Innovative Agile Project Based Learning

Agile Ceremonies in a classroom

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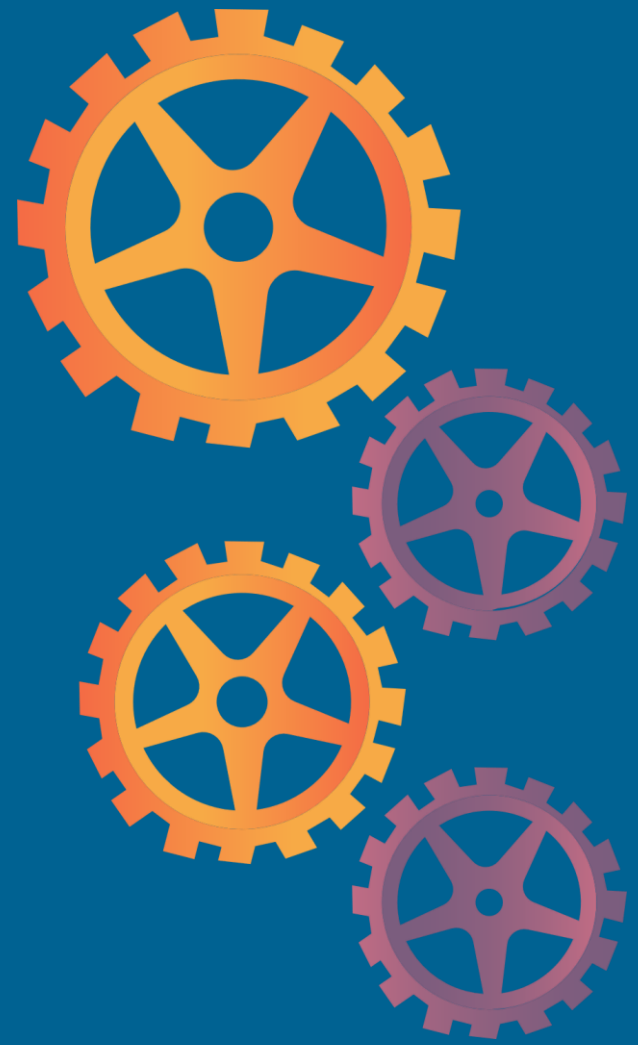
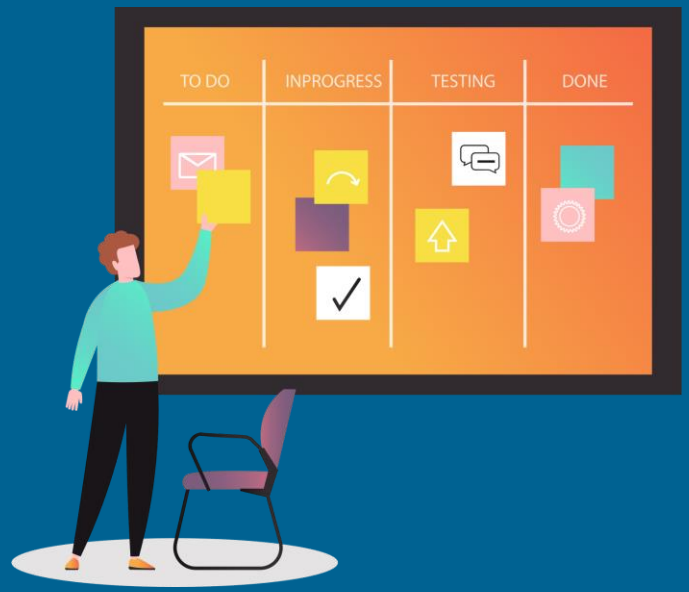
Agenda

- Present agile approach in education
- Present aspects of an agile learning culture
- Present and describe agile ceremonies adaptation to a classroom environment



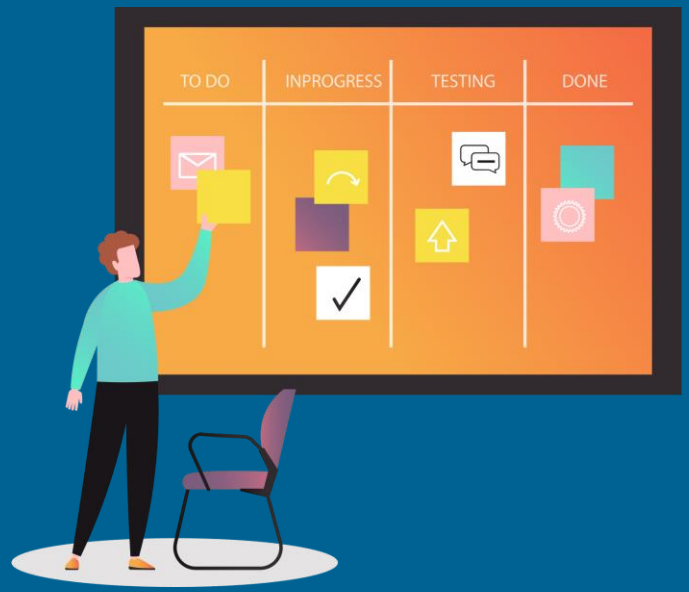
Agile in education

- During last years, there is an increased interest on how agile methodologies can be applied to education.
- **Agile methodologies** can be applied in various domain of education:
  - As an **educational tool**
  - As a **tool** that can **foster cooperation and collaboration** between teachers
  - As a **tool** that will **improve project management and execution** by schools.



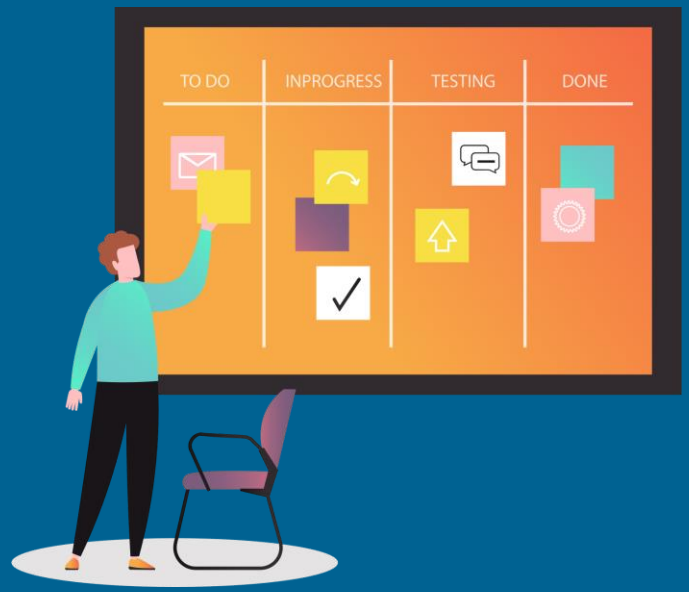
Agile in education – Agile school manifesto

