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EMPLOYING GAMEFUL DESIGN AND DEVELOPMENT FOR AN OPEN EDUCATIONAL RESOURCE ON ANTI- PLAGIARISM

Complete Research

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Abstract

This paper presents aspects of the design, development and implementation of an open e-learning resource (OER) on anti-plagiarism. This course is designed to be delivered as distance learning to students in Higher Educational Institutions. It is based on a synchronous e-learning platform; it includes thematic lectures, a variety of asynchronous tools for communication and support of the learners, game-based learning activities and gamification elements. Through its pilot implementation, learners acquired valuable knowledge in anti-plagiarism deterrence techniques and best practices to avoid plagiarism. They became aware of using anti-plagiarism software tools, they watched videos and animations that explained different forms of plagiarism and they played games that let them realize the importance of proper academic writing and they become aware of existing legislation that defines commercial online activity. A preliminary report on their assessment is included.

Keywords: Open Educational Resource, Anti-plagiarism, Game-based Learning, Gamification.

1 Introduction

Through a research (web1) that explored several aspects of plagiarism in all EU member states, it has been confirmed that Information and Communication Technologies, facilitating accessibility to online resources, have contributed to increased incidents of academic plagiarism. Carroll (2007) and Chanock (2008) have associated good practices on academic writing with anti-plagiarism approaches. Towards this direction, a number of educational resources are published online or in hard copy which offers advice primarily to students but also to academics willing to assist their students. They outline best practices that contribute towards prevention of plagiarism. Published educational resources include principles and examples on paraphrasing, referencing and properly addressing sources. Awareness of best practices, per se, is only a part of any policy aiming to prevent plagiarism. Repetitive practice on academic writing (Emerson, Rees & MacKay, 2005) and proper examples have also been proposed in the framework of anti-plagiarism approaches. Another relevant approach is the provision of feedback to students’ work relative to plagiarism before final submission of the work (Barrett & Malcolm,

2006). This can be accomplished as part of a formative assessment of students' work, which includes software tools, such as Turnitin©, which identify text similarities.

Research on practices and policies on anti-plagiarism at universities has been conducted primarily at English-speaking countries (MacCabe, 2005; Hayes and Introna 2005) and less so at non-English speaking ones (Carroll and Zetterling 2009). It has also been identified that provision of guidelines to avoid plagiarism in other languages is under-represented. To address this gap, an e-learning course with content in Greek is proposed.

Designing, developing and implementing e-learning courses is a complex endeavour. It involves pedagogical, technological and economic aspects. Considerations included the limited availability of resources in the specific language, the number of people who might be interested in and capable to follow this particular course, and the need for the methodology developed to be scalable.

This paper presents aspects of the design, development and implementation of an initial prototype of an e-learning course on anti-plagiarism, which was developed for learners living in Greece and Cyprus or Greek-speaking students in other countries. Through a localization process, however, other interested parties may localize the contents of the e-learning environment to their own special requirements. Emphasis was placed on employing game-based learning and appropriate gamification techniques for letting learners discover the different forms and aspects of plagiarism and follow appropriate actions to prevent or limit it.

This paper aims at 1) outlining the methodology for identifying users educational needs related to anti-plagiarism, 2) presenting a specific framework of the design of an e-course using game-based learning and gamification elements on anti-plagiarism, 3) allowing interested parties who may wish to localize this course to understand the design parameters and thus perform their tasks more efficiently, and 4) facilitating the evaluation of the design and development of the e-course on anti-plagiarism. For this course, the development team consisted of an expert on e-learning pedagogy and technologies with strong IS skills, and a domain expert with experience in eLearning. The development team was responsible for the design of the course and the corresponding learning material.

The remaining of this paper is structured as follows. Section 2 provides a brief literature review on relevant pedagogical approaches, game-based learning and gamification elements as well as the methodology used for identifying the educational needs of the target audience. Section 3 provides a description of the design of the e-course along with examples. Section 4 provides a roadmap through the implementation and evaluation of the environment on this implementation. Section 5 concludes this paper.

