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Good practices and recommendations to Enhancing Education with Gamified Open Badges

This article aims to explore how gamified open badges can enhance motivation and engagement in education through a qualitative desk research methodology. We explain the concept of gamification in the educational industry, highlight the difference between digital badges and micro-credentials, discuss motivational frameworks, present good practices for badge implementation, list some successful case studies, and identify essential micro-credential providers. Consequently, we provide valuable insights and practical guidance for trainers, VET teachers, teachers, and stakeholders on increasing the use of gamified open badges and improving the learning methodology experience.

Overview of Gamification in Vocational Training and Higher Education

According to Borrás Gené (2022), the scientific literature offers various definitions of gamification in vocational and higher education. Some authors highlight ideas related to the educational field, such as problem-solving (Schell, 2008) or the intention of quantifiable objectives associated with player-involved conflicts (Salen & Zimmerman, 2003). Marczewski (2015) entirely expresses the distinction between play and game: "Play is transformed into a game when explicit objectives are added, and a system based on rules is imposed."

Gamification in vocational and higher education means applying game design elements and principles in non-game contexts to enhance learning satisfaction and engage students. By incorporating methods such as "leveling up," challenges, and leaderboards, teachers try to create a more interactive and motivating environment for learners. The concept of gamification leverages the natural human inclination towards competition, achievement, and reward, making the learning process more enjoyable and engaging (Deterding et al., 2011).

"In educational settings, gamification can take various forms, including point systems, badges, and progress tracking. For instance, students might earn points for completing assignments, participating in class discussions, or achieving high scores on quizzes. These points can then contribute to levelling up, unlocking new challenges, or earning a spot on a class leader board. Such elements not only foster a sense of accomplishment but also encourage continuous participation and effort." (Kapp, 2012).

Differences Between Digital and Open Badges and Micro-credentials

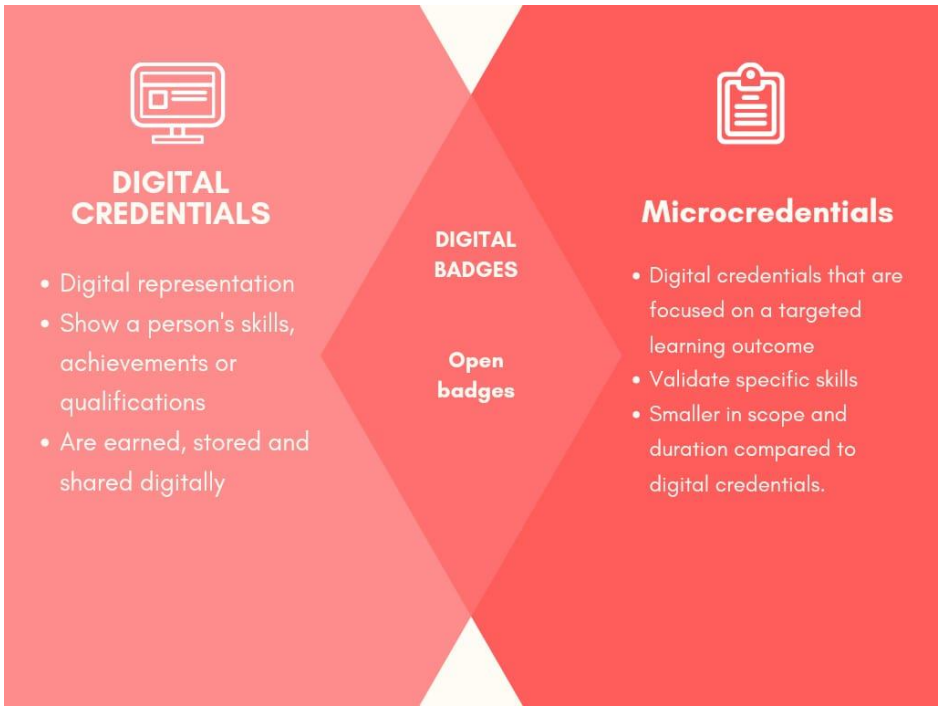
We experience that digital open badges and micro-credentials are often used as synonyms. While a digital badge often represents the achievement of a micro-credential, there are distinct differences. Digital and open badges have visual representations of achievements that can be shared and verified online. They often focus on employability by providing a granular view of the skills developed by the individual (Laya, 2023). They can recognize both formal and informal learning experiences and are not necessarily connected to a micro-credential.

Micro-credentials, on the other hand, are digital certifications that verify proficiency in a specific skill or set of skills. They are typically earned through a formal assessment process that may require the learner to demonstrate their skills in a real-world context (Tinsley et al., 2022). Micro-credentials can be standalone or stackable, allowing learners to build a more comprehensive skill set over time (Laya, 2023).

In this frame, digital badges are visual representations of achievements, skills, or competencies that learners can earn and display electronically. These digital badges act as digital credentialing, providing a verifiable record of accomplishments that can be shared across various platforms. As illustrated in

Figure 1, open badges,s: a specific type of digital badge, adhere to an open standard that ensures they are portable, interoperable, and packed with metadata about the achievement, the issuer, and the criteria met (Mozilla Foundation, 2012).

