Designing a Digital Badge as a Reflection Tool in Blended Workshops

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Abstract This paper describes the design of a digital badge that provides support for learners who participate in blended instructional-design (ID) workshops. The workshops are hosted by Kumamoto University as lifelong learning activities, and their purpose is to introduce a practical method that enhances participants’ education and supports them in applying ID in their jobs. We designed the digital badge as a tool that continues to support participants after the workshop has finished. The digital badge constitutes not just a program certification, but also an index of the learning outcomes of the blended workshop, such as online report assignments, and an asynchronous discussion record of forum posts made during the workshop. We confirmed through actual use that the acquired digital badge accumulated learning outcomes that would be useful in the participants’ jobs and reflected their skill mastery.

Keywords: instructional design, digital badge, reflection, blended learning, professional development

1. Introduction

Since 2011, Kumamoto University has held instructional-design (ID) workshops as a lifelong learning activity. The purposes of these workshops are: 1) to allow participants to gain basic knowledge of ID and to enhance their education from the viewpoint of effectiveness, efficiency, and attraction; and 2) to enable participants to apply ID in educational tasks related to their jobs and present proposals for improving their tasks. Thus far, a broad variety of professionals from a number of fields, such as university lecturers, medical doctors, nurses, and Japanese language teachers, have attended the workshops. Many of these participants have expressed the need to employ education skills to increase their performance in the workplace. Satisfaction with the workshops has been high, and the workshop that was concerned with hands-on ID learning received a particularly positive evaluation in which more than 90% of the responses to a questionnaire after the workshop were “very satisfied” and “satisfied” (1).

This hands-on workshop focuses on supporting the participants in their use of ID to solve problems in the workplace. However, a recurring problem relating to this workshop has been finding methods to support reflection and the use of the learning outcomes once the program has ended. In previous workshops, we issued a certificate of participation to each participant. This certification was not associated with learning achievement, but was distributed to all participants who attended the program. To encourage participants to apply their learning outcomes to their jobs, it was suggested that a mechanism to represent and recognize their accumulation of learning outcomes might be useful. Therefore, we focused on developing a digital badge, which is an online certificate of completion, and we introduced it as a mechanism that can signify mastery of the skills taught in the workshop and show the participants’ accumulation of these skills. In this paper, we describe the design of the digital badge that was introduced in the ID workshop held in 2015.

2. A Digital Badge as a Reflection Tool

Digital badges are becoming popular as a mechanism for authenticating the learning outcomes of online learning, higher education, and massive open online courses (MOOCs). Peck(2) highlighted that digital badges are not prizes that create extrinsic motivation; instead, he defined them as “‘clickable’ graphics that contain metadata that can reveal information about the individual or organization that issued the badge, the cri-
teria met to earn the badge, the tool(s) used to assess the evidence, and the evidence of learning itself.” As it includes learning outcomes, assessments, and processes, a digital badge can be considered a representation of skill mastery. By acquiring a badge icon that is displayed online, learners can demonstrate evidence of acquiring the relevant program’s knowledge and skills. Furthermore, by taking advantage of the benefits of digital networks, it is possible to link the digital badge with the learning process and outcomes. For example, a learning process includes peer and expert reviews of the coursework items, while learning outcomes include report assignments and other materials that show what the participants know and what skills they have (3). In contrast to a paper-based certificate, the digital badge is associated with skill mastery, it is linked to the learning process and outcomes, and it is not merely a reward for finishing a learning task.

Furthermore, the link functions of digital badges make it possible to use the badge as a learning-support tool once the education program has been completed. Hickey and Soylu (4) described the badge as a valuable tool because it is attached to the learning process and outcomes. As the badge can perform a similar role to that of a portfolio, they suggested that digital badges can be used as reflection-support tools. After completion of the education program, learners can use the digital badge as an index of the skills they have mastered and as a means of reflecting learning, not just as evidence of having completed the program.

Therefore, a digital badge is not only a certificate of completion of an education program or a reward that enhances the extrinsic motivation of the learners, but it is also a representation of skill mastery concerning learning processes and outcomes. Additionally, it can be used in a skill mastery-based portfolio, which is useful for reflecting learning once the program has finished.

Because of these functions and capabilities of digital badges, in this study we designed a digital badge that constitutes a tool supporting the reflection of participants’ learning achievements in ID workshops.

