

Innovative Agile
Project-based
Learning



Agile2Learn

Agile Learning Glossary

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1.1 Agile Learning Coach

An educator or facilitator who guides learners through the agile learning process, providing support, mentoring, and expertise in adapting agile methodologies to educational contexts.

1.2 Agile Learning Manifesto

Similar to the Agile Manifesto in software development, the Agile Learning Manifesto outlines principles that prioritize individuals and interactions, adaptability, and collaboration in the learning process (Peha, 2011). It emphasizes responding to change over following a rigid plan. More specifically these values are:

- Individuals and interactions over processes and tools: The school focuses on the relationships between students, teachers, and parents. These relationships are more important than the processes and tools used for teaching and learning.
- Meaningful learning over measuring learning: The school focuses on providing meaningful learning that has an impact on the lives of students. Learning should not only be measured by tests, but also by other means, such as student participation, creativity, and problem-solving skills.
- Stakeholder collaboration over continuous negotiation: The school collaborates with all stakeholders, such as students, teachers, parents, the community, and businesses. This collaboration is essential for providing a quality education that meets the needs of all students.
- Responding to change over following a plan: The school is flexible and adaptable to change. Teachers and school administrators are willing to change their plans and practices, when necessary, in order to provide students with the best possible education.

The Agile Learning Manifesto is a powerful vision for the future of education. It is a vision of a school that is student-centred, flexible, adaptable to change, and provides meaningful learning that has an impact on the lives of students.

1.3 Agile Learning

Agile learning is an educational approach inspired by agile methodologies used in software development. Agile learning is a method of developing and delivering training that emphasizes speed, flexibility, and collaboration. It is based on the agile methodology, which is a set of principles for project management that emphasizes iterative development and continuous improvement.

In agile learning, the training content is developed in short cycles, called sprints. Each sprint focuses on a specific learning objective, and the content is constantly being refined and improved based on feedback from learners. This allows for a more responsive and adaptable approach to learning, which is essential in today's rapidly changing world.

Agile learning also emphasizes collaboration between learners, instructors, and other stakeholders. This helps to ensure that the training is relevant and meets the needs of the learners.

1.4 Agile Mindset

A mindset that embraces change, values collaboration, and is open to experimentation and continuous learning. It's fundamental for successful agile-based learning. The twelve principles of agile schools that constitute the agile mindset are the following (Peha, 2011)

- Our highest priority is to satisfy the needs of children and their families through early and continuous delivery of meaningful learning.
- Welcome changing requirements, even late in a learning cycle. Harness change for the benefit of children and their families.
- Deliver meaningful learning frequently, from a couple of days to a couple of weeks, with a preference to the shorter timescale.
- School and family team members work together daily to create learning opportunities for all participants.
- Build projects around motivated individuals. Give them the environment and support they need and trust them to get the job done.
- The most efficient and effective method of conveying information to and within a team is face-to-face conversation.
- Meaningful learning is the primary measure of progress.
- Our processes promote sustainability. Educators, students, and families should be able to maintain a constant pace indefinitely.
- Continuous attention to technical excellence and good design enhances adaptability.
- Simplicity-the art of maximizing the amount of work not done-is essential.
- The best ideas and initiatives emerge from self-organizing teams.
- At regular intervals, teams reflect on how to become more effective, then tune and adjust their behaviour accordingly.

1.5 Continuous Improvement:

A core principle of agile-based learning that emphasizes making regular adjustments and enhancements to the learning process based on feedback, outcomes, and changing goals. Continuous improvement is the ongoing effort to enhance processes, products, or services. It involves identifying opportunities for refinement, implementing changes, measuring the effects, and then iterating based on the results. This approach aims to achieve higher levels of efficiency, quality, and effectiveness over time.

1.6 Eduscrum

"Eduscrum" is a portmanteau of "education" and "scrum." It refers to applying the principles of Scrum, an agile framework for project management, to educational settings. EduScrum is an educational framework based on the agile methodology. It is a set of roles, activities, and artifacts, and interaction rules that binds them all together. It is designed to help students learn in a more self-directed, collaborative, and iterative way. It was defined by Wijnands and Stolze, (2019) as an edit is an edit of Scrum a framework for an active, collaborative, co-creative education process.

1.7 Eduscrum: Content of assignment

In EduScrum, an assignment's content is referred to as a "story." A story comprises a description of a learning objective that students engage with during a sprint. It is crucial for the story to adhere to the SMART framework: specific, measurable, achievable, relevant, and time bound.