Fig. 1: **Digital and Open Badges in the Digital Credentials and Micro credentials Universe**. Adapted from Banco Interamericano de Desarrollo (2023)



Traditional grading systems typically focus on summative assessments, the final evaluation of student performance at the end of a course or term. In contrast, digital and open badges emphasize formative assessment, recognizing ongoing achievements and skills development. "This approach allows for a more personalized and continuous learning journey, where students can see their progress and areas for improvement in real-time." (Carey, 2012)

Digital (open) badges are helpful in digital credentialing because they provide a flexible and detailed means to recognize and validate learning. Unlike traditional grading systems, which often simplify student performance to a single score, digital (open) badges can express various skills and achievements. "They provide detailed information about what the learner has accomplished, including evidence of the work done to earn the badge." (Gibson et al., 2015)

Moreover, digital badges can be shared on social media, included in digital portfolios, and used to enhance resumes, making them a valuable tool for lifelong learning and career development. They offer a more comprehensive and transparent way to showcase one's abilities and accomplishments beyond the limitations of traditional grades (Abramovich et al., 2013).

Motivational Frameworks in Education

The underlying motivational framework is essential to understanding how gamified open badges can effectively engage learners. Self-determination theory (SDT) is a psychological framework that emphasizes the importance of intrinsic motivation in fostering personal growth and well-being. According to SDT, individuals have three basic psychological needs: autonomy, competence, and relatedness. When these needs are satisfied, individuals are more likely to be intrinsically motivated and engaged in their activities (Deci & Ryan, 1985).

In education, gamified open badges can fulfill these intrinsic motivations by giving students a sense of autonomy, competence, and relatedness. Autonomy is supported as students can choose which badges to pursue and how to achieve them. Competence is enhanced as students receive recognition for their skills and achievements through badges, which can boost their confidence and encourage further learning. Relatedness is fostered through the social aspects of badges, such as sharing achievements with peers and receiving feedback from educators (Ryan & Deci, 2000).

Borrás Gené (2022) discusses the importance of motivational frameworks in education, emphasizing the role of both intrinsic and extrinsic motivators. In this frame, gamified elements, such as open badges, can enhance student engagement by fulfilling psychological needs and providing tangible rewards. It also explores the balance between intrinsic and extrinsic motivation, suggesting that combining both can lead to more effective and sustained learning outcomes (Borrás Gené, 2022).

Role of Extrinsic Motivators

Extrinsic motivation refers to participating in an activity to gain external benefits or to avoid unfavorable outcomes. In educational settings, extrinsic motivators can play a significant role in encouraging sustained engagement. Digital badges, as an extrinsic motivator, act as a reward system that recognizes and validates students' efforts and achievements (WeAreTeachers, 2018). While extrinsic motivation may not lead to long-term engagement on its own, it effectively initiates participation and maintains interest in the short term. For example, students may be motivated to complete assignments or participate in class activities to earn badges, leading to a more profound, intrinsic interest in the subject matter over time (Harrington-Atkinson, 2024). Educators can create a more comprehensive and practical motivational framework by combining intrinsic and extrinsic motivators. Gamified open badges provide immediate rewards and support the development of intrinsic motivation, leading to sustained engagement and a more meaningful learning experience.

Main Providers of Micro-Credentials

According to the OECD (2021a), the main providers of micro-credentials include education and training providers, companies, non-governmental organizations (NGOs), and professional associations. Education and training providers, such as universities and colleges, offer micro-credentials to support lifelong learning and upskilling. Companies use micro-credentials to certify employee skills and competencies, enhancing workforce development. NGOs and professional associations provide micro-credentials to recognize specialized skills and knowledge within specific fields, contributing to professional development and career advancement." (OECD, 2021a).

Some member states have recently implemented EU recommendations to enhance national certification regulations with micro-credentials. Hungary is one such example. In Hungary, micro-credentials are important in offering sub-diploma official certifications in Higher Education (HE) and sub-professional official recognitions in vocational education and training (VET). The legislation focuses on "small scale" and "learning outcomes," but does not address stackability. Technically, the awarding process is tied to centrally developed and accredited Learning Management Systems, such as *Neptun* for HE and *FAR* for VET. This legislation provides a valuable opportunity for HE institutions and VET schools to offer flexible and trusted small certificates to the market. However, it also creates significant barriers for smaller or industrial players in the educational market to award micro-credentials. As a result, the role of digital badges is increasing in Hungary and other countries with similar legislation.

Case Studies and Examples of Effective Use of Badges in Education and Training

Using digital badges in educational and training settings has yielded positive outcomes in boosting student engagement and motivation. The following examples demonstrate how different institutions

have effectively incorporated badges into their programs to acknowledge accomplishments and promote involvement.

