電子ポートフォリオ活用による
学生の取り組み強化と内省的学習の促進

パッソス・アンデルソン†1　マレー・アダム†1

概要：本論文では、Moodle と Mahara を活用した電子ポートフォリオシステムの導入の成功例を報告しています。この論文では、私たちの e ポートフォリオの導入における 4 つの重要な側面が実証されています：クラス設定と教授方法、ルーブリックを使用した学生の課題評価、学生のやる気を起こさせるためのバッジの活用、ジャーナル記入機能の活用による内省的学習。学期の終了までに、学生は明らかに、彼らの ICT スキルと、電子ポートフォリオシステムを活用する能力を向上し、自分自身の学習のあり方をよりよく理解しました。

キーワード：ルーブリック、バッジ、ジャーナル、ポートフォリオ

Using e-Portfolios to Promote Student Engagement
and Reflective Learning

ANDERSON PASSOS †1 ADAM MURRAY †1

Abstract: In this paper, authors report on a successful implementation of an e-Portfolio system based on Moodle and Mahara. Here, four important aspects of our e-Portfolio implementation are explored: the class setting and teaching mechanics, student work evaluation using rubrics, the use of badges as a motivational strategy and Journal writing to promote reflective learning. By the end of the course, students have clearly improved their ICT skills, demonstrated competency in using the e-Portfolio system, and have gained awareness of their own learning.

Keywords: Rubrics, Badges, Journal, Portfolio

1. Introduction

Many universities in Japan and abroad have been trying to implement electronic portfolios in their educational setting for some time [1] [2] [3]. The applicability of electronic portfolios (e-Portfolios for short) is so broad that some universities are even using it together with job hunting efforts [4] [5]. Still, little is known about how to implement e-Portfolios in courses that are already in place without making huge changes to the syllabus or compromising instruction time.

In the following sections, we describe the course setting, evaluation mechanics and explain some of the techniques used to promote student engagement and reflective learning like the use of badges and Journal writing as an intrinsic class assignment.

2. Classroom setting and teaching methodology

Before talking about the tools and methodology used in our course, it is important to describe our current class setting, so the reader has a clear understanding of how our classroom environment operates and what are the benefits of our approach implementing and e-portfolio as an intrinsic part of the course.

The e-Portfolio was implemented with first year students taking an introductory ICT course taught in English to a majority of Japanese students with TOEIC scores ranging from 300 to 900 points.

In such a challenging environment, instructors have to find ways to keep students with high language skills motivated while students with low language skills not only learn the class content but also improve their language abilities.

The class is taught twice a week for 15 weeks with ICT objectives of proficiency in text editors, spreadsheet software, presentation software and presentations skills. In addition, the course uses environmental issues as the central theme. In other words, the students develop ICT skills while they learn about environmental issues.

As a general rule, the first session of the week is when instructors start with ICT related training and vocabulary, while the second session of the week serves mainly to work on knowledge reinforcement and language necessary to understand the environmental issue the class is actually working on. Homework assignments were also developed keeping this content distribution in mind, what means that the homework assigned in the first class of the week will be necessary in the second class. Also, the homework assigned at the end of the second class is necessary for the next week's class.

By design, homework assignments play an important role in the course and the flow of the course may be jeopardized if they are not submitted on time. How can we ensure that the students submit assignments? To answer this question, the methodology for evaluation is essential.

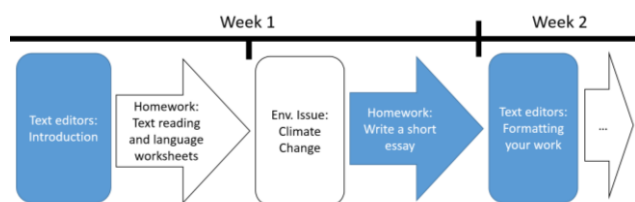
†1 Miyazaki International College

Figure 1 - Content distribution and how the homework assignments connect each class

3. Assignment submission and evaluation

Class assignments are submitted to the Moodle part of the e-Portfolio system where instructors are able to grade it. Here, we decided to change the evaluation method of assignments from *points* to *rubrics*. As it will be explained later, rubrics played an important role making sure students would work outside class.

In the Mahara part of our e-Portfolio system, students create pages for the course and class projects. Those pages contain files, a list of Journal entries (that resemble a blog) and a short text description of the page. Of course, all items are related to the topic of the page.

Next, we explain how we were able to connect everything together.