Furthermore, the story should encompass "celebration criteria," which serve as benchmarks to ascertain the story's successful completion. These criteria must be unequivocal and quantifiable to provide students with a clear understanding of the necessary tasks to fulfil the story's requirements.

An illustrative example of a story along with its celebration criteria is as follows:

Story: Create a presentation on the history of Scrum.

Celebration criteria:

- The presentation must be at least 10 slides long.
- The presentation must include a clear introduction, body, and conclusion.
- The presentation must be well-organized and easy to follow.
- The presentation must use clear and concise language.

The content of an assignment can vary depending on the learning objective. However, it is important that the story is specific, measurable, achievable, relevant, and time bound. The celebration criteria should also be clear and measurable so that the students know what they need to do to complete the story.

1.8 Eduscrum: Definition of Doing

The Definition of Doing in EduScrum is a definition of what it means to be "doing" work on a learning objective. It is a set of criteria that the students and the teacher agree on to determine whether the work is considered to be "done".

The Definition of Doing can vary depending on the learning objective. However, it should be clear and measurable so that the students know what they need to do to complete the work.

Here is an example of a Definition of Doing for a story about creating a presentation on the history of Scrum:

The work is considered to be "done" when the presentation meets the following criteria:

- The presentation is at least 10 slides long.
- The presentation includes a clear introduction, body, and conclusion.
- The presentation is well-organized and easy to follow.
- The presentation uses clear and concise language.

The Definition of Doing should be agreed upon by the students and the teacher at the beginning of the sprint. This helps to ensure that everyone is on the same page and that the work is completed to a high standard.

The Definition of Doing and Celebration Criteria are two important concepts in EduScrum. They are both used to define what it means to complete a piece of work, but they have different purposes. The Definition of Doing is a definition of what it means to be "doing" work on

a learning objective while the Celebration Criteria, on the other hand, are the criteria that will be used to determine whether the story has been successfully completed.

1.9 Eduscrum: Definition of Fun

The Definition of Fun in EduScrum is a definition of what makes the work fun for the students. It is a set of criteria that the students agree on to determine whether the work is enjoyable and engaging.

The Definition of Fun can vary depending on the students. However, it should include some basic principles, such as:

- Being challenging but not overwhelming.
- Being creative and open-ended.
- Being collaborative and social.
- Being relevant to the students' interests.
- Being rewarding and satisfying.

The Definition of Fun should be agreed upon by the students at the beginning of the sprint. This helps to ensure that everyone is on the same page and that the work is enjoyable.

Some examples of how the Definition of Fun can be used in EduScrum:

- The students agree that they will take breaks to play games or do other activities that they enjoy.
- The students agree that they will work on projects that are relevant to their interests.
- The students agree that they will collaborate with each other on projects.
- The students agree that they will celebrate their accomplishments.

1.10 Eduscrum : Flap – eduScrum board

The Flap - eduScrum Board is a visual representation of the backlog, the sprint goals, and the work that has been completed. It is a tool that helps the students and the teacher track the progress of the sprint and identify any blockers.

The Flap is typically a physical board, but it can also be a digital board. It is divided into three columns:

- **To Do:** This column contains the stories that have not yet been started.
- **In Progress:** This column contains the stories that are currently being worked on.
- **Done:** This column contains the stories that have been completed.

The Flap is updated regularly during the sprint. The students move the stories from column to column as they work on them. This helps the students to visualize their progress and to identify any areas where they may be falling behind.

The Flap is also a communication tool. The students and the teacher can use the Flap to discuss the progress of the sprint and to identify any blockers. This helps to keep the team on track and to ensure that the sprint goals are met.

1.11 Eduscrum: Key artifacts

The artifacts are:

- Content of assignment (stories with Celebration criteria): This is the list of learning objectives that the students will work on during the sprint.
- The Flap - eduScrum Board: This is a visual representation of the backlog, the sprint goals, and the work that has been completed.
- Definition of Doing: This is a definition of what it means to be "doing" work on a learning objective.
- Definition of Communication: This is a definition of how the team will communicate with each other.
- Definition of Fun: This is a definition of what makes the work fun for the students.