- Nowadays there are several approaches on how agile principles can be applied to Agile education.
- According to **Agile School Manifesto** by Peha (2011), an agile education should encompass the following values:
  - *Student interactions over lectures and textbooks*
  - *Meaningful learning over the measurement of learning*
  - *Stakeholder collaboration over complex negotiation*
  - *Responding to change over following a plan*



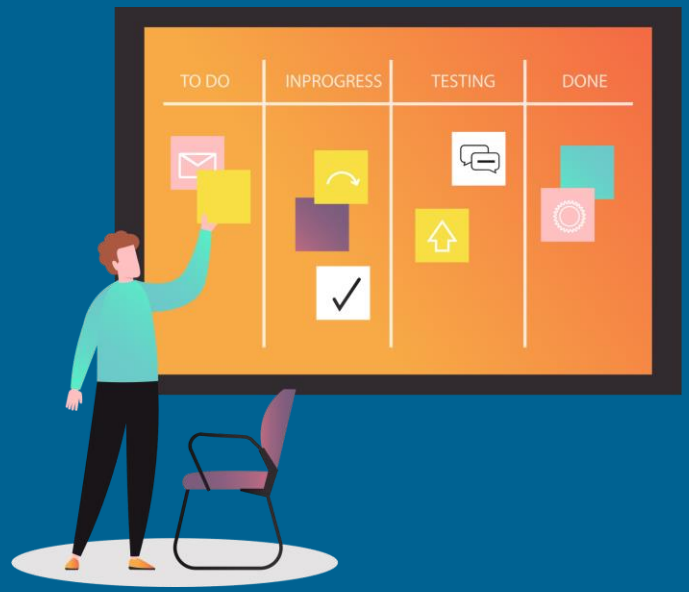
Agile in education – Agile Manifesto in Higher Education

- According to **Agile Manifesto for Higher Education** by Kamat (2012), an agile education should encompass the following values:
  - *Teachers and students over administration and infrastructure*
  - *Competence and collaboration over compliance and competition*
  - *Employability and marketability over syllabus and marks*
  - *Attitude and learning skills over aptitude and degree*



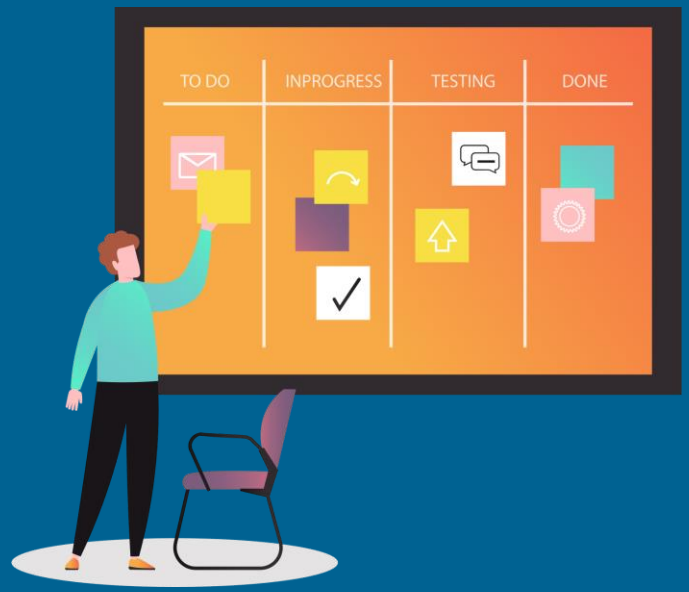
Agile in education – Agile Pedagogy Manifesto

- According to **Agile Pedagogy Manifesto** by Royle and Nikolic (2016), an agile education should encompass the following values:
  - *Practice preferred to theory*
  - *Learner choice and agency preferred to learners being limited and controlled*
  - *Learning and applying skills preferred to learning facts*
  - *Collaboration preferred to competition*
  - *Customized learning preferred to standardized one size fits all*
  - *Co-constructed learning preferred to teacher-led learning*



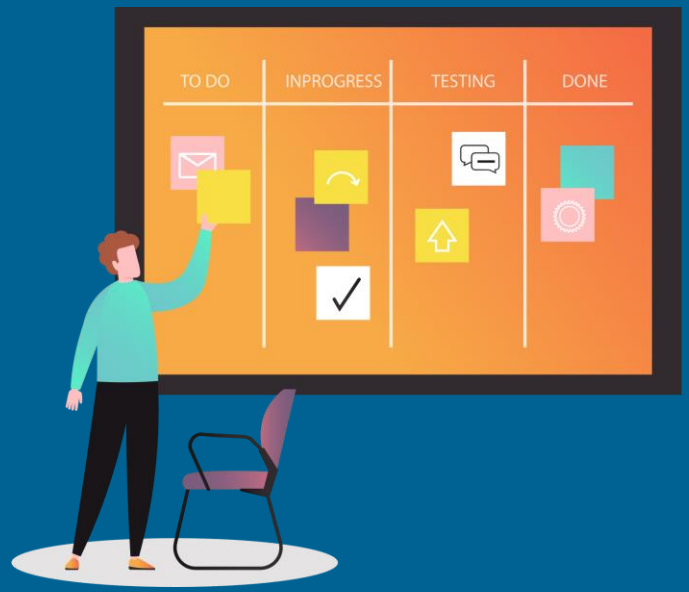
Agile in education – Agile Manifesto in Teaching and Learning

- According to **Agile Manifesto for Teaching and Learning** by Krehbiel et al. (2017), an agile education should encompass the following values:
  - *Adaptability over prescriptive teaching methods.*
  - *Collaboration over individual accomplishment.*
  - *Achievement of learning outcomes over student testing and assessment.*
  - *Student-driven inquiry over classroom lecturing.*
  - *Demonstration and application over accumulation of information.*
  - *Continuous improvement over the maintenance of current practices.*



