

Badges in the Carpe Diem MOOC

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Throughout March and April 2014, the Learning Transformations Unit at Swinburne University of Technology (Melbourne, Australia) developed and delivered the Carpe Diem MOOC (CD MOOC) via the Blackboard CourseSites platform (coursesites.com). The CD MOOC, which attracted 1426 registrations, provided participants with the opportunity to learn about the Carpe Diem learning design process and to apply it to their own educational practice. We discuss the challenges and opportunities faced by the CD MOOC designers and moderators in offering participants the opportunity to obtain digital badges for recognition and reward of their participation and completion of tasks in the CD MOOC. Here we present findings of research into the impact of badges on the completion of learning tasks and the motivation of participants. We demonstrate that many of the CD MOOC participants, who were generally well-educated and mature professionals, were motivated by digital badges – some through to course completion.

Keywords: MOOC, badges, digital badges, Carpe Diem learning design

Introduction

Digital badges, a concept adopted for online gaming (Hamari, 2013), have emerged as a potential technique for motivating and engaging online learners (Deterding, 2011; Sullivan, 2013). Badges represent learners' achievements and serve as an incentive to guide and shape learner behaviour (A. Anderson, Huttenlocher, Kleinberg, & Leskovec, 2013). Educational organisations are considering badges to credential the learning process (Young, 2012). Early work demonstrates that awarding badges provides an additional form of reward with the potential to increase learner motivation (Abramovich, Schunn, & Higashi, 2013). Massive Open Online Courses (MOOCs) have become one of the key players in the use of digital badges to engage and motivate learners, to reward participation and recognise the achievement of skills and knowledge (Cross & Galley, 2012; Easley & Ghosh, 2013; Hickey, 2012). Badges allow MOOC participants to collect recognition of achievement from different learning experiences, leading to a comprehensive set of accomplishments.

The use of badges in education initiatives

Badges have been used throughout history in many guises and forms, including military medals that signify achievement and/or rank (Halavais, 2011), achievement badges for boy scouts and girl guides (L. S. Anderson & Gilbride, 2003; Mechling, 2001), and as symbols of membership of particular groups or societies (Alexander, Barraket, Lewis, & Considine, 2009; Barrett, Pai, & Redmond, 2012). Online games have adapted this tangible system of reward to create digital badges that give recognition to players achieving different levels and skills within a game. Badges are also used alongside other rewards, such as voting or ranking, to recognise contributors' input on social media websites such as StackOverflow, Y! Answers, Q&A education forums, Amazon and Yelp, a practice allowing contributors to actively pursue and compete for rewards (Easley & Ghosh, 2013). The use of tools and social practices that have previously been used to rate, rank, recognise and reward the contributions and participation of others in social media and online games have prompted education communities to experiment with implementing digital badges as a reward for achievement (Randall, Harrison, & West, 2013).

The biggest push for the adoption of badges comes from the online education industry and education reformers (Young, 2012). A number of organisations, such as The Mozilla Foundation, Peer to Peer University (P2PU) (p2pu.org/en) and the Khan Academy (khanacademy.org), are involved in such reforms. Furthermore, as we write this paper, MOOC providers are leading the way in the gathering of evidence of skills required for lifelong

learning occurring outside the traditional classroom environments (Abramovich et al., 2013; McDaniel, Lindgren, & Friskics, 2012; Randall et al., 2013; Young, 2012). As both reformers and traditional educational institutions have recognised, the introduction of badges to teaching and learning practice has the potential for recognition of learning anywhere, anytime, and in any environment, whilst also providing the learner with a mechanism for capturing evidence and gaining credentials (Antin & Churchill, 2011; Grant & Shawgo, 2013).

