



Proposing the use of Agile Project Methodology approaches to improve eportfolio design

Patrick Lynch & Persefoni Stylianoudaki

Learning Enhancement & Academic Practice, The University of Hull, UK

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Abstract

There are many stories of eportfolios being implemented and students not engaging with them. Lecturers fail to see the benefits promised and the eportfolio falls into disuse. At our University three main factors were found to be contributing to these problems: lack of understanding amongst staff of what we would call 'eportfolio thinking'; the electronic aspect of eportfolios and the specific affordances of an online portfolio; and the lack of stakeholder engagement in the development process. To address these issues the authors decided to deliver a more supported, hands-on approach to eportfolio development, embedding stakeholder involvement in the eportfolio process and introducing collaborative and innovative methods of working. The agile development methodology adopted places the academic staff and students at the forefront of the developmental process and uses constant and quick iterations to develop understanding and constantly evolve the eportfolio design and use. This proposal recommends the agile development approach and explores how this has been implemented and some of the benefits achieved.

The digital age has presented many challenges for teaching and learning over the last two decades, challenges both in terms of what needs to be taught and how it is taught. Naturally, technology has played a large part in changing education (Beetham & Sharpe, 2013) and has influenced the way educators develop elements of the curriculum and its delivery. ePortfolios have played their part in this change by providing a way in which learners can be assisted in articulating and evidencing new skills required by the workplace. These skills include advanced levels of technology use and new forms of literacy, numeracy, problem solving and communication, rather than just the learning of stable knowledge (Barrie, 2007).

For three years the Technology Enhanced Learning (TEL) team at the University of Hull has been using techniques from Agile Project Methodology (Schwaber, 2004) to support the development

of eportfolios across the University. This paper proposes that by applying agile techniques with eportfolio design, benefits for all stakeholders can be accrued, particularly around the quality of the design and successful adoption. Working with students as true partners in the design and implementation can also increase their understanding and engagement in learning.

“An eportfolio is a purposeful aggregation of digital items – ideas, evidence, reflections, feedback, etc, which “presents” a selected audience with evidence of a person’s learning and/or ability.”

(Sutherland & Powell, 2007)

One finds eportfolios used for specific purposes within programmes of study. These might be related to professional accreditation or other assessments, but rarely used simply because it is a ‘good thing’. What is clear is that for each implementation there are particular needs relating to the context in which the eportfolio is being used.

“Effective eportfolio-based learning is unlikely to occur unless it forms part of a broader commitment to learner-centred, autonomous learning. Evidence suggests that a bolt-on approach to eportfolio implementation fails to engage either practitioners or learners.”

(Jisc, 2008 p.16)

The specificity of implementations requires focussed development of ‘the portfolio’ for each application, and implementation appropriate to that context. In PebblePad language this can translate into the development of ‘resources’ for each specific course.

The authors believe that students and other stakeholders should be involved in the design of the eportfolio. Jisc (2008) state that eportfolio use can help improve students’ understanding of self and of the curriculum, which in turn can lead to greater satisfaction, better performance and higher self-direction in learning. Embedding the eportfolio in the curriculum results in the eportfolio being a representation of the curriculum and the pedagogical approaches employed. Often the eportfolio becomes the best document from which to really understand the course processes. The authors believe that by involving students as partners in the design of eportfolios, benefits are amplified in that students are required to consider not just ‘self’ but also the needs of others.

Agile methodology is a project management method, much applied in technology projects, based on an iterative approach allowing for small and rapid incremental releases where deliverables are tested at the end of each cycle. Development uses short, fixed-length iterations, generally no longer than 30 days, and keeps the iteration focused by prioritising one step at a time. This approach allows for the development and delivery of early prototypes which are improved with every cycle. Another benefit of the agile methodology is the fact that stakeholders provide input at

every stage of the process which ultimately informs any further development. This methodology empowers users and enables them to work with the project team collaboratively.

Agile methods have increased speed-to-market by supporting the notion of early and regular releases. A 'perpetual beta' mentality leads to quality improvement as testing is integrated throughout the lifecycle with active user involvement and improved risk management through early identification and flexibility (Waters, 2012).

Table 1 describes the terminology and roles involved in agile project development and links these to the approach to eportfolio development at Hull.