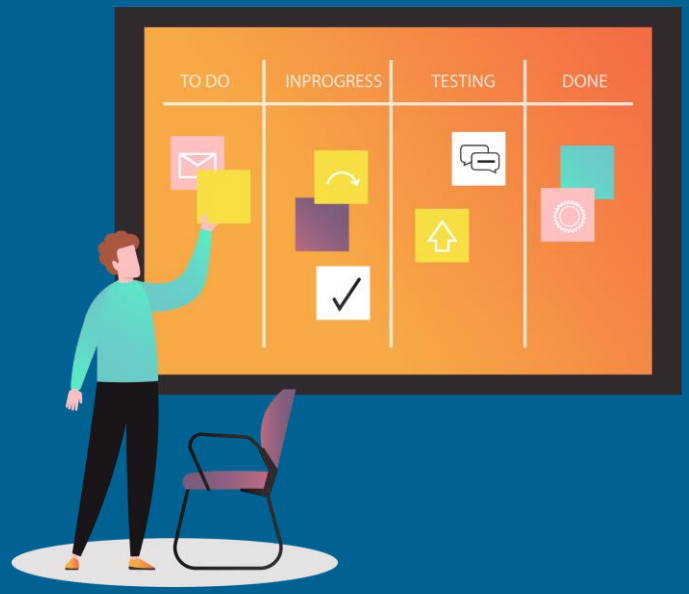
Agile in education – Scrum Manifesto for Agile education

- According to **Manifesto for Agile education** by Scrum@School (2018), an agile education should encompass the following values:
  - *Responsibility for students above control by teachers.*
  - *Kaizen mindset (continuous improvement) above meeting standards.*
  - *Teamwork above individual excellence.*
  - *Feedback above grades.*
  - *Respond to change above following a plan.*



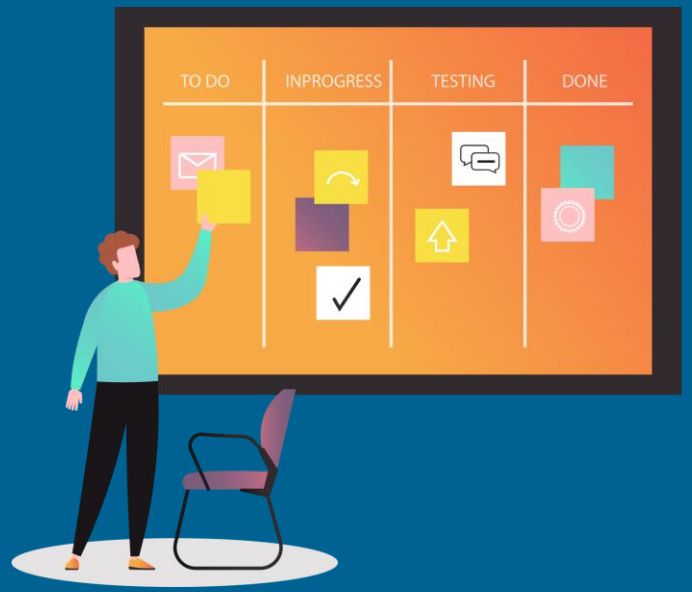
Agile in education – Principles

- Common principles of this agile approach are the following:
  - *Continuous and Incremental Learning in Shorter Phases*
  - *Collaborative Learning*
  - *Collaborative teaching*
  - *Customized learning*
  - *Prioritize Better Learning Experiences*
  - *Constant Reflection at All Levels*



Agile learning facts

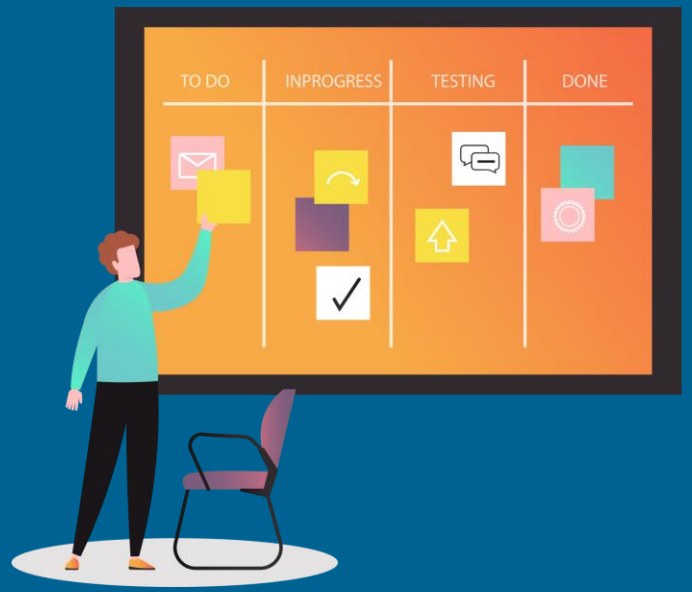
- An agile learning environment is an environment that is highly responsive, adaptive and iterative.
- In Agile learning environments participants gain or improve their competences through the work undertaken.
- Agile learning is based on incremental design approach where learning occurs through doing, trying and fail.
- Agile learning moves in small steps and via an iterative process. That means continuously testing, refining and improving content until you're pleased with the final result.
- Agile learning is focused on flexibility, collaboration and speed.



Agile Learning vs Learning Agility – An important difference

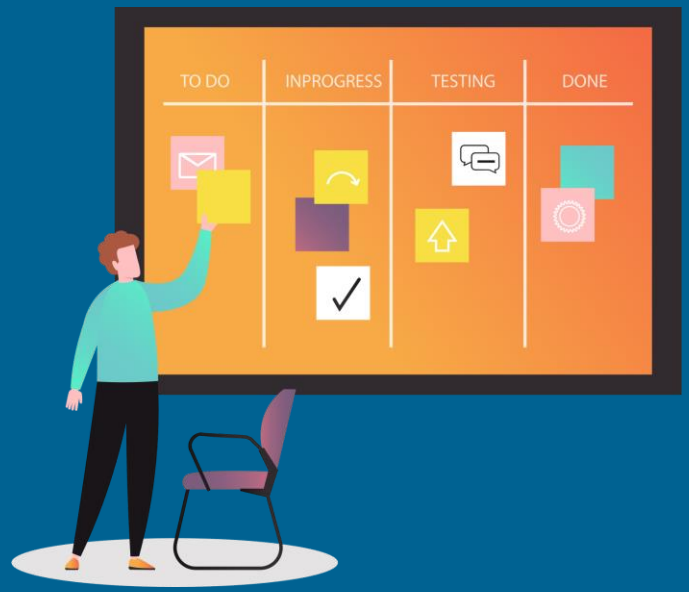
- **Agile learning** is the application of Agile philosophies to the learning design process. It enables incremental and iterative design process. Agile learning usually incorporates the use of Scrum.

