Abstract

In our previous papers (Nunes et al., 2016; Oliveira et al., 2017), we have explored the 4 mini-games of Deborah Game and the use of technology in teaching Accounting History, focusing on the game about the Modern Accounting History, respectively. We also had the opportunity to explore the use of Design Thinking method in the development of the game about the Medieval Accounting History (Nunes et al., 2014). In addition, Nunes (2016) approached Deborah Game aiming at investigating the position of students regarding the myth of Accounting neutrality in a quasi-experiment which associated students perception and their Accounting History knowledge.

In this present paper, we intend to focus on the integration of Deborah Game in two different learning environments: a MOOC on Accounting History and a regular undergraduate Accounting course. The MOOC was offered in the Coursera platform in two editions in 2015. The regular course was offered at University of Sao Paulo (Brazil), in four classes in 2015 and 2016, under Professor Cornacchione's responsibility, who was honored with the 2016 Innovation in Accounting History Education Award, by The Academy of Accounting Historians (United States), which stated that “The course that you offer, Accounting History, which includes the integration of your unique Deborah Game is a prime example of the type of education innovation that the Academy encourages”.

Some challenges we have faced: (i) the progressive discontinuance of browsers supporting the webplayer of the development tool we have used, the game engine Unity 3D; (ii) as it was the first game offered in the Coursera platform, there was no previous experience from their support team to share (although they offered help and encouraged us to do it).

We intend to offer subsidies for those interested in using serious games in MOOCs or regular courses, so that they can prevent some difficulties we have found in the process, making the integration easier.

Keywords: Serious games, massive open online course (MOOC), undergraduate courses, Accounting History, Accounting Education.

1 INTRODUCTION

In accordance with authors who claim the relevance of learning Accounting History [1] and those who support the use of games in accounting education [2], the Education Technology in Accounting Lab of the College of Economics, Business and Accounting of University of Sao Paulo (GETEC-FEA-USP) took the challenge to develop a serious game to inspire students of the new generation to learn more about Accounting History: Deborah Game (Double Entry Bookkeeping OR Accounting History).

Deborah Game comprises 4 mini-games (Fig. 1), from Ancient to Contemporary Accounting History (see Nunes et al. [3] for more details; Nunes et al. [4] to know more about the Design Thinking method applied in the Medieval Accounting History mini-game; and Nunes [5] and Oliveira et al. [6] to recent research approaching this serious game).
Figure 1 – Screenshots of the four mini-games of Deborah Game.

Since Deborah Game is an online game, it can be played at any time, from anywhere that has an internet connection. Besides being freely available at www.deborahgame.com – in English and in Portuguese – we decided to integrate it in our Accounting History course, which is presented in two modes: a MOOC (massive open online course) and regular course for undergraduate students. Cornachione [7] presents a positive analysis on online education and highlighted this could expand access, especially to employed adults holding a B.A. (continuing professional education – CPE), which is the profile of a significant portion of students of the Accounting History MOOC in this study. To this kind of profile, Cornacchione [7] recommends full use of the online mode. On the other hand, for undergraduate students – which is the case of the regular course in this study – Cornacchione [7] suggests partial use of the online mode, as a complement to the traditional educational environment.

This paper aims to offer subsidies for those interested in using serious games in MOOCs or regular courses, so that they can prevent some difficulties we have found in the process, making the integration easier.

2 METHODOLOGY

This is a qualitative study in which the experience of integration of the serious game in two different educational environment is described. We also analyse the challenges we have faced in this process, so that it can be helpful for other instructors going through the same situation.

3 RESULTS

Next, we present the details on the MOOC, on the regular course at the university, and relevant aspects to take into account when integrating a game in those learning environments. We also present some challenges we are facing currently.

3.1 The MOOC

In late 2014, University of Sao Paulo (USP) and Coursera <www.coursera.org> became partners, aiming to offer high quality education available to a wider audience, not restricted to the regular students of the university. The Accounting History course (Fig. 2) developed by GETEC-FEA-USP was the first MOOC resulting from this partnership.
In 2015, two editions of the Accounting History course were launched, one in each semester. All course resources were freely accessible to the registered students – there was a US$ 29.00 fee only in case the student wished a verified certificate (optional). The registration process in the platform was very simple: it was asked an e-mail account and the creation of a password. To enrol in the course, once registered in Coursera, the student should click in the “Enroll” button in the homepage and confirm.

