ASSESSING OPEN-BOOK-OPEN-WEB EXAM IN HIGH SCHOOLS: THE CASE OF A DEVELOPING COUNTRY

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ABSTRACT

It has long been debated whether the Open-Book-Open-Web exam was useful and efficient as the traditional closed book exams. Some scholars and practitioners have doubted the efficiency and the possibility of cheating in the OBOW as it is not directly monitored. This paper tends to investigate the effectiveness of OBOW exams by comparing them with the traditional closed book exams to reject or confirm the possibility of cheating and efficiency. Two different exams were conducted in three high schools and in a developing country, whereas 307 students participated in it. The first exam was done during the midterm with closed books and well monitored. Then the second exam was done at the end of semester by adopting the OBOW method. Each exam was done in two phases. Phase one consisted of multiple choice questions and phase two consisted of a mini case analysis. The results obtained were compared with each other. Furthermore, a focus group chosen from the teachers and students were done in order to support the findings in addition to questionnaire that was sent by email. The results had showed that there is no difference when it comes to cheating but on the contrary, there is a difference in the quality of the learning outcome. This paper provides contribution to improving knowledge of e-learning for educational institutions developing countries.

KEYWORDS

Open Book Open Web Exams, Closed Book Exams, Traditional Exams, E-Learning, Developing Countries

1. INTRODUCTION

In a world where globalization is considered as a multidimensional phenomenon, e-leaning appears to be one of the emerging trends and is increasingly weighing not only in developed economies but also in developing economies (Broadfoot, 2016; Guàrdia, Crisp & Alsina, 2017). It is an innovative tool, mainly for subjects that necessitate multimedia and collaboration. As a result, the student profile has changed economically, culturally and socially as new online teaching techniques have emerged, encouraging students from all over the globe to enroll in e-distance learning (Joi, Camille & Krista, 2011). This has resulted in an impressive change in the educational technology. A transformation that has been of a major interest to scholars and journals recently which have lead to the creation of a stream of literature that examined this topic from different angles such as blended learning techniques and wholly online techniques among others (Sims,2004). Despite this new revolution, one facet of the academic life has hardly changed at all, which is the traditional exam model for conducting exams that still dominates. Given the fact, that most of the modern academic institutions use the internet platform to communicate with their students, exchange information such as lessons and homework's, they still fear conducting online exams and prefer to rely on a physical examination that is physically monitored. We cannot deny the fact that most of this new generation is an internet savvy and depend largely on the use of the net very often and easily in their daily activities. Therefore, this paper is centered on the following questions: Could Open-Book-Open-Web (OBOW) exams methods encourage cheating? Are there any advantages or disadvantages for the OBOW model that could be interesting to our era? Finding a suitable model in theory is not simple, especially that the objective of this research doesn't follow a mainstream management or have enough relevance in the literature in developing countries (El Rassi,2018, El Rassi & Harfouche, 2016). Most of the cases and research that were previously done were done in developed countries. Whereas developing countries differ from developed countries in terms of culture and ICT infrastructure. Our major objective in this research is to better understand the difference between a traditional examination compared to an OBOW in an era where it appears that there is a

gap in literature when it comes to assessing and comparing those two methods in a developing country. For the purpose of this study, several dimensions were recognized and most important were two subjects: the possibility of cheating and the learning outcome. To accomplish the study's objectives outlined in this paper, we proceed by presenting a literature review concerning the employment of e-learning in the education system, the OBOW. Then we present the methodology employed, the results and the outcome that might result from this analysis.

