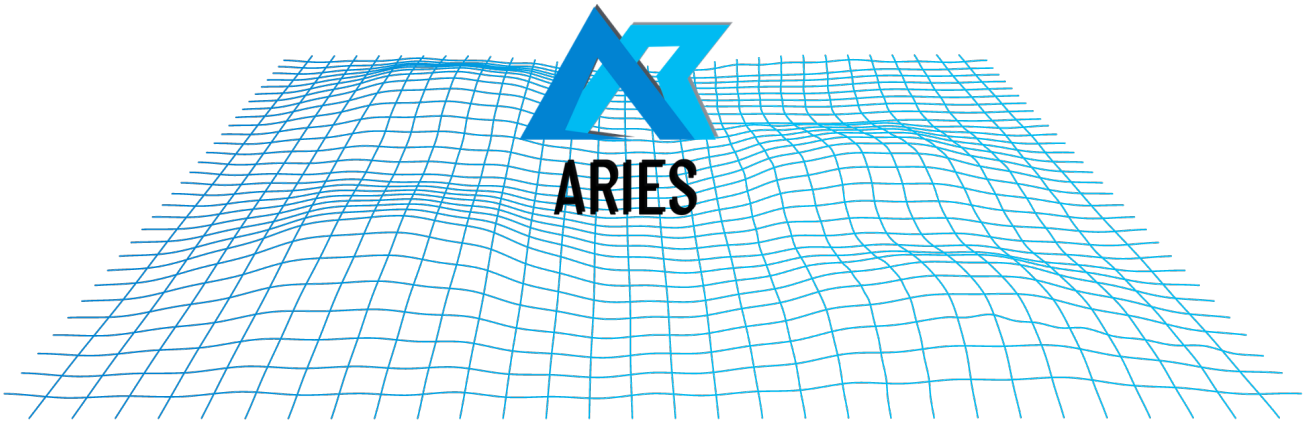

ARIES

Work package n°2: Competence Framework

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Introduction to the ARIES Competence Framework

In an increasingly digital world, education must evolve to prepare students for the challenges and opportunities of the future. The ARIES project is dedicated to the integration of Augmented Reality (AR) and Immersive Reality (IR) technologies in the classroom, offering new ways to engage students and enhance the learning experience. These technologies not only make learning more interactive and immersive, but also contribute to the development of essential skills that are critical for success in the 21st century.

The ARIES Competency Framework has been developed to help teachers effectively integrate AR/IR technologies into their teaching practice. This framework is based on the LEVEL5 approach, a comprehensive methodology that focuses on the development of competences through the integration of knowledge, skills and attitudes. By aligning with the European Qualifications Framework (EQF), the ARIES Competence Framework ensures that the competences developed are recognised and valued across Europe, promoting lifelong learning and professional development.

Aims and structure of the ARIES Competence Framework

The ARIES Competence Framework is organised into several key chapters, each addressing a critical aspect of the integration of AR/IR technologies in education. These chapters provide a step-by-step guide for teachers, from understanding the theoretical underpinnings of the framework to practical implementation in the classroom.

1. Theoretical foundations: LEVEL5 and EQF

In this chapter, the theoretical underpinnings of the ARIES framework are presented. It explains the LEVEL5 approach, which simplifies and operationalises competence development by focusing on the integration of knowledge, skills and attitudes. It also explains how the framework is aligned with the EQF, an 8-level framework that facilitates the comparison of qualifications across Europe. This alignment ensures that the competences developed in the ARIES project are not only applicable in national contexts, but also comparable and transferable across European borders.

2. Core competence: Implementing and facilitating AR/IR in the classroom

This chapter focuses on the core competence that teachers need to develop in order to effectively integrate AR/IR technologies into their teaching. It provides a detailed description of this competence by breaking it down into its individual components (knowledge, skills and attitudes) and offers a reference system to help assess and guide competence development.

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3. The teacher's environment: planning, delivery and assessment of AR/IR enhanced learning

Effective integration of AR/IR in the classroom requires careful planning, implementation and assessment. This chapter guides teachers through these essential steps and provides practical strategies for creating and delivering AR/IR enhanced learning. It emphasises the importance of context and the quality of the learning environment to ensure that AR/IR technologies reach their full potential to improve educational outcomes.

4. Generic competences: Supporting wider educational goals

In addition to the core competence of AR/IR integration, the framework also addresses broader educational goals by focusing on generic competences such as social, personal and organisational skills. These competences are crucial for both teachers and students as they support the overall learning environment and prepare students for the challenges of the future.