2 Background Context and Identified Educational Needs

For the design framework of this research and the learning models to be applied, we follow a social-constructivist approach (Vygotsky, 1978), which proposes learner-centered activities and recognizes intrinsic learning through social interactions. Specific theories that guided the design of this e-course include:

- Vygotsky's (1978) theory of the "zone of proximal development", which posits that when learners engage in social behavior and enjoy the collaboration of peers they achieve more fulfilled learning experiences than what they might achieve by working individually;
- Kolb's (1984) experiential learning theory, which suggests that learning intertwined with applied, real life incidents and reflection upon this experience leads to higher learning achievements, and
- Lave's (1990) situated learning theory, which distinguishes a progression line among active learner initiating from "newcomer" status to "oldtimer" level within a learning community.

In alignment with these theoretical frameworks, the overall design of an e-course on anti-plagiarism observes the main principles, it also employs game-based learning and other gamification elements.

A game may be defined as a system in which players engage in an abstract challenge, defined by rules, interactivity, and feedback, that results in a quantifiable outcome often eliciting an emotional reaction (Koster 2004). There is plenty of supporting evidence on the pedagogical role of fun in learning and of the potentials games to support learning (Ellis et al., 2006, Garris et al., 2002, Kolb 1984, Kolodner et al., 2003). Recently, gamification, that is, “[...] *the use of game design elements in non-game contexts*” (Deterding et al., 2011), has received attention as a potential mechanism for increasing users’ engagement and behavioral change (Burke 2011); in the context of this research project, gamification has been examined with respect to plagiarism deterrence.

The e-course was designed according to active learning, learner-centered principles and it includes certain common gamification elements and a set of learning activities that the learner performs in order to acquire or advance knowledge in this topic. The sequencing of these learning activities ranges from the simplest, to the most complex. The e-course specifies the learning objects involved (such as self-assessment test, video-lectures, exercises, handles to anti-plagiarism tools, text, games), the learning objectives (and other Metadata: who prepared it, when, for what type of learners, prerequisites, IPRs, technical infrastructure needed), and the learning environment (e.g., Moodle, WebEx, Turnit®, Ephorus®, Anton©, including the structure of the platform used, i.e. Moodle). Gamification elements are embedded in the e-course design; furthermore challenges, rewards, social influences and plagiarism specific self-expressing and self-assessment activities are included in the e-course.

In the design of the e-course we also included the profile of the learner, the tutor profile, the learning objectives, possible prerequisites of each learning session, the learning environment structure and the utilized ICT skills. We have also included a description of the learning activities, possible sequencing of the learning activities and time restrictions or recommended timing: e.g., “one session per week”. A (high level) description of the learning objects, including sizing (e.g., a 2’ video), sources, and recourses necessary for implementation; and a series of self-assessment tools as well as guidelines for a cap-stone activity that upon successful completion may substitute a standard written exam are included in order to determine the level of depth of the e-course.

In alignment with the overall pedagogical paradigm and in order to identify the profile of the learners, the project team did secondary research and accessed data acquired during the LLP funded IPPHEAE project (<http://ippheae.eu>) and more specifically the country reports on Greece and Cyprus.

To maximize its potential impact on the target audience, it was decided to design the course on anti-plagiarism as an open educational resource and be hosted at the Moodle server of the University of Nicosia. The hosting facility provides access to three popular anti-plagiarism software tools, guarantees its free access and offers satisfactory maintainability prospects. The first version of the original OER environment is in <http://moodle.lll.unic.ac.cy/course/view.php?id=1473> which can be accessed as username: test_user1, password: 1ABCDE. The course includes discussions with facilitators, a variety of learning activities, relevant videos and animation and self-assessment exercises, as explained in the following section.