1.12 Eduscrum: Key concepts

The key concepts of EduScrum:

- **Sprint:** A sprint is a short period of time (typically 2-4 weeks) during which students work on a specific learning objective.
- **Backlog:** The backlog is a list of all the learning objectives that need to be addressed.
- **Product Backlog Refinement:** The product backlog refinement is a meeting where the students and the teacher discuss the backlog and prioritize the learning objectives.
- **Daily Scrum:** The daily scrum is a short meeting where the students and the teacher discuss what they have worked on the previous day, what they plan to work on today, and any blockers they are facing.
- **Sprint Review:** The sprint review is a meeting where the students present their work to the teacher and get feedback.
- **Sprint Retrospective:** The sprint retrospective is a meeting where the students and the teacher discuss how the sprint went and what can be improved for the next sprint. Therefore, the meeting focuses on reviewing the effectiveness of the learning process, identifying areas for improvement, and adjusting the learning strategy for future cycles.

1.13 Eduscrum: Key roles

EduScrum defines a number of roles and artifacts. The roles are:

- **Teacher (Product Owner/eduScrum Master):** The teacher is responsible for setting the learning objectives, creating the backlog, and facilitating the scrum events.
- **Team Captain:** The team captain is responsible for leading the team and ensuring that the team meets its goals.
- **Student's Team:** The student's team is responsible for working on the learning objectives and delivering the final product.

1.14 Epics

An epic is a big idea or feature that can be broken down into smaller user stories.

For example: an epic called 'Improve Mobile UI' can consist of 3 user stories: 'Add mobile Shopping Cart', 'Optimize Speed', and 'Improve fonts and graphs'.

1.15 Iterative Learning

Iterative learning involves repeating cycles of learning, receiving feedback, and making improvements. This approach allows learners to refine their understanding and skills progressively over time.

1.16 Kaizen Education

Kaizen education (Wiid, 2018) is an educational approach that emphasizes continuous improvement and problem-solving. It is based on the Japanese philosophy of kaizen, which means "continuous improvement".

Kaizen education is often used in business settings, but it can also be applied to education. In an educational setting, kaizen can be used to improve the curriculum, teaching methods, and learning environment. Some of the key principles of kaizen education are:

- Focus on continuous improvement: Kaizen education emphasizes the importance of continuous improvement. This means that educators and students are always looking for ways to improve the learning process.
- Empowerment: Kaizen education empowers students to take ownership of their learning. Students are encouraged to identify problems and come up with solutions.
- Collaboration: Kaizen education emphasizes collaboration. Students work together to solve problems and improve the learning process.
- Feedback: Kaizen education relies on feedback. Students and educators receive feedback on their work so that they can make improvements.
- Flexibility: Kaizen education is flexible. It can be adapted to different settings and needs.

Kaizen education can be a valuable tool for improving the quality of education. It can help to create a more student-centred learning environment, improve the learning process, and empower students to take ownership of their learning.

1.17 Kaizen

Kaizen is a Japanese term that translates to "change for better" or "continuous improvement." It refers to the practice of making small, incremental improvements in processes, products, or systems over time. Kaizen involves a mindset of constant adaptation and refinement to enhance efficiency, quality, and overall performance.

1.18 Kanban

Kanban (Singh & Singh, 2009) is an agile methodology that uses visual boards to manage work tasks. Applied to learning, it involves creating a visual representation of the learning journey,

breaking down tasks into cards, and moving them through different stages of completion. Kanban allows for flexibility and visualization of the learning process.

1.19 Lean Education

Lean education applies lean principles to the field of education. It involves identifying and eliminating inefficiencies in educational processes to improve the learning experience for students, educators, and other stakeholders. Lean education seeks to optimize resource allocation, reduce unnecessary administrative burdens, and enhance the overall educational journey.

1.20 Lean Teaching

Lean teaching refers to the application of lean principles to instructional practices. Educators who practice lean teaching focus on identifying the most effective teaching methods, eliminating redundant or ineffective activities, and optimizing the learning experience for students. This approach encourages educators to reflect on their teaching strategies and make data-driven adjustments to enhance student outcomes.

1.21 Lean

Lean is a methodology that originated in manufacturing and has been adapted to various industries, including education. It focuses on maximizing value while minimizing waste. Lean principles aim to eliminate activities that do not contribute to the final outcome, resulting in streamlined processes, reduced costs, and improved outcomes.