5. Assessment methods: Assessing the impact of AR/IR integration

Assessment is an essential component of the ARIES Competence Framework. This chapter presents a range of assessment methods tailored to the specific needs of AR/IR enhanced learning. These methods help teachers to evaluate student progress and the effectiveness of AR/IR integration to ensure that these technologies contribute positively to learning outcomes.

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Advantages of the ARIES Competence Framework

The ARIES Competence Framework offers several key benefits to teachers and students:

- Increased student engagement: AR/IR technologies make learning more engaging by providing immersive and interactive experiences that capture students' attention and make complex concepts easier to understand.
- Comprehensive skills development: By focusing on the integration of knowledge, skills and attitudes, the framework ensures that students develop a well-rounded set of competencies essential for success in the digital age.
- Recognition and transferability: Alignment with the EQF ensures that the competences developed through the ARIES project are recognised and valued across Europe, facilitating mobility and lifelong learning.
- Support for teachers: The framework provides teachers with practical tools and strategies for integrating AR/IR technologies into their teaching practices, making it easier to modernise education and keep pace with technological advances.

By following the ARIES Competence Framework, educators can confidently bring AR/IR technologies into their classrooms, creating a more dynamic, student-centred learning environment. This framework not only enhances traditional educational goals, but also prepares students for the future in an increasingly digital world.

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I. Theory: ARIES Competence Framework Background

The ARIES Competency Framework has been developed to provide teachers with the tools and methods they need to effectively integrate Augmented Reality (AR) and Immersive Reality (IR) technologies into their teaching. As AR and IR technologies become more prevalent in education, there are exciting opportunities to enhance learning experiences, engage students in new ways and develop essential skills that are increasingly important in the modern world.

This framework provides a structured approach to planning, delivering and assessing lessons that incorporate AR/IR tools. It supports teachers in enriching traditional teaching methods and making learning more interactive and immersive. In addition, the framework emphasises skills development for teachers and students to ensure they are equipped to meet the challenges and opportunities of these new technologies.

Theoretical basis: The LEVEL5 approach

At the heart of the ARIES framework is the LEVEL5 approach, a robust methodology for simplifying and operationalising competence development. The LEVEL5 approach is aligned with various European competence models, making it a practical and adaptable tool for educators wishing to integrate AR/IR technologies into their teaching practice.[1]

Figure 1: LEVEL5 logo

Components of competence

LEVEL5 defines competence as a holistic integration of three key components

- Knowledge (cognition): Understanding of content, theories, principles and functionalities.
- Skills (abilities): The ability to carry out tasks and activities effectively.

[1] see: https://level5.eu/

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- Attitudes (affective elements): Emotions, motivations, will and values that influence behaviour.

This integrated approach ensures that competences are not only about the acquisition of knowledge, but also about the effective application of that knowledge in real-life contexts, supported by the necessary skills and attitudes.

Internal and external perspectives on competence

Competence development at LEVEL 5 is considered from both an internal and an external perspective:

- Internal (potential): A person's intrinsic ability to perform tasks, reflecting their internal capacity for competence.
- External (demonstration): The observable behaviour and performance in specific contexts that show how well competences are applied in real-life situations.

Context and quality

The context in which competences are developed and demonstrated is crucial. LEVEL 5 emphasises the importance of the environment, whether in exercises, role-plays or real-life challenges, for the demonstration of competences. The quality of the performance is also influenced by this contextualisation, ensuring that the competences are not only understood but also effectively applied at the appropriate levels.

The bow tie model

The LEVEL5 approach uses the Bow-Tie model to visualise the interdependencies of the competence components:

- Performance Objective: the intersection where knowledge, skills and attitudes are demonstrated through activities and behaviours.
- Levels of competence: Depicted as circles, with higher levels of competence covering wider areas and addressing all aspects equally.

This model emphasises that competences are dynamic and evolve as individuals gain experience and expertise.