2. LITERATURE REVIEW

2.1 E- Learning

E-learning has recently become more crucial for educational institutions especially in a world where the fierce competition has become global. The introduction and adoption of new methods and tools in educational institutions, such as delivery and support systems had a great effect on their performance (Broadfoot, 2016; Guàrdia, Crisp & Alsina, 2017). Before proceeding further, we aim at briefly defining e-learning. E-learning could be related to any mean that is enabled electronically or empowered by the use of digital technologies. Other scholars have defined it as a concept that refers to the use of applications, learning methodologies or processes. Thus, it is not easy to agree on a definition that could be adopted but we may summarize it as the employment of online technologies to facilitate the access to educational materials such as online courses or online exams. Several schools and higher educational institutions have realized what e-learning could bring to them in terms of added value as it could shape people's knowledge and enhance their skills. E-learning could take different shapes and types and could also be employed with different techniques. For example, three different models of e-learning could be implemented in an educational institution: adjunct, blended e-Learning and holly (Algahtani, 2011; Zeitouni & Milstein,2017). The "adjunct e-Learning" model refers to the e-learning that is adopted by educational institutions and considered as a supportive tool to the traditional old way. This could be used as a link between the staff, faculty, students and parents as well. In the "blended e-Learning" model, e-learning is blended with the traditional way of teaching. Which means delivering the course material explanation either in class or online and sometimes both (Algahtani, 2011; Zeitouni & Milstein,2017). The "wholly online" model refers to the course materials and explanations exchanged online between the instructor and students. It is a total virtual system. Regardless of the quite significant transformation in the education system, one feature has hardly changed at all and more precisely the exams methods. Indeed, final exams are still the standard that are conducted in a traditional way and that is by using a pen and a paper. This is a relic by itself, and most significantly, is considered as a measurement tool and the most frequently used in educational institutional nowadays. Nevertheless, several authors believe that the "open-book-open-web" (OBOW) examination could be considered as an interesting alternative to be used in assessing students' performance (Lam, Williams & Chua, 2007).

2.2 Traditional Examination versus OBOW

The traditional closed book examination methods are able to investigate the student's knowledge based on their learning (Broadfoot, 2016; Guàrdia, Crisp & Alsina, 2017). These methods are entirely based on the student's memory and is considered as an assessment instrument more likely to foster cramming/ data dumping, or deep learning (Macdonald, 2004). Thus, sometimes, these methods are not very efficient in assessing the students' knowledge and have been questioned by many scholars. Some scholars have argued that the closed books exam method does not always assess the deep understanding of the questioned concept because it allows, or perhaps requires, the student to retain all the required data and pump them in on the exam paper with "little knowledge retention" afterwards (Williams, 2004). In some cases, the students could answer the exam questions very efficiently under pressure but without being able to reference their information and may end up memorizing the concept rather than understanding it (Steve, Ferrante & Heppard,2016). It is also found that traditional exams sometimes result in higher scores but those same students might fail to pass the competitive recruitment exams when required because they lack the freedom of analyzing (Steve et al,2016). In order to overcome this issue, some scholars have encouraged educators to

reassess their traditional format by proposing an Open –Book-Open –Web exam among other options (Lam et al,2007; Steve et al, 2016). Thus, a new trend had emerged where some universities for example have started to accommodate grades from traditional examination to OBOW to award program degrees. This new pattern called OBOW allows students to use electronic devices during their exam assessment. It reflects a major change and difference from the traditional format as it allows the student to take full advantage of all the available resources through the Web (Williams, 2004). This new pattern also prepares the students to acquire a new experience in answering the questions, which is reflective and enhances their future skills that could be required in a professional environment. Another interesting outcome of the OBOW examination is that questions represent "real world problems" which requires general knowledge and research and this minimizes the chance of copying or cheating by students (Williams, 2004; Steve et al,2016). Even though this looks quite easy to be done by cheating or copying, a submission procedure such as plagiarism software could be used to detect any academic fraud (Williams, 2004). The major idea in the OBOW model is to urge the students to think in a conceptual way to analyze and solve a given problem or mini-case and that is by employing their knowledge and expertise that they have acquired during their course of studies (Herrington & Herrington, 1998). In addition to the use of plagiarism software, and the time constraints that the student faces when conducting his exam (2 or 3 hours), it would be impossible for them to outsource or buy the solution as the accomplice should be first familiar with the subject which makes it more difficult for them to cheat. Therefore, may authors have considered that the OBOW exams represent an efficient way to engage students whether they are monitored for cheating as in the traditional exams or not (Williams, 2004; Steve et al,2016). For the purpose of our study, we have ttempted to carry out two different exams for high school students, OBOW and traditional exam that could help us better understand the differences between the two streams and detect if there is any difference in the results that could hint some cheating.

