

# Agile Learning: An innovative curriculum for educators

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## Abstract

This paper presents a transformative approach to education, integrating agile methodologies into teaching and learning practices. It begins by contextualizing the necessity of agile learning in the modern educational landscape, drawing on a comprehensive review of background literature. The document then outlines the essential competencies required for educators in this innovative environment, emphasizing skills beyond traditional teaching methods to foster a dynamic, flexible, and effective learning atmosphere. Central to the curriculum are the structured learning objectives and the integration of practices from other innovative pedagogical methods, including Flipped Classroom, Inquiry-Based Learning, Lean learning, etc. This paper overall is underscoring the significance of Agile methodologies in adapting to the evolving demands of 21st-century education and it represents a step forward in redefining educational practices to meet contemporary challenges.

## Introduction

Agile learning represents a significant shift in educational methodologies, adapting to the evolving needs and expectations of students in our fast-paced, technology-driven world. This approach is characterized by its adaptability, collaboration, and focus on personalized learning experiences, which are increasingly essential as traditional educational methods become less effective in the face of constant change. Agile learning in education is notably flexible and student-centric, allowing educators to tailor their teaching methods to better address individual student needs.

Originating from agile methodologies used in software development, agile learning emphasizes speed, flexibility, and collaboration in developing and delivering training. Training content is developed in short cycles known as sprints, each targeting a specific learning objective and continuously refined based on learner feedback. This results in a more responsive and adaptable learning approach, crucial in today's rapidly changing environment. It also fosters collaboration among learners, instructors, and other stakeholders, ensuring the training is relevant and meets learners' needs.

The Agile2Learn project, an Erasmus+ KA2/Innovative project, exemplifies the application of agile learning in education. It aims to transform education through an Agile-based curriculum, empowering educators in primary and secondary education to adapt to 21st-century demands. The curriculum focuses on defining new learning paths, developing 21st-

century skills, enabling effective teamwork, enhancing project efficiency, promoting team collaboration, and facilitating the use of modern collaboration tools. This approach prepares both educators and learners to face contemporary challenges and efficiently implement educational projects.

Agile2Learn Project (project number 2021-1-CZ01-KA220-VET-000025558) is an Erasmus+ KA2/ Innovative project aimed at transforming education through the development of an Agile-based curriculum. The developed curriculum is designed to empower educators in primary and secondary education to adapt to the demands of the 21st century and create a dynamic, efficient, and collaborative learning environment.

The primary objectives of the Agile2Learn curriculum are as follows:

- Define New Learning Paths: Create innovative learning pathways that cater to the evolving needs of students in the 21st century.
- Develop 21st Century Skills: Equip educators with the skills and knowledge necessary to foster 21st-century competencies in their students, including Agile methodologies.
- Enable Effective Teamwork: Foster collaborative teamwork among learners, whether in face-to-face or virtual settings, to address complex and contemporary challenges.
- Enhance Project Efficiency: Empower learners and educators to implement educational projects more efficiently and effectively.
- Promote Team Collaboration: Encourage educators to work collaboratively, leveraging the benefits of teamwork over traditional isolated teaching methods.
- Facilitate Modern Tool Usage: Enable the use of modern team collaboration tools to enhance teaching and learning experiences.

## Background

The educational landscape is undergoing significant transformations due to globalization, rapid technological advancements, and shifts in labor market demands. These changes necessitate equipping young people with a diverse spectrum of skills and competences, which are essential for securing employment (Caena & Punie, 2019). In response to these evolving needs, various pedagogical methods have emerged.

Agile methodologies in education, inspired by agile software development principles, emphasize collaboration, self-direction, incremental progress, and iteration. This approach allows students to take an active role in their learning, preparing them for the rapidly changing demands of the modern workplace (Reehorst van Rossum & Saris, 2019; Krehbiel et al., 2017; Fitsilis & Lekatos, 2017).

Similarly, Lean Thinking, initially used in the industrial sector, aims to increase productivity by eliminating non-value-added elements in educational processes. This approach has been particularly successful in technology and STEAM disciplines (Parsons & MacCallum, 2019; Sanahuja, 2020).

Another example is Project-Based Learning (PBL) is centered around students engaging in real-world and meaningful projects. It emphasizes student autonomy, inquiry, and collaboration, resulting in a publicly presented product or performance. PBL has been effective in engaging students in learning and developing essential 21st-century skills such as problem-solving and critical thinking Markula & Aksela (2022).