Learner motivation is seen as one of the key factors in student success (Brown, Armstrong, & Thompson, 2014; Clark, Howard, & Early, 2006; De Castella, Byrne, & Covington, 2013). Hence, amongst education researchers the correlations between the use of badges and learner motivation and participation are among the faster growing areas of investigation. For instance, Alberts (2010) investigates badges as an alternative motivational method, while such studies like Bowen and Thomas (2014) and Tally (2012) argue in favour of the use of badges as mechanisms for recognising learning not included in the official transcript, giving “colleges and universities a new way to document learning outcomes and to map the pathways students [...] follow to earn a degree” (Bowen & Thomas, 2014). Finally, as Khaddage, Baker and Knezer (2012) argue, badges have the capacity to serve as a “means of inspiring teaching and learning in the digital age, confirming accomplishments and validating skills” and as an excellent way of motivating learners as badges allow for the setting of “clear standards [...] that can empower informal learning, and reward and recognise [learners] for undertaking this challenge” (Khaddage et al., 2012). While the ways in which digital badges are displayed vary (Abramovich et al., 2013), the underlying benefit of the badge is that once it is earned it can be immediately displayed on such online spaces as the learner’s social media or online curriculum vitae where potential employers or collaborators also can view it.

Finally, since digital badges can serve as both an indicator and validator of learner accomplishment, the area where badges can affect significant changes is that of assessment. A number of issues need to be considered before discussing the specifics of badge application in the CD MOOC. Within a MOOC, the quizzes and tests utilised to verify skills predominantly focus on lower-order skills (Tsaparlis & Zoller, 2003) such as memorisation of facts (Balfour, 2013), while tasks of higher intricacy, such as written assignments, require a more complex form of assessment. With MOOC-offering (edx.org) institutions like the Massachusetts Institute of Technology (web.mit.edu) and Harvard University (harvard.edu) (Gregory, 2013) announcing a switch to an Automated Essay Scoring (AES) application (Dikli, 2006) to assess the written work component in their courses, other MOOC providers, including Coursera (coursera.org) remain sceptical of fully-automated assessment mechanisms and insist on using a form of human-based Calibrated Peer Review (cpr.molsci.ucla.edu) in their own scoring process (Balfour, 2013). A fully-fledged assessment process, requiring students to demonstrate higher-order skills (e.g. critical thinking, theoretical and research-based knowledge, problem solving) would require an extensive resource input from the institutions’ academics (Shepard, 2000) and currently is not viable in MOOC models. However, a number of MOOCs, such as those offered by Coursera, have attempted to fill this assessment gap by taking advantage of group work and peer feedback. Even when peer-assessed though, the latter examples lack institutional verification of the learning process (Balfour, 2013). This is where badges can be utilised to bridge such assessment-related gaps – badges can complement and support formal assessment techniques while maintaining quality standards through institutional involvement in the process (Sandeen, 2013). This paper discusses how digital badges were used in the CD MOOC to streamline the knowledge verification process through the use of both peer feedback and institutional input from the CD MOOC facilitators.

The Carpe Diem MOOC: the design

The CD MOOC was designed to introduce participants to a learning design process that successfully enables teams to quickly and effectively design for learning (Salmon, 2013). Armellini and Jones (2008) describe Carpe Diem as a “design workshop” where course teams “in collaboration with subject librarians and learning technologists, work to implement effective e-learning designs” (p.19). The Carpe Diem learning design process normally consists of a two-day, face-to-face workshop with a facilitator, and by the completion of the second day the course teams have achieved the outcome of a set of online learning activities or e-tivities (Salmon, 2013). The Carpe Diem process comprises six stages: Write a Blueprint, Make a Storyboard, Build a Prototype Online, Check Reality, Review and Adjust, and Planning your Next Steps (Salmon & Wright, 2014). This process was presented and adapted for the electronic form of the CD MOOC to ensure that participants were introduced to each of the six stages of the Carpe Diem process and had the opportunity to design and receive feedback on their selected learning design.

