

IMPLEMENTATION OF SCRUM METHODOLOGY IN EDUCATION: A SYSTEMATIC LITERATURE REVIEW

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ABSTRACT

The agile methodology like Scrum is always considered at pioneer level in software communities over some decades. Scrum attempts to build the quality work in short iteration and helps to gain returns on investment for the industry. Now a days Scrum methodology have become novel framework in education to scaffold students learning process when they do project based learning or working on real world tasks. Pedagogical experts enhance teaching by using scrum methodology ,helps to increase effectiveness and enrich teaching expertise. This paper review several papers on scrum, its framework and implementation of scrum methodology in higher education. This paper represent a result to check whether scrum adoption is a boon or bean in higher education.

Keywords: Agile methodology, Scrum, higher education, scrum framework

INTRODUCTION

Scrum is an incremental and iterative agile software development framework for managing product development. It was first defined as "a flexible, holistic product development strategy where a development team works as a unit to reach a common goal".In such a highly competitive working environment, it was crucial to organize working group projects efficiently. In fact, each developing group member must interact by following a particular manner of organization (so-called self-organization): the scrum methodology. The ultimate purpose of this working methodology was to follow an agile and effective procedure.In the context of higher education scrum methodology could be useful for students to invest quality time in solving projects in a team.In today's world students need skills of identification and solving problems collaboratively as well as communicate, interact, find and use information.The student should learn how to learn.Collaborative learning is an umbrella term where students learn together in a group to solve complex problem.Scrum methodology was implemented in context-based chemistry courses. However, Scrum methodology has gained ground in education to structure self regulated learning. It was implemented in several educational contexts, including software engineering and professional writing courses.

What's Scrum?

Scrum is a methodology used to solve complex problems and tedious tasks by working collaboratively in a team.Scrum methodology includes ceremonies, roles and artifacts,and should provide structure and overview.Scrum is adopted as a Whole with little change or may be tailored as required which is called as "ScrumButs".Scrum has various roles and artifacts.With scrum, the product is developed across a number of sprints, which are fixed-length iterations. Sprints are predetermined time periods in which a product is created and delivered for review.One iteration that lasts no more than a month and is constant in length throughout a development endeavor is referred to as a sprint. The Sprint can only be cancelled by the Product Owner. Sprint completions, or milestones, occur regularly and at regular intervals, bringing with them a sense of real progress with each cycle that energizes everyone and continuously inspires the team and also aids in identifying any flaws or poorly understood needs early on.

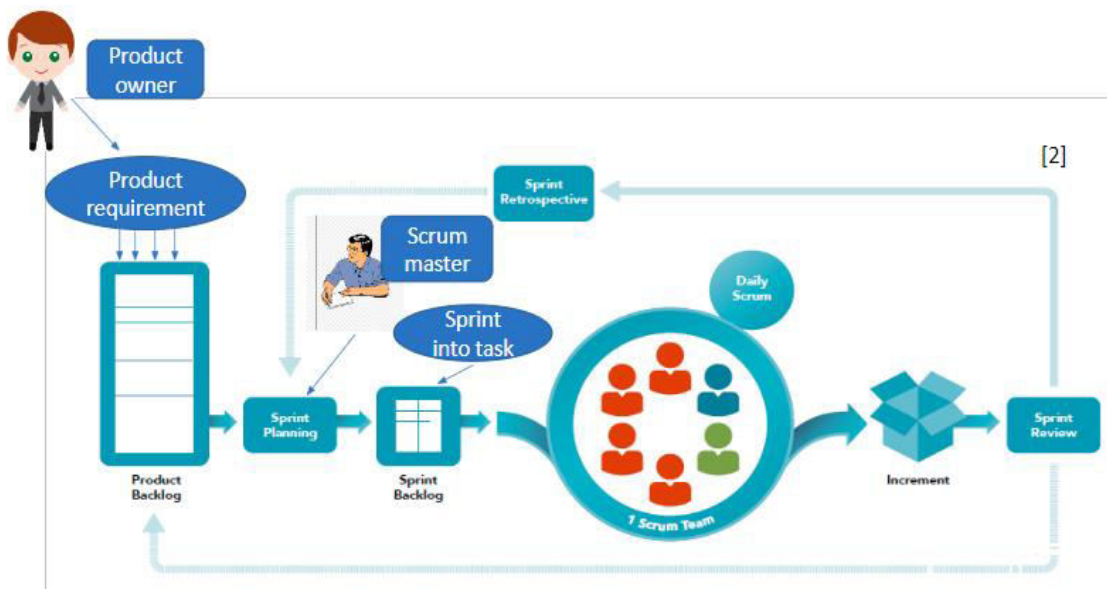


Fig1: Scrum methodology Framework

Scrum Roles

The Product Owner, Scrum Master, and Team are the three components that make up the Role Scrum. The person in charge of defining the specifications or the objective of the software applications that will be implemented is known as the product owner. All initial needs will be documented by the Product Owner for the Team to complete (known as the Product Backlog). The team, which includes business analysts, system analysts, developers, testers, and others, is in charge of managing the project. The team is in charge of completing the Product Backlog that the Product Owner has provided, and each member of the team is in charge of one of the separated Backlogs and is capable of knowing what to do next. The scrum process was established by the scrum master.

Research Objectives

In this review article, the Scrum methodology in different educational fields mentioned above are examined based on several research papers published in the relevant periodicals.

Analytical Table:

Sr.No	Scrum Methodology Implementation in different field	Analysis
1.	Student’s Performance Analysis Using Scrum Practices	A standardized framework for managing the university's placement process is provided via the use of scrum technology. Scrum increases each member's productivity, adaptability, quality, and responsibility when they are involved in the university's placement process.
2.	Scrum Methodology in Higher Education: Innovation in Teaching, Learning and Assessment	Creating an environment where teaching and assessment can be constructively aligned is extremely helpful. Additionally, via this

		experience, students learn other soft skills that are crucial for their professional futures, such as self-assurance, organizational abilities, learning how to handle challenging projects, and the capacity for teamwork.
3.	Using Distributed Scrum for Supporting Online Collaborative Learning - A Qualitative Descriptive Study of Students Perceptions	The use of a project management framework like Scrum methodology in a learning environment like secondary chemistry classes places a lot of expectations on the teachers. However, based on the experiences of the participating teachers in this study, it is clear that fostering a collaborative environment in the classroom that allows teachers and students to work together consistently is both advantageous and a necessary precondition for the successful application of the Scrum methodology.
4.	Tracking the student's performance in Web-based education using Scrum methodology	The largest issue for the worldwide web-based education system is communicating and monitoring student achievement, despite the fact that it deals with a variety of subjects, ideas, and bright students. We can use scrum to tackle this problem. One of the most effective agile approaches is Scrum, which is its core.

CONCLUSION

An organized framework for managing project-based learning in higher education is provided through the use of scrum technologies. It is being found that initially use of scrum methodology is hard to implement by both teachers and students but once totally implemented can be effective for team building, communication and greater productivity. The preparation work for the teacher should be finished, including carefully preparing the Scrum ceremonies (stand-up, review, and retrospective) and setting up the necessary materials (scrum board, product backlog). They should also engage with their pupils using their pedagogical knowledge, pay attention to their comments and worries, and adjust the Scrum methodology to meet their unique needs.

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