- **Learning agility** refers to characteristics held by individual learners. Learning agility is the ability held by an individual to adapt to unfamiliar situations, learn quickly, and in a mostly self-managed way.



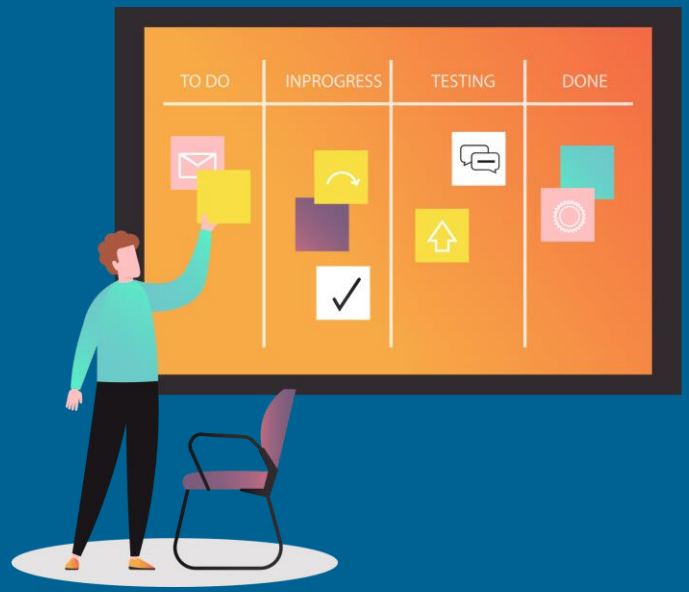
How to establish Agile Learning Culture

- **Identify and involve every stakeholder**. As each stakeholder has a different perspective, this will help you to collate their ideas and feedback and create something that everyone wants and is interested about.
- **Encourage peer learning.** It is easier to learn from a teammate rather than a teacher.
- **Make learning continuous.** In continuous learning, an agile learner acquires new skills and knowledge on an ongoing basis.
- **Break it down into bite-sized chunks**. Instead of using extensive learning courses, give people small packs that will help them learn something new quickly
- **Make time for inspection and reflection.**
- **Appreciate learning**. Appreciate team members for achieving a milestone or performing well in a course



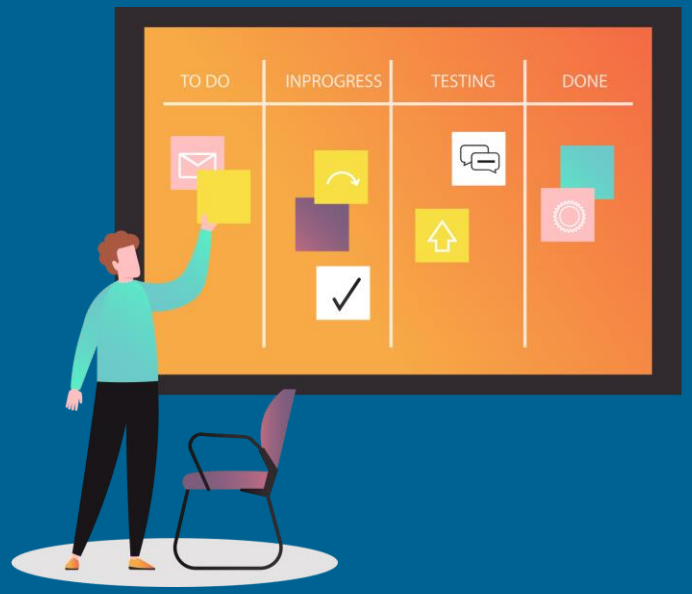
Scrum adaptation to Agile learning in schools

- Scrum adaptation to classroom:
  - Product owner → teacher
  - Scrum master → teacher
  - Customer → student
  - Increment → increase in students' skills/knowledge
- Scrum classroom teams:
  - Team leader → teacher
  - Team → students



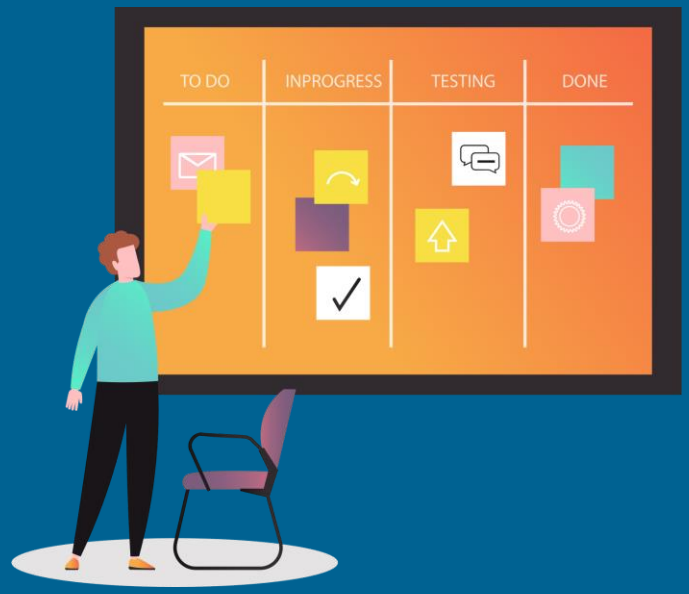
Teacher as Scrum master

- Teacher as Scrum master is responsible for the overall good implementation of Scrum methodology in class (coaching).
- Scrum Master is responsible for:
  - Initiate, facilitate and monitor Scrum ceremonies and
  - Maintain the connection between team (students) and product owner (teacher).
  - Facilitates cross-team collaboration