As the Carpe Diem learning design process is a team based approach, it was important to replicate this within the online environment to provide participants with the learning and experience afforded by the interaction of

people with different backgrounds and perspectives. To facilitate interaction, the CD MOOC was designed as an interactive MOOC (Littlejohn, 2013), with participants randomly allocated to small groups (up to 30 in each), each with an online facilitator or e-moderator (Salmon, 2011) who would support them as they worked through the process over the six week period. The Five-Stage Model (Salmon, 2011), a well-established model of a scaffold for online teaching, guided the design of the CD MOOC to encourage online participation, information sharing, knowledge creation and application by the CD MOOC participants. The Five-Stage Model used e-tivities, located within the discussion board on CourseSites to engage participants. Each e-tivity was designed to ensure that participants understood what was required to complete the task and created opportunities for collaboration. In addition to the e-tivities, introductory videos, readings and links to additional resources were provided under Creative Commons Licence to enable participants to review and use the materials in their own educational practices.

A key focus of the CD MOOC was encouraging participants to complete all activities and to collaborate with others. This was built into the design of the e-tivities and was supported by the role of the CD MOOC facilitators who responded to posts on the discussion board, gave information when required and also provided feedback on work. In addition to the learning process within the structured MOOC, participants were encouraged to interact through social media, in particular Twitter and Facebook, and were sent regular emails advising them of new developments in the CD MOOC.

In total, 1426 people from around the world registered for the CD MOOC and of these, 1029 participants commenced the CD MOOC in March 2014. Following the completion of the CD MOOC, all participants were invited to fill in a questionnaire about their experiences with the CD MOOC. The questionnaire collected 155 anonymous responses. The majority of the questionnaire participants resided in Australia – the country hosting the CD MOOC, followed by the United Kingdom, New Zealand, Malaysia and the United States. Of the participants, 37 percent were between the ages of 46 and 55, followed by 27 percent between the ages of 36 and 45. A large majority (78 percent) held post graduate qualifications and 73 percent were employed full time. Nearly all participants (approximately 90 percent) worked in the education sector and 67 percent of all participants were female.

With a few exceptions (DeBoer et al., 2013; Parr, 2014), most MOOCs are dominated by male students in their 30s in full-time employment (Christensen et al., 2013). The CD MOOC participant demographics, however, differed from the Christensen et al., (2013) findings in relation to gender, employment and age. These differences are likely to be due to the particular focus of the CD MOOC on learning design, with nearly all participants working in the education sector which tends to employ more women (Australian Government, 2013).

Carpe Diem badge design

The primary purposes of the CD MOOC badges were to encourage participants to gain skills in learning design based on the Carpe Diem process (Salmon, 2014) and to motivate e-tivity completion. The requirements for earning the badges were detailed in the *Earn a badge* section of the CD MOOC menu in the CourseSites platform.