3. Design of the Digital Badge

3.1 Blueprint of the Skill Mastery-Based Blended Workshop

To decide on the blueprint of the blended workshop, we applied a criterion-referenced instruction framework (5) at the initial design stage (Figure 1). First, we identified why the participants wanted to attend the workshop. According to the online questionnaire conducted in advance of the workshop, the participants had problems in their own educational work and wanted to learn skills to solve them. Thus, we set the objective of the workshop to be participants proposing plans of improvement for their education. In order to describe this objective in terms of performance, we set the following learning objective: “the participants can apply the ID model to their education.” This learning objective belongs to the category of intellectual skills, based on the five categories of learning outcomes (6), because it includes the ability to apply knowledge to a particular situation. To have clear standards of good performance, we set six criteria that the final report needed to meet, such as containing ideas for improving participants’ education, reasons why they would be useful, and how they reflect learning outcomes. The learning activities

![Figure 1. Blueprint of the Workshop Based on a Criterion-referenced Instruction Framework.](image-url)
were designed to allow the participants to master this learning objective effectively and efficiently. They were divided into three phases: prior learning activities (online), face-to-face (one day), and post-learning activities (online). The online phases served to allow the participants to effectively utilize the single day at the actual workshop. These online activities were required for submitting coursework items, and thus they were a prerequisite for evaluation in order to allow the participants to select the best learning path. Finally, the participants would acquire a digital badge if they met all these evaluation criteria and prerequisites for evaluation. In these ways, we designed the blueprint of the workshop based on skill mastery, and the digital badge was a representation of this mastery.

3.2 Program Structure of the Blended Workshop Using the Digital Badge

The program structure connected with the digital badge is shown in Figure 2. The course of the blended workshop was as follows. During the prior learning phase, participants were required to post a worksheet concerning education they had engaged in on the online discussion board in order to clarify the problems they were facing concerning education skills. They were also required to write at least one comment regarding their opinions of other participants’ posts on the online discussion board, as a preparation for peer-feedback among participants at the face-to-face workshop. In the one-day face-to-face workshop, participants discussed methods of improving their education through pair and group work with the option of consulting the lecturer on any questions they had. These modules were repeated twice in the one-day workshop. Through these collaborative activities in the face-to-face workshop program, we allowed the participants to acquire a great variety of tips for improvement. During the post-learning (online) phase, participants were required to submit a final report, including a proposal for solving problems they had described earlier concerning their education, and to write at least one comment in response to another participant’s post on the online discussion forum.

The digital badge was linked to these learning processes in both the online phases, which comprised the final report. Using the digital badge, participants could receive individual feedback on their final reports. The individual feedback included information on whether they had fulfilled the criteria, good points of the reports, and positive suggestions for improving their proposals. This feedback served to acknowledge their achievements and encourage them, as members of a community, to continue applying ID in enhancing their education practices and to continue using their newly acquired skills after the program.

The digital badge was issued to each participant one month after they submitted their final report. The specific issue time was as follows: Participants submitted the final report by the deadline at the end of February. Then, a badge was issued at the end of March.
after the lecturer had checked whether or not the final report met the pass criteria and the lecturer had created individual feedback for the report. The reason for setting this timing of issuing the badge was to enable the participants to use the contents linked to the digital badge for new work after the new fiscal year started in April.

4. Development of the Digital Badge Using Default Features of Moodle

The digital badge was developed by combining the standard features of Moodle, an open source learning management system (LMS) (Figure 3); specifically, it was issued to participants who individually met the criteria for passing using the “course badge” function of Moodle. Furthermore, learning processes and outcomes were linked with the digital badge through the inclusion of a link in the description of the badge that leads to a “detailed report” page. This page lists the learning process and outcomes of the individual participant and includes specific feedback on the final report from the lecturer.

Figure 4 gives a visual representation of the uses of the digital badge. The digital badge is designed to help improve participants’ abilities in their workplace after completion of the workshop program. By accessing the digital badge, participants can browse a portfolio of the skills they have mastered, review their learning processes and outcomes, and apply their learning outcomes to activities such as job applications and advertising their education skills to others, such as their bosses and colleagues. Designing the digital badge to constitute a skill mastery-based portfolio, we attempted to assist participants in applying their learning to their jobs.

5. Results

The workshops that introduced the use of a digital badge were held in Tokyo and Osaka during January 2015. During them, 34 out of the 57 participants (60%) acquired a digital badge. These 34 participants completed and submitted the final report and met all the criteria for passing; one additional participant submitted an incomplete final report and was not issued a badge.