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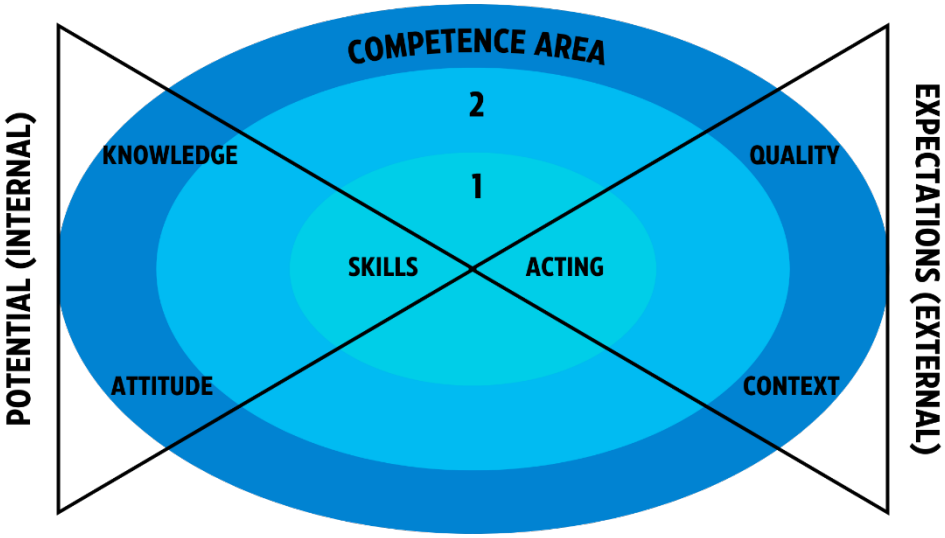

Figure 2: Bow-Tie model of competence components

Integration with the European Qualifications Framework (EQF)

The ARIES Competence Framework is also closely aligned with the European Qualifications Framework (EQF), which is an important tool to ensure that the competences developed through AR/IR integration are recognised and assessed in different education systems.[2]

What is the EQF?

The European Qualifications Framework (EQF) is an 8-level framework based on learning outcomes that serves as a translation tool between different national qualifications frameworks. Developed by the EU, the EQF aims to improve the transparency, comparability and transferability of qualifications across Europe. It is intended to support the cross-border mobility of learners and workers and to promote lifelong learning and career development.

The EQF covers all types and levels of qualifications, making it possible to compare qualifications from different countries and institutions. The levels of the framework are based on learning outcomes that clearly define what a person knows, understands and is able to do at each level. Levels range from 1 (basic knowledge and skills) to 8 (advanced knowledge and skills).

[2] see: https://europass.europa.eu/en/compare-qualifications

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The role of the EQF in the ARIES framework

By aligning with the EQF, the ARIES Competence Framework ensures that the competences developed through the integration of AR/IR technologies are not only relevant within individual national contexts but are also comparable and transferable across Europe. This harmonisation makes it easier for teachers, students and educational institutions to recognise and validate the skills and knowledge acquired through AR/IR-supported learning.

The EQF was established in 2008 and revised in 2017 to maintain its core objectives of creating transparency and mutual trust in the qualifications landscape across Europe. Member States are committed to developing the EQF to make it easier for employers, workers and learners to understand national, international and third country qualifications.

The ARIES Competence Framework, based on the LEVEL5 approach and aligned with the EQF, provides a comprehensive, structured way to integrate AR/IR technologies into education. This framework not only enriches teaching and learning, but also ensures that the competences developed are recognised and valued across Europe to support lifelong learning and professional development. By following this framework, teachers can confidently bring the benefits of AR/IR into their classrooms and prepare students for the future in an increasingly digital world.

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The four competence clusters: a strategic approach to competence development

In the ARIES framework, competences are strategically grouped into four key areas: social, personal, organisational and field (core) competences. This clustering approach provides a structured and focused method for training and development, making it easier for educators to identify and target specific skills in their teaching practice.