Flipped Classroom is another innovative approach where traditional learning environments are inverted. Students are introduced to learning material before class, and classroom time is devoted to expanding on these concepts through discussions, problem-solving, and application-based activities. This method enhances student engagement and allows for more interactive and collaborative learning experiences (Bergmann & Sams, 2012).

Following these pedagogical approaches, the European Union has established frameworks to define essential competences for future generations. The European Reference Framework outlines key competences for lifelong learning within European educational institutions, including literacy, personal, social, and learning-to-learn skills, digital competence, and entrepreneurship. The LifeComp framework emphasizes competences for effectively managing professional and personal life challenges (European Commission Directorate-General for Education, Youth, Sport, and Culture, 2019; Sala et al., 2020).

In conclusion, these innovative pedagogical approaches – agile methodologies, Lean Thinking, PBL, and Flipped Classroom – collectively signify a paradigm shift in education. They emphasize efficiency, relevancy, practical application, and skills development, which are essential for equipping students to navigate and thrive in the complexities of the 21st-century world.

## Agile Learning for Educators' Curriculum

The Agile Learning for educator's curriculum, responsive to the evolving educational landscape, incorporates Agile methodologies into classroom settings, aligning seamlessly with EU policy priorities. This innovative curriculum framework is structured to improve transversal competencies in education, embrace Agile Project Management and Agile Pedagogy, and develop and validate training curriculums for educators in primary and secondary education. Additionally, it aims to cultivate an innovative culture of training.

The curriculum's learning objectives are multifaceted:

1. **Development of Transversal Competences:** It equips educators with skills that go beyond specific job roles, enhancing their adaptability to diverse situations and challenges.
2. **Development of Agile Competences:** Educators are trained in Agile methodologies like Scrum, Kanban, Lean Management, and XP to promote adaptability and efficiency.
3. **Development of Digital Transformation Competences:** This aspect focuses on enabling educators to utilize digital tools and resources effectively for teaching and collaboration.
4. **Developing People and Teams:** It enhances educators' capabilities to work in self-managed teams, thereby

improving collaboration, communication, and problem-solving skills.

5. **Developing an Innovative Culture of Training:** This objective is about fostering a continuous learning and innovation culture among educators and students.

In addition to these core objectives, the curriculum integrates other innovative pedagogical methods such as the Flipped Classroom and Inquiry-Based Learning. The Flipped Classroom approach reverses traditional in-class lectures and homework assignments. Students engage with pre-recorded lectures or reading material before class and then participate in activities like discussions, problem-solving, and project-based learning during class time. This method shifts the focus to active, peer, and problem-based learning, encouraging students to take responsibility for their learning and collaborate with peers (Bergmann & Sams, 2012; Bishop & Verleger, 2013).

Inquiry-Based Learning, another key component, places students at the center of the learning process. It is a student-centered approach where students ask questions, make observations, investigate, and draw conclusions. This method promotes deeper learning and understanding by engaging learners in the process of exploration and discovery, encouraging them to become active learners motivated to seek out answers and solutions to problems.

In summary, the Agile2Learn curriculum not only aligns with EU policy priorities by incorporating Agile methodologies but also enhances the educational experience through innovative pedagogical methods like the Flipped Classroom and Inquiry-Based Learning, fostering a dynamic and adaptable learning environment

## Agile2Learn Competencies

In the rapidly evolving educational landscape, the role of educators has transformed significantly, necessitating a shift in the competencies they require. Agile learning methodologies have emerged as a vital framework in this context, offering a dynamic and responsive approach to teaching and learning. This shift demands educators not only to be knowledgeable in their subject areas but also to be skilled in Agile principles and practices. These competencies extend beyond traditional teaching methods, encompassing new skill sets that are crucial for creating a more engaging, flexible, and effective learning environment. The following section delves into the specific competencies required for educators to effectively implement agile learning methodologies, highlighting the essential skills and attributes needed to navigate and thrive in the contemporary educational landscape.