Furthermore, we found in the final reports that most participants learned how to solve the problems in their work through the blended workshop. Some participants mentioned having identified the problem in their educational practice and having acquired guidelines in the workshop that would be useful for improving their work. One participant commented in the final report: “Through the workshop, I realized that my syllabus did not clearly convey learning objectives to my students. I had thought that it was enough to indicate in class that the students were moving in the right direction.” These reflective comments were submitted together with ideas for improving their educational practice, such as applying Gagné’s Nine Events of Instruction to university lesson plans, applying first principles of instruction to nurse training, and analyzing the impact of corporate training using Kirkpatrick’s four levels of evaluation. To facilitate the realization of these ideas, participants had

Figure 3. Function of the Digital Badge Using Default Tools of Moodle.
to produce concrete step-by-step action plans. One example of the participants’ suggestions is as follows: “In the workshop for teachers, I want to implement a task of summarizing problems that participants have in their work before the face-to-face training and take time to share it by applying a problem-centered viewpoint and the activation phase of the first principle of instruction. I think that participants should be made aware of the necessity of attending the training.”

The final reports contained feedback from the lecturer to inform participants that they met the criteria for passing, to identify the good points of their ideas for improvement, and to make positive suggestions for the proposals. An example of lecturer feedback is as follows: “The final report met the standards, so it passes. I think that the direction of improvement by introducing an action plan at the end of the applied version and adding the evaluation of behavioral aspects in the workplace is good. For evaluating actions in the workplace, there are various methods, such as each student evaluating the action plan by themselves, the boss evaluating the degree of achievement of the action, and so on. Moreover, there are various options, such as questionnaires, interviews, or holding a meeting. I recommend that you coordinate with your organization and build up results steadily.” In this way, we confirmed that the digital badge included material such as ideas for improving participants’ educational practice, action plans to realize these ideas, and constructive advice that reflected their skill mastery, which could be useful for improving workplace practices after the blended workshop.

6. Conclusion

A digital badge is a representation of learning accomplishments and a tool that supports the reflection of learning achievements. Based on this idea, in this paper we described an overview of a digital badge design that was introduced for an ID workshop. The method through which the digital badge was designed was presented here as a case study. The digital badge was developed to allow participants in the workshop to have a detailed digital record of their achievements and results in the workshop, something that greatly exceeds the capacity of a paper-based certificate. Furthermore, its portability and usability means that the badge is a convenient, efficient tool that the participants can use to demonstrate their educational experience and advertise their skills. Lastly, as this badge is created using the standard features of Moodle, an open source LMS, this technique can be adopted at low cost.

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example, we confirmed that the final report contained participants’ suggestions for educational improvement and their action plan, and also included constructive feedback for the realization of ideas from the lecturer. We feel that this information represents the participants’ skill mastery. Moreover, the digital badge linked with these items might be useful for reflection on learning outcomes and participants’ performance after the workshop. Therefore, this research demonstrated a mechanism that enables the digital badge to collect information useful for participants to reflect learning outcomes and use them in their jobs.

However, we did not conduct verification of the effects of the digital badge. An area for future studies is the evaluation of the application and usefulness of the digital badge as a representation of mastered skills and as a reflection tool. We did confirm that all participants who had submitted the final report had satisfied the criteria for passing and received the digital badge. Further investigation at this point should therefore be aimed at encouraging more participants to submit final reports and increase the success rate.

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References
(1) Tsuzuku, S., Amano, K., Morita, A. et al.: “Introductory Class of Instructional Design: Implementation Report”, Kumamoto University Policy Research, Vol. 6, pp. 23–30 (2015) (in Japanese).
(2) Peck, K. L.: “The Future of Learning Design: The Future’s So Bright I Gotta Wear Shades”, in The Future of Our Field, ed. Asino, T. I., TechTrends, Vol. 59, No. 1, pp. 24–30 (2015).
(3) Gibson, D., Ostashewski, N., Flintoff, K. et al.: “Digital badges in education”, Education and Information Technologies, Vol. 20, No. 2, pp. 403–410 (2013).
(4) Hickey, D. T. and Soylu, F.: “Wikifolios, Reflections, and Exams for Online Engagement, Understanding, and Achievement”, J. of Teaching and Learning with Technology, Vol. 1, No. 1, pp. 64–71 (2012).
(5) Mager, R. F.: Preparing Instructional Objectives: A Critical Tool in the Development of Effective Instruction, Center for Effective Performance, Atlanta (1997).
(6) Gagné, R. M., Wager, W. W., Golas, K. C. et al.: Principles of Instructional Design, Thomson/Wadsworth, Belmont (2005).