4. Course rubric development

When we talk about rubrics, a simple table with criteria in rows and grades in columns comes to mind. However, developing a course rubric is an extensive task and requires quite a lot of effort and time to be done correctly [6] [7]. When developing our course rubric we had to consider what the main objectives of our course. Being an introductory ICT course, we started with the basic skills of word processing, creating spreadsheets and making presentations.

To our surprise and against our initial beliefs, developing the rubrics backwards was much easier. By focusing on the final assignments we had a clear idea of the items to be evaluated and the criteria for which each item could evaluated. In addition, knowing that Moodle allows the rubrics from assignments to be reused, it made perfect sense to use this approach.

4.1 Reasoning for rubrics

Of course, a number of evaluation methods could be used, and it is at the instructor's discretion to decide which method works best for a given assignment. Still, rubrics provide clear guidance to the students on what needs to be done in order to earn full points.

Although some may say it looks like cheating since students can see what is expected from an assignment, how is explaining an assignment on the whiteboard any different? Traditionally, a course instructor would say things like "Make sure you have the margins set to X", or "make sure your essay is four paragraphs long and cover what we have just talked in class."

The fact that students know what to do on an assignment does not constitute cheating, but the same cannot be said for tests. For courses where tests are submitted electronicaly our suggestion is, as we have done in Moodle, to hide rubrics from the test assignment and also make only the test assignment visible so students can not "peek" on previous assignment's rubrics. This works well and is fair.

Figure 2 – The first category in the class writing rubrics explicitly requires students to perform work

4.2 Using rubrics to assure outside class work is done right

In our case, the creation of a single item in the rubrics for each activity made students aware that outside class work had to be done and had to be done correctly.

For example, in a writing assignment where students are using a text editor, submitting a file for grading is not enough to get full points. Additional tasks such as drafting, mind-mapping and discussion had to be performed. This single item made outside class work not only necessary but intrinsic to our course, answering the answer we posed before about assuring that students work outside class in their assignments.

5. Using badges to keep students motivated

Keeping student's motivation in the classroom is itself a difficult task. Making sure that students keep up with their work in the e-portfolio system makes things even more complicated. One possible solution is a rewards system. Some researchers suggested gamification in education could keep students engaged and make classes more interesting [8]. For these reasons, we decided to implement Moodle's badge system to issue badges when certain conditions were met.

5.1 Badge design

As our class was in the pilot stage, some adjustments had to be performed and the first badges were issued in the second half of the semester. Surprisingly, or not, students suddenly had a reason to perform better and some even became competitive. This atmosphere really contributed to the course because assignments, communication, and even class behavior were evaluated by the instructors during the duration of the course.

Learning from the implementation problems faced by other institutions [9], we decided for a localized roll-out instead of an institution-wide implementation.

5.2 Keeping it serious

From the beginning, we wanted to have the badges designed by professionals, outside our institution, but due to administrative problems that was not possible. We ended up developing our course badges ourselves with free image manipulation software but always keeping the following points in mind:
- All class badges had to be standardized;
- No gimmick icons should be used. Still, badges should be captivating;
- Badges should be issued by instructors, not automatically;

- Badges should reflect the course objectives as stated in our syllabus;
- As much as possible, badges need to enhance students' learning experience:

Participation: Students are able to answer questions that are not directly asked to them. Even when not knowing the answer, they try.

Critical Thinker: Students are able to use previous knowledge to solve class tasks and problems. Their resolutions are comprehensive and well-reasoned.

Advanced Typing: Students are quite proficient at typing and are able to finish writing assignments faster. Typing speed equal or higher than 45 WPM.

Public Presentation: Students are able to present their ideas clearly during presentations. Answer to questions are clear and to the point.
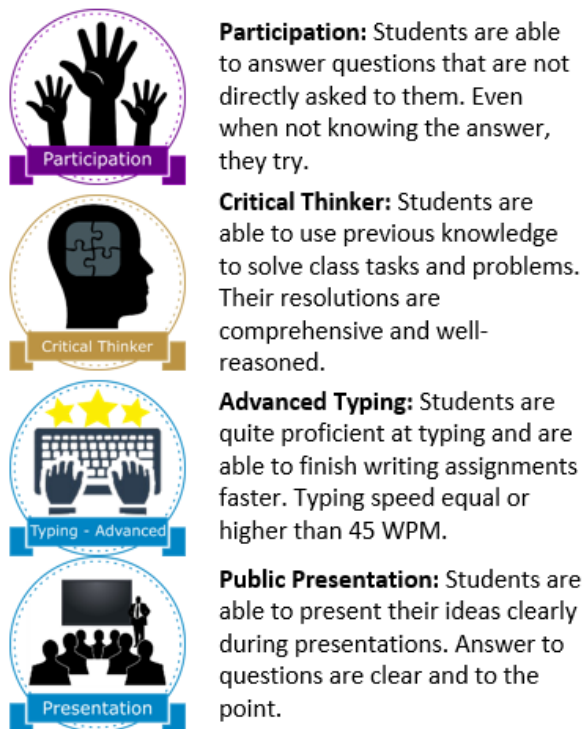
Figure 3 - Examples of badges developed for our course