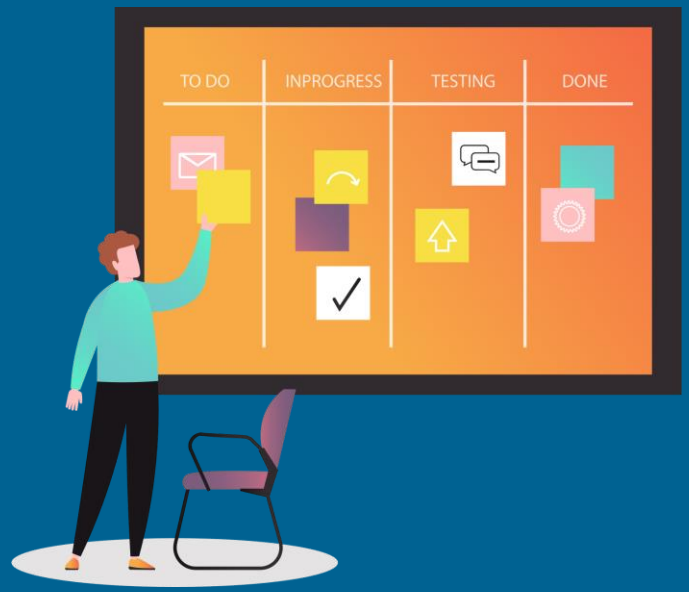
Teacher as Product owner

- Teacher as product owner focuses on the subject matter and is responsible for:
  - Setting the learning objectives and partially also how something is learned.
    - Product Owner should gradually give autonomy to teams as they become increasingly more self-organised and take responsibility of their own learning.
  - Monitoring the quality of educational results
    - Set the acceptance criteria (e.g.: min test scores, type and size of presentations, deadlines etc.)
    - Definition of Done. When a work is considered as “Done”. Experienced team do this autonomously while inexperienced done this with product owner consultancy.
  - Grade the results.
    - Product owner evaluates both individual students and teams



Student teams

- Student teams consist of autonomous students who collaborate to achieve a common goal at the end of the sprint.
- Student teams are created by the product owner in a way that they can achieve their tasks.
- Usually they have the following characteristics:
  - Are self-organized
  - Have a variety of skills
  - Track their own progress using the acceptance criteria and definition of done
  - Size are small in order to be manageable, large enough to be able to perform the work. The usual number is 4 to 5 members.



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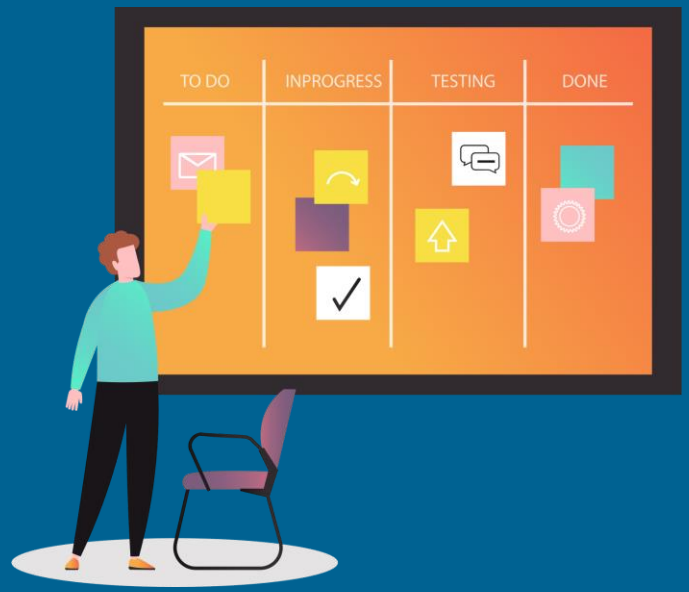
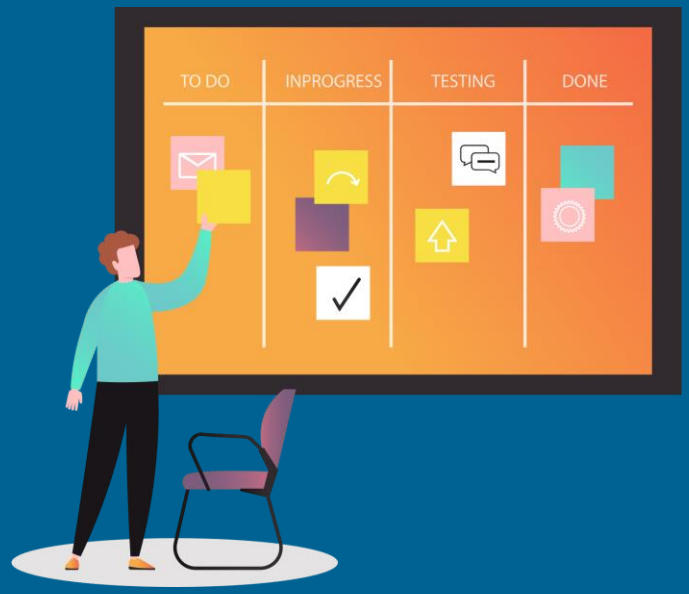


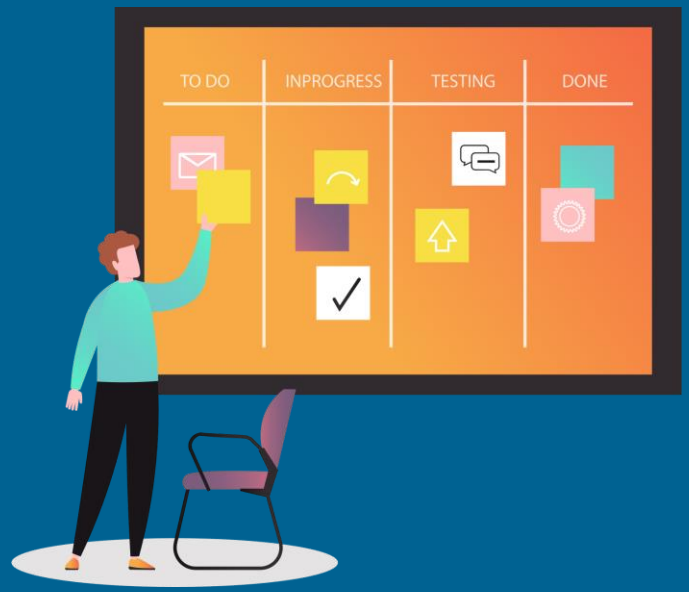
Sprint – basic concepts

- The Sprint consists of a set of learning materials that contribute to the achievement of a specific goal (assignment) and add value to the learning process. As sprint can be:
  - A small project
  - A chapter from a book
  - A lesson series
  - Etc.
- An assignment consists of several sprints (at least 3 sprints). This allows team to reflect and adapt.
  - Student teams cannot change during an assignment.