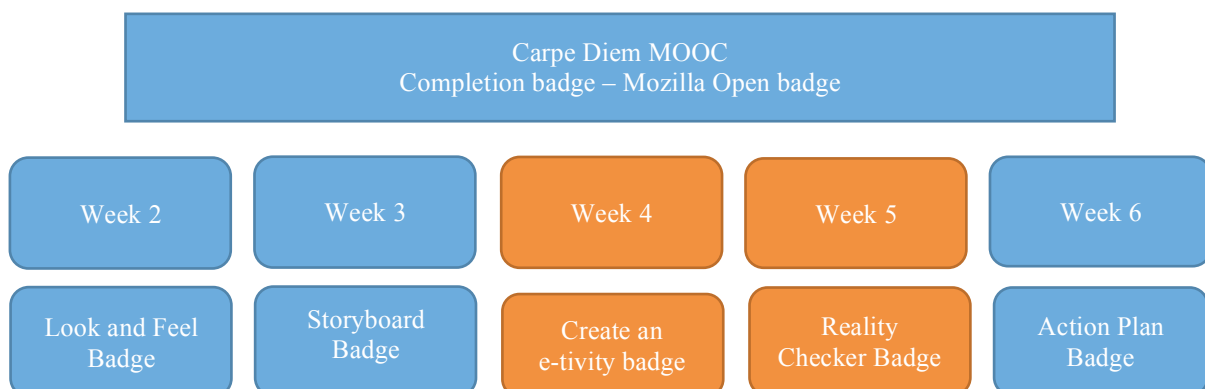


Figure 1: Carpe Diem MOOC Badge Design

There was no badge allocated for the CD MOOC Week 1 as the activities in that week were introductory tasks not specifically related to the Carpe Diem process. In order to gain the “Look and Feel” and the “Storyboard” Badges (Weeks 2 and 3 respectively) the participants had to complete the tasks and the e-tivities corresponding to each relevant week of the course, and then officially submit their assignments. To qualify for the “Create an e-tivity” and “Reality Checker” Badges (Weeks 4 and 5), the participants had to have their work assessed by the CD MOOC facilitators. A badge was also awarded for the “Action Plan” completed in Week 6. The final Open Badge was awarded only when the six initial badges had been earned. The final badge also served as an equivalent to a certificate of completion for the MOOC.

It was possible for a participant to complete the CD MOOC without earning the badges. However the majority of those who completed also submitted their work to earn badges. Figure 2 shows the six badges participants received upon submission of their completed task. Participants could immediately display the first five badges in their CourseSites profile. The final badge (“Carpe Diem MOOC Completion Badge”), which was a Mozilla Open Badge (www.openbadges.org), could be displayed in a wide range of the participants’ online spaces.



Figure 2: Visual representation of badges

Assessment submission verification and validation

The CD MOOC designers’ intent was to ensure that if a participant was awarded an Open Badge at the completion of the CD MOOC this achievement represented completion of all the activities in the course and signalled that the participant had indeed developed an understanding of the Carpe Diem learning design process. A potential risk in awarding badges arises if there is no process for checking the quality of the tasks submitted, hence making the badge a reward for submission rather than a reward for understanding and application of knowledge. Two key components of the Carpe Diem process are the e-tivity creation and the feedback obtained through reality checking (Armellini & Aiyegbayo, 2010; Salmon, 2013), therefore it was decided that these components would be individually assessed by the CD MOOC facilitators. In order to assess potentially large numbers of submissions (Balfour, 2013), and to provide clear guidelines for participants, templates were designed to standardise the presentation of submitted work. Facilitators could then assess whether the submitted work addressed the key requirements and demonstrated a competent level of work in relation to the design of e-tivities and the provision of constructive feedback as a reality checker.

Methods

The use of badges as an educational tool is relatively new, with research related to this area limited, hence an exploratory research design (Stebbins, 2001) was used in this study to elicit responses from participants in regards to their CD MOOC experiences, including with digital badges. Though the badges were embedded into the assessment process for the CD MOOC, it was of interest to analyse whether the presence of badges served as a motivation for participants to complete the CD MOOC or not. The research design for assessing the value of badges within the CD MOOC consisted of two key processes: a post-MOOC online questionnaire (completed anonymously by 155 participants) and 29 phone interviews with questionnaire participants who indicated a willingness to be interviewed.

In the online questionnaire participants’ opinions on the use of digital badges in the CD MOOC were elicited using a 5-point Likert scale question statement (Norman, 2010) “I enjoyed being able to earn badges”. The participants were asked to rank their responses to the statement from “Strongly Agree” to “Strongly Disagree”, and to provide any further comments on what, in their opinion, worked or did not work. In addition, open-ended questions elicited comments on badges, the themes of which are presented in this paper along with

preliminary findings from the interviews. Interview data is currently being analysed, with initial themes presented below. Findings will be fully reported in future publications.

Findings: impact of digital badges

Over a quarter of the participants (30.7 percent) who commenced the CD MOOC earned the first badge, while 17 percent of the participants who started the CD MOOC earned all the badges including the final badge (Mozilla Open Badge). The majority of the questionnaire participants either strongly agreed or agreed with the statement “I enjoyed being able to earn badges”, with 74 percent of the respondents answering positively to the question.

