Introduction

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igital Game-Based Learning (DGBL) has received growing attention from educators and the games industry in recent years (Chiang et al., 2011). Not that there was no interest previously: over the last thirty years numerous articles, reports and books have been published by proponents of DGBL (Van Eck, 2006). Additionally, it has become an increasingly popular method of learning and teaching (Gendron et al., 2008; Jarmon et al., 2009; Johnson et al., 2009; Proberta, 2009). At its core DGBL consists of 'games that lead to positive learning performance.' (Cheng et al., 2012, p. 214). There is empirical evidence that games can be effective for enhancing both learning and understanding of complex matter (Ricci et al., 1996). The positive effects of DGBL have been studied by various researchers; Yien et al. (2011) have shown that games are effective method to promote active participation by learners, and they have the potential to be the best way to kick-start student motivation (Chiang et al., 2011; Ebner and Holzinger, 2007; Burguillo, 2010; Dickey, 2011). This increased interest and motivation on the part of the learner means that DGBL can make academic subjects more learner-centred and interesting, and learning can become more effective (Kafai, 2000; Prensky, 2001).

When DGBL incorporates problem solving it is able to improve students' abilities and attainment (Kim et al., 2009). One popular way to introduce problem-solving is through the narrative structure of the game, which enables players to ‘absorb knowledge…during the gaming process.’ (Cheng et al., 2012, p. 215). The narrative element also allows for self-reflection on the part of the student – as Ke has shown, gaming without reflection is not an effective learning tool (Ke, 2008). Further self-reflection comes through effective collaboration, another aspect which DGBL promotes (Kaptein and Cole, 2002). Therefore DGBL needs to ensure that the goals of the gameplay complement the learning goals, so that the students’ collaboration and self-reflection are an effective part of their learning (Ke, 2008).

The most substantial hurdle in blending game-like elements with traditional instruction is something known as the ‘chocolate-covered broccoli’ effect: much in the same way that a chocolate coating cannot suppress the (allegedly) unpleasant taste of broccoli, many games designed to foster learning and comprehension fail to highlight educative content over their ‘chocolaty’, game-like elements. This is something we feel we have overcome with Operation LAPIS.

Operation LAPIS

Operation LAPIS is a two-year game-based introductory course in Latin and Roman culture. It can be used on its own, or can supplement more traditional Latin teaching methods, especially Books 1 and 2 of the Cambridge Latin Course.

An important term to start with is ‘practomime.’ The term was invented by Roger Travis (2010) to refer to the connection between games and stories. In terms of game-based learning, this means turning the classroom into a game, creating a situation where both the students and the teacher are in a place where everyone is playing pretend in a context where everyone agrees that playing pretend is what you do – the players immerse themselves within a fictional world and role-play their characters’ responses. This is an important concept for Operation LAPIS and should be kept in mind through the discussion of how teachers and students approach using the course.

Travis’ first experiment with practomimetic curriculum was in a course on Greek Historians, in autumn 2007 at the University of Connecticut. Beginning from the premise that games teach participants how to play the game, he designed a course that purported to be a mission to save civilization by
interpreting the works of Herodotus and Thucydides to the ancient Athenians and to the modern world. *Operation LAPIS* is a natural extension of this course. Travis’ inspiration came from two sources: first, the engagement he himself experienced in digital games, and also observed others experiencing, led him to believe that games are one of the most powerful educational technologies available to modern learners. Second, his research into the precise analogy between bardic performance in ancient epic and player performance in digital games gave a grounding to his observations about engagement. He found not only that the Homeric Odyssey gives us an account of ancient game-based learning in its description of the relation of bards to their audiences, but also that Plato, especially in the Republic, understands mimesis and its role in education as inflected by that very engagement, above all in the story of the cave (Travis, 2010a).

Given the crucial importance of performance to language-learning, an introductory Latin curriculum was an obvious fit for the method, and Roger and his former student Kevin Ballestrini, now himself a Latin teacher, began work on a text-based (but online) narrative game in which the objective is to save civilization by finding, reading, and interpreting a crucial inscription: the *LAPIS SÆCULORUM*.

Together with a graduate student at UConn, Stephen Slota, they formed *The Pericles Group* (TPG) in 2010 which provides game-based learning solutions for learners, teachers, and administrators in a wide range of situations and a variety of disciplines.

TPG partners with teachers, providing resources to develop and deliver materials for game-based courses and curricula. Their role in the process is similar to that of a traditional textbook publisher, but the services they provide make old-fashioned textbooks seem not just old-fashioned but also entirely inadequate to the challenges and enormous opportunities of teaching as a digitally-enhanced practice. TPG practomimes do not look like video games as you are used to thinking of video games, but they play like video games and they teach even better than video games can: while video games can only teach players to play video games, practomimetic courses teach their students to play the curriculum — that is, to reach the learning objectives of the curriculum and to master the skills and content the practomime is designed to foster.