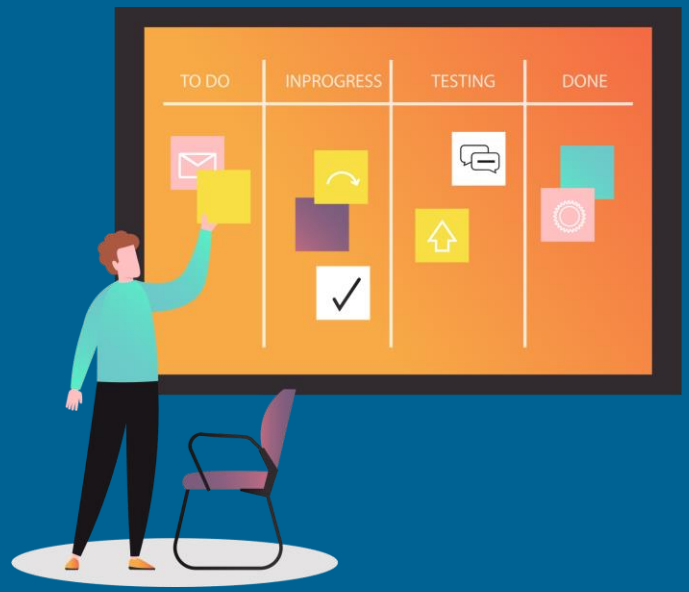
Sprint - Duration

- The duration of an assignment is usually two months or less. Longer periods introduces a lot of unforeseen complexity and makes planning difficult for teams.
- A sprint duration can be from 4 hours to no more than 2 weeks. For a full-time work, a sprint lasts a week maximum.
- A sprint cannot be cancelled. In case of a problem extra time can be assigned and/or a reset of goals can be done.



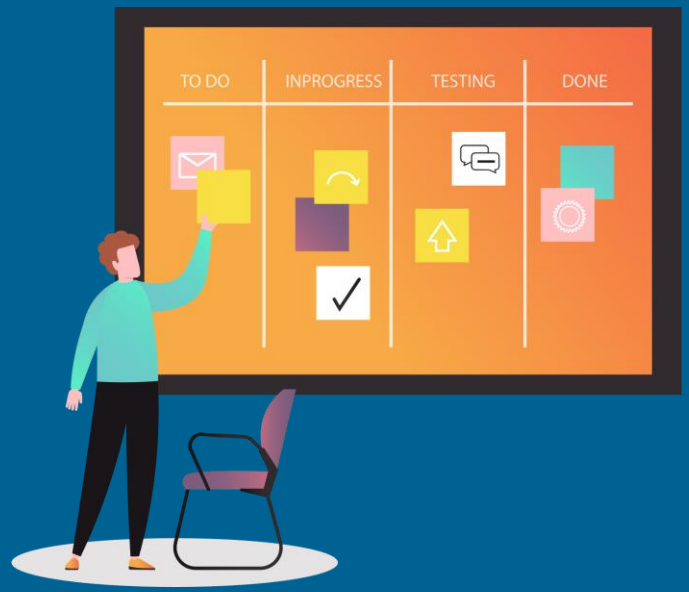
Sprint – Team formation

- Team formation refers to the formation of various student teams in order to fulfil an assignment.
- Team composition should follow some criteria such as:
  - Have skill diversity
  - Gender balance ratio
  - Be different from previous assignments
  - Team formation based on friendship is undesirable.



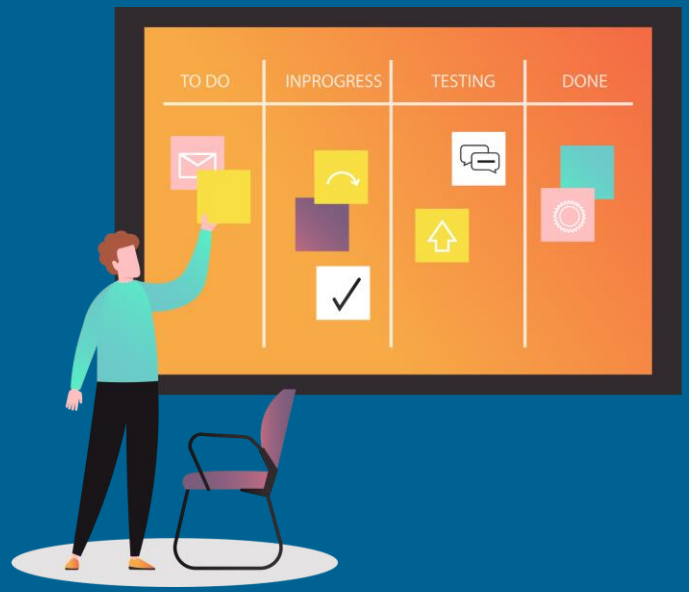
Sprint - Ceremonies

- Each sprint consist of the following ceremonies/meetings:
  - Team formation.
  - Sprint Planning organizing and prioritizing the work need to be done.
  - Dailly stand-up for progress update and problem solving.
  - Sprint release. (Performing the work)
  - Sprint review
  - Sprint retrospective in order to identify possible improvements.



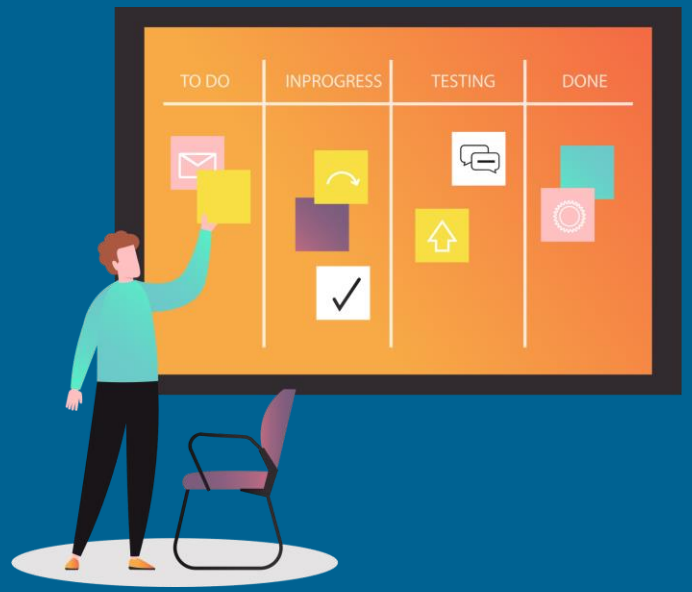
Sprint – Sprint planning /1

- Initially, the product owner explains to the student teams:
  - what he/she expects at the end of the sprint
  - the learning goals.
- Also sets:
  - the number of lessons in the sprint,
  - the basic milestone within a sprint,
  - the evaluation model (acceptance criteria)
  - the time boundaries.
- Next, the team starts to organize and to prioritize the tasks. In continuous, the first subdivision of the tasks begin to be implemented.