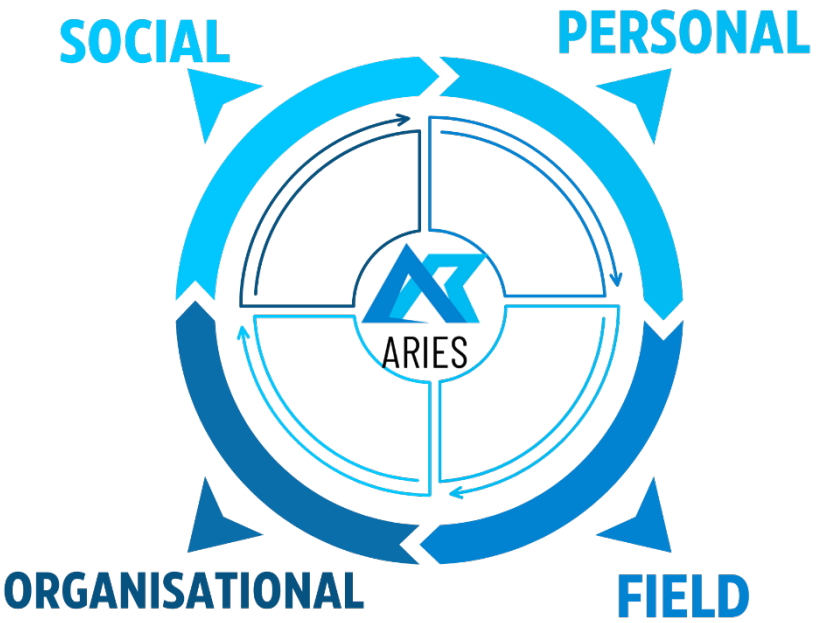

Figure 3: 4 cluster competence setting

Why clustering competences is beneficial

I. Holistic development

Holistic growth:

By addressing multiple dimensions of competence, the framework ensures that both personal and professional development are fully covered. Participants are equipped not only with technical skills, but also with interpersonal skills and strategic thinking, resulting in a well-rounded skills package.

Balanced skills:

This approach helps teachers and learners alike to develop a balance of skills that are critical for success in different areas of life and work. For example, while domain-specific competences provide the necessary technical know-how, social and personal competences ensure that these skills are used effectively in collaboration and in the real world.

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II. Targeted training

Tailored learning:

Clustering enables the development of tailored training programmes that focus on specific skill areas. This focus on the individual needs and goals of participants ensures that training efforts are focused on the areas where development is most needed, increasing the overall effectiveness of the training.

Efficient development:

By focusing on specific areas, trainers can deliver more efficient and effective training that addresses the exact areas where participants or professionals need to improve. For example, a programme focused on organisational skills could emphasise project development and risk management for those in leadership positions.

III. Networked skills

Synergistic skills development:

Bundling skills recognises that different skills are interrelated. Personal skills such as problem solving, and initiative are directly linked to organisational skills such as project development and risk management. This interlinked approach ensures that participants understand how their skills can be applied in different contexts and how they complement each other.

Cross-cluster integration:

By recognising these links, the ARIES framework encourages learners to develop skills that are not isolated but are part of a broader set of skills that work together. This makes it easier for learners to apply what they have learned in real-life situations, where different skills are often required simultaneously.

IV. Contextual relevance

Application in the real world:

Competences are grouped in such a way that they correspond to real-life applications, making the learning process more relevant and practical. Participants can easily relate the acquired competences to their actual working environment, which improves the transferability of these skills.

Bridging the gap between theory and practice:

This contextual grouping helps to bridge the gap between theoretical knowledge and practical application. For example, by grouping soft skills with domain-specific competences, the framework ensures that learners not only understand theoretical concepts, but also know how to communicate and apply them effectively in real-life scenarios.

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Integration with the ARIES Competence Framework

The strategic grouping of competences into social, personal, organisational and domain-specific areas provides a clear pathway for teachers and learners. This approach facilitates targeted training, supports holistic development and ensures that the skills developed are both relevant and applicable in a variety of contexts. As educators implement AR/IR technologies in their classrooms, this packaged approach to skills development will guide them in designing lessons and assessments that align with the broader goals of the ARIES project, ultimately leading to more effective teaching and richer learning experiences.

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II. The ARIES Core Competence Concept

The core competence area, called field competence, explicitly focuses on the ARIES concept of "Implementation / Facilitation of Augmented and Immersive Reality in the classroom".

The following chapter is divided into three clear sections: the Introduction, the Environment of a teacher, and the central ARIES Competence, "Implementation / Facilitation of Augmented and Immersive Reality in the classroom".