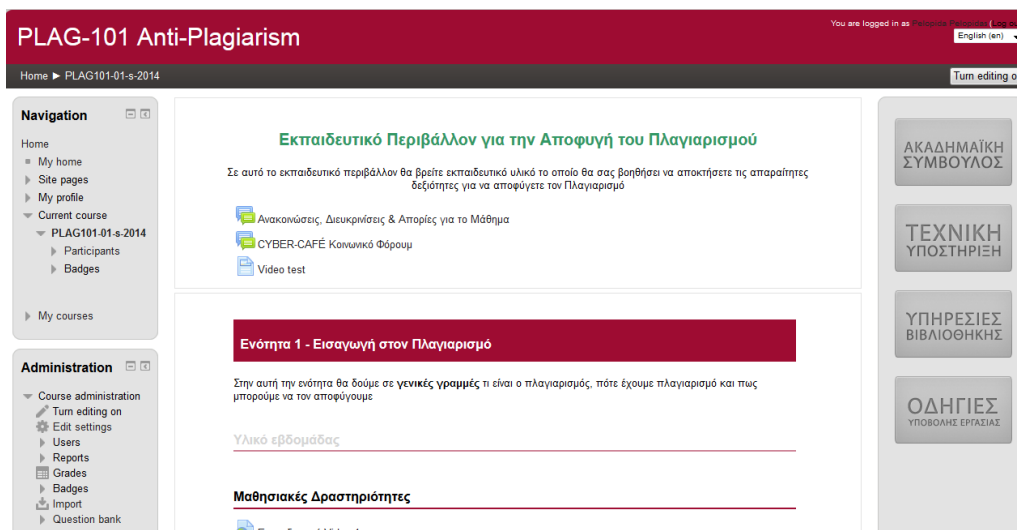


Figure 1. An Open Educational Resource (OER) on anti-plagiarism

3 Design and Development of an OER on Anti-plagiarism

A fundamental principle followed in this research is the separation, with clearly defined interfaces, of the design, the implementation and the delivery of the course. The design requires the combined expertise of e-learning pedagogy, technology and of domain knowledge. The implementation, i.e., filling the educational activities designed with specific content, does not require the presence of an e-learning pedagogy or technology expert, any more. This separation of levels supports scalability and transferability: A fully deployed course on anti-plagiarism would require considerable cost for developing and delivering. The expected benefits are derived from its potentials of being repeatedly delivered to academic audiences from all Universities with Greek as an official language of instruction or even Greek speaking students in other Universities. Furthermore, localizing such a course in another language and culture would not call for a redesign, nor for repetition of the initial research, but mainly for the translation and localization of the educational material and activities.

The methodological approach allows the learners to perform a number of e-learning activities.

- Learners may participate in synchronous distance learning sessions that entail tutorial discussions on anti-plagiarism concepts. Such sessions could be coordinated by a remote instructor. At implementation level, it is supported by WebEx®.
- An asynchronous e-learning system (Moodle, an open source LMS) and various Web and Web 2.0 tools were used. Furthermore, selected gamified activities in this context has been attempted.
- Participants worked on their own using specifically designed educational material and anti-plagiarism software tools (asynchronous distance learning).
- Learners may communicate, cooperate and form new knowledge with their fellow students, using embedded tools, educational activities and gamification elements.
- Finally, participants had the opportunity to undertake self-assessment exercises, play games and get engaged in gameful activities that empower learners follow their individual learning skills.

From a pedagogical perspective, the primary aims of this course are to: i) raise awareness among learners on plagiarism; ii) let them develop skills and competences for plagiarism deterrence and iii) enable them towards formative learning through access to anti-plagiarism software tools.

