



Use-case analysis of SCRUM based approach in education using cloud based tool JIRA

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Abstract

Scrum is a project based learning framework where students attain their learning objectives by completing a project through working in small teams/This in itself is not new, but Scrum as a framework is new and brings you specific roles, artifacts and events that gives both the student and the teacher that structure which is normally missing within project-based learning. On top, students may attain their knowledge faster and grades are supposed to be higher. For this purpose we can use cloud based learning tools increasing students efficiency and proper distribution of team work. For this purpose online cloud based tools like JIRA can be used.

I. INTRODUCTION

Schools are using Scrum to help teams of students to learn more effectively and develop themselves in an enjoyable way. The self-organized student teams work in sprints to learn subjects and evolve the learning process. Results from the agile way of working are improved quality of education, higher grades and motivated students. The student teams and teachers used retrospectives to evaluate the learning processes, and improve the way that Scrum can be used for teaching. Using effective tools for the same can enhance the productivity of students.

Teachers' didactical expertise and pedagogical expertise appeared to play a key role during the implementation process, whereas teachers' subject matter expertise, and other factors such as teaching context, teaching experience and personal biography seemed to be less important. Didactical and pedagogical expertise enhances teaching with Scrum: it supports the implementation as well as increases its effectiveness, independently of teaching context, experience and personal biography. This would mean Scrum methodology offers possibilities for teachers to enhance and enrich their teaching practice.

II. LITURATURE SURVEY/BACKGROUND

Scrum methodology is a novel framework for teaching intended to scaffold students' learning process when they work on complex, real-world tasks. It is originally a project management framework frequently used in business and industry to manage projects. Scrum methodology is increasingly used in educational contexts. Yet, it is also a rather complex framework and more insight in how teachers understand and implement Scrum methodology is needed.

Currently, context-based approaches are widely used by students of all years in engineering students. For the self development of students the university emphasizes the students to perform mini projects in each



year. These mini-projects are usually conducted in groups of 4 to 5 student members. The issues faced are making assumptions, misinterpreting what's being discussed, not understanding what they need to do, working on the wrong task and failing to work well together. To overcome these problems we can use SCRUM based process using online cloud based tools like JIRA.

III. PROPOSED WORK/SYSTEM

The SCRUM based methodology focuses on creating agility in students. This can be achieved from teacher-driven education to student-driven & organized education. The main idea behind this entire process is to properly organize the student activities. These activities can range from simple class work to group mini-projects. –

Scrum methodology includes ceremonies, roles and artifacts, and should provide structure and overview. Its iterative character invites reflection on both learning process and learning progress and evokes feedback among students and teacher.

Scrum methodology was initially developed in the 1990s as a project management framework frequently used in business and industry to manage complex projects, especially in the field of software development. The term 'scrum' originates from rugby, and refers to rugby players forming a powerful group, positioned in a specific way to conquer the ball. Scrum provides ceremonies, roles and artifacts to monitor progress, to adjust to changing circumstances and to reflect on quality of intermediate products. In an educational context, Scrum methodology might be an answer to collaboration issues often perceived by students.

A typical Scrum project in an educational context starts with a teacher, in the role of product-owner, presenting a rather complex, real-world question to his students with an explicit ceremony. The teacher clarifies the learning goals, connects the real-world question to the personal lives of his students and provides students with artifacts such as a scrum board and a product backlog, which comprises a list with exercises and assignments that are necessary to answer.

Research has shown that especially innovations which require a shift from a rather directive teaching style, to a more participatory and student-centered teaching style are challenging for teachers to implement. Thus, before implementing Scrum methodology into context-based chemistry classrooms, a closer look to specific factors that hinder or facilitate the implementation of context-based approaches, is necessary. Several studies suggest that the following conditions play a key role in the implementation of context-based approaches: (1) teachers should understand the real-world question and the underlying concepts themselves; (2) their beliefs about education should align with the rationale behind the context-based approach and should be supported on the big picture as they develop context-based materials (3) they should possess skills necessary to create a context-based learning environment with a focus on monitoring students' learning process as well as guiding and scaffolding their learning progress with appropriate materials (4) they should be able to develop adequate assessments appropriate for context-based learning environments; (5) they should be able to adapt their teaching to the specific needs of their students, elicit and pay special attention to frequently asked questions and their educational level.