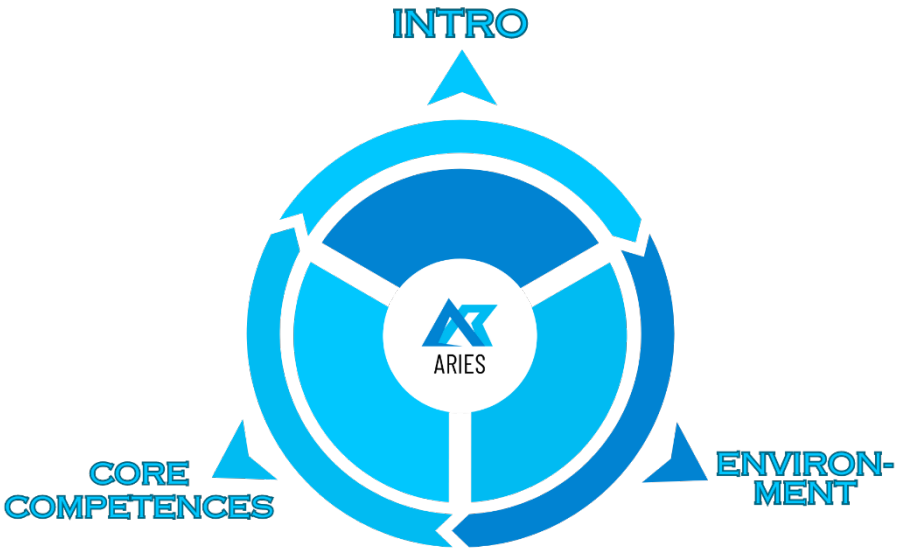

Figure 4: Chapter 1

Introduction

Purpose and Benefits

Augmented Reality (AR) and Immersive Reality (IR) can be integrated into the classroom to enhance teaching and learning. This sub-chapter will provide teachers with a clear understanding of how AR/IR can be effectively incorporated into their teaching practices. Teachers must be equipped with the tools and knowledge to create more engaging, interactive, and effective learning environments.

AR/IR will significantly increase student engagement. These technologies offer dynamic and visually stimulating content that will make lessons more interesting. A biology teacher can use AR to create a 3D model of the human heart, allowing students to explore its structure and function interactively. This helps students retain information better.

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Supporting Diverse Learning Styles

AR/IR is the ideal solution for catering to different learning styles by providing multimodal content. A history lesson should include immersive virtual tours, audio narratives and interactive timelines. This approach guarantees that all students can engage with the material in a way that suits them best.

AR/IR fosters critical thinking and creativity by allowing students to interact with virtual environments. In a chemistry class, for example, students can and should use AR to visualise molecular structures and simulate chemical reactions. This hands-on approach ensures students think critically and develop innovative solutions to problems.

AR/IR tools enhance collaboration and communication. They provide platforms for collaborative projects and interactive discussions, facilitating student collaboration and communication. For instance, students can work together in a virtual space to build a sustainable city, sharing ideas and resources in real time. This helps students develop invaluable teamwork and communication skills.

Preparing Students for the Future

Incorporating AR/IR in the classroom is the best way to prepare students for future technological advancements. As these technologies become more prevalent in various industries, experience with them will give students a competitive edge. Additionally, understanding how to use AR/IR tools will enhance students' digital literacy.

Main objective

Clear communication of implementation steps

The main objective of this chapter is to guide teachers through the process of integrating AR/IR into their classrooms. This involves a step-by-step approach that includes planning, delivering (implementing) and assessing (evaluating) the use of these technologies.

A brief overview

Planning: Teachers learn how to design lesson plans that incorporate AR/IR and align those plans with curriculum standards and learning objectives. This phase involves selecting appropriate AR/IR tools, preparing the necessary materials, and anticipating potential challenges.

> **Example:** A geography teacher planning a unit on ecosystems can use AR to create interactive maps that allow students to explore different biomes and their features.

Delivering: This phase focuses on the practical aspects of using AR/IR in the classroom. Teachers will receive guidance on how to introduce these technologies to students, integrate them into daily lessons and manage classroom dynamics to maximise learning outcomes.

> **Example:** In a geometry lesson, a maths teacher can use IR to create virtual shapes that students can manipulate to better understand geometric properties and relationships.

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Assess: Effective implementation requires ongoing assessment to ensure that AR/IR tools are meeting educational objectives. Teachers learn how to assess the impact of these technologies on student learning, make necessary adjustments, and solicit feedback to improve future use.

> **Example:** After a series of AR-enhanced science lessons, a teacher can use formative assessments, such as quizzes and student reflections, to gauge understanding and gather feedback on the AR experience.

Conclusion

Successful implementation of AR/IR in the classroom depends on thoughtful planning, effective implementation, and ongoing assessment. With the structured approach outlined in this chapter, teachers can utilise these technologies to create dynamic and impactful learning experiences. The goal is to improve students' academic performance and equip them with the skills and knowledge they need to succeed in a digital world.

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The Teacher's Environment: COL & V

Introduction

Adopting a competence oriented approach to learning and validation is essential for promoting a dynamic and effective learning environment. This section presents the process of planning, delivering and assessing learning units based on the LEVEL5 approach, which has been developed to support competence oriented learning. The LEVEL5 approach emphasises the development and validation of specific competences to ensure that both teachers and learners achieve their educational goals.