3. METHODOLOGY

The research was conducted in a high school that has adopted the web as a support to its teaching methods. Students can connect with their teachers, consult their lessons and grades as well through an application called "pronote". In addition to that, the school has initiated many electronic initiatives and had merged them into their learning processes for their students' access and use. OBOW was one of the concepts that were adopted by this school. Nevertheless, the tradition learning model is still valid. This paper is based on a comparison between the traditional method examination and the OBOW. Two methods that were conducted during the same year and for the same courses, in addition to a focus group that was selected from the students who had experienced both methods that are stated in our paper. The traditional exam was obviously conducted at school and monitored by instructors, while the OBOW exam was made outside the school on a day off and the due time limit was fixed on that day from 9 am to 12 noon. This had allowed the students to take the test at their convenience, fear free, and from any place they may chose to be comfortable with. And as the school is an international French school that usually have 3 different campuses in the same city, the students were divided into 3 different groups sharing in common the same educational level (senior high school year) and course offerings. The total number of students that participated in this exam was 307 students and their age range was expected to be 17-18. We have also considered that students who usually score a high GPA (higher than 16/20) are considered "excellent students". Those who score between 14 and 16 are considered" "Good students". Those who score between 10 and 14 are considered "average students". Those who score less than 10 are considered as "below average". This is based on the French system grading that is usually different than the English system where "excellent" for example could be equal to an "A" student. All three groups have taken the same exam, at the same time without knowing each other or without even knowing that the others have had a similar case. Then we compared the grades of OBOW exams of the students by the same group of students from the traditional closed books exams. As we have targeted three different campuses for the same school and the same courses taken, we have divided our groups into 3 main groups depending on their grades as mentioned before. Having three different locations have helped us a lot because students aren't supposed to be familiar with each other which could decrease the possibility of cheating when doing the first and second phase of the exam. Both exams consisted of two phases: the first phase consisted of 30 multiple choice questions and was estimated to be finished within 45 minutes, and students were given 60 minutes. While the second part consisted of a mini case where the students should be

able to illustrate and analyze based on their personal knowledge. Once they start, they cannot keep it on hold or save and return to it later. While the second phase consisted of a mini-case analysis that was well-researched, well thought-out scripts along with a reflection that represents the value of this approach for the improvement of students' learning outcome. The second phase couldn't be copied as it was automatically passed through the plagiarism software and was based on a personal writing skill. After finishing the two exams, we then interviewed 3 focus groups to evaluate their experience and assessment of this new experience and compare the differences, if found, in the two adopted models in addition to their instructors. Each focus group was chosen from the three campuses based on their academic level. Then we carried on our study by sending a questionnaire by email to the same students. In an attempt to detect any possible cheating or difficulties encountered in part I of the OBOW exam, we have estimated that when a student took more than 5 minutes to answer a question, he could possibly be looking to find another alternative with other peers. Considering that 30 multiple choice questions needed between 45 to 60 minutes to be completed and there is no penalty in answering any question falsely, therefore we expected the student to pick any answer if he doesn't know it within a time frame of 2 minutes' maximum. A previous sample test was done online and in campus with the students to avoid any technical mistakes they might encounter.

4. RESULTS

In this section we will start by presenting the results of the exams conducted in both models and their grade scores. When the idea of OBOW was presented to the students at first, they showed some skepticism, confusion and surprise (James, Nonacs & Hayes, 2017). Not being used to conduct an exam online and without being monitored was a challenge for them. Then we proceed by choosing a focus group that equally represents all three schools.

Starting with the first phase of the exam, we have conducted two exams for the same course. One midterm that was done through traditional means, with a pen and paper, while the second was done during the final exam using the OBOW method.

Table 1 explains in details the results of the first phase that consisted of a "Multiple Choice Question" (MCQ) exam. It included 30 questions that equally varied between difficult, medium and easy. In the traditional method, pen and paper, students were monitored in class and the supervisors were able to detect any technical or cheating problems directly on the spot. In the OBOW method, the answers were chosen randomly for each student which means that cheating is not an easy task for them to do due to the time constraints unless they waste their time and efforts to make it happen. The below table explains the differences between the two methods and as follows: Instructors participated in screening the degree of cheating during the examination period. Cheating was evaluated based on the time the students took to finish their exam whether phase one or phase two.

Table 1. QCM exam results comparison

Phase 1 : Multiple choice questions (MCQ) - 30 questions- 60 mn							
	Type of exam	Grp1-execllent >16/20	Grp2-good From 14/20 to 16 /20	Grp3-average from 10/20 to 14/20	Grp4-below average < 10/20	Invalid	Numbers of students
School I	OBOW	32	40	24	6	0	102
	Traditional	38	47	16	1	1*	
School II	OBOW	44	33	17	3	1*	98
	Traditional	45	30	20	2	1*	
School III	OBOW	50	37	14	4	2*	107
	Traditional	53	29	22	3	0	
Total number of students	OBOW	126 (41%)	110 (35.8%)	55 (18%)	13 (6%)	3	307
	Traditional	136 (44.22%)	106 (34.5%)	58 (18.9%)	5(2%)	2	