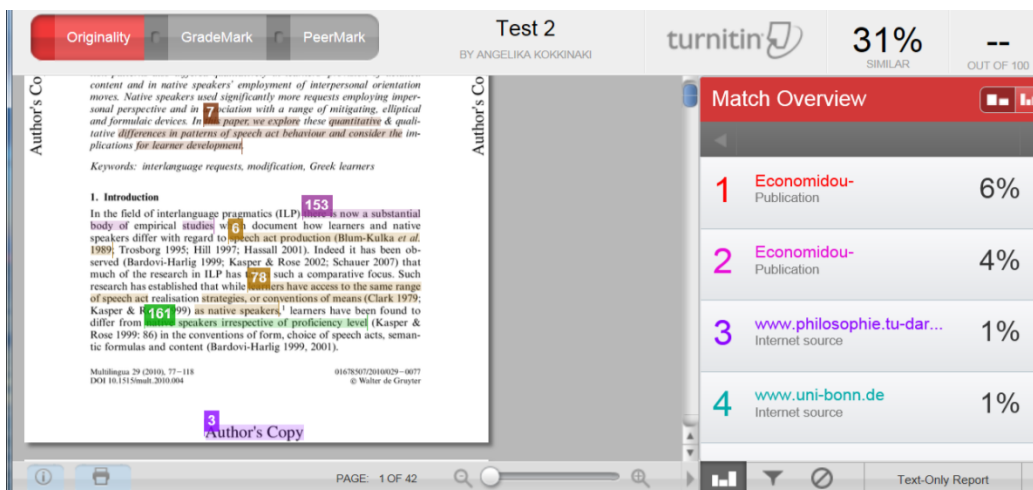


Figure 2. An example of the use of an anti-plagiarism software tool within the OER.



[Επιστροφή στο Εκπαιδευτικό Περιβάλλον](#)

Figure 3. An example of an anti-plagiarism game in OER.

4 Assessment of the OER

It should be underlined that the assessment process has not been completed yet. However, it was considered helpful to include preliminary results about the perceptions of learners. Overall, the e-course is positively perceived by the learners who participated in an evaluation process. Trainees learned the fundamentals on anti-plagiarism, knew how to use text-similarity software tools, followed animation spots, conducted self-assessment tests, and overall enabled themselves to proceed in formative learning. The methodology followed was flexible and easy for everyone to follow. The one-week time period between classes was enough for learners to do their assignments and study additional material. Video clips and animations, were received very positively because they contained mostly practical examples and no complicated terminology, addressing all the main aspects of e-business. Another aspect of the OER that was very positively perceived was the gamified activities that were included.

In sum, the learners acquired valuable knowledge in policies, procedures and best practices on anti-plagiarism that could be applied in their academic contexts. The overall assessment of the project, including evaluation of the OER offered is described in more detail, as follows.

At the time this paper was written, 80 users were invited to assess the first version of OER; 32 questionnaire were received correct and fully completed. The survey included questions on different aspects of the user interface, the content of the e-learning course, the learning activities and the way the OER provides access to anti-plagiarism software. Indicatively, we include answers to the questions that outline the definitive preferences of users.

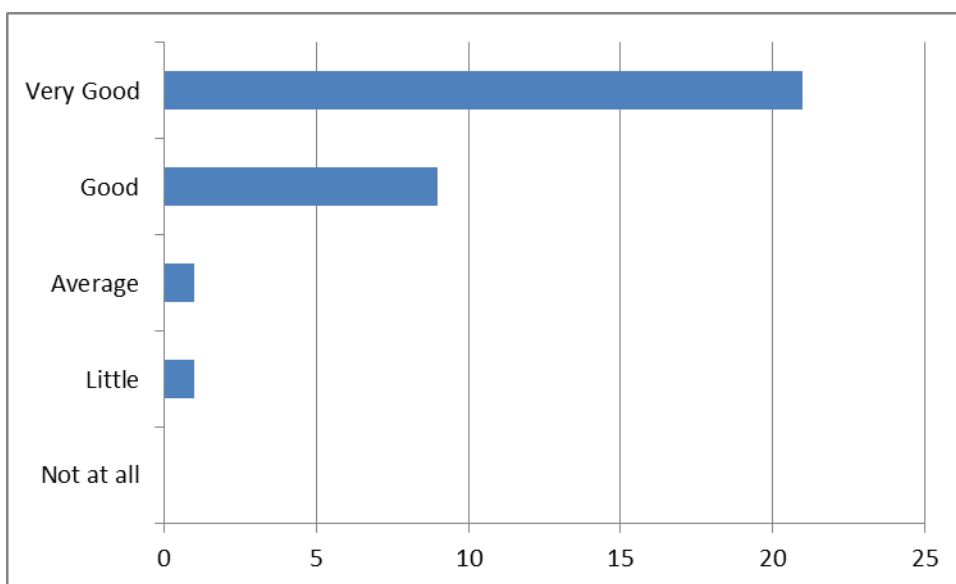


Figure 4. The OER provides the necessary information on plagiarism?