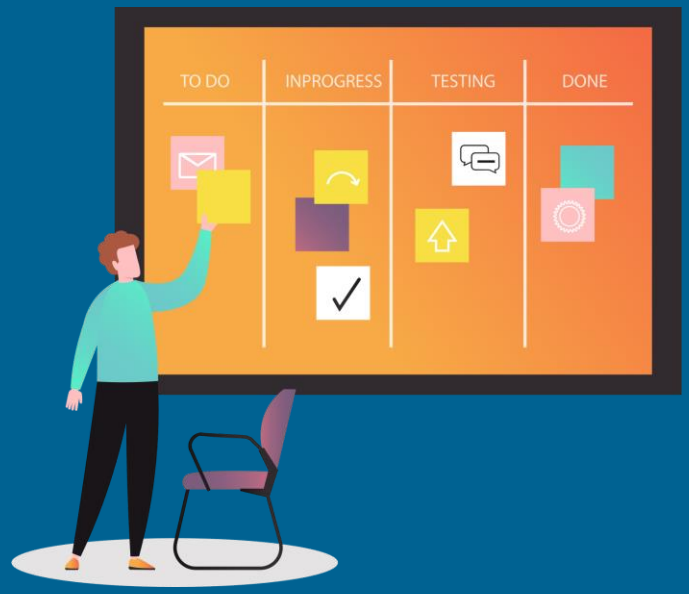
Sprint – Sprint planning /2

- At the end of the sprint planning phase, the student teams should be able to explain to the product owner their plan to achieve the specific learning goals.
- If the **sprint results are not in line** with the goals set, then the team re-sets the goals with the product owner and restructures the tasks in order to achieve the learning goals.



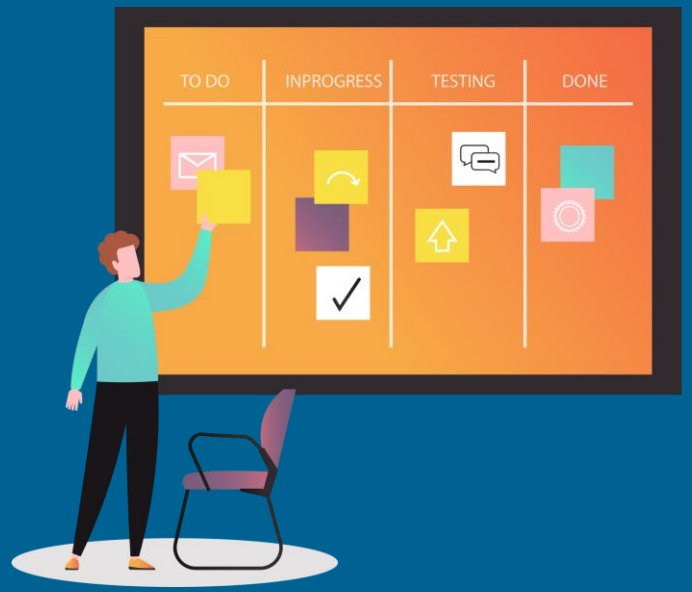
Sprint – Stand Up

- Stand Up meeting, as in normal Scrum, is a 5-minute meeting aiming to:
  - synchronize activities within team
  - adjust the daily plan
  - Provide support to others.
  - Be accountable to own self and other team members
- Student Team should be able to explain to the product owner their plan, what work has been done and what is remaining to be done until the end of the sprint.
- Scrum master ensures that student teams perform the daily stand-up meeting and helps them keep it within 5-minute timebox.
- Stand-up meetings improve communication, enhance trust, encourage members and improve the knowledge of the team about the undertaken work.



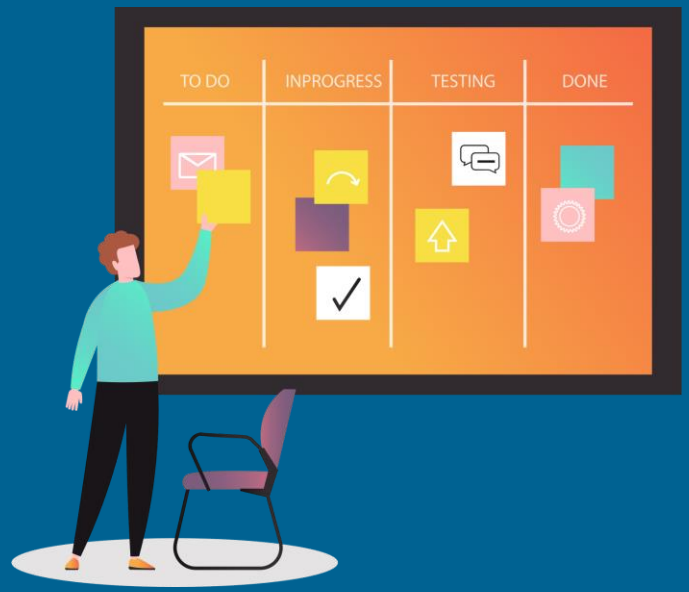
Sprint – Sprint Release

- During Sprint Release student teams deliver the work they had undertaken. Assignment delivery includes presenting the assignment and receiving feedback.
- Teams should deliver only tested work. This ensures that knowledge is shared among team members and that the quality of the delivered work is according to standards that had been set.
- Work should be delivered within deadlines. No delays or lagging are allowed.
- Product owner is responsible to provide accurate and concise feedback.
- Decreased number of corrections as Sprints go on indicate that good quality of the work being made.



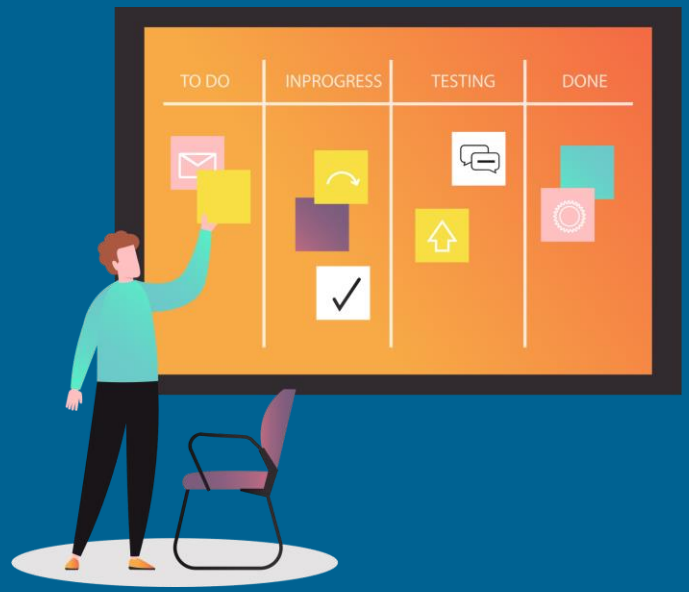
Sprint – Sprint review /1

- At the end of each Sprint, a sprint review meeting takes place. The main question of a sprint review is “What did we learn?”.
- The team analyzing the collected feedback tries to identify points of improvement for the next Sprint.
  - If required tasks are added to learning backlog (backlog refinement).
- Sprint review duration is about 15-30 minutes.
- Sprint review enhance team members’ self-confidence through the undertaking of the ownership and the control over their improvements.