*Cheating

In the first and second groups, the OBOW exam performance reached 41% for Group1 compared to 44.22% for the traditional model and 35.8% for the OBOW in group 2 compared with 34.5% in for the traditional model. Summing them together, 76.8% of the grades in OBW were slightly lower than 78.7% in the traditional model. This means that both methods were at the same level of efficiency in the MCQ exam. Cheating in the OBOW was less significant than in the traditional model as it was detected that they took more time (between 7 and 10 minutes) for answering some of the questions. This difference could be considered insignificant (3 for OBOW and 2 for the traditional model).

Table 2. Mini-case exam results comparison

Phase 2 : Mini case assessment- 90 minutes							
	Type of exam	Grp1- execllent (above 16/20)	Grp2-good\ (between 14/20 and 16 /20	Grp3- average between 10 and 14/20	Grp4- below average less than 10/20	Invalid cheating	Numbers of students
School I	OBOW	35	34	31	1	1*	102
	Traditional	28	33	37	4	0	
School II	OBOW	46	32	18	2	0	98
	Traditional	44	30	20	2	2*	
School III	OBOW	41	39	22	5	0	107
	Traditional	29	32	39	6	1*	
Total number of students	OBOW	122 (40%)	105(34.2%)	71 (23.1%)	8 (2.6%)	1	307
	Traditional	101 (33%)	95(31%)	96 (31.2%)	12(4%)	3	

*Cheating

In the second phase, the students were offered a mini case and were expected to have a personal contribution. Unless the student didn't attend the previous seminars, he cannot fulfill the requirements and analyze the case study. For the same reasons as in phase I, a student that has been detected to be wasting time or encountering some technical difficulties is considered either cheating or having technical problems. The OBOW exam performance reached 40% for group1 compared to 33% for the traditional model and 34.2% in OBOW for group 2 compared to 31% for the traditional model. Summing them together, 74.2 of the grades in OBW were scattered between group 1 and group 2 which is higher than the sum of those two groups in the traditional model (64%). While cheating in the OBOW was less significant than in the traditional model (1 student in the OBOW took more than 10 minutes in answering 2 questions). And a higher number of failing students that scored below the average were identified in the traditional exam.

We proceeded our investigating by choosing a focus group of 9 students and three teachers. Three students and one teacher from each institution in order to evaluate their experience and perspectives regarding the pros and cons of this OBOW exam and to note their objections, if any. The results of those focus groups had helped us to better frame several factors. We have identified those factors and organized them in a questionnaire that we had randomly sent to a group of students from the same sample (sample of 307 students). They were solicited by emails, and a set of 12 questions were asked and the students were expected to answer on a likert scale from 1 to 5 such as 1= strongly disagree and 5 =strongly agree (see table 3).

Table 3. Traditional closed book exam versus OBOW exams: a gap analysis n=66)

	Traditional model	OBOW	Diff
Fear of misuse (facing technical problems etc…)	3.6	3.9	0.3
Intellectually challenging and quality outcome	3.15	4.25	1.1
Timing and location convenience	3.3	4.51	1.21
Matched with student's learning style (positive outcome)	2.88	4.8	1.92
Exam content engaging	3.1	4.87	1.77
Cheating opportunity	2.7	2.85	0.15

While the students were well informed ahead of time about the OBOW exam that will be taken by the end of the semester, they expressed some fears and concerns at the beginning especially that the exam was supposed to be conducted individually and off campus. Their major concern was that in case they encounter any technical problem, they will be all by themselves and could not complete the task on time. Despite these concerns, some others welcomed the idea and considered it as an opportunity and a new challenge to accomplish the required tasks (for a reason or another) and thought that it would be easier than the traditional method. The difference in questions concerning "fear of misuse" resulted in a difference of (+ 0.3) which could be considered as insignificant (see table 3).

"I felt relaxed and stress free in doing it at home and at my convenience, even though I thought it would be complicated. On the contrary, it wasn't at all" (Student fro group 1-school 1)

"I felt more comfortable doing the exam at home. I thought it would be more difficult when it is an OBOW exam, but it was ok" Student from (student from group 2- school 2)

"This is very innovative and different from what we usually see. I find it interesting even though I have encountered some difficulties at the beginning and the timing was short for me" (Student from group 3- school 3).

