

MOOC as supplementary tutoring to public school students learning

Erica Dal Magro, Samuel Gebing

IFRS
Brazil

erikadm26@gmail.com; samu.gebing@gmail.com

Maria Eduarda Romagna, Júlia Studer, Tiago

Martins Goulart, Daniel Martins Ayub,

Maurício Covolan Rosito, Júlia M. C. Silva

Instituto Federal do Rio
Grande do Sul
Brazil

dudicaaah@gmail.com; juh.studer@gmail.com;

tiago.goulart@bento.ifrs.edu.br;

daniel.ayub@bento.ifrs.edu.br;

mauricio.rosito@bento.ifrs.edu.br;

julia.silva@bento.ifrs.edu.br

Letícia Heinzmann

Instituto Federal de Educação, Ciência e Tecnologia do
Rio Grande do Sul - Bento Gonçalves
Brazil

leticiaheinzmann@gmail.com

Hazra Imran

University of British Columbia
Canada

hazra@cs.ubc.ca

Kinshuk

University of North Texas
USA

kinshuk@unt.edu

Abstract— Massive open online courses (MOOCs) have recently received a great deal of attention from educational organizations. The benefit of MOOCs is that they provide free access to education that could lower down the cost of education. A MOOC have potential to provide much more advantage to the students than a traditional online course. Every student has diverse learning needs and it would be beneficial for students if they get chance to decide and take control of their learning. In this paper, we present a research to combine the potential of MOOC with the student-centered approach using a learning management system (LMS). Our preliminary study with students showed their acceptability and longings for the above approach. In partnership with the project “My Moodle School”, we developed courses that reflects the combination of MOOC perspective with that of student-centered approach. Our results of preliminary study suggested that the proposed approach could enhance students’ learning recovery process.

Keywords- virtual environment, teacher, moodle

I. INTRODUCTION

Traditionally, students go to the school, take some classes and sometime later, they take exams. If they get enough grades, they are approved in the course. However, if they fail, some situations may occur. Some educational institutions, are stricter and do not give a second chance, while others offer additional classes and / or a new exam to the student [23]. Some countries have laws to guarantee the right of having supplementary tutoring to students [24, 25], while others develop special programs [26]. Our study is held in Brazil, which there is a law specifying that all students must receive extra classes in their original school.

However, there are some issues found through studies and preliminary survey with teachers, students and family about offering these classes. First one is the cost related [7], because schools need to pay extra hours to teachers remain in school to receive students, while teachers need to work in different schools to ensure their livelihood. Second, some teachers from our school believe that students use this opportunity as an advantage to not pay attention in regular classes because they know they will have a private tutor, or

to stay over the school to hang out to friends instead going to classes. Third, even though students go to supplementary tutoring, not every teacher is able to use different approach to teach the same subject as before, so the chances of failure remain, according some students’ opinion. Finally, due to security restrictions, we face some limitations of family allowing the student to go to school in a different time; so, parents and students prefer to stay at home, according to families’ opinion.

This study is focused on public schools in Brazil. The school schools offer classes in one shift, most of secondary students take classes in the morning, while primary students in the afternoon. So, in both cases supplementary tutoring is taken in the opposite shift. Moreover, many schools are adopting classes in two shifts (select days or all days of the week) from this year [27]. Finally, some schools offer the night shift, where those students enroll who work during the day and have very limited time for learning, which in turns limits the time that can be used for recovery.

One way to offer supplementary tutoring is through technology by online learning. Many students can benefit from online resources to conduct their studies, such as videos [2, 11], interactive pages [3], questionnaires [8], and even social networks [15]. Previous studies [17][13] demonstrates that the use of an LMS to provide learning recovery can benefit everyone, namely, students, teachers, parents and the institutions. Moreover, [21, 22] discusses how to use it through Moodle.

The use of LMS in education incurs the initial and additional cost but the benefit of using LMS is the availability of the content that can be available permanent and can be accessed from anywhere, whether at home or at school. Mainly, private schools invest in the integration of LMS and generally the cost of this investment is returned in the medium term. However, in public schools, the option of using LMS is not yet fully explored. We aim to answer the following question: "How to elaborate courses for supplementary tutoring, respecting the particularities of each curricular component, by combining the MOOC and student-centered learning approach using Moodle?". The paper presents a proposal of a large-scale project that aims to elaborate and offer courses using LMS to support the learning recovery process in public schools. The main idea

is not only the integration of LMS but also incorporating student-centered learning approach so that students can take the responsibility of their learning and recovery. To do so, the MOOC courses were offered with the student-centered learning approaches. The whole process involves three main steps: Firstly, we developed courses corresponding to each curricular component and year (for example, Geography - 7th grade) as per the contents and guidelines of the schools. Secondly, the developed courses were presented to the teachers so that they can make the necessary adjustments if needed as per their students. Lastly, the courses were made available to the students. This initiative is part of the set of actions of the "My Virtual School" project [16], which offers LMS Moodle free of charge to teachers of public schools.