In *Operation LAPIS*, learners:

- Play as operatives whose mission is to learn Latin;
- As those operatives, enter into a story that takes place in the ancient world, in which their characters attempt to find and decipher the *LAPIS SÆCULORUM* (Stone of Ages);
- Do readings and exercises to give them the Latin skills to succeed in the story;
- Do basic research to give them the cultural knowledge to succeed in the story.

The goals and objectives for the course have been given a formal structure.1

When a student starts *Operation LAPIS*, the Demiurge, a mysterious and shadowy figure, explains that in order to be able to save the world they need to learn how to speak and think like a Roman.

‘DEMIURGE ONLINE
BEGIN TRANSMISSION
SIGNAL “Operation LAPIS” START
Greetings, friend of civilization. I have a job for you. I need you to help me save the modern world, by going inside my computer simulation of the ancient one. I need you to find and read the LAPIS SÆCULORUM, the Stone of Ages. There’s a catch. The inscription on it is written in Latin, and even to get to it you’re going to need to act, to speak, and to think like a Roman.

Developments in digital technology have made it possible for me to offer you the opportunity to perform as an operative in *Operation LAPIS* completely online. Before you accept this weighty responsibility, please be sure to familiarize yourself thoroughly with the information about the operation to be found at practomime.com.

Please note that before they begin, all prospective recruits are REQUIRED to have a Google Account (for access to GMail and Google Drive.) If you do not have a Google Account, you must make one before proceeding to the next step.

If you remain interested in joining my team, please click the owl for the next step...

END TRANSMISSION
DEMIURGE OFFLINE”

The Demiurge's agent, Mission Control (i.e. the teacher), then guides students through the various Missions and assignments and answers any questions they may have.

There are three main components students use to guide their learning. The first of these is the *Texto-Spatio-Temporal Transmitter* (TSTT). It is through this that the story of the game develops. Starting in a field outside Pompeii in AD69, and moving throughout the Roman Empire and the mythical past, students have to learn how to act, think, and speak like a Roman in order to complete their ultimate mission. For the online course, twice a week a new sub-mission is posted to which the students have to respond, in-character. A large part of the response is determined through collaboration - students, either working in teams or individually (depending on how the group of students has been assigned characters) discuss how their characters will respond to the prompt they have been given. *Edmodo* is used as the TSTT-interface and collaborative space as it provides a really good medium between a social networking-type interface and an...
Educational learning environment.

Directly related to this is the CODEX. For each sub-mission there is a codex which contains all the information needed to complete their tasks. There are six different categories: Key-text, Grammatica, Verba, Culturalia, Attunment, and Navigation. The obvious ones here are the new grammar and vocabulary given in each sub-mission. Additionally, each sub-mission has a map which shows the students where the current part of the story is set. This will usually be a link to Google Maps, but there may also be specially created maps to help them navigate around a certain town or place. The Culturalia gives cultural information related to the story - so if the students are in Roman Britain there will be information and links related to that. The Key-Text encourages students to start reading Latin as soon as possible. They are guided through the text with tool tips (which pop up when the mouse hovers over the word) and colour-coding to help identify the grammar of the sentences. Finally, there is the Attunment. Each student is given a link to a Google Document when they start the course, called the Attunment Document. For each sub-mission they copy and paste the Attunment and answer the exercises.

Students also each have an Operative Dossier. This collects their score for each of the missions, their sheets for Collection activities, and keeps track of the CARDs they have earned. CARDs are Classical Attunement Reward Devices.

For each mission 300 Latinity Points are awarded for a completed Attunment, 1800 for collaboration and immersion responses. What are Latinity Points? Basically they are our version of ‘Experience Points’ (XP), which is a unit of measurement used in many games to quantify a player’s progression through the game. They are generally awarded for the completion of quests, overcoming obstacles and opponents, and for successful role-playing. In Operation LAPIS this is one of the ways a student can see how well they are doing. Because there are no formal tests or grades, a student can see how many Latinity Points they have earned as well as the Level they have earned. Teachers can also use Latinity Points to then create a system for awarding grades if they need to. The more students role-play, the more Attunment exercises they complete, the more CARDs they earn, the more Latinity Points they get and the more their Level increases.