The majority of students in the focus groups expressed their enthusiasm for completing the first part of the exam online and have described it as a challenging and relaxing experience beside the quality of the exam. This could lead us to conclude that the OBOW exam approach seems to be quite interesting in such cases (Guardia, Crisp & Alsina, 2017). When students were given part II of the final exam online, which requires them to conduct a personal analysis based on their class lectures during the semester, they were given the choice to do it in a group of two people or personally. Most of the students worked on it solely, ninety percent of the students worked individually and only 30 students presented their work in common. So we ended up having 30 students who worked as pairs. This was quite interesting for us as we expected them all to work in groups as this will give them an opportunity to depend on the other peer in their group in case they do not want to make an effort and be serious about it. They literally said that they felt that this had given them the opportunity to do an individual reflection and a peer-based approach. They were impressed with the outcome of this new experience as it gave them more flexibility and an opportunity to be more creative in their analysis by showing their skills and competences and that is by going out of the traditional box which they considered as "intellectually challenging" (+1.1). (see table 3).

"Being able to search the web when needed gave us the chance to relate our acquaintance and skills to real challenges whilst bringing in merits. This is different than memorizing and dictating what we have memorized. We feel more self dependent and gained more credit by adding our personal touch" (Student from group 1- school 1)

"It was an excellent experience because it was a learning-oriented concept that encourages a personal critical thinking"(student from group 3- school 2)

"It is a good idea. This gave me more space to think, write and express my personal opinion to a subject that could be broadly and endlessly discussed" (student from group 2- school 3).

"it is a summative assessment that allowed me to draw on all that I have learnt and relate what was relevant". (Student from group 2- school 2).

While intellectually challenging and quality outcome emerged as an important indicator, another factor emerged to be very important and in favor of OBOW: "timing and location convenience" (+1.21), as most of the participants appreciated the fact that, with an OBOW, they can easily manage their exams timetable to better fit their schedule:

"Giving me the opportunity to do the exam at my convenience and in a stress free environment is awesome and very helpful". (Student from group 2- school 2).

In addition, when asked about the outcome of this new method and how possibly could be an added value and consistent with their learning style, most of them expressed a positive outcome (+1.92) and an exam content engaging (+1.77).

The last topic that was discussed with them was the possibility of cheating. And because we have anticipated the fact that they might not be very open in this subject, we have questioned their professors as they are usually monitoring and correcting exams. When doing so, we have noticed a sense of appreciation. Even though students ranked higher in the traditional exam in part I, the resulted outcome of part II was quite impressive for them and the results in table 3 show an insignificant difference of (+0.15).

"I expected them to work together as groups as it would facilitate their tasks and minimize their efforts. I am impressed that most of them chose to do it individually" (instructor from school 1).

"They have done an excellent job. I can feel their enthusiasm. The outcome is a great relief for me as I see excellent results in phase II compared to a traditional exam. Which means, working home and at their convenience could help them to give more in a fear free environment" (instructor from school 3).

"We used to think that we have to invigilate assessment because it's the only way we know for sure that they aren't cheating". (instructor from school 2).

5. DISCUSSION

Our main concern when examining the students results in high school and comparing the two models was to investigate further the credibility of the OBOW versus the traditional model. Evidently, we were neither after harassing them nor filtering them. The progress in the teaching methods that appeared recently had driven many scholars to identify the best way to examine students and the OBOW was one of those methods (Fluck, 2009). When observing the performance of the models (Tables 1 and 2), it is observed that there isn't much difference in the results. As for the cheating, we have suspected 4 cases in the OBOW based on the software results and tracking system compared to 5 cases in the traditional exam that were detected by the instructors. Comparing the results together, we cannot point out that cheating was more evident in any of the models nor in any of the two phases. The results in the second phase show an evident improvement with the OBOW model where the students had all the resources available in an exam that required a personal effort and was made at their convenience in a stress free environment. Based on the above stated results, we observe that the OBOW method is efficient if not more than the traditional method at least the same. We noticed that cheating has been almost at the same level, the results in the QCM were almost the same while the mini case study gave better results and better reflection from the students (Williams, 2004). This opposes what has been stated by scholars and doubted by practitioners that the information technology could be considered as canalization for cheating or dishonest behavior (McMurtry, 2001) and that it could be a source of confusion for the participants. On the contrary, such method can pave the way for students to get ready for the real-world problems by giving them more motivation and confidence in a stress free environment and helping them in get engaged with multi-media and depth in learning as four important factors had proven to be as of importance for the OBOW exams: Intellectually challenging and quality outcome, timing and location convenience, matched with student's learning style (positive outcome) and exam content engaging.

