



Harnessing the Power of Digital Badges to Help Create Future Ready Graduates

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Abstract

Higher education has seen an upsurge in recent times in the use of digital badges for the recording of student achievement. According to Dowling-Hetherington & Glowtaz [1], many students in higher education today have grown up with the internet and consider digital media to be a very useful learning tool. A digital badge represents an accomplishment in the same way that a traditional badge such as one received from the girl guides would have. However, a digital badge is available online and contains all the meta-data and links required to explain its context and meaning. In essence digital badges provide three things motivation, status recognition and evidence of achievement [2]. Taking all this into account, they have the potential (when used correctly) to become an alternative system for awarding micro-credentials. The piece of work undertaken for this paper looked at a large scale pilot study to award digital badges to participants and category winners in Ireland's first Science Undergraduate Research Experience (SURE) network conference (2018) aimed at students from Ireland's Institutes of Technology. The conference ran simultaneously over three venues with 28 oral presenters, 64 poster presentations and almost 600 delegates. A total of 104 digital badges were awarded from the SURE network with an acceptance rate of 79%. A follow up survey of recipients revealed that while 90% had never come across a digital badge they found it easy to accept and 75% said they would use it on LinkedIn and their CVs (Curriculum Vitae). The recipients found the badges a motivating factor and while some expressed concerns that employers might not recognise their value, 58% stated that they would be useful for their careers. Following on from this successful pilot, digital badges will be used in subsequent SURE network conferences with an annual evaluation measuring the impact of the badges planned.

Keywords: *Digital badge, badges, Undergraduate, Conference, skills.*

1. Introduction

The emergence of digital badges to offer micro-credentials in higher education is a relatively new phenomenon [1]. A key advantage of digital badges is that they incorporate meta-data associated with the award, can be time bound and are easily transferred to professional networks and job applications. A digital badge represents an accomplishment in the same way that a traditional badge such as one received from the girl guides would. However, a digital badge is available online and contains all the meta-data and links required to explain its context and meaning. In essence digital badges provide three things motivation, status recognition and evidence of achievement [2]. When digital badges first began to emerge there was a tendency for higher education practitioners to dismiss them, as they felt they reduced learning to very discrete skill sets and were only focused on lower level skills [3]. However, the potential for digital badges to provide a transparent way that learners can convey skills acquisition and academic achievement is now an attractive and viable option for learners, academic institutes and employers alike. In particular "micro-credentials" can be invaluable. A degree or professional qualification is a very valuable means to recognise academic achievement, however, it may in some cases be more important to highlight a particular skill [4]. Digital badges offer a portable virtual method of displaying a specific skill set that might otherwise be invisible. Often times they can be grouped or stacked in a way that can demonstrate a wider range of skills or build up to a larger macro-credential. Digital badges are designed to contain all the relevant information in relation to what the learner had to do to earn the badge [5]. According to the nationally funded project Allaboard.ie [6] they provide a very good example of how good educational practice and technology can work together. Digital badges offer a competency based approach to learning which can be displayed online to show the world what you can do. An example from undergraduate science is "cell explorers" which provides a good example of stacked micro credentials in operation (Figure 1.1) [7].



Figure 1.1 Cell explorers stacked digital badges [7]

Creating a badge is not difficult. Anyone with basic computer skills could make a digital badge in much the same way as they can create a paper certificate. However, just creating a badge does not give it validity, it must meet set criteria and even better be linked to the issuer's website [8]. There are a number of platforms such as Open Badge factory (OBF) and Credly which can be easily incorporated into Learning Management System (LMS) such as Moodle or Blackboard. According to Suarta *et al* (2017) [9] when they looked at the skill sets that employers were looking for, communication was the top fundamental generic skill cited by employers. There are dozens of soft skills but, according to a recent Randstad report [10] for most jobs; soft skills like good communication are a very desirable graduate attribute. Obviously it goes without saying that academic qualifications are still a must have. But, what will distinguish one potential employee from the next? This is where digital badges can play a role, they can highlight skills such as communication and presentation skills that would otherwise not be visible or accessible. It is with this in mind that the SURE network decided to incorporate digital badges into its awards. The conference was run simultaneously over three venues; (Athlone Institute of Technology, Waterford Institute of Technology and TUDublin (formally Dublin Institute of Technology)). Each venue hosted 3 or 4 other Institutes with a total of 10 Institutes of Technology involved.

1.1 Background

The conference was dedicated to undergraduate STEM (Science, Technology, Engineering and Mathematics) research, in essence; student's 4th year projects. Students from each Institute had the opportunity to submit abstracts centrally, which were blind reviewed, A total of 107 abstracts were submitted and 28 were accepted for oral presentations across the three venues. In addition, 64 abstracts were accepted for poster presentations which included a five-minute poster talk. The organising committee for the SURE network felt that it was very important to recognise the achievement of the students, both in relation to the oral and poster presentations. Digital badges were chosen as the most effective means of recognition. The aim of this study was to offer digital badges to the conference participants that could subsequently be used to showcase their achievement and then to follow up with the recipients in terms of use and impact of the digital badge.

2. Methods

The SURE network conference 2018 used the innovative cross institute approach of issuing digital badges to all oral and poster presenters. A total of 6 badges were designed. The categories and badge design for each award can be seen below in table 2.1. An example of the criteria for receiving a digital badge along with the badge design are documented in figure 2.1. All presenters received a digital badge irrespective of winning a category. OBF was the platform chosen and while it is possible to use bespoke images for the badges it was decided that in terms of cost and practicality that the OBF icons were suitable. As can be seen in table 2.1 below the design was standardised and colour coded in terms of participation and overall category winners. Digital badge receivers were surveyed about their use and perception of the digital badges. This survey was carried out using google forms and was issued to all badges recipients.