5.3 Managing badges

Unfortunately, due to our unfamiliarity with Moodle's badge system, issuing badges was cumbersome and took some time. We realize that Moodle's badge management section needs a lot of improvement. Also, one of the main problems we see with the current Moodle badge system is that badges cannot be "un-issued" [10], what means that, if you issue a badge by mistake there is no way to fix that unless a system administrator changes data directly in the database.

6. Using journals to check out-class work completion

In our personal experience, we have seen course instructors telling students what they have learned at the end of a class to make sure student recognize it. Other instructors tell students what they will learn at the beginning of a class. It is our belief that either way, instructors are depriving their students of the joys of recognizing by themselves what has been achieved.

We opted for a more intrinsic and easy way of forcing students to perform reflective learning by using the Journal functionality of Mahara.

As explained before, our first item in the assignment rubric forces students who are pursuing full points on an assignment, to perform additional tasks. Journals offer not only a venue for them to show it, but also allow course instructors to check assignment completion and, if desired, evaluate the reflective writing done by students.

6.1 On the importance of academic journals

The idea of using journals as a tool for students to reflect upon their learning process is not new [11], and in our case worked very well.

Journal writing can be a valuable technique to further develop and enhance thinking and communication skills in any academic field. It also provides opportunities for students to self-assess what they have learned and to record what they experienced during a specific activity. As we are teaching English as Foreign Language students, having them think about what they did and communicate it in writing also helps them practice and improve their language skills.

As explained before, most assignments, if not all, have one item in the evaluation rubric that requires a draft or proof that the student really developed the given solution/artifact by himself. In other words, writing Journal entries becomes the only way students can prove they made, for example, a draft or a mind map for their essay. Students feel the necessity of writing it because this becomes the only possible way of achieving 100% on the assignment, in turn, by doing it they are performing reflective thinking. Recurrent assignments, or assignments divided in multiple submissions work even better since students will come back to what they have written and possibly, but not always, make references of what they have learned in their following entries.
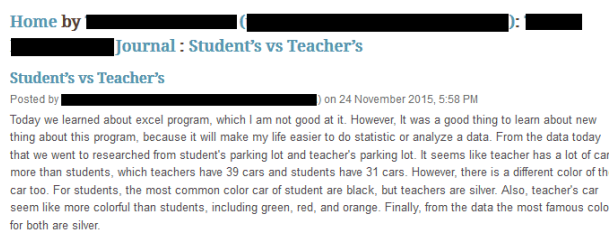

Figure 4 - An example of student journal entry showing reflective learning

Additionally, it should be noted that according to Japanese University Establishment Standards [12], students are required to work a lot outside of the classroom. Although not perfect, Journals in Mahara helped us address this government requirement and at the same time help us make sure that our students are studying enough.

7. Submitting e-portfolios for final evaluation

Finally, as a final evaluation item, we had students submitting their e-Portfolio pages for evaluation. As explained in section 3, students' pages contain files, a list of Journal entries and a short text description of the page.

Just like when developing rubrics for our course, we had to think backwards. If Journals and reflective learning are intrinsic to our course, how can we evaluate student's Journals during the semester it they are submitting it at the end of the course? Could we make students submit their pages at beginning?

The solution we found was to make an assignment in the early stages of the course where students submit their URL for the course pages as soon as they are available. That way, we could check student's Journal entries, double check system dates to

make sure entries were written on time and issue the rubric points accordingly for each assignment.
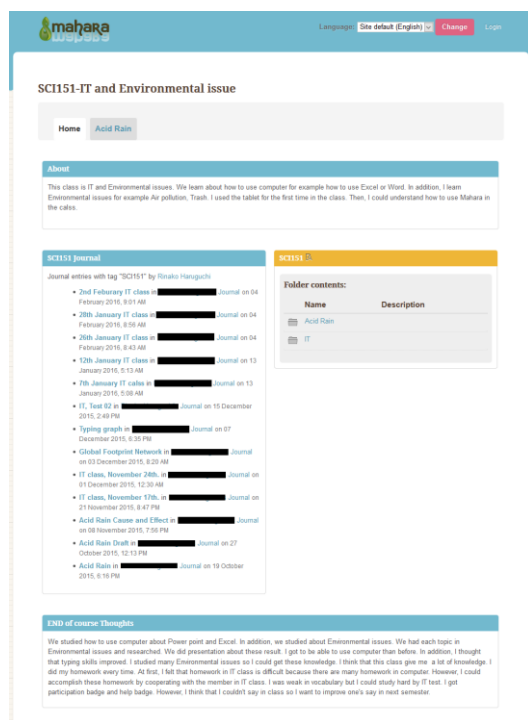

