The Success Factors of Using Scrum Methodology to Improve the Effectiveness of Web-Based Learning and Traditional Learning

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ABSTRACT: Teaching and learning is essential for everything. The advanced technologies are implemented in education like technology-enhanced learning (TEL), computer-based training (CBT), computer-assisted instruction (CAI), internet-based training (IBT), web-based training (WBT), online education and so many apart from traditional classroom learning. This paper gives description about success factors of running scrum to improve the effectiveness of both web-based learning and traditional learning.[1]

KEYWORDS: Scrum Basics; Traditional learning; Web-based learning; Comparison

I. INTRODUCTION

Scrum is one of the effective methodology in agile. Many software companies are using scrum to improve their projects. Each project is different and the requirement varies continuously, the same way education field also requires innovations, new ideas, and new subjects to improve student's knowledge and to analyze the capacity of each student. In this case also scrum can be utilized. Scrum is an innovative and iterative approach to getting work done. Scrum is an agile framework for completing complex projects. Scrum originally was formalized for software development projects, but works well for any complex, innovative scope of work. Work can be handled using scrum.[4][6]

II. RELATED WORK

Scrum is an incremental framework. Scrum structures product development in cycles of work called Sprints, work take place one after the other. Beginning of each sprint, team selects items from a list of requirements based on priority and completes it by the end of the sprint. During sprint changes are not accepted. [2][4]

A. **Scrum Roles**

1. The Product Owner: The Product Owner is the main person and responsible for achievement in project. The Product owner is Customer representative, the features of the project are defined by product owner, responsible for the profit, and he has full rights to accept or reject the work results.

2. The Team : The Team members are the real developers of product. Each team consists of 5-9 people. Different expertise members like Programmers, testers, user experience designers are involved in project.

3. The ScrumMaster:The scrum master helps the team members to complete their project. He is responsible for teaching, implementing scrum and maintains required documentation.

B. *Scrum Activities***:** [3][4][5]

*1. Sprint planning meeting:*Sprint Planning Meeting takes place, at the beginning of each Sprint. In this meeting, they focus on what to do and how to do. In the Sprint Planning Meeting, the team is making a very serious commitment to complete the work and the team will begin the Sprint Planning Meeting by estimating how much time each member has for Sprint-related work.

2. Sprint: Changes are not accepted during sprint and the release cycle of 2 to 4 weeks.

3. Daily Scrum: It is a short period of meeting about 15 minutes of meeting. Daily work is discussed during this meeting. It is also called "Stand-up meeting". In this meeting, everyone discuss about

- What they did since last meeting?
- What to do next?
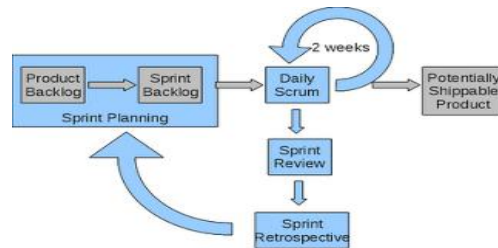- What problems they face while doing project?

Fig. 1. Scrum meeting [6]

4. *Sprint Review:* After the Sprint ends, there is the Sprint Review, where the team demos what they've built during the Sprint. Present at this meeting are the Product Owner, Team Members, and Scrum Master, plus customers, stakeholders, experts, executives, and anyone else interested. The team does not give any presentation, they just discuss about what's been developed, to ask questions and to give input.

5. *Sprint Retrospective:* Sprint Retrospective is done at end of every Sprint after review meeting. In this, whole team can participate and they discuss about obstacles and experiences faced to improve the project further. It takes 15-30 minutes to complete this meeting.

III. PROPOSED CONCEPT-TRADITIONAL LEARNING USING SCRUM

Traditional learning involves
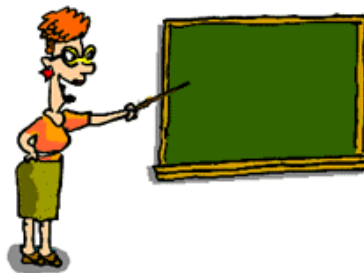
- Teacher,
- Student,
- Blackboard and chalk.

Fig. 2. Traditional learning

A. *Advantages of Traditional learning:*

- Teachers will clarify the students doubt immediately.
- Understand capacity of each student easily.

B. *Disadvantages:*

- Student's performance is low.
- More of theoretical session.

Student's practical knowledge can be improved when we implement scrum.

- Each subject can be considered as project.
- Each topic in subject is task.
- Students are team members.
- Teachers are the scrum master.
- HOD's are the product owner.

In class room learning, number of students can be divided into team based on strength of the class. Each team can consist of 5-9 students. Subject is divided into number of topics and each topic assigned to each team by the scrum master called teachers. Students will analyse about each topic and they can discuss about it for better understanding purpose. Scrum meetings can be implemented in traditional learning. Instead of implementing all meetings, we can use sprint planning meeting, daily scrum meeting and sprint review meeting. During sprint planning meeting, the team can decide about what subject and how to learn that subject in depth. In the Daily scrum meeting, students can involve and they can share different ideas about the subject to get depth knowledge. The questions must be answered in this meeting are

- What topic students learnt since last meeting?
- What to learn till next meeting?
- What problems students face while studying subject?

In the sprint review meeting, students just share about what they have learnt during sprint. All members can involve in this meeting to give suggestions.

IV. PROPOSED CONCEPT - WEB-BASED LEARNING USING SCRUM

Web-based learning means learning through Internet. Learners need to have high-speed internet connection. It involves,

- Computer.
- High-speed Internet connection.

Fig. 3. Learning through Web

A. Advantages:

• Available at any time.
• Material can easily be kept up-to-date.
• Available at any place.

B. Disadvantages:

• No direct contact to teacher
• No face-to-face interaction to other students
• Student's questions are not answered immediately.

Scrum can be implemented in web-based learning. The main disadvantages listed above can be resolved using concept of scrum. For example: students learning through Internet can form a team, they can invite expertise in each field, students those who want to learn must register their name and they can create unique ID. Time chart can be prepared for each expertise to answer for the questions all time without any delay. Like face book, all learners can communicate, interact with each other, they can share ideas using video, audio and text.

V. COMPARISON

A. *COMPARISON OF TRADITIONAL LEARNING*

Categories	Traditional learning With Scrum	Traditional learning Without Scrum
Students knowledge	Will be improved	Improvement will be low
Learning	High	Low
Communication	Necessary	Not necessary

B. *COMPARISON OF WEB-BASED LEARNING*

Categories	Web-based learning With Scrum	Web-based learning Without Scrum
Availability	All time	Not all time
Communication	Provides best communication	No communication

V. CONCLUSION AND FUTURE WORK

Although all students get knowledge through web-based and traditional learning, 60% are comfortable to learn in both learning techniques but maximum number of learners expects immediate answer in web based learning and depth knowledge of subject in traditional learning. To meet this challenge, scrum can be effectively implemented in both the techniques of learning. We propose the topic called "Webeduscrum" for making interaction between all the students using Internet based on this our further research will be continued.

Scrum provides greater productivity, adaptability, communication, improves quality, team co-operation, and greater responsibility of each member in a team. Scrum is not only used in IT field, it can be implemented in education, banking sector and video game development.

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BIOGRAPHY

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