Master’s Thesis Proposal

Digital Badges in Education

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1 Motivation & Problem Statement

The methodology for grading in almost all the universities in Europe is based on quantitative guidelines and traditional rules, which associates directly a number or letter with the grade, it could be considered as standard quantitative evaluation methods. Nowadays with the arising of new technologies emerge the necessity of adapting the actual educational systems with the purpose of encourage and motivate the students for enhancing their potential.

Digital Badges, which is a gamification tool, is a validated indicator of accomplishment, skill, quality or interest that can be earned in many learning environments [6]. They may be used to motivate students, to show a learning path and to improve the learning success. One of the main characteristic is concerning about the brief feedback to the student, so that at any time any student can be compared himself with the rest of the classmates, providing a clear measure of performance of each one. Some of the important advantages of Digital Badges are: enhancing the competitive, rewarding the effort and the extra work, team collaboration, suggesting ways to improve the grade in the lecture and notifying and penalizing the lack of interest.

Considering the advantages of Digital Badges mentioned before, it arise as a promising assessment tool which can be implemented for lecturing in the Computers Sciences Faculty of the Vienna University of Technology, because of its potential for optimizing, improving, and to motivate the student’s capabilities.

Furthermore, with the interest of exploring the capabilities and applications of Digital Badges on education, a parallel and complementary research on the field of social networks titled “Foursquare in Education” is being performed by Maryam Rezaei under the supervision of prof. Dr.techn. Jürgen Dorn at Vienna University of Technology.
2 Aim of this work – Expected Results

Initially it will be analyzed in which way Digital Badges could be used in higher education and which implementations are necessary for establishing the complete scenario to be designed. Moreover it will be discussed which measures or evaluations shall be applied to verify if this new assessment mechanism is useful in the future.

The aim of using Digital Badges is to evaluate which functions can be implemented in education and how this tool could be applied into the courses of Knowledge Management lectured by Univ.Prof. Dipl.-Inf. Dr.-Ing. Jürgen Dorn at Vienna University of Technology.

The prototype designed and proposed in this research, based on the Open Badge Infrastructure of Mozilla, will be specifically created and adopted to the Social Software System block, which is a specific part of the course Knowledge Management. Currently the Mozilla Foundation is leading the "Mozilla Open Badges" project which consist into create the open source software platform necessary to extend the system based in Digital and Open Badges [7].
Methodological Approach

a. Research/Analysis: to summarize the state-of-the-art concerning to Digital Badges in education and to analyze how this tool could be implemented for lecturing in higher education.

b. Design the system for the Social Software System block, which is a specific part of the course Knowledge Management (VO and UE):
   i. Set of Digital Badges
   ii. Task associated to every badge
   iii. Relation between the Digital Badge and the grading method of the course
   iv. Management of Badges

c. Evaluation methods: to analyze which kind of methods and premises would be necessary to verify the success or not after implementing Digital Badges in the courses of Knowledge Management. Furthermore, if it is applicable, to evaluate in which parts of the courses is not possible the implementation of Digital Badges and why it happens.
3 State of the Art

According to Astin and Lising [1] the basic purpose of assessing students is to enhance their educational development but unfortunately this goal is usually not met by traditional evaluation rules. Therefore they suggest that the actual educational challenge should increase the engaging of the students, using their interests and motivations, stimulating the participation and raising their attention.

The development and use of social networks have reached a considerably impact in areas such as entertainment, marketing and business, as well as in educational fields where the main applications are in wikis and blogs.

Rienties and Kinchin investigated the influence and the behavior of the Social Network in higher educational institutions by considering triangulated Social Network Analysis with qualitative free exercise responses in order to compare and understand from whom PhD students built and developed learning relations. The findings indicated that the impact of teacher education should widen its focus beyond the formal program boundaries [3].

The history of games dates since the ancient past and nowadays they are considered as an integral and important part of the society and lately with the development of the computers science technology in the middle of 40’s appear the video games. At the beginning of 80’s Malone [19] and Bowman [20] theorized about what makes computer games so appealing to the players, and how those aspects could be applied in education to improve student motivation and engagement. However the term gamification was introduced in 2008 [18] and it refers to the use of the beneficent elements and ideas of gaming environment in non-game settings. Its application in several areas is not new, but its practical use in the education area has been recently implemented. Rather than thinking of video games as the next educational panacea, it is necessary to consider how the games might promote effective science education by analyzing game elements and their relation to developmental mechanisms [2].

Concerning to video games, the first idea coming in mind is its relation with entertainment, but currently there are different applications related with learning and education which are growing very fast. There are some nonformal learning platforms as used by Duolingo which offers language training with gaming utilities [4] as well as ClassDojo which is a applications at school level support [5] and use gamification as a tool and try to make the effort to maintain a strong communications environment that promotes feedback and reinforcement between all the participants. That means, between the instructor and students, and also between the students themselves which is one of the main principles of Social Networks.
Specifically for the Digital Badges, exists HASTAC [6] which is an alliance of humanists, artists, social scientists, scientists and technologists where members share news, tools, researches, insights, and projects to promote engaged learning for a global society e.g. The Digital Media and Learning Competition that used Digital Badges in the last opportunity or The Badges for Lifelong Learning Competition which was held in collaboration with the Mozilla Foundation [7].

There are other private companies such as Badgeville [8] which offers services in diverse areas like entertainment, technology, health and education. Some applications in learning and education have been developed training for employees in different companies and also directly with one University (Kaplan University).
4 Relation to Information & Knowledge Management

This Thesis will be directly related with Knowledge Management, and more specific with the analysis and application of Social Software Systems, also with e-commerce and learning organization (in this case for the Vienna University of Technology). These learning subjects are in different lectures in the Curriculum of Information and Knowledge Management as:

- Knowledge Management
- Business Intelligence
- E-Commerce
- IT-Based Management
- E-Commerce Technology
- Online Communities und E-Commerce
- Web Application Engin. & Content Management
- Information Search on the Internet (?)
- Business Services: Management and Composition (?)
- IT Services: Processes and Implementation (?)
5 References