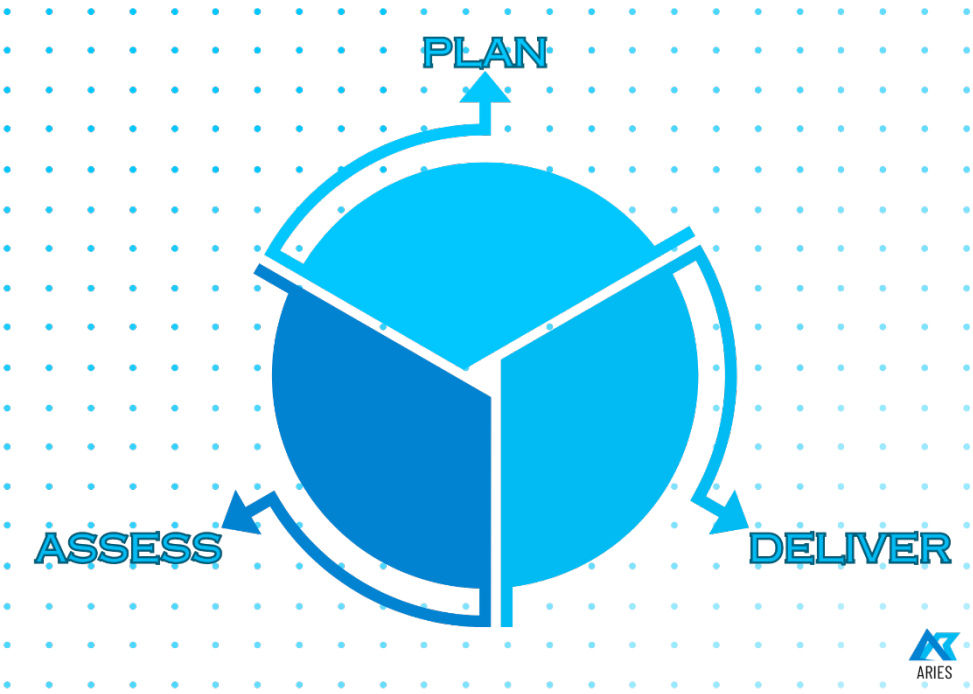

Figure 5: Plan, Deliver, Assess

Plan, Deliver and Assess

These three steps - planning, delivery and assessment - are not only helpful, but they are also essential to ensure that subject content can be used flexibly. This flexibility means that existing concepts and proven learning units can be seamlessly integrated with new teaching methods and technologies.

It also means that teachers' experience remains at the heart of teaching, and that existing knowledge and experience is simply added on.

Planning: This first step is about designing a learning unit with clear objectives and outcomes. By identifying the competences to be developed and validated, teachers can create lesson plans that are in line with both the curriculum objectives and the integration of AR/IR technologies. This

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structured planning ensures that all necessary resources and materials are prepared in advance, allowing for smoother implementation.

Especially since in almost all school systems not only existing curricula provide the framework, but lesson plans exist in almost every subject, or each teacher can usually fall back on his or her own concept and development, the planning step offers an excellent opportunity for interaction between one's own teaching concept by extending it with tools and methods from the field of augmented and immersive reality.

Delivering: In this step, teachers implement the planned learning unit in the classroom. Effective implementation involves using a variety of teaching methods and tools, including AR/IR, to engage students and enhance their learning experience. This step focuses on interactive and immersive teaching strategies that make learning more engaging and effective.

Assessment: The final step is to evaluate the effectiveness of the unit, and the competences developed. Using the LEVEL5 approach, teachers can assess student progress in a structured way, provide feedback and identify areas for improvement. This assessment ensures that the integration of AR/IR technologies contributes positively to the overall learning outcomes.

	Knowledge	Skills	Attitude
5	Know where else (knowledge for Transfer	Developing/ Constructing Transfer	Incorporation, Internalisation
4	Know when (Implicit understanding	Discovering / acting independently	Commitment / Volition
3	Know how	Deciding/ selecting	Appreciation / Motivation
2	Know why (Distant understanding)	Application, Imitation	Curiosity / Perspective taking
1	Know-what / know that	Perceiving	Self-oriented, neutral

Figure 6: Learning Pathway (example)

The core competence of "Implementing and Facilitating Augmented and Immersive Reality in the Classroom" is easily integrated through this three-step process. By focusing on planning,

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implementation and assessment, teachers can enrich and expand their toolkit to facilitate the integration of AR/IR technologies into their teaching practice. This approach not only enhances the overall teaching and learning experience, but also ensures that the tools used are effective and beneficial to student learning.