Table 1: Responses to the question of whether participants enjoyed earning badges (N: 155)

Response	%
(Strongly) agree	74.4
Neither Agree Nor Disagree	18.5
(Strongly) disagree	7.1
Total	100

While the overall feedback from the CD MOOC participants on the use of badges was positive, the relatively low percentage of participants (17 percent of the total number of commencers) who earned all the badges suggests complex dynamics within the CD MOOC cohort regarding badges. Below, we discuss the key questionnaire findings pertaining to badges, particularly the motivational aspects in relation to the completion of online tasks and e-tivities.

The theme of motivation linked to earning badges was common across the questionnaire participants: *“I like the earn badges aspect [...] it serves as an extrinsic motivation to all the participants to submit their homework”*. A number of participants linked the badges to motivation in a similar way, for instance, one stating that *“badges have really kept me motivated”*, while another commented that *“earning badges is a good way of motivating and encouraging”*. Participants also noted on how badges helped to keep them *“on track to actually complete things”* and how the badges were a *“good method to push me into doing what was needed to study the subject matter”*. Finally, a participant linked keeping on track with the course assignments to earning badges: *“as far as keeping on one track to at least do something per week, rather than... I haven’t got this done so I’m not going to worry about it”*. Thus the badges served two purposes: that of extrinsically motivating the participants and also operating as a guide and check for progress.

Findings that the CD MOOC participants reported lacking knowledge about badges or even admitting some negative connotation they had initially attached to badges can be explained by the specifics of the composition of the CD MOOC cohort. The cohort, atypical when compared to MOOCs student bodies overall, is unique in that they are mature-aged and are predominantly engaged in the field of education, in a teaching or research capacity. The concept of badges as signifiers of knowledge and achievement was a new concept to many participants. One participant observed how they had *“never worked with badges before”* but yet *“found them strangely motivating - in terms of closure and satisfaction”*. The value of badges became apparent with another participant stating that *“before this course, I thought badges were childish. Now I noticed how motivating they can be”*. Badges were also recognised for their reward element with statements such as *“it was something to work for. There was a ‘reward’ for doing the work”*, demonstrating the value of the immediate recognition of work done.

Competitiveness among the CD MOOC participants presents another topic of discussion as it appears that the badges as rewards not only worked as motivators to the participants to complete the tasks but also provoked some competitive behaviours among them, as the quote below suggests:

I think we all have this kind of competitive streak in us and also that we want to be rewarded is a basic psychological need, and there is a satisfaction in the knowledge that you are actually doing well and that’s a confirmation of that. It’s playful too, which people like so I thought it was good, I enjoyed getting my badge and...yes, it was good it really works.

Throughout the CD MOOC there was also evidence that participants were keen to obtain their badges as the

facilitators received emails from participants asking when they would receive their badges for the tasks that were being reviewed.

Table 2: Descriptive responses to the interview question “Would you use badges in your practice?” (N: 29)

Response	%
Yes	72.4
No	13.8
Uncertain	6.9
Answer not given	6.9
Total	100

Analysis of the interview data is still a work in progress, however, early indicators point to a strong motivational aspect to the use of badges in the CD MOOC, with some participants quite surprised by their own reactions. Comments made by participants during interviews tended to concur with responses to open-ended questions in the online questionnaire. For example, one participant stated that he was at first “*rather sceptical about badges*” but then “*noticed that [badges] had motivated [him] to study*”, a view that was discussed in more detail by another participant who commented that he was “*a bit sceptical about badges but I was really pleased to be picking them up. At the end I was waiting for my last badge, kind of the culmination badge. I was very anxious that I wasn’t going to get it. I was really pleased when I did, I’m not sure what that was about but it worked for me. [...] It was a bit unexpected because, you know, I’m fifty years old, I’m looking at that and going ‘badges that’s a bit of a laugh’ but there is something motivating about them.*”

In addition to motivation, some participants spoke of the competitive aspect of earning the badges: “I think we all have this kind of competitive streak in us and also [...] we want to be rewarded – is a basic psychological need, and there is a satisfaction in the knowledge that you are actually going well and that’s a confirmation of that.” Finally, badges were seen as a reward on their own: “[What I liked about the badges was] the fact that it was something to work for. There was a ‘reward’ for doing the work.”