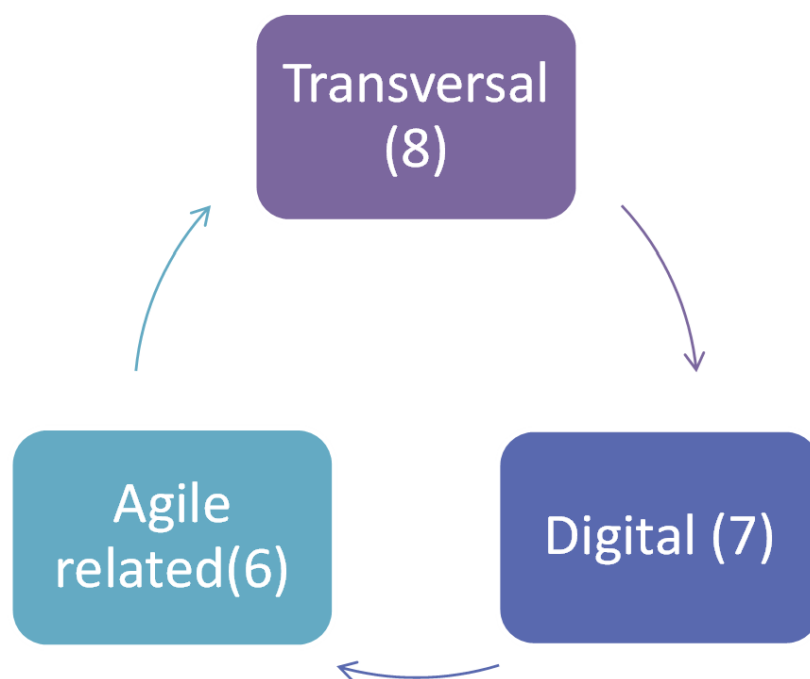


Figure 1. Agile2Learn project competences groups

## Agile Related Competencies

Six competences have been identified as agile competences. These are:

1. **Agile Methods Fundamentals:** This competency delves into the foundational understanding of Agile methodologies such as Scrum, Kanban, and Lean Management. Educators will learn how to apply these frameworks in educational settings to promote adaptability and efficiency.
2. **Entrepreneurial Thinking:** Entrepreneurial Thinking equips educators with the ability to identify market opportunities and creatively capitalize on them. It encourages educators to think innovatively, work both individually and as part of a team, and take proactive, forward-looking approaches to teaching and learning.
3. **Project Inception (Planning):** This competence revolves around effectively planning and initiating projects within specified timeframes. It includes defining roles, facilitating communication, setting measurable objectives, identifying deliverables, and creating schedules. Educators learn to structure and manage educational projects efficiently.
4. **Self-Managed Teams:** Educators with this skillset can form and lead groups of students who collaboratively take full responsibility for delivering a service or product. Self-managed teams enhance students' teamwork and problem-solving abilities, fostering a sense of ownership and independence.
5. **Agile Artifacts:** Agile Artifacts refer to essential pieces of information that stakeholders and teams use to describe a product's development. Educators learn how to use artifacts like product backlogs and sprint backlogs to define and manage educational goals and progress effectively.
6. **Agile Ceremonies:** Agile Ceremonies are periodic meetings held to ensure projects are on track and meeting quality goals. Educators become proficient in conducting ceremonies like Sprint Planning, Daily Scrum, Sprint Review, and Sprint Retrospective, which enhance project management and team collaboration within the educational context.

## Transversal Competencies

After a project-based research endeavor, eight competences have been identified, each playing a pivotal role in shaping the success of individuals in diverse contexts. These competences, often referred to as transversal or transferable competences, hold immense value in today's rapidly changing world.

Transversal competences transcend specific job roles, academic disciplines, or areas of knowledge, making them universally applicable and indispensable in various situations and work settings. Communication: Effective communication is crucial for educators to convey ideas, instructions, and feedback clearly to students and colleagues. It also involves active listening and understanding the diverse communication dynamics in various contexts, fostering positive learning environments.