1.22 Learning Velocity

In the context of agile learning, learning velocity is a measure of how much learning a student can accomplish in a given period of time. It is typically calculated by taking the total number of learning objectives completed in a sprint and dividing it by the number of sprints. Learning velocity can be used to track the progress of a student and to identify areas where they may need more support. It can also be used to set goals for future sprints (Doma, 2017). To calculate learning velocity, you need to know the following:

- The total number of learning objectives in the sprint.
- The number of learning objectives that were completed in the sprint.
- To calculate the learning velocity, divide the number of learning objectives completed by the number of sprints.

For example, if there were 10 learning objectives in the sprint and 5 were completed, then the learning velocity would be $5/10 = 0.5$.

Learning velocity can be a helpful tool for tracking the progress of a student and for setting goals for future sprints. However, it is important to note that learning velocity is not a perfect measure of learning. There are many factors that can affect learning, such as the difficulty of the learning objectives, the student's motivation, and the quality of instruction.

1.23 Scrum

Scrum is an agile framework originating from software development that focuses on teamwork, accountability, and iterative progress. In the context of agile-based learning, Scrum involves structuring learning tasks into time-boxed periods (sprints), holding regular meetings to review progress, and adapting the learning plan accordingly (Schwaber & Sutherland, 2011).

Scrum is a lightweight framework, and it can be used to manage any type of project, from software development to marketing campaigns. It is a popular choice for teams that need to be able to adapt to change quickly and efficiently.

The Scrum framework is made up of a number of different roles, events, and artifacts. The roles are:

- **Product Owner:** The Product Owner is responsible for defining the product backlog and prioritizing the work.
- **Scrum Master:** The Scrum Master is responsible for facilitating the Scrum process and ensuring that the team is following the Scrum framework.
- **Development Team:** The Development Team is responsible for completing the work in the sprint.

The events/ceremonies are:

- **Sprint Planning:** The Sprint Planning meeting is where the team plans the work for the sprint.
- **Daily Standup:** The Daily Standup meeting is a short meeting where the team discusses their progress and identifies any blockers.
- **Sprint Review:** The Sprint Review meeting is where the team presents the work they completed in the sprint to the stakeholders.
- **Sprint Retrospective:** The Sprint Retrospective meeting is where the team reflects on the sprint and identifies areas for improvement.

The artifacts are:

- **Product Backlog:** The Product Backlog is a list of all the work that needs to be done for the product.
- **Sprint Backlog:** The Sprint Backlog is a list of the work that the team will complete in the sprint.
- **Burndown Chart:** The Burndown Chart is a visual representation of the team's progress towards completing the sprint backlog.

1.24 Scrum: Burndown Chart

A Scrum Burndown Chart is a graphical representation of the amount of work remaining in a sprint. It is typically plotted daily, and it shows the progress of the sprint over time. The Burndown Chart is a valuable tool for tracking the progress of a sprint and identifying any potential problems. It can also be used to communicate the progress of the sprint to the stakeholders.

1.25 Scrum: Daily Standup

The Daily Standup is a short, daily meeting where the Development Team discusses their progress and identifies any blockers. The meeting typically takes place at the same time and place every day, and it should last no more than 15 minutes. The Daily Standup is a standing meeting, hence the name. This is to encourage brevity and focus. The purpose of the Daily Standup is to:

- Ensure that everyone is aligned on the work that needs to be done.
- Identify any blockers that may impact the team's progress.
- Plan for the day ahead.

The Daily Standup is a great opportunity for the team to communicate and collaborate. It is also a chance for the Scrum Master to identify any potential problems and to offer support to the team.

1.26 Scrum: Product Backlog

The Product Backlog is a list of all the work that needs to be done for the product. It is a living document that is constantly being updated as the product evolves. The Product Backlog is owned by the Product Owner, who is responsible for prioritizing the work and ensuring that it meets the needs of the stakeholders. The Product Backlog is typically organized into three categories:

- **Must-haves:** These are the features that are essential for the product to be successful.
- **Should-haves:** These are the features that would be nice to have but are not essential.
- **Could-haves:** These are the features that are not yet needed but may be needed in the future.

The Product Backlog is a dynamic document, and it is important that it is kept up to date. As new features are identified, they should be added to the Product Backlog. As features are completed, they should be removed from the Product Backlog.