Agile project development	Hull eportfolio development
<u>Agile (scrum) cycle</u>	Curriculum development cycle
<u>Development team</u> Consists of a small group of people with specific skillsets who are responsible for the development of the product by driving the plan for each sprint and by communicating daily with the scrum master on issues and updates.	Members of the TEL team responsible for developing the resources and the team who have responsibility for delivering and assessing the academic course. The makeup can be fluid depending on the course in question.
<u>Scrum Master</u> The coach of the scrum development team and responsible for solving issues that arise within that team during development. The Scrum Master can alter the scope of the sprint if deemed necessary and also works closely with the Product Owner.	A member of the TEL team responsible for facilitating the project.
<u>Scrum</u> Short-hand for regular team meetings. Progress is reviewed and any blockers addressed.	Team meetings
Part of scrum cycle includes steps to 'gather data and feedback' as well as 'analyse and update'.	Evaluation, feedback and new user stories emerge as the eportfolio becomes more embedded.
<u>Sprint planning meeting</u> Identifying activities to take part in the next sprint. Assigning tasks.	Team meetings
<u>Sprint</u> A fixed period of time during which specified work is completed, typically 2-3 weeks.	Effectively the time between meetings of the team. This varies depending on the availability of the members.
<u>Product owner</u> Represents the end user, prioritises key decisions based on the business needs, owns the product on behalf of the organisation, manages expectations of the end user, and has a vision of where to take the product. Manages the backlog of 'user stories'.	Programme leader
<u>Users</u>	Teaching staff, administrative staff, students, mentors/other assessors, external agencies etc.
<u>User stories</u> The requirements of each specific user are collected, prioritised and signed off by the Product Owner. These are collected in a story form including the role, requirement and the reason for the requirement.	The needs of each type of user: students, teaching staff, mentors, assessors, externals etc.
<u>Acceptance criteria</u> When is something 'done'.	Course criteria, professional requirements, mentor and student criteria.

Table 1: Agile approaches in eportfolio development.

One of the key roles for the team is the Product Owner. *“The product owner leads the development effort to create a product that generates the desired benefits”* (Pichler 2010, p.2). Similarly, within a university context a programme leader leads the development of the curriculum on a programme or module level. There is also a strong similarity between agile cycles (sprints) and the curriculum development cycle. While it might be suggested that the curriculum design cycle is normally longer, responding to feedback between cohorts, the authors would argue that any delivery of the curriculum needs to be adaptive at the time of delivery to the students participating, current developments in the subject area, and a myriad of other influences. Kamat (2012) also identified a connection between agile approaches and the curriculum, noting that although academic programmes follow a strict pattern with fixed timescales and restrictions on content development and delivery, there are already pockets of educators who practice an agile approach in their work. At Hull we require the programme leader to take on the role of Product Owner. The nature of that role requires them to engage with all users of the system being designed.

One tenet of the agile approach is to demonstrate developments early to prove the design and get feedback. PebblePad provides built in templates and we have a selection of examples from previous projects. These allow us to demonstrate the capabilities of PebblePad very early and we can begin the development process with a greater understanding amongst our users of the possibilities available to them. The presence of existing templates and previous successful projects also reduces the frustrations that the ‘perpetual beta’ approach could cause. It gets us working with user stories quickly and creating the product backlog consisting of ideas and requirements identified throughout the project.

A particular feature of PebblePad also supporting our continuous improvement approach is the fact that resources already in use by students can be updated, with these updates immediately visible to the users, without them needing to reload anything or any loss of work. This allows for any identified improvements to be implemented rapidly. Problems can be fixed quickly and we have even made these changes as they have been identified within a classroom setting. The user experience of regular updates, tangible progress and a shared product backlog provides confidence in the system and the development approach being used.

We acknowledge that terms such as ‘beta’ and ‘pilot’ can have a negative impact on the adoption of technologies. However, courses do change with each cohort, learning and teaching itself changes, new approaches become available, and new expectations emerge. Our University wishes to move more systematically towards continuous enhancement in our curricula and we feel eportfolios can assist us in moving away from the didactic era. We would argue that for Hull the idea of perpetual beta might become the norm. In our approach we invite staff and students to contribute to the continuous improvement of the eportfolio, thus getting the best solution for their needs. By inviting, even requiring, the students to act in partnership we believe that they feel more valued and are therefore more willing to assist in continually improving the resources (Kotze & Du Plessis, 2003). If our assertion is that the eportfolio is the best documentation of the

course and its pedagogical approaches, then we are in effect inviting the students to contribute to the course design.