Audience Participation Award (APA)		Academic Judging		Conference Participation	
Oral Presenter		Oral Presenter		Oral Presenter	
Poster Presenter		Poster Presenter		Poster Presenter	

Table 2.1 Digital badge categories awarded for the SURE conference 2019



BEST SCIENCE COMMUNICATOR SURE NETWORK 2018, AUDIENCE PARTICIPATION AWARD
 This badge has been awarded to an IOT student who has excelled in science communication at the SURE 2018 conference as determined by an audience of their peers.
 To receive this badge a student must:

- Be an Institute of Technology student.
- Have been selected from a national cohort of IOT students to present their final year project at the national SURE network conference
- Give a 10 minute presentation on their project
- Present in front of an audience of their peers, faculty staff and invited guests
- Engage the audience in a 5 minute follow up session
- Declared as best science communicator by an audience of their peers.
- further information about this badge can be found at [SURE network 2018](#)

Figure 2.1 Example of digital badge and criteria used

3. Results

As indicated, the conference was run simultaneously over three venues with 28 oral presenters, 64 poster presentations. A total of 104 digital badges were awarded from the SURE network with an acceptance rate of 79% (figure 3.1). Of the 21% that did not accept their badge it is suspected that this might in part be accounted for by incorrect email addresses entered by the students. The results can be further broken down to reveal that while the acceptance rate was 79%, the take up for category winners was higher with 100% acceptance in most categories (figure 3.2). The follow up survey of recipients elicited quite a low response just over 10% of recipients replied. However, they revealed that while 90% were not aware of digital badges they considered them easy to accept and 75 % of respondents said they would use it in LinkedIn and CV's (figure 3.3). Having a means to highlight achievements in this way is an advantage, particularly in light of the research stating that good communication is a key skill that potential employers look for. The response rate to the survey is something that will be further investigated as it is important for the follow up studies that are planned.



Acceptance of Digital badges SURE conference 2018

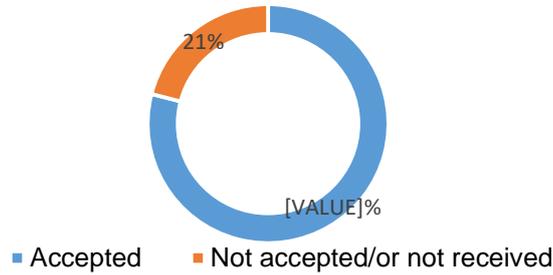
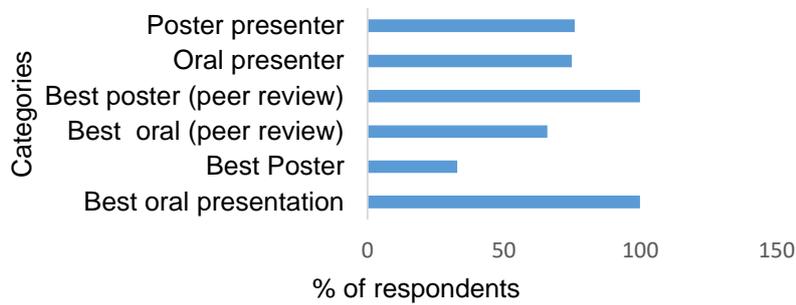


Figure 3.1 Acceptance rate for digital badges issued from the SURE network conference 2018

Digital badge acceptance rate by category



3.2 Digital badge acceptance rate by category SURE conference 2018.

How do you think you will use the digital badge

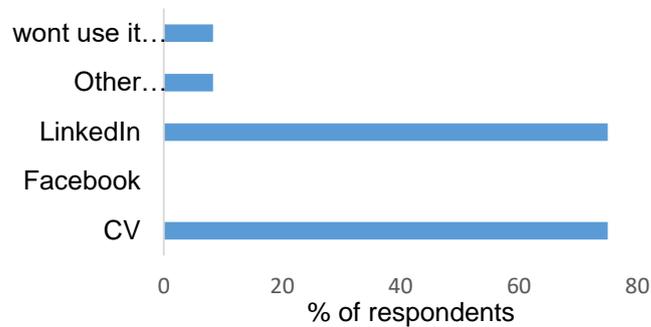


Figure 3.3 The way students intended to use the digital badge

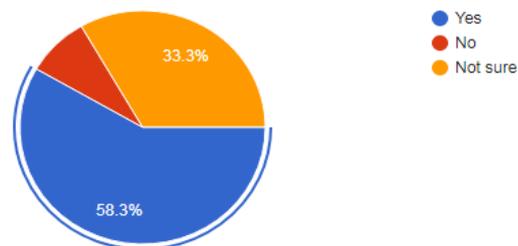


Figure 3.4 Do you feel that having a Digital badge for presentation skills is useful and will help in your career?

The recipients found the badges a motivating factor towards engagement. Some expressed concerns that employers might not recognise their value, however, 58% stated that they would still be useful for



their career (figure 3.4). The 42% that said they were either not sure or did not think they would be useful needs further exploration.

4. Conclusion

Digital badges are designed to be secure, meaningful and produced in a way that ensures they cannot be counterfeited. It is highly motivating to receive a digital badge and can be stacked with other badges to provide evidence and a portable way of demonstrating skill sets that are desirable for employers. They showcase skills and achievements that might otherwise be invisible or not recognised. The results of this pilot study demonstrate the benefit of digital badges and also highlight the need to follow up with badge holders to determine the extent to which the badges will be used and to determine the extent of industry awareness of these badges. While the response rate for the follow up survey was quite low the acceptance rate for the digital badges was high. This indicates that the recipients place a value on having the digital badge. Digital badges will be used in future SURE network conferences and an annual evaluation measuring the impact of the badges is planned.

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