1. **Creativity:** Cultivating creativity empowers educators to approach teaching and problem-solving in innovative ways. It encourages thinking beyond conventional boundaries, finding connections between ideas, and fostering a creative learning atmosphere that inspires students.
2. **Teamworking:** Teamworking skills enable educators to collaborate effectively with colleagues and guide students in collaborative learning experiences. Emphasizing the strengths of each team member and leveraging diverse perspectives enhances the learning process.
3. **Social Skills:** Social skills encompass a range of competencies that facilitate effective interaction and communication with others. Educators learn to develop skills such as conflict resolution, empathy, and active listening, which are essential for building positive relationships in the classroom.
4. **Handling Ambiguity:** This skill equips educators to navigate uncertain and ambiguous situations with confidence. It includes making decisions in unpredictable circumstances, testing ideas and prototypes, and adapting swiftly to change, ultimately fostering resilience in the face of uncertainty.
5. **Critical Thinking:** Critical thinking encourages educators to actively and skillfully analyze, evaluate, and synthesize information. It equips them to guide students in developing analytical and reasoning skills, enabling deeper understanding and problem-solving.
6. **Problem Solving and Decision Making:** Problem-solving skills help educators identify challenges, analyze them, and find effective solutions. Decision-making skills enable thoughtful and objective choices, enhancing educators' ability to make informed decisions for their students' benefit.
7. **Time Management:** Time management skills empower educators to use their time productively and efficiently. Prioritizing tasks, scheduling, and organizing activities allow educators to optimize their teaching and administrative responsibilities, ensuring a balanced workload.

## Digital Competencies

In today's digitally interconnected world, the value of digital competences cannot be overstated. Proficiency in digital skills is not just a necessity but a powerful enabler for success in education, the workplace, and daily life. These competences

empower individuals to navigate the digital landscape with confidence, harnessing technology to communicate effectively, solve complex problems, access vast information resources, and create innovative solutions. Moreover, in an era where digital transformation is reshaping industries and economies, digital competences are the gateway to numerous opportunities and a key driver of personal and professional growth. Whether in education, careers, or simply staying connected in the modern age, digital competences are the currency of the digital era, offering individuals the tools to thrive in an increasingly digitalized world. Based on Digicomp Agile2Learn identified 7 digital competences:

1. **Digital Collaboration at Professional and Learning Level:** Proficiency in digital collaboration equips educators to effectively use technology for professional networking and collaborative learning environments. It enables them to leverage digital tools for communication, cooperation, and knowledge sharing, fostering a global community of learners.
2. **Selecting Digital Resources:** Educators with expertise in selecting digital resources can identify, assess, and choose appropriate digital materials for teaching and learning. They consider factors such as learning objectives, pedagogical approaches, and learner characteristics when making resource selections.
3. **Creating and Modifying Digital Resources:** This competence empowers educators to adapt and create digital educational materials, enhancing their teaching resources. They can modify existing resources to suit specific learning needs or create new content, providing personalized and engaging learning experiences.
4. **Managing, Protecting, and Sharing Digital Resources:** Educators proficient in managing digital resources organize and make them accessible to learners while ensuring data privacy and copyright compliance. They understand the importance of protecting sensitive digital content and can effectively share resources with students, parents, and colleagues.
5. **Actively Engaging Learners:** Educators with expertise in actively engaging learners use digital technologies to foster students' active participation and creativity in the learning process. They employ pedagogical strategies that encourage transversal skills, deep thinking, and creative expression.
6. **Digital Content Creation:** This competence involves incorporating digital means for students to express themselves and learn. Educators guide students in creating and manipulating digital content in various formats, teaching them about copyright, licensing, and proper source referencing.
7. **Digital Problem Solving:** Educators skilled in digital problem-solving incorporate activities that require students to identify and solve technical problems or apply technological knowledge to novel situations. This competency prepares students to tackle real-world challenges in a digitally driven society.

## Conclusions

In conclusion, the Agile2Learn curriculum stands as a beacon of innovation and adaptability in the field of education. Its overarching goal is to equip educators with a holistic skill set and a deep reservoir of knowledge that transcends traditional teaching methods. By nurturing a profound understanding of Agile methodologies, transversal competences, and digital proficiencies, this curriculum empowers educators to be dynamic catalysts for change in the learning process.



The aim is not merely to impart knowledge but to foster a mindset of continuous growth and adaptability, preparing educators to navigate the ever-evolving educational landscape. Through the Agile2Learn curriculum, educators are poised to create learning environments that mirror the dynamism of the 21st century, where students are not just equipped to face challenges but are inspired to become active contributors to a rapidly changing world. It is a transformative journey that promises to reshape education and, in doing so, shape the future.

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