At the Hellenic Open University in Greece, Open Badges were employed as credentials in pilot educational systems covering non-formal and informal learning environments. These badges motivated positive behavior and served as practical educational tools, significantly increasing student engagement and motivation. By acknowledging and rewarding students' efforts, the university created a more dynamic and interactive learning experience (Papadimitriou & Niari, 2019).

Murdoch University in Australia implemented a digital badge program for nursing students to support self-directed learning and competency achievements. The badges recognized students' skills and experiences, providing a structured pathway for their professional development. This initiative validated the students' competencies and encouraged them to take ownership of their learning journey, fostering a sense of accomplishment and confidence (Nilson & Dewiyanti, 2020).

During the COVID-19 lockdown, IBM leveraged digital badges to maintain student engagement in their training programs. The badges recognized various competencies and achievements, helping students stay motivated and continue their learning despite the challenges of remote education. This approach kept students engaged and committed to professional development during significant disruption (Daniels, 2020).

In the *United Kingdom, City & Guilds* used digital open badges to recognize students' efforts in vocational education and training programs. The open badges were shared on social media, enhancing the visibility of students' achievements and providing them with valuable credentials for further use in their careers. This public digital recognition boosted students' morale and increased their employability by presenting their skills to potential employers (City & Guilds, 2021).

The practices identified in implementing gamified open badges across various educational contexts highlight the importance of aligning badges with learning objectives, designing visually appealing badges, and providing clear criteria for earning them. These strategies ensure that badges are meaningful and impactful, fostering student engagement and motivation. The case studies from the following institutions: Hellenic Open University, Murdoch University, IBM, and City & Guilds show the flexibility and effectiveness of open badges in recognizing achievements and motivating participation. Having compared these practices, it became evident that successful open badge implementations share common parts: transparency, variety, peer recognition, and integration into LMS (learning management systems). These elements contribute to creating a supportive and motivating learning ecosystem, leading to the following recommendations to further enhance the use of gamified open badges in education.

Implementing badges in educational settings requires careful planning and consideration of different methods to ensure they are motivating, engaging, and meaningful for learners and students. Here are some key strategies, not in order of importance:

- ***Develop Badges with Learning Objectives***: "Ensure that each badge is tied to specific learning outcomes or competencies. This alignment helps students understand the purpose of the badges and how they relate to their overall educational goals." (Crewhu, 2023)
- ***Develop Clear Criteria for Earning Badges****:* "Clearly define the requirements for earning each badge. This transparency helps students know what is expected of them and motivates them to meet those criteria. Detailed criteria also ensure that badges are awarded fairly and consistently." (Crewhu, 2023).
- **Design Visually Attractive Badges**: "Create badges that are visually attractive and meaningful. Use colors, icons, and designs that resonate with students and reflect the achievements being recognized. Incorporating fun and engaging visuals can make badges more desirable." (Empuls, 2023).
- ***Offer Different Type Badges***: "Include different types of badges to recognize a range of achievements, from academic performance to soft skills and participation. This variety ensures

that all students have opportunities to earn badges and feel recognized for their diverse strengths." (Crewhu, 2023).

- ***Introduce Peer Recognition***: "Allow students to award badges to their peers for demonstrating positive behaviours or achievements. Peer recognition can foster a supportive learning environment and encourage collaboration." (WeAreTeachers, 2018)
- Introduce Institutional Recognition: Advocate at universities, VET schools, and Businesses to introduce Official recognition of Open Badges.
- ***Align Badges with Learning Management Systems (LMS)****:* "Use an LMS to manage and display badges. This integration makes it easy for students to track their progress and see the badges they have earned. It also allows educators to monitor student achievements and provide timely feedback." (Crewhu, 2023)
- ***Acknowledge Badge Achievements***: "Publicly acknowledge and celebrate when students earn badges. This recognition can be done through announcements, ceremonies, or digital displays. Celebrating achievements reinforces the value of badges and motivates other students to strive for similar recognition." (Empuls, 2023).

Conclusion

Adding gamification and digital badges to education is an effective way to increase student motivation and participation. Educators can develop engaging learning environments that address intrinsic and extrinsic motivational factors by utilizing game mechanics and digital credentials. Self-determination theory (SDT) highlights the significance of autonomy, competence, and relatedness in promoting intrinsic motivation. At the same time, digital open badges play an effective role in extrinsic incentives that acknowledge and reward learner and student achievements.

Best practices for open badge implementation include introducing learning objectives and providing clear achievement criteria, increasing their "meaning" and impact. Case studies from institutions like the *Hellenic Open University, Murdoch University, IBM, and City & Guilds* demonstrate the variety and effectiveness of open badges in various educational and training contexts. These examples illustrate how digital open badges may enhance student engagement, motivation, and professional development.

As the educational and training sector evolves, using gamified digital (open) badges presents a promising pathway to create more engaging, motivating, and rewarding learning experiences. By recognizing and celebrating student achievements, trainers and teachers may inspire a lifelong "love of learning" on the pathway and enhance the development of upcoming essential skills for the future.

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