![Figure 2 – Accounting History course homepage in the Coursera platform.](image)

The serious game Deborah Game was one of the educational resources of this MOOC. The integration process required the use of LTI (Learning Tool Interoperability). It links external service tools to learning management systems, making possible to link the game to the Coursera environment. This linkage was essential because the student performance in the four mini-games was part of his/her course grade – so, if the game were played in an independent website, his/her score would not be registered. Thus, the LTI tool should redirect the student logged in the Coursera platform to an adequate environment (“third-party software”) where s/he could play the game and, when s/he had finished it, the tool should send his/her score back to the course platform. From the student standpoint, it was necessary to be logged in the educational platform to have access to the game and, once s/he had finished it, s/he should select the respective button (“send result”) in the final screen to send his/her score back to the course record (Fig. 3).
Therefore, besides the Coursera educational platform, it was necessary an external server. This is something instructors interested in integrate their games in a MOOC should take into account, since it is a payed service. If the instructor has the support of his/her educational institution, s/he should check the technical and bureaucratic aspects related to it. For example: to verify what is the regular response time for the demands to the help desk, because there may be technical issues while the MOOC is running which may require an immediate solution so that students are not impaired. In our case, it was decisive to have direct access to the server, so that our technical team could work to solve eventual problems, like system instability, which sometimes required restarting the server.

Although the MOOC was available only in Portuguese, people from around 50 countries registered in it – besides Brazil, most were from United States, China and Portugal. There were about 4 thousand students enrolled in the two editions combined.

### 3.2 The regular course in the university

The regular Accounting History course for the undergraduate students of Accounting from University of Sao Paulo is semestral. Although it is optional, enrollment has increased each semester. It is a blended course and the online part is hosted on Moodle (Modular Object-Oriented Dynamic Learning Environment), the learning management system (LMS) used at USP. Moodle is a free software, and a free access platform used for several educational institutions. It is available in about 200 countries.

The technical aspects of the integration of the serious game in the educational platform were very similar to those observed in the MOOC. Moreover, this integration with Moodle happened a few months after the previous one with Coursera, so that our programming team took advantage of the learning curve. Thus, it was possible to propose the serious game as one of the activities to the undergraduate students of the regular course of USP. In Fig. 4, we can see a sample of one topic of the course at Moodle. In the highlighted area, the instructions about the serious game are shown, and the red arrow indicates the link to play it.
So far, there were four editions of the regular course on Accounting History to the undergraduate students of University of Sao Paulo: one in the last semester of 2015, and three in 2016. In 2017, new classes of this Accounting History course will be offered.

3.3 Current challenges

It is reasonable to think that technological advances will be constant, and the big companies of the area will keep debugging their softwares. This also applies with respect to browsers. Lately, browser updating has been an issue since the plugin needed to run the game (Unity WebPlayer, which is largely used for game developers) is not supported by the new versions of most browsers. For now, as Deborah Game is an online game, we have suggested students play the game in the Mozilla Firefox browser – which is freely available for download in their website – since others are not compatible any longer.

The technological progress can also be found in the upgrade of the educational platforms. That happened to Coursera, which has a new system – better, but which requires technical adjustments in the previous version of the MOOC and in the integration of the serious game to the new platform.
But if there are such conditions which demand an update from us, on the other hand, there is the opposite situation. There were cases in which students’ equipment were so old that they did not support our game. It usually happened regarding the video board, which could not be updated to support the game pictures.

Finally, not related to the integration itself, but still an issue to take into account is that there are several operational systems (OS). That implies that the development of the game requires some adaptations to run in different OSs. Resource restrictions may direct the game development aiming at the predominant system in the market, in order to cover the majority of students. But even this choice implies other consequences: as in Brazil the prevailing OS is not the same as in United States, for example, this may constitute a barrier to the dissemination of the game in a larger scale.

4 CONCLUSIONS

The integration of the serious game in the MOOC and in the regular course was successful. Technically, so far it has been working: two editions of the MOOC and four of the regular course were offered by University of Sao Paulo. However, there are some technical challenges to overcome in order to keep the game on.

From the educational perspective, there were some achievements as well. In 2016, the Academy of Accounting Historians honoured Professor Cornacchione with the Innovation in Accounting History Education Award. According them “the course that you offer, Accounting History, which includes the integration of your unique Deborah Game is a prime example of the type of education innovation that the Academy encourages”.

We consider it is worth to share our experience in integrating the serious game in both learning environments, since we would like to have had the opportunity to learn from others’ experience by the time we were developing this integration. We hope it makes this process easier to other instructors, and that it stimulates more of them to do the same, and share their (bad and good) results and provide some useful advices when possible.

Unfortunately, we do not have the perfect solution for all the issues we have presented in this paper. Maybe more valuable than offering ready-made solutions is to try to show that, even without the ideal conditions, and even still facing some challenges, it was possible to deliver an innovative and fun educational resource to our students, and their feedback has been positive and contributes to make all the work worthwhile!

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REFERENCES