Working with stakeholders, including students, has established a sense of shared endeavour. The feeling may be amplified for the students as they also see their lecturers adopting a more exploratory and inclusive philosophy to their teaching, backed up by a genuine desire to improve their teaching and the students' experience. Staff have opened up the potential fallibility of the system being used without apology or embarrassment. The essence of the approach we adopt is to place the students, indeed all stakeholders, very much as partners in the project rather than subjects of an experiment or simply recipients of knowledge.

Examples from projects across the University have shown that a sense of collaboration, suspension of disbelief, and trust in the shared final outcome have resulted in a more relaxed and confident approach through the stages of development. This compares positively to previous projects where the delivery of solutions 'matching' uninformed specifications has been met with disappointment.

Table 2 provides a simple outline of the way in which the agile approach is implemented at Hull.

Step	Action	Content/purpose	Participants
1	Contact made by programme leader expressing potential interest	Respond with request for course documentation to get background on needs	Programme leader
2	Sprint planning meeting	Demonstrate PebblePad and existing templates. Introduce agile approach and the role of Product Owner. Gather initial requirements Forecast during the sprint planning meeting takes place and actions such as what can be done and how the work will get done are discussed. Sprint goal is created during the sprint planning meeting which the TEL team refers to. If the work changes from its initial sprint goal, then the TEL team negotiates with the Product Owner	Programme team TEL member(s) Others as available e.g. mentors, students
3	Sprint 1	Build first prototype. Typically a wireframe approach with some areas for discussion fleshed out more	TEL Team
4	Scrum	Demonstrate progress. Explore areas needing further development /discussion. Expand user stories and prioritise next sprint	TEL Programme Team + more stakeholders
5	Sprint n planning	Develop more areas	Programme team TEL member(s) Others as available e.g. mentors, students

Step	Action	Content/purpose	Participants
6	Sprint n Review meeting	Feedback from Product Owner Feedback from users and stakeholders Demo of the product	TEL team Product Owner
7	Scrum	Demonstrate and refine requirements	TEL
8	Repeat number 5-7 until ready to launch	Refine the resources, refine requirements	Increase/vary audience for demonstrations as we progress
9	Launch	Demonstrate to stakeholder groups. By launch most groups will have already seen an earlier stage. With students we do a hands-on session. Gather feedback.	Programme team TEL Stakeholders
10	Last minute changes sprint	Any emerging issues from the launch that can be addressed	TEL team
11	Demonstrate and go live		TEL Programme team and affected stakeholders
12	Post-launch developments	Changes that couldn't fit in the last minute sprint, which can be made to the live eportfolio	TEL team
13	Scrum Inter semester sprint planning	Evaluate success. Agree to changes that could not be made on the live eportfolio	Programme team TEL + others as required
14	Semester 2 launch		Programme team TEL + others as required
15	Semester 2 post-launch sprint	Keep asking for feedback	Programme team TEL + others as required
16	End of year scrum	Evaluate success. Planning sprint to harmonise semester 1 and semester 2 plus any other requirements	Programme team TEL + others as required
17	Rinse and repeat	... and celebrate success along the way!	

Table 2: Example project pattern

As a further benefit, helping the students understand the agile development mind-set is also useful. ePortfolios are seldom completed in one sitting. Often there is the need for confirmation of achievement from an assessor of some kind. ePortfolios offer the student the opportunity to demonstrate progress early (a beta version). Feedback on that 'demo' helps to develop the requirements and is used in the next iteration of evidence gathering and presentation. Working with an assessor can be likened to a scrum and the interim periods as sprints. Depending on the course it could be argued that the learning design also needs to be agile as new learning opportunities arise. ePortfolios also encourage students to tell a story based on authentic artefacts in the same way agile methods collect 'user stories' in order to capture the functional requirements of the product from their clients' perspective (Rees, 2002, p.23).

In conclusion, being 'future ready' requires new approaches not only to teaching but also to learning design. Adopting an agile approach to eportfolio design embeds a continuous improvement mentality into learning design, resulting in a much better preparedness of course teams and their stakeholders for whatever the future may bring. Engagement of learners in the

design phase helps them understand the outputs of a learning process and helps them become partners in the process of learning and of evidencing that learning. Furthermore, as Waters (2012) suggests, agile development teams are a more enjoyable way to work for most people because of the active involvement, collaboration and cooperation.

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