Conclusions

Motivation in online learning provision is a complex and multi-faceted phenomenon sensitive to situational conditions (Hartnett, St George, & Dron, 2011, 2014). While motivation plays an important role in how students engage in learning (Schunk, Meece, & Pintrich, 2014), different students show different forms of motivation, and these do not necessarily remain stable. This complex issue of learner motivation is highly debated, and a growing body of research suggests that further understanding is needed in online contexts, in particular with MOOCs providing further opportunities for study (Bekele, 2010; Hartnett et al., 2011; Kim & Frick, 2011).

The CD MOOC participants were different to a typical MOOC student sample – our participants were older, more likely to hold a postgraduate degree and were predominantly engaged in teaching or research practice. The composition of the CD MOOC cohort is therefore likely to have shaped the pattern of the participants’ engagement with the course, affecting how and why they became motivated to complete the tasks and earn the badges. The findings demonstrate that the CD MOOC participants were likely to be *already* motivated to learn about the Carpe Diem design prior to commencing the course, and hence badges may not have been the key motivator of their engagement and completion, but rather an additional element the participants could choose to engage with or not.

The majority of the questionnaire participants positively assessed their engagement with badges. Those participants who expressed initial lack of interest, lack of understanding or even distrust towards badges often discussed how their views changed towards embracing the badge system within the CD MOOC as a result of their experiences. Some respondents commented that they found themselves becoming competitive with other CD MOOC participants in their earning of badges. The CD MOOC cohort was dominated by participants employed in the field of education. Therefore, the participants’ interest in badges could have been affected by their perspective as educators, who might consider badges as a possible gamification element to introduce in their own teaching practice. Such shifts in understanding and acceptance, followed by application of the badge in their own teaching practice, are all topics for further investigation based on the CD MOOC data.

Regardless of the uniqueness of the CD MOOC cohort, our findings demonstrate that the majority of questionnaire participants found the badges motivating. Participants reported that the badges acted as a motivator to complete e-tivities and finish the course. Some participants suggested their openness to using badges in their own educational practice. However, whilst the questionnaire participants were generally positive about the badges as additional motivators, it was clear that badges alone were insufficient motivation for everyone. Three hundred and forty participants who gained a first badge in the CD MOOC did not continue to submit work for more badges to earn their open completion badge. This indicates that, unless there are other motivations at play, badges alone are not always sufficient.

Emerging technologies provide many tools that can be used within a MOOC and across other learning environments to improve teaching and learning practices, to better engage and motivate students and to ensure positive student experiences. Our findings suggest that online badges are an innovative method, able to motivate participants as well as improve their engagement outcomes. Badges, therefore, can be used successfully in a MOOC, both as an internal system of rewards, motivation and progress tracker and as an externally recognised reward, which, as in the case of the CD MOOC, equates to a certification of course completion and serves as evidence of skills and knowledge acquired. The ability for the CD MOOC participants to transport the final reward - Open Badge – to a range of online spaces and social media sites enables learners to immediately showcase the skills they have gained to employers or other interested parties. In-depth studies could identify correlations between different types of badges, students' levels of motivation, the impact of badges on completion of a MOOC, and achievement rates. While digital badges have been credited with being able to transform the way learning is recognised both in formal and informal learning contexts (Hickey, 2012), the use of badges in online learning is still in its infancy. Further research is needed to ascertain the effects of badges on learner motivation, and the achievement of learning outcomes and skills.

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