

Agile learning & teaching with wikis: building a pattern

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ABSTRACT

In this paper, we describe a blended learning process that is based on the agile development principles [1] and techniques [2] and supported by wikis. The process presented here is applicable to any learning and teaching scenario where the module¹ objectives require development of non-cognitive skills such as: teamwork, giving and receiving feedback, collaborative writing, incremental and iterative development etc We believe that understanding agile principles and being able to apply agile techniques to any development activity are highly relevant skills that are important for the employability of our students.

Categories and Subject Descriptors

H.5.3 [Group and Organization Interfaces]: Computer supported cooperative work, Web-based interaction
K.3.1 [Computer Uses in Education]: Collaborative learning.

General Terms

Management, Design, Experimentation, Human Factors

Keywords

Blended learning, agile development, wikis

¹ A course (North American terminology)

1. INTRODUCTION

In this paper, we describe a blended learning process that is based on the agile development principles [1] and techniques [2] and supported by wikis. The process was implemented in Semester B 2007/8 with a group of seven post-graduate Project Managements students at University of Hertfordshire Business School.

The content of the paper is presented in a format of a pattern (as in [5], but with a subset of relevant fields²) for clarity purposes only, as we acknowledge that a promotion of an “idea” to a “pattern” has to be justified with its broader use and adoption (therefore “building a pattern” in the title).

2. A PATTERN FOR AGILE LEARNING AND TEACHING

Intent: The goal is to provide students with practice in agile development, regardless of their subject area and to use agile principles, as described in Agile Manifesto [1] in working together with students to achieve the learning objectives of the specific module.

Motivation (Forces): We have identified a particular problem when teaching agile principles and techniques to a group of Business School students with diverse educational backgrounds and work experiences. The problem was in finding a common ground that all students can equally refer to when practicing agile development techniques (for example, we could not “simply” develop software!).

The solution was to use the students’ coursework (consisting of six bi-weekly group-work assignments) as a “development” paradigm, and guide the students through the process of developing the coursework using agile principles and techniques.

Applicability: This pattern can be used not only in the original context described under the “Motivation” but also whenever the module objectives require development of non-cognitive skills such as: teamwork, giving and receiving feedback, collaborative writing, incremental and iterative development etc. For example, one of the strategic imperatives in many Business Schools across UK has become “embedding employability into the curriculum” [4]. We

² The following fields are not included: “title and classification”, “also known as”, “code examples”

believe that understanding agile principles and being able to apply agile techniques to any development activity are highly relevant skills that are important for the employability of our students.

Structure: The diagram in Figure 1 is adapted from Mike Cohn's web-site illustration (www.mountaingoatsoftware.com/popular) of the SCRUM³ process.

The "product backlog" from the original diagram corresponds to the "bi-weekly group assignments"; the "sprint backlog" corresponds to the set of selected wiki learning tasks formulated as "user-stories" [2]; the final product is the module wiki site developed through the collaborative effort of all students that will form the group coursework part of the students' assessment.

The main difference with respect to the original SCRUM process [8] is in the absence of daily SCRUM meetings. These are replaced by weekly (students') group meetings and weekly lectures and tutorials, where the coursework development is discussed amongst students and between students and tutor(s).

Participants: The main participants are: tutor ("project owner" [2]), students working in a group ("development team"), other tutors involved with the module, internal moderators, external examiners and any other visitor of the public wiki site.

Collaboration: Every two weeks, the tutor publishes a list of five to six new wiki learning tasks on the module wiki, covering various levels of educational competencies. A task can be a simple one: such as "add a new item to the module glossary" or more complex one, such as: "provide critical collaborative review of a research paper". The template for the tasks is the same as for the user stories described in [2]: "I as a lecturer, would like to see <task> completed, as it fulfils the following <learning objectives> of the module"

Every week, students meet to estimate the complexity of each wiki task (in "story points"[2]) and based on the previous speed of development (i.e. "historical velocity" [2]), estimate the completion time of the current assignment. Individual task allocation is done by the group in their off-line or on-line meetings (e.g. via the wiki discussion pages). Tasks are "implemented" on the module wiki.

After the completion date, the tutor reviews all tasks that are finished and provides the feedback to students. The points for improvement from the feedback are then included as a new task and added to the next assignment ("refactoring").

Consequences: Using the "user story" metaphor for student learning activities has helped students in understanding better the principles of agile planning and estimating. The main side-effect was in the extended workload for the tutor in providing the students with the regular bi-weekly feedback.

Implementation: The actual implementation of the idea extends the work already described in [3] which defines a feedback-driven blended learning process supported by wikis. In this work, bi-

weekly wiki learning assignments are further split (by the tutor) into a set of smaller tasks ("user stories") that are then estimated by the students (using "story points" [2]) and depending of the students group's "historical velocity" [2] included in the bi-weekly "release" or further split into the smaller stories.

Known Uses: See mbsp0340.wikispaces.com (the actual wiki under the consideration).

Related: Just-in-time teaching [7], Conversational learning [6], Wiki framework for blended learning [3]

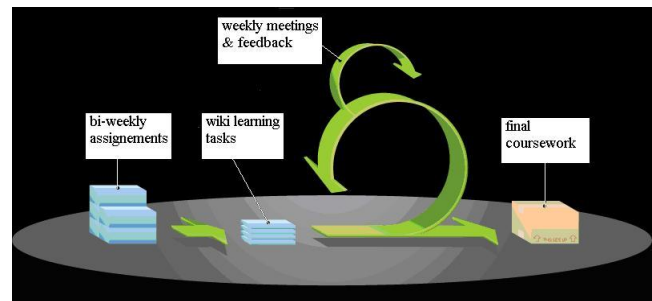


Figure 1 Agile Learning and Teaching Process based on SCRUM

3. ACKNOWLEDGMENTS

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4. REFERENCES

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³ One of the most popular agile development and project management processes. See for example [8]