The paper is organized as follows. Section 2 presents the results from an analysis of the students' opinion for our proposed approach. Sections 3 and 4 contextualize, respectively, MOOCs and Student-centered learning approaches. Section 5 discusses the project "My Virtual School". Section 6 outlines the process of developing such courses. Finally, Section 7 concludes the paper by summarizing the main contributions of our approach and presenting future directions.

II. FIRST FINDINGS

To confirm the need to offer MOOC courses along with student-center approach for the recovery of learning, a survey was carried out with students of public school. The sample is composed of 60 randomly chosen students, comprising a universe of 350 students studying in a single or full shift. This represents an approximate sampling error of 11%, with a confidence level of 95. The focus of conducting survey was three folded. Firstly, to understand whether students would like to have access to courses via LMS Moodle for learning recovery. Result shows that 93% of respondents said they would like to have access, while 7% responded either they do or they do not. Secondly, to identify the curriculum components in which majority of students were facing the learning difficulties. For the identification of the difficult courses, the students were presented with all the components in their traditional curricula. The results showed that most of the students had difficulties in topics related to Mathematics, Physics and Chemistry. Based on the results, the above-mentioned topics were selected that requires recovery. Thirdly, to find out the students' desire to have access to list of courses that can aid recovery. The results indicated that most of the students would like to access all components, followed by Mathematics, Physics and Chemistry. The results of conducted survey is shown in Figure 1.

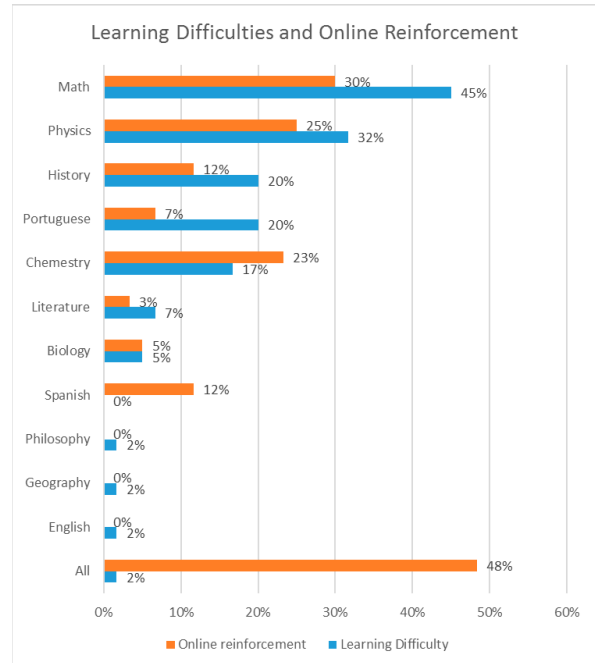


Figure 1. Students' learning difficulties Vs Recovery needs

III. MOOC

Massive Open Online Courses (MOOCs) are offered openly by teachers and experts to large number of students [18]. According to Christensen, G., et al. [4], MOOC quickly emerged and became popular with companies and universities offering the educational services. Traditionally, MOOCs have no limit on students' number. Also, there are few or no enrollment requirements. Most MOOCs are free or charge minimum registration fees to obtain a formal certificate of completion. The course is conducted exclusively through the internet, with the materials being scanned and participation and debates taking place online. Lastly, the pedagogical model may vary according to the course, with defined learning objectives and timelines [18]. According to Jordan, K. [10], the average number of students enrolled per course is 43,000, with 6.5% completing the course. The number of students enrolled decreases throughout the course, related directly to their duration. That is, the longer the duration of a course, the less completion rate it will have. Also, a good reputation of the offering institution and quantity of enrollments, tend to guarantee a greater completion rate.

IV. STUDENT-CENTERED APPROACH

For years, education makes use of traditional teaching, where the teachers are the driving point of the teaching and learning process. It is up to the teachers to define learning objectives, plan the lesson, select and apply the content. Thus, the student becomes a passive agent of the process, which is sometimes comfortable, but does not instigate autonomy and promotes effective participation. This model is called teacher-centered approach.