Planning: Developing a learning pathway

Introduction.

The first step in effectively integrating augmented and immersive reality (AR/IR) into the classroom is comprehensive planning. This includes the development of a clear learning pathway that guides both teachers and students from first contact to mastery of AR/IR tools. The learning pathway is essential as it helps to ensure that content and skills are taught systematically and progressively. Using the LEVEL5 framework, we can develop a structured approach that integrates tasks, materials, self-reflection, personalised teaching and individual learning steps. This pathway is designed to be adaptable and scalable, making it suitable for different educational contexts.

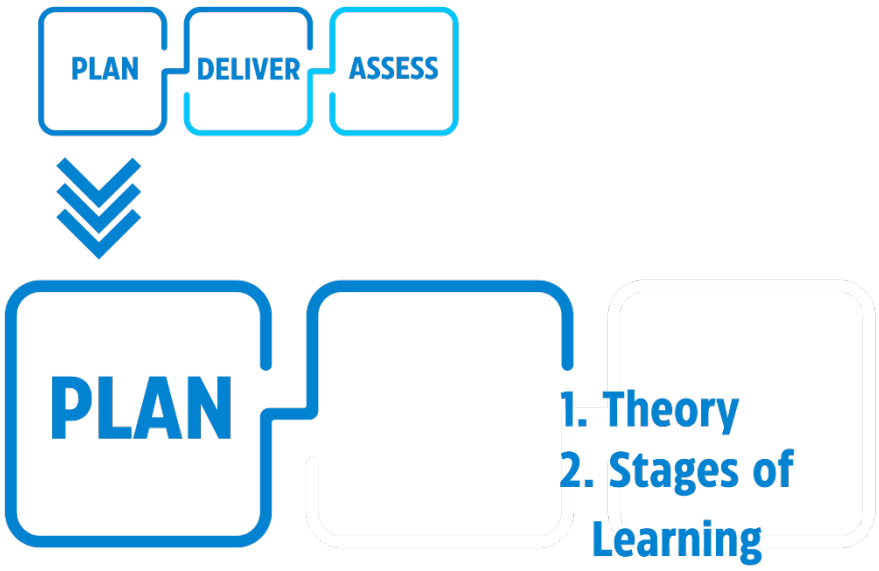

Figure 7: Planning

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Learning pathway

1. Theory

The development of competences is a complex, often non-linear process that depends on the competence itself, the learner's level and external factors such as context and quality expectations. LEVEL5 facilitates and mediates competence-oriented learning in a variety of settings - formal, non-formal and informal. A learning facilitator designs a pathway based on a reference system that takes into account learners' prior experience, motivations and societal learning needs. This pathway involves designing learning programmes that are embedded in wider contexts, planning learning processes, using different methods, creating competence-based learning and promoting open learning environments.

2. Stages of Learning

The learning progression of teachers and learners is similar, although teachers' competences are more detailed, comprehensive and transferable. The learning pathway should include different tasks focusing on different competence dimensions and levels. These tasks can range from activities focusing on specific dimensions to combined tasks such as multiple-choice questionnaires and essays that integrate knowledge, skills and personal motivation.

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3. Example Learning Pathway

To provide a clear example, here is a detailed learning pathway that could be adapted for AR/IR implementation in the classroom:

Step No.	Title	Content	Learning Objective	Method/Activity	Media	Unit Time	Competence Dimension
1.1	Benefits of using AR/IR	Introduction to AR/IR concepts, showcasing successful case studies	Understand the benefits of AR/IR in education	F2F, Investigative techniques, desk research	PowerPoint, brainstorming, reflective dialogue	2 hrs	Knowledge (Medium), Skill (Low), Attitude (Medium)
1.2	Recognising AR/IR potential	Overview of AR/IR tools and their applications	Identify potential applications of AR/IR in various subjects	F2F, Presentation, group discussion	PowerPoint, brainstorming, reflective dialogue	2 hrs	Knowledge (High), Skill (Low), Attitude (Medium)
1.3	Introduction to AR/IR tools	Hands-on session with basic AR/IR tools	Apply basic AR/IR tools in educational settings	F2F, Individual exercises, group review	PowerPoint, brainstorming, self-assessment	2 hrs	Knowledge (Medium), Skill (High), Attitude (Medium)
1.4	Developing AR/IR lessons	Methods to integrate AR/IR into lesson plans	Design effective AR/IR-enhanced lessons	F2F, Investigative techniques, desk research	PowerPoint, small group work, reflective dialogue	8 hrs	Knowledge (Low), Skill (Medium), Attitude (Low)
1.5	Advanced AR/IR applications	Advanced techniques and examples	Create complex AR/IR-enhanced activities	Online, Blue sky thinking, mind maps	PowerPoint, group work, reflective dialogue	10 hrs	Knowledge (Low), Skill (Medium), Attitude (Low)
1.6	AR/IR in Problem Solving	Using AR/IR for creative problem solving	Apply AR/IR to solve educational challenges	Online, Exercises, presentations	PowerPoint, brainstorming, review	2 hrs	Knowledge (Low), Skill (Medium), Attitude (Low)