6. CONCLUSION

As the traditional closed-books exams still dominate most of the educational institutions, it I sometimes necessary to look in a different angle as the business world need for a knowledge economy opens the probability for new proposed models such e-learning and more specifically OBOW. OBOW is more compatible with constructive learning that smoothes the progress of a different type of examination that can harness the offered multimedia today to engage the students in a better experience. This can improve the results and the depth of the students' experience and learning. While there will always be a number of students who will tend to cheat, whether in a closed or OBOW model, the OBOW is a manageable model that could be managed on campus or off campus and could provide a more convenient and an efficient way to improve the learning quality. Therefore, cheating is not a barrier for adopting OBOW and could be a better mean for assessing the student's capacities to comprehend the topic and replicate it. Like any other research, this study has some limitations. The current study could be carried out on larger sample to take into consideration different cases and analyzed with a quantitative method to have a more solid result. Furthermore, a comparison between females and males' attitude would be interesting as several studies have that in the online world, females' attitude might differ from male attitudes (Lian & Yen, 2014).

REFERENCES

Algahtani, A,2011. Evaluating the Effectiveness of the e-Learning Experience in Some Universities in Saudi Arabia from Male Students' Perceptions. *Diss. Durham University*.

Broadfoot, P., 2016. Assessment for Twenty-First-Century Learning: The Challenges Ahead. *Learning, Design, and Technology, Springer*, pp. 1-23.

El Rassi, M, 2018. Firm's Size Effect in the e-Service Industry: The Case of a Developing Country. *AIS electronic library (AISeL).*https://aisel.aisnet.org/cgi/viewcontent.cgi?article=1013&context=ecis2018_rp

El Rassi, M. A. B., & Harfouche, A., 2016. E-Business Assimilation Levels in Lebanon. In Information and Communication Technologies in Organizations and Society. *Springer, Cham*. pp. 141-160.

Herrington ,J. and Herrington, A.,1998.Authentic assessment and multimedia: how university students respond to a model of authentic assessment", *Higher Education Research and Development,* vol.no.17, 3, pp.305–322.

James, C. K., Nonacs, P., and. Hayes, D.,2017. Evaluating an Open-Exam Approach to Engaging Students in Evolutionary Paradoxes: Cheating to Learn. *The American Biology Teacher*, vol. 79 .2, pp. 144-148.

Joi, L. M., Camille, D. D.& Krista, G, 2011. E-Learning, Online Learning and Distance Learning Environments: Are they the Same? *Internet High Educ*, Vol, no.14, pp. 129-135.

Lam, W, Williams, J.B. and Chua, A.Y.K, 2004. Exams: Harnessing the Power of ICTs to Enhance Authenticity. *Educational Technology & Society*, vol. no10, 3, pp. 209-221.

Lian, J. W. and Yen, D. D.,2014. Online Shopping Drivers and Barriers for Older Adults: Age and Gender Differences". *Computers in Human Behavior*, vol.no.37, pp. 133-143.

Macdonald, J. ,2004. Developing Competent e-Learners: The Role of Assessment. *Assessment & Evaluation in Higher Education* vol.no.29.2, pp.215-226

McMurtry, K., 2001. E-Cheating: Combating a 21st Century Challenge. *The Journal Technological Horizons In Education,* vol. o .29.4 .

Sims, R., 2004. Trends, Fads and Futures: 21 Years of Educational Multimedia: Where Have We Got to, and Where Should We Go?. *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications. Chesapeake*, VA: AACE, pp.3755-3766.

Steve, G., Ferrante, C. J., and Heppard, K.A.,2016. Using Open-Book Exams to Enhance Student Learning, Performance, and Motivation.

Williams, J. B., 2004. Creating Authentic Assessments: A Method for the Authoring of Open Book Open Web Examinations. In R. *Atkinson, C. McBeath, D. Jonas-Dwyer & R. Phillips (Eds), Beyond the comfort zone: proceedings of the 21st ASCILITE Conference*, pp. 934-937.

Zeitouni, N. and Milstein, I., 2017. The Role of Social Support in Teachers' Intention to Use ICT Tools in Their Classrooms. *Management of Engineering and Technology.*