On the other hand, learning using the student-centered approach provides autonomy to the students [9] as a mechanism of motivation and consequently improving their performance [1]. In this pedagogical approach, the student manages the time of learning, independently traversing the contents and activities [6]. Therefore, the student is the focal point of the learning process in student-centered approach [5]. However, the consequence of the student-centered approach is the additional workload of the teachers [14]. Due to the freedom of choice, each student is on a unique learning path. At each moment, the teacher will be evaluating activities and responding to diverse doubts, while in the traditional model, teacher evaluates and compares the students together based on the activities selected by the teachers. Therefore, the use of technologies is imperative in order to integrate the possibilities of the MOOC courses that follow the student-centered approach.

To prove the potential of combining the MOOC with the student-centered pedagogical approach, the project, namely, “My Virtual School” was selected, which offers LMS Moodle for teachers who works in public schools.

V. MY VIRTUAL SCHOOL PROJECT

“My Virtual School” is a Brazilian project that offers the access of Moodle LMS, free of charge, to the teachers and students of public schools [17]. Through Moodle, the teacher can create courses, provide learning materials and carry out activities with their students in the course.

In order to participate in the study, the teachers were required to register themselves and can request for one or more courses from the developed list of the courses. After the approval of request, the teacher receives an “access key”, Also, after getting access to the approved courses, the teacher can add more learning materials and activities for the students. The other goal of the project was to provide support to the teachers by creating the preliminary design and structure of their courses. This support helps in training the teachers to use Moodle in their teaching. The ready-to-go courses based on the educational program outlines, designed in cooperation by a group of specialists were the great candidates that can be further used in learning recovery program with the students. Our study focuses on the usage and effect of such pre-designed courses.

VI. COURSE DESIGN PROCESS

The motivation was to provide MOOC courses with student-centered approach for learning recovery process in Elementary Public Schools. We got the list of the course content for each grade from the Brazilian educational secretary. The main exhaustive task was to design MOOC courses for each grade. Initially, we discussed the need to create our own learning contents and activities from scratch. However, we realized that it would not be useful and in the end, it could be a waste of time, since there is abundance of available high quality educational resources. Moreover, respecting the ideologies and particularities of each teacher and component, we finally opted the usage of the existing recourses. The course designing process was carried out along with the expert teachers to get knowledge from their

experiences. After designing of the courses, all the courses were presented using a common layout by showing the general presentation of the component and resources. Afterwards, each content is displayed individually, followed by a list of reference resources and quizzes. The example of one of the designed course is shown in Figure 2.



Figure 2. Course Example Screen (available only in Portuguese)

The choice for the learning resources and activities follow the principles of the MOOC courses [19] and student-centered approach. The students were provided with the learning content and activities that they can choose to learn. This freedom of learning is defended by some studies, such as [20]. This limits the dependency if students on teachers for evaluation and feedbacks. The whole learning process appears to be more dynamic to the students. The aim of the project is to make these courses available to all the public-school students at their first access, without any restriction. Therefore, an expressive volume of mentoring and support would be needed further to carry out the project.

VII. CONCLUSION

This paper dealt with the problem faced by the students, teachers, parents and educational organization during the process of the learning recovery. One of the possible solution to the problem can be the use of LMS in learning. From a preliminary study carried out with a group of students, we noticed that they support the idea and would like to have access to it. However, for the solution it is necessary to understand that specific learning difficulties of each student. That is, the traditional teaching model, where the teacher

drives the rhythm, does not seem to be the most ideal. With this, the proposed student-centered approach, where the student chooses what and when to study, seems to be promising in the context of learning recovery. In this direction, in partnership with the “My Virtual School” project, we developed the courses based on the MOOC and student-centered learning approach. To get a start, History and Geography components were developed under the supervision of expert teachers using references to existing resources and activities of automatic and collaborative feedback. From this experience, we demonstrated how to elaborate courses for learning recovery, respecting the particularities of each curricular component, from the MOOC approaches and student-centered learning, using the LMS Moodle.

As a future work, we aim to make these courses available to students, in order to assess acceptability for such courses in process of promoting students learning recovery. Also, we will continue working on developing new courses aligned with the other curricular components.

