Using Trello to Support Agile and Lean Learning with Scrum and Kanban in Teacher Professional Development

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Abstract—Agile and lean concepts from industry are increasingly being brought into education. The most common way in which agile methods are used in the classroom is to manage student learning using an adaptation of processes such as Scrum, while the most popular adoption of lean thinking is to manage the pull and flow of learning via a Kanban board. Supporting such approaches with suitable technologies means finding a tool that can support both ways of thinking while also facilitating collaboration, ubiquity and ease of use. We provide an overview of how we have used Trello to support a classroom for the professional development of secondary school teachers, reflect on the outcomes, and consider the implications for tool selection.

Lean thinking originated in the post-war Japanese car industry but has become increasingly popular internationally [9]. It has subsequently been applied to the development of software. Lean software development focuses on five elements; creating value for the customer, eliminating waste, optimising value streams, empowering people and continually improving [10]. These ideas have been carried over into education both in terms of institutional process improvement [11] and in ways of applying lean ideas to classroom activities [12].

A. Scrum and Kanban in Education

The two most popular ways in which agile and lean methods have been adopted in education have been 1) applying Scrum to manage learning, and 2) using Kanban boards. Scrum is a framework for developing products. It's about the product owner, Scrum master and development team working together.

Kanban is a visual tool for managing and optimising workflows. It's about visualising work in progress, limiting work in progress, and adapting to change.
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Problem

“We talk a lot in education about creating a culture of learning in our schools. But we don’t have reliable ways of creating this culture. Agile does.” (Peha, 2011)

Agile project process normally takes place over a period of weeks or month > We created a process miniature approach to provide a relevant agile experience, where participants play-act a small number of iterations of the process in a very short period of time, We aim to maintain the rhythm and the feedback ceremonies (stand up meetings, retrospectives) of Scrum, so our process miniature is based on Scrum sprints with a Kanban board of user stories with WIP limits.
Trello Boards

- Pull and Flow
- Three 20-30 minute sprints
- Standup meetings in between sprints
- 2 WIP limit on 'Things we are learning'
User Cards

To the "back" of the Trello User Story Card students defined their achievable and meaningful acceptance test (success criteria).

They also recorded the result of the test (at the end), so that once approved they could move it to "Things we have learned" column.
Meaningful Learning? (1/2)

Approaches provide **student agency**, allowing

- Students to **research**, **apply** and **evaluate knowledge**, and **present** outcomes
- to be **successful** rather than the push model of high stakes exams and the associated risk of failure
- to **self-regulate** their learning by prioritising
- differentiation over **choice** and **pace**, with the students being the driver rather than the passenger

Visual nature of Trello Kanban **learning backlog**

- helps students maintaining **focus**
- provides an opportunity to **track** and **reflect** on progress of learning
Meaningful Learning? (2/2)

Trello Kanban boards for Teaching staff?
- more **efficient** level of activity by ensuring tasks are not left incomplete
- creates a sense of **accountability** for a group and improve **communication**
- **collaboration** would be evident, visible to learners and other stakeholders

Standup meetings for Teaching staff?
- would help to **prioritise**, more **productive use of time** and more effective and goals focused
- **goals** are established and decisions made within **self-managing teams**
3rd Sprint > Focus on Leadership

When the participants were given the opportunity, in the final sprint, to create their own story cards around agile and servant leadership, the scaffolding provided in the earlier sprints helped them to effectively write story cards and acceptance tests.

“How can we demonstrate the characteristic of ‘Valuing people’ within our team?” Acceptance test: “all team members have contributed and justified a way that we can show this characteristic.”
Abstract—Agile and lean concepts from industry are increasingly being brought into education. The most common way in which agile methods are used in the classroom is to manage student learning using an adaptation of processes such as Scrum, while the most popular adaptation of lean thinking is to manage the pull and flow of learning via a Kanban board. Supporting such approaches with suitable technologies means finding a tool that can support both ways of thinking while also supporting collaboration, ubiquity and ease of use. We provide a case study on how we have used Trello to support a classroom board for the professional development of teachers. We reflect on the different perspectives of students, teachers, and external parties.

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A. Scrum and Kanban in Education

The two most popular ways in which agile methods have been adopted in education have been 1) using Scrum to manage learning, which fits the way Scrum is used in the professional world, and 2) using Kanban boards which are often built and used to support lean thinking in schools and universities [12].

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