Gamifying Education: 
Motivation and the Implementation of Digital Badges for Use in Higher Education

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ABSTRACT
This article describes how gamification in education through the use of digital badges has emerged as a means to motivate and reward student learning. This exploratory, multi-case study looked at the motivations and perceptions of 90 higher education students across four disciplines, regarding the use of digital badges as an incentive for either a performance-related task or for student effort. Survey findings suggest that although students found the badges motivating, learning the course content and the overall course grade were more important to them than the tangible reward. The successful implementation of digital badges in higher education requires advanced planning to promote awareness of the usefulness of digital badges with students.

KEYWORDS
Digital Badges, Gamification, Grades, Higher Education, Motivation, Rewards, Students

INTRODUCTION
As early as the Revolutionary War, soldiers were provided with emblems or “badges” for their bravery and good conduct (McAfee, 2015). Even today, the military continues to wear crests on their uniforms symbolizing vigilance and valor. Badges are also used to certify knowledge and learning (Halavais, 2012). In fact, the first Boy Scout badges, made of cloth with an embroidered design, were produced in 1911 to signify evidence of proficiency or merit in a particular area like agriculture (Wills, 2009). Today, there are over a hundred badges in various areas and skill levels. These visual representations of credentials are symbolic and highlight the qualifications and characteristics of those wearing them.

During the first half of the twentieth century, the use of rewards became evident in the field of education. Based upon operant learning theory, the use of rewards such as candy, stickers, badges, and grades have been used to extrinsically motivate students. The premise was to promote a desired

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behavior. And, according to behaviorist B. F. Skinner (1950), the use of rewards strengthens a student’s behavior, especially if the individual finds merit in the incentive system.

Scholars have suggested that rewards may also motivate individuals to pursue more challenging tasks. For example, online gaming is growing at a rapid pace. Participants earn rewards such as badges, points, and achievements for accomplishing a particular level in the game. Begy and Consalvo (2011) stated that “games are designed to continually reinforce the player’s position in the fictional world” (para. 2). Tom Chatfield (2010) noted that “games are brilliant at this... every time you do something, you get credit; you get a credit for trying” (para. 8). Also, Kapp (2012), noted that these rewards provide social capital and bragging rights. Additionally, Suh, Wagner, and Liu (2016) reported that gamification enhanced user psychological needs satisfaction.

Recently, components from gaming are being implemented into education in the form of digital badges (Foster, 2013). Originally static graphical images, today’s digital badges are “web-enabled tokens of accomplishment that contain specific claims and evidence about learning and achievement along with detailed evidence supporting those claims” (O’Byrne, Schenke, Willis, & Hickey, 2015, p. 451). Furthermore, the practice of creating, rewarding, and sharing digital badges has emerged as a means to motivate and reward student learning. Digital badges may identify “anytime, anywhere learning” as students acquire credentials that actually measure skills, competencies, and achievements obtained in the classroom, workforce, and community (USDE, 2011).

**RELATED LITERATURE**

The MacArthur Foundation (2017) defined a digital badge as “an assessment and credentialing mechanism that is housed and managed online. Badges are designed to make visible and validate learning in both formal and informal settings, and hold the potential to help transform where and how learning is valued” (para. 1). Simply stated, a digital badge is a reward but also a visual symbol of ones’ credentials (Otto & Hickey, 2014). According to Defelio and McWhorter (2015), a digital badge is comprised of micro-credentials including the purpose of the badge, the date the badge was awarded, who issued the badge, and who earned the badge. Digital badges are verifiable, stackable, and portable for sharing across social media sites (Mozilla, 2016). In addition, the ability to display digital badges may “induce competition among badge earners” (Schenke, Tran, & Hickey, 2013, para. 8).

According to Twarnoitte (2015), 75% of the Millennial Generation (defined as adults 18-34) will be part of the global workforce by 2025. A recent study by the University Professional and Continuing Education Association (UPCEA, 2017) indicated that millennials valued alternative credentialing in the form of certificates and digital badges. Similarly, Zalaznick (2016) noted that in higher education, it is the millennial generation driving the badging system in order to earn microcredentials for the workforce.

**The Use of Badges Across Education**

The use of digital badges remained largely untapped until 2011 when Mozilla and The MacArthur Foundation joined forces to explore the digital badge movement. The organizations sponsored a two million dollar competition for the creation and assessment of digital badges (MacArthur Foundation, 2011). Various leaders across the United States participated in the initiative. For example, at the launch of the competition, Secretary Arne Duncan of the U.S. Department of Education stated, “Badges can help engage students in learning, and broaden the avenues for learners of all ages to acquire and demonstrate – as well as document and display – their skills” (USDE, 2011).

In 2012, the Harvard Review reported that digital badges were one of four innovative trends to watch in 2013 (Schrage, 2012). The report suggested that the system we currently use of accreditation may favor badges over traditional grades and digital diplomas to show skills acquisition and course completion. Even the non-profit Kahn Academy, which is well-known for its free content based instructional micro-lectures, integrated a system of points and badges into its learning resource
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