REFERENCES

- [1] Armbruster, P., Patel, M., Johnson, E., Weiss, M. 2009. Active learning and student-centered pedagogy improve student attitudes and performance in introductory biology, *CBE-Life Sciences Education*, 8(3), 203-213.
- [2] Arroio, A. e Giorgan, M. 2006. O vídeo educativo: aspectos da organização do ensino”, *Química nova na escola* 24.1: 8-11.
- [3] BIOE 2016. Banco Internacional de Objetos Educacionais. Available in: <http://objetoseducacionais2.mec.gov.br/>. Access: mai 2016.
- [4] Christensen, G., et al. 2013. The MOOC phenomenon: who takes massive open online courses and why?. Available: <http://ssrn.com/abstract=2350964>
- [5] Collins, J. W., O’Brien, N. P. 2003. *Greenwood Dictionary of Education*, Westport, CT: Greenwood, 3 ed.
- [6] De Guzman, M. F. D. 2016. Preferred Student-Centered Strategies in Teacher Education: Input to Outcomes-Based Instruction. *Asia Pacific Journal of Education, Arts and Sciences*, Vol. 3 No. 1, January 2016.
- [7] Gomes, Candido Alberto, et al. 2010. Reforço escolar: gastos e desigualdades sociais, *Revista Brasileira de Estudos Pedagógicos* 91.227: 55-74.
- [8] Haigh, M. 2007. Sustaining learning through assessment: an evaluation of the value of a weekly class quiz, *Assessment & Evaluation in Higher Education* 32.4: 457-474.
- [9] Imran, H, et al. 2016. VAT-RUBARS: A Visualization and Analytical Tool for a Rule-Based Recommender System to Support Teachers in a Learner-Centered Learning Approach, *State-of-the-Art and Future Directions of Smart Learning*. Springer Singapore. 31-38.
- [10] Jordan, K. 2014. Initial trends in enrolment and completion of massive open online courses. *The International Review of Research in Open and Distributed Learning* 15.1.
- [11] Khan Academy 2016. Khan Academy. Disponível em: <https://pt.khanacademy.org/>. Access: mai 2016.
- [12] Mendes, F. 2014. Recuperação de estudos: Uma busca pela educação de qualidade, *Cadernos de Gestão e Empreendedorismo* 2.3: 1-22.
- [13] Mezzari, A. 2011. O uso da Aprendizagem Baseada em Problemas (ABP) como reforço ao ensino presencial utilizando o ambiente de aprendizagem Moodle, *Revista Brasileira de Educação Médica* 35: 114-121.
- [14] Naicker, V., Bayat, A. 2016. Towards a Learner-centred Approach: Interactive Online Peer Assessment, *South African Journal of Higher Education* 26.5.
- [15] Pechi, D. 2011. Como usar as redes sociais a favor da aprendizagem, *Nova Escola* 6.246: 1-4.
- [16] Silva, B. N., Andrade, F. G., Rosito, M. C., Silva, J. M. C. 2106. Minha Escola Virtual: Quem e como os professores utilizam um ambiente virtual de aprendizagem gratuito?, *Computer on the Beach, Florianópolis*.
- [17] Silva, S. V., Lopes, A. M. A., Ribeiro, L. S. R. 2014. Reforço ao Ensino Presencial Utilizando o Ambiente Colaborativo de Aprendizagem Moodle no Curso de Engenharia de Produção do Isecensa *Perspectivas OnLine* 2007-2010 2.6.
- [18] Wulf, J., et al. 2014. “Massive Open Online Courses”, *Business & Information Systems Engineering* 6.2: 111-114.
- [19] Zhang, X.; Li, C.; Li, S., Zue, V. 2016. “Automated segmentation of MOOC lectures towards customized learning. *ICALT*, 2016.
- [20] Chang, H.; Huang, N.; Kuo, T. M. 2016. “Developing a Data-Driven Learning Interest Recommendation System to Promoting Self-Paced Learning on MOOCs”. *ICALT*, 2016.
- [21] Machado, A.A, Bagni, G.; Zanetti, M.C. 2014 “Utilização da Plataforma Moodle como recurso didático na promoção da recuperação da aprendizagem.” *Congreso Iberoamericano de Ciencia, Tecnologia, Innovación y Educación*.
- [22] Bagestan, Diego Berti. "O uso do Moodle como ferramenta de apoio à aprendizagem: desafios e incentivos na educação profissional." (2015). <http://www.lume.ufrgs.br/bitstream/handle/10183/133999/000979723.pdf?sequence=1>
- [23] Bray, M. 1999. The shadow education system: Private tutoring and its implications for planners. *Unesco, International Institute for Educational Planning*.
- [24] Tansel, A., & Bircan Bodur, F. 2008. Private supplementary tutoring in Turkey recent evidence on its various aspects.
- [25] Lei de Diretrizes. 1996. Bases da educação Nacional. http://www.planalto.gov.br/ccivil_03/leis/L9394.htm
- [26] Hursh, D. 2004. No child left behind. *Social Justice in These Times*, 173.
- [27] Novo Mais Educação. 2016. <http://educacaointegral.mec.gov.br/mais-educacao>