability of their grades. Proctortrack is integrated with several LMSs, including Canvas, Blackboard, Moodle, Desire2Learn, eCollege, and Sakai, ensuring that students and lecturers never have to leave the LMS environment when using Proctortrack.

Proctortrack authenticates students through its three part identity authentication process: face, ID and knuckle scans are performed. Each student is required to take an onboarding test once at the beginning of the year to collect a biometric baseline of these points, which are then used to compare against during future exams to verify student identity.

Upon entering Proctortrack within the LMS, a student reads and agrees to test policies in order to gain access to an exam. Proctortrack bans certain keystrokes (copy and paste, print screen, etc.,) and applications (virtual applications, among others) throughout the exam. During the exam a student knows that they are clearly being recorded with the indication of a red frame around their screen. The solution is transparent to the student at all times. Proctortrack does not stop the exam if the student is performing a suspicious activity. The activity will be flagged as a test policy breach in the student integrity report. After the exam is over, data is processed and lecturers are given a proctoring report within 24-48 hours of the exam. The lecturer then reviews any incidents of test policies being breached and works with university administration to determine what qualifies as cheating or not.

Nevertheless, this software also had its drawbacks, on the one hand, its cost and, on the other hand, time-consuming video watching for the lecturers. The second drawback was extreme sensitiveness to any movement of the test takers as it tracks your eye motion through your webcam, it scans your knuckles, etc. The students in Armenia still are not accustomed to sitting still in front of the monitors during the whole test (despite all the instructions they read before starting the quiz), which results in the generation of a huge number of videos with test policy breaches, which makes the process very overloaded and cumbersome especially for novice online instructors.

3. CONCLUSION

The analyses of the logs show that the most visited and completed items in the online courses are graded items and videos/materials needed to complete the graded items. All other items, which are not graded in on online/distance learning course and don't appear in the gradebook are among the least visited items.

How to increase competence: Students' confidence increases, and the quality of their work improves, when they can practice and get feedback on all parts of an assignment before turning it in for a final grade.

How to increase relatedness: Provide context and increase the personalization of the course by posting weekly announcements that share how the upcoming work connects with previous work and overarching course goals.

How to increase autonomy: Most online courses already provide students with lots of autonomy because they can choose where and, within assignment parameters, when they do the work. You can increase students' perception of autonomy by providing a calendar of assignments and discussions, specifically noting when there are flexible windows of time for interacting within the course. This reinforces students' awareness that they have both the autonomy and the responsibility to decide when they will get the work done [7].

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