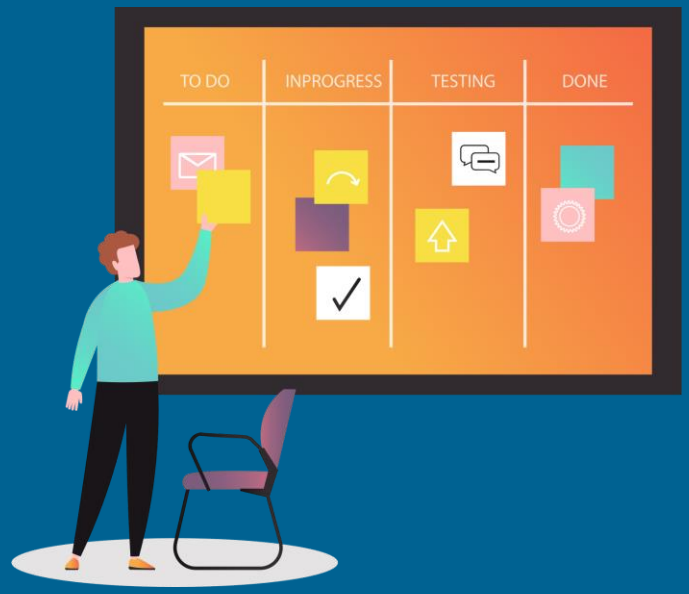
Sprint – Sprint review /2

- Scrum master facilitates sprint review and ensures that the following topics are discussed:
  - What was the feedback about?
  - What of the work done was good? (in relation to acceptance criteria)
  - What needs to be improved?
  - Did we achieve the goals set? How far we are from the goals set?
- Results of Sprint review can be documented for future reference.



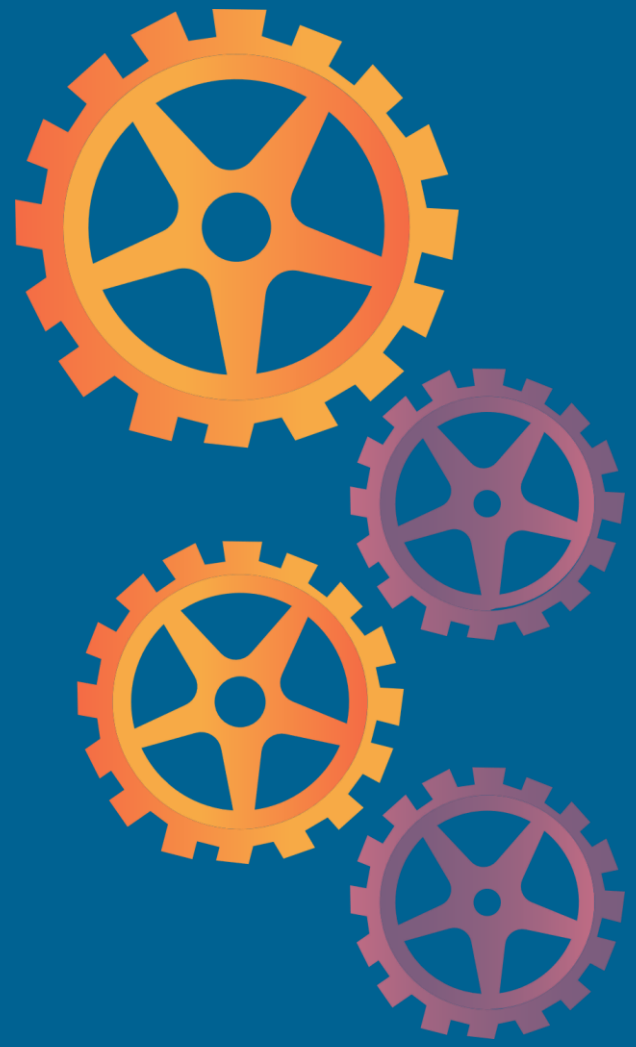
Sprint – Sprint Retrospective

- Sprint Retrospective takes place at the end of the assignment (whole sprint) and after the grades are available.
- The main question of Sprint Retrospective is “What did we work?”. The team:
  - Evaluate the methodologies and work methods followed and what could be improved
  - Evaluates their team-members skills, what was improved and what they did well.
  - What should not be happened again.
- During this process students learn how to give and receive critical feedback, resolve conflicts, plan improvement strategies and solve problems.
- Results of the Sprint review can be documented for future reference.



References

- Delhij, A., van Solingen, R. & Wijnands, W., 2015. *The eduScrum Guide. "The rules of the Game".* [Online] Available at: https://eduscrum.com.ru/wp-content/uploads/2020/01/The_eduScrum-guide-English_2.0_update_21-12-2019.pdf [Accessed 26 09 2022].
- Fitsilis, P., 2021. *Agile methods in administration and project managemennt.* Athens: Kallipos.
- Krehbiel, T. et al., 2017. Agile Manifesto for Teaching and Learning. *The Journal of Effective Teaching,* 17(2), pp. 90-111.
- Reehorst, E., van Rossum, J. & Saris, S., 2019. *Scrum@school Guide.* [Online] Available at: https://scrumatschool.nl/wp-content/uploads/2019/03/Guide-EN-2019.pdf [Accessed 28 09 2022].
- Scrum Alliance, 2021. *The Agile Educator Guide. An Agile Framework for Modern Education.* [Online] Available at: https://www.scrumalliance.org/ScrumRedesignDEVSite/media/ScrumAllianceMedia/Certification/Guide_to_Agile_K-12_Education.pdf [Accessed 28 09 2022].
- Scrum at School, 2018. *Manifesto for Agile Education.* [Online] Available at: https://scrumatschool.nl/wp-content/uploads/2018/11/Manifesto-for-Agile-Education.pdf [Accessed 27 09 2022



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