Scrum methodology could potentially support teachers in four of these conditions. Obviously, the first condition—basically about the quality of teachers’ subject matter knowledge—is not affected by this project management framework. However, Scrum methodology offers a ceremony in which teachers are challenged to explain why the concepts involved in the project could be meaningful for the students. Secondly, if teachers’ beliefs are not aligned with the rationale behind context-based approaches caused by feelings of uncertainty how to guide the students, the ceremonies and the clear structure of Scrum methodology might support teachers in changing their behavior (condition 2 and 3). This suggests that Scrum might contribute to teachers’ didactical expertise, which can be defined as knowledge and skilled use of teaching approaches that guide teachers’ planning, execution and evaluation of classroom actions. Especially in student-centered learning environments, such as context-based approaches, where students typically work collaboratively in small groups, didactical skills, such as guiding, monitoring and facilitating students through the entire learning process, are important aspects of teachers’ didactical expertise.

Scrum methodology explicitly supports teachers with the fourth condition by introducing a review phase in the form of a formative assessment at the end of each sprint cycle. These reviews evoke feedback and might support teachers in focusing on the specific needs of their students (condition 5). Reviews reveal misconceptions in an early stage, providing opportunities for students to discuss challenging concepts with their teacher or with team mates. In addition, the retrospective phase, in which students reflect on issues concerning collaboration, communication and their learning approach, reveals problems in an early stage. Retrospectives create opportunities for the teacher to discuss and reflect with their students on motivational issues and how to overcome hindrances perceived, such as collaboration problems within teams. Review and retrospective invite teachers to discuss and reflect with their students on conceptual problems, learning strategies, motivational issues, and how to overcome hindrances perceived, *e.g.*, concerning collaboration in their team.

Both reviews and retrospectives require that teachers have specific subject matter expertise and pedagogical expertise. Subject matter expertise refers to teachers’ knowledge of the subject that enables them to deploy appropriate learning tasks, elucidate subject material and diagnose students’ misconceptions. Pedagogical expertise refers to the social and emotional dimensions of learning, and focuses on how teachers approach their students. It encompasses sincere interest in what is going on in their minds, motivational and personal issues

Thus, the ceremonies, roles and artifacts of Scrum methodology might encourage teachers to apply *subject matter expertise*, their *didactical expertise* and *pedagogical expertise* in a suitable way to scaffold students’ learning in a context-based learning environment, and thus shape teachers’ classroom behavior.

IV. RESULT AND DISCUSSIONS

JIRA Software supports any agile project management methodology for software development. JIRA Software is an agile project management tool that supports any agile methodology for scrum,. From agile boards, backlogs, roadmaps, reports, to integrations and add-ons you can plan, track, and manage all your agile software development projects from a single tool.

Agile tools for scrum



Scrum is an agile methodology where products are built in a series of fixed-length iterations. There are four pillars that bring structure to this framework: sprint planning, stand ups (also called daily scrums), sprints, and retrospectives. Out-of-the-box, **JIRA Software** comes with a comprehensive set of agile tools that help your scrum team perform these events with ease.

Sprint planning meetings determine what the team should complete in the coming sprint from the backlog, or list of work to be done. JIRA Software makes your backlog the center of your sprint planning meeting, so you can estimate stories, adjust sprint scope, check velocity, and re-prioritize issues in real-time. There are several tools within JIRA Software's scrum template that can help your sprint planning run smoothly.

1. Version management

Track versions, features, and progress at a glance. Click into a version to see the complete status, including the issues, development data, and potential problems.

2. Easy backlog grooming

Easily re-prioritize your user stories and bugs. Select one or more issues, then drag and drop to reorder them in your backlog. Create quick filters to surface issues with important attributes.

Sprint planning

Make your backlog the center of your sprint planning meeting. Estimate stories, adjust sprint scope, check velocity, and re-prioritize issues in real-time with the rest of the team.

4. Story points

Estimate, track, and report on story points to help your team become more accurate in future sprints. Use story points, ideal hours, or your own method of estimating.

Scrum board managed by teachers as well as students.

Scrum boards are used to visualize all the work in a given sprint. JIRA Software's scrum boards can be customized to fit your team's unique workflow. You can also easily add things like swim lanes to separate epics, assignees, projects, and more. At the end of the sprint, get a quick snapshot of all the issues that were completed and any unfinished issues will automatically move into the backlog to be addressed in the next sprint planning meeting.

V. CONCLUSION

Scrum methodology could be an appropriate framework to support context-based classrooms. This methodology is intended to students' learning process when they work on complex, and sometimes overwhelming, projects. Scrum methodology has gained ground in education to structure self-regulated learning. It can be implemented in several educational contexts, including software engineering and professional writing courses. It can be observed that participating students perceived their software engineering course as appealing. Moreover, the introduction of Scrum methodology to improve mutual collaboration and reflection among students and teacher. Experiences of students during a project-based learning approach can show that students recognized the advantages of Scrum methodology and scored above average compared to students using regular teaching approaches.



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