Figure 5 - Student class portfolio page containing a page introduction (top), journal entries (left), class files (right) and end of course reflective learning comments (bottom)

8. Additional uses for the e-Portfolio

Although we had no time to fully test it, there are two more aspects of an e-Portfolio that we would like to explore in the future.

8.1 Visualization of learning outcomes

Visualization of learning outcomes is important so students have an idea of what areas they need to improve. We have used our institution's mid-term report to test-trial a custom visualization tool that gives students a clear idea of areas that need improvement.
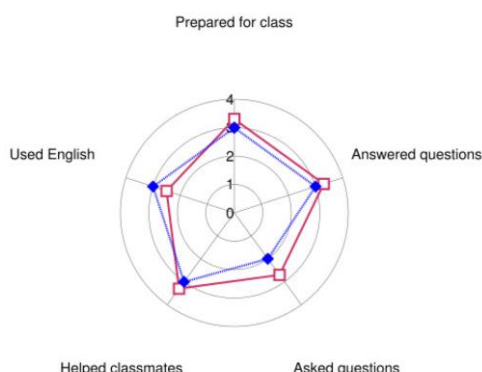

Figure 6 - A custom developed visualization tool used to show students areas that need improvement

8.2 Class explanations made available outside class

Another approach we intend to explore is to record class explanations and make them available to students. We believe that students can benefit from them as they can review class explanations outside classroom as many times as necessary.

9. Concluding Remarks

Although an amazing experience for the instructors and students, the work accomplished here is far from done. The course rubrics are likely to need continuing improvements semester after semester; the badges are far from finalized as more skills are being tested in the course and the criteria of the existing ones need to be revised.

As discussed before, going from a normal syllabus to a rubric-based syllabus requires time and effort. For instructors and institutions thinking about a rubric based syllabus, we recommend the basic PDCA approach and keeping in mind it will be a working in progress.

Upon successfully completing the course, students became not only competent using the e-Portfolio system but also able to reflect on their own learning outcomes. We really hope that the study presented here can be used and adapted by different instructors and institutions beginning or already using e-portfolios.

Reference

[1] Gülbahar, Y., & Tinmaz, H. (2006). Implementing project-based learning and e-portfolio assessment in an undergraduate course. Journal of Research on Technology in Education, 38(3), 309-327.

[2] 金子徹哉, & 望月雅光. (2012). 電子ポートフォリオの組織的取り組みに関する全国調査 (利用状況の概要). 研究報告教育学習支援情報システム (CLE), 2012(2), 1-4.

[3] 田中洋一. (2011). LMS・e-Portfolio・SNS を用いた学習コミュニティのデザイン. 研究報告教育学習支援情報システム (CLE), 2011(6), 1-3.

[4] 岩野雅子, & 宇田川暢. (2013). 山口県立大学国際文化学部における履修カルテとしての e ポートフォリオ開発と導入の試みについて. 山口県立大学学術情報, 6, 139-151.

[5] 新目真紀, 長沼将一, 小林万里乃, 小松大, & 玉木欽也. (2013). キャリア教育における e ポートフォリオの活用方法に関する考察. 研究報告コンピュータと教育 (CE), 2013(3), 1-8.

[6] Palmer, Michael, Dorothe Bach, and Adriana Streifer. "Measuring the Promise: A Valid and Reliable Syllabus Rubric." (2014).

[7] Burke, K. (2010). From standards to rubrics in six steps: Tools for assessing student learning. Corwin Press.

[8] McDaniel, R., Lindgren, R., & Friskics, J. (2012, October). Using badges for shaping interactions in online learning environments. In Professional Communication Conference (IPCC), 2012 IEEE International (pp. 1-4). IEEE.

[9] Mewburn, I., Freund, K., & Rutherford, E. (2014). Badge trouble: piloting open badges at the Australian National University. Ascilite.

[10] Moodle Support, "Support fully deleting badges" (https://tracker.moodle.org/browse/MDL-40551 2016)

[11] Boud, D. (2001). Using journal writing to enhance reflective practice. New directions for adult and continuing education, 2001(90), 9-18.

[12] 文部科学省. 大学設置基準 http://www.mext.go.jp