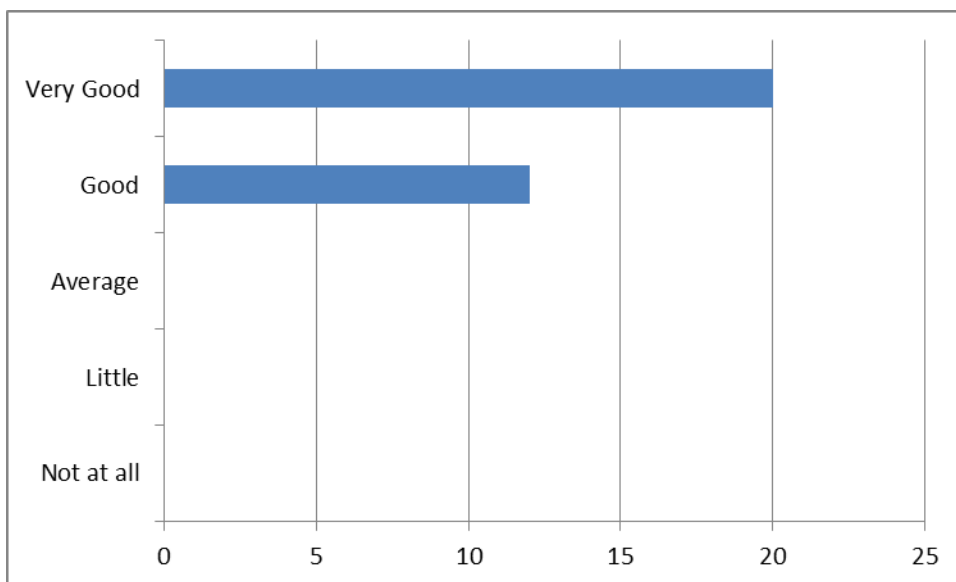


Figure 5. Gamification on anti-plagiarism is appreciated?

It is very important to note how the users perceive the games on anti-plagiarism; 20 out of the 32 respondents or 62.50% of the learners interviewed posit that the games help them and the remaining 12 or 37.50% consider that the games help the cognitive process a lot. Overall, the users accept that the OER has a positive impact on their training on avoiding plagiarism. More specifically, 43.75% of

the learners (or 14 out of the 32 responders) replied that they have benefited a lot, 37.5% of users (or 12 out of the 32 responders) replied that they have benefited and 15.63% (or 5 out of the 32 responders) perceive that they have benefited on average scale and 3.13% has benefited a little by the use of the OER.

In sum, the majority of the learners are satisfied with usability of the system, its content and its structure. Most users thought that they benefited from the system and preferred this form on training on plagiarism. Moreover, they are clearly in favor of the use of video segments and educational games. Users are content with the self-assessment exams, quizzes and the feedback given in case the users have provided a wrong answer. To a great extent, users believe that the OER provides the necessary content and on anti-plagiarism and it could be formally delivered as part of a course.

5 Conclusions

This paper focuses on the design and development of an OER on anti-plagiarism. The authors report findings related to initial implementation; it is expected that the design process will go through repetitive iteration cycles to reach a higher level of maturity. The presented research works as a proof of concept that OER are economically feasible and scalable. The main contribution of such work remains to be validated through additional research. It would be important to identify if the prototype developed in the Greek language enhances the learning process of Greek student in comparison to other similar tools that are offered in English. Another aspect that needs to be examined is the extent to which gamification has an impact on the learning process of users and explore ways that gamification can further support aspects of an overall anti-plagiarism campaign.

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