Students are encouraged to keep running vocabulary lists in their Operative Dossiers. The more words and forms they collect, the more CARDs they earn. These not only give another way of keeping track of progress in keeping up with the running vocabulary, they also allow students to take part in a mini-game called CARD-tamen. CARD-tamen is more or less Top Trumps with greater player participation. To play CARD-tamen, two students compose arguments that will persuade their cohort members that the CARD they choose fits a certain category (called a ‘controversy’) better than the CARD chosen by their opponent (another member of the operation team). This is a game that can be played in real-life, but for Operation LAPIS-online this is all done through posts on Edmodo. If, therefore, a student wants to have the best choice of CARD to choose, they will need to collect as many words and forms as possible. This can sound complicated, but students are introduced to each aspect gradually so that it does not become too overwhelming.

**Operation LAPIS in Practice**

Operation LAPIS can be used by teachers within a traditional classroom and as an online-only course. The Pericles Group currently support a number of teachers who have started using Operation LAPIS to supplement their Latin instruction this academic year and have four groups of online students.

Ballestrini has been using Operation LAPIS for a bit longer - in effect, his students have been beta testers for the course for the past few years. In this next section we discuss the use of Operation LAPIS in real life, based on his experiences at Norwich Free Academy, a high school in Norwich, Connecticut (Maton, 2000). Ballestrini has had a unique opportunity to evaluate the differences between traditional Latin teaching and using Operation LAPIS as he has been able to run two back-to-back classes - one using the traditional textbook and one using Operation LAPIS. His experiences suggest a more engaged student body (both in and out of the classroom), a faster learning pace, and students who feel much more confident in their language learning.

For a classroom based approach, immersions, the core narrative of Operation LAPIS, function as a driving force for relevancy and bridge the gap between in-class work and out-of-class work by the students. In-class students can consider what the immersion post for the Mission is asking them to do and begin, working collaboratively within their character teams, to formulate their character response. Collaboration is also possible as the students work through the CODEX entry for each Mission, especially through the translation of the Key-Text and the information given in the Culturalia section. Out-of-class, in lieu of traditional homework assignments, students post their team’s in-character immersion response. Attunments for each mission can be completed both in and out of the classroom. This leads to a mainly student-driven atmosphere, one where the instructor / teacher only provides support where necessary.

Anecdotal evidence suggests the following regarding student engagement:

- normally engaged students become hyper-engaged;
- moderately engaged students become much more engaged day-to-day;
- some traditionally low performing students find a new opportunity to engage with the material and ways to contribute;
- a small number (much smaller than in a traditional classroom) still are mostly unengaged (although their class time is far more productive).

The main hindrances to using Operation LAPIS are technological – access to computing devices and the internet by students both in and out of the classroom. While it is possible to use Operation LAPIS with a pen-and-paper approach, it is true to say that it works better and is more engaging through the full online experience.
Conclusion

The Pericles Group believe their contribution to DGBL may be able to breathe life into academic fields that seem only to be trudging along with bulging sacks of chocolate-covered broccoli. The overarching goal is to create educational games that do more than place learners in isolation with nothing but a joystick so that the act of “being” a scientist, writer, mathematician, or foreign language speaker comes more naturally and fluidly than it possibly could in a traditional academic setting.

Despite having the capacity to expand into other content areas and bring with it engaging narratives like those found in The Iliad and Hals, the practical implementation of game-based learning requires the passion of educators, dedicated to the expansion of accepted pedagogy and the improvement of the education system as a whole. They hope to help teachers foster a transformation in pedagogical design that encourages them to craft stories that fit their curricula, seamlessly binding instructional objectives with colourful characters that learners of all ages have found themselves engaged with for years.

In the words of the adventurous Italian plumber Mario, we earnestly believe that the princess of education is in another castle; now is the time for us to hitch up our overalls and use practomime in another castle; now is the time for us to breathe life into academic fields that seem more natural and fluidly than they possibly could in a traditional academic setting.

Ortega, J. (2008). Using game theory to help teachers foster a transformation in pedagogical design that encourages them to craft stories that fit their curricula, seamlessly binding instructional objectives with colourful characters that learners of all ages have found themselves engaged with for years.

References


Websites mentioned in the text.

www.edmodo.com


www.practomime.com

www.prezii.com

1 To introduce an aspect of educational psychology, it is worth noting that games embody Piaget's process of cognitive disequilibrium and resolution (1964).

2 Kevin Ballestrini has made two very useful presentations showing how Operation LAPIS works: prezii.com/ezru_drjia_do/this-is-practomime and prezii.com/n7fwboqiep5/an-agents-flow-chart.

3 See http://www.practomime.com/pdf/lapis-toc.pdf for the grammatical objectives and the cultural and historical learning objectives for the two year course.

4 Demiurge's Invitation for Operation LAPIS-Online students (http://www.practomime.com/quidestlapis/753.html - last accessed 24/05/2013).


7 For the 2012-2013 academic year, 10 institutions were signed up to use Operation LAPIS (two Middle Schools, seven High Schools and one University).