1.27 Scrum: Sprint Backlog

The Scrum Sprint Backlog is a dynamic, detailed plan that outlines the set of tasks, user stories, and features that the Scrum Team commits to completing during a specific sprint. It is created during the Sprint Planning meeting and serves as a guide for the team's work throughout the sprint duration. The Sprint Backlog includes:

- **User Stories:** These are the individual items of work that need to be completed to fulfil the sprint goal.
- **Estimations:** The Sprint Backlog often includes estimates of the effort required for each task or user story, usually using story points or other estimation techniques.
- **Priority:** The items in the Sprint Backlog are typically ordered by priority. The most important and high-priority items should be at the top of the list, allowing the team to focus on delivering the most valuable work early in the sprint.
- **Responsibilities:** The Sprint Backlog identifies the team members responsible for each task or user story.

- **Progress Tracking:** Throughout the sprint, the Scrum Team updates the Sprint Backlog to reflect the progress made. Tasks are marked as in-progress, completed, or facing obstacles.
- **Changes:** If necessary, the Sprint Backlog can be adjusted during the sprint in response to changing circumstances, newly discovered insights, or unexpected challenges.

The Sprint Backlog is a crucial tool for effective sprint execution and collaboration within the Scrum Team. It aids in organizing the team's work, maintaining focus on the sprint goal, and enabling transparent communication among team members and stakeholders.

1.28 Scrum: Sprint Planning

Sprint Planning is the first event in a Scrum sprint. It is where the team plans the work they will complete in the sprint. The meeting typically takes place at the beginning of the sprint, and it is attended by the Product Owner, the Scrum Master, and the Development Team.

The goal of Sprint Planning is to create a Sprint Goal and a Sprint Backlog. The Sprint Goal is a high-level description of what the team will achieve in the sprint. The Sprint Backlog is a list of the work that needs to be done to achieve the Sprint Goal.

The Sprint Planning meeting is a facilitated discussion, and the Scrum Master is responsible for ensuring that the meeting is productive and efficient. The Product Owner shares the prioritized Product Backlog with the Development Team, and the team then discusses the work that can be completed in the sprint. The team will negotiate with the Product Owner to finalize the Sprint Goal and the Sprint Backlog.

1.29 Scrum: Sprint Retrospective

The Sprint Retrospective is an event in Scrum where the team reflects on the sprint and identifies areas for improvement. The meeting typically takes place at the end of the sprint, and it is attended by the Product Owner, the Scrum Master, and the Development Team. The goal of the Sprint Retrospective is to:

- Identify what went well in the sprint.
- Identify what could be improved.
- Make plans to improve the process for the next sprint.

1.30 Scrum: Sprint Review

The Sprint Review is an event in Scrum where the team presents the work they completed in the sprint to the stakeholders. The meeting typically takes place at the end of the sprint, and it is attended by the Product Owner, the Scrum Master, the Development Team, and any other stakeholders who are interested. The goal of the Sprint Review is to:

- Demonstrate the work that was completed in the sprint.
- Get feedback from the stakeholders.
- Identify any areas for improvement.

The entire group collaborates on what to do next, so that the Sprint Review provides valuable input to subsequent to Sprint Planning. The Sprint Review is a great opportunity for the team

to get feedback from the stakeholders. This feedback can be used to improve the product and to make sure that the team is meeting the needs of the customers. The result of the Sprint Review is a revised Product Backlog that defines the probable Product Backlog items for the next Sprint. The Product Backlog may also be adjusted overall to meet new opportunities.

Sprint Retrospective vs Sprint Review (Difference)

- Sprint review output: updated product backlog with the top priority user stories for the development team to work on at the top.
- Sprint retrospective output: action list with specific steps to improve team ways of working during the next sprint.
- The sprint review is about the product, while the sprint retrospective is about the team.

1.31 User Stories

A user story is a short, informal description of a piece of functionality that a user wants. It is typically written from the perspective of the user and describes what the user wants to achieve, not how it should be done. User stories are a popular way to capture requirements in agile software development. They are easy to understand and write, and they can be used to communicate requirements to both technical and non-technical stakeholders. The three parts of a user story are:

- **Who:** The actor or user who wants the functionality.
- **What:** What the user wants to achieve.
- **Why:** Why the user wants the functionality.

The Who part of the user story should be a specific user or role, such as "the customer" or "the administrator." The What part of the user story should be a clear and concise description of the functionality, such as "add a new product to the catalogue" or "delete an old user account." The Why part of the user story should be a brief explanation of the reason for the functionality, such as "to make it easier for customers to find the products they want" or "to improve security."

Suggested links for further information on agile terminology:

Agile Alliance: <https://www.agilealliance.org/agile101/agile-glossary/>

Scrum org: <https://www.scrum.org/resources/scrum-glossary>

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