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Step No.	Title	Content	Learning Objective	Method/Activity	Media	Unit Time	Competence Dimension
1.7	Evaluating AR/IR Impact	Assessing the effectiveness of AR/IR	Evaluate the impact of AR/IR on learning outcomes	Online, Demonstration, group work	PowerPoint, reflective dialogue	4 hrs	Knowledge (Medium), Skill (Medium), Attitude (High)

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Delivery: Implementing AR/IR tools in the classroom

In the delivery phase, teachers implement the carefully planned AR/IR enhanced lessons in the classroom. This phase requires the use of a variety of engaging and interactive methods to make the most of augmented reality (AR) and immersive reality (IR) technologies. Effective delivery is critical as it directly impacts the student's learning experience, making it more interactive and immersive. This phase should fit seamlessly with the competences outlined in the planning phase, taking into account existing teaching structures and enhancing them with AR/IR features.

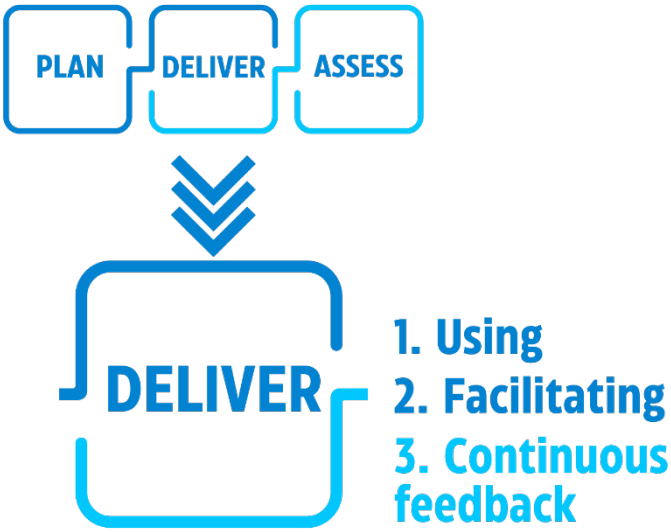

Figure 8: Delivering

Effective use of AR/IR tools

1. Using AR/IR tools in the classroom

Interactive lessons: Use AR applications to create dynamic lessons where students can interact with 3D models or historical events in real time. For example, in a science lesson, students could use AR to explore the human body by peeling back layers to examine different systems.

Immersive experiences: Use AR tools such as VR headsets to give students immersive experiences that would not be possible in a traditional classroom. For example, a geography teacher could take students on a virtual field trip to the Amazon rainforest.

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2. Using a variety of teaching methods

Blended learning approaches: Combine AR/IR tools with traditional teaching methods to create a rich, blended learning environment. This could include using VR for complex demonstrations in a physics class, while reinforcing concepts through traditional problem solving exercises.

Collaborative projects: Facilitate group projects using AR tools that encourage collaboration and communication between students, such as a group task to recreate historical sites in AR to enhance their understanding of architecture and history.

3. Facilitate open and flexible learning

Adaptive learning pathways: Use AR/IR tools to provide personalised learning experiences that adapt to each student's learning pace and style, provide real-time feedback, and allow task difficulty to be adjusted.

Contextual learning: Use AR/IR to link educational content to real-world applications, making abstract concepts tangible and understandable, e.g. by overlaying historical data with current locations using AR.

4. Continuous feedback and support

Real-time assessments: Use AR/IR for continuous assessments that give students immediate feedback and help them understand their progress and areas for improvement.

Technical and pedagogical support: Ensure continuous support for students and teachers by addressing technical challenges and integrating pedagogical guidance to maximise the benefits of AR/IR technologies.

Practical examples for teachers

Example 1: Augmented Reality in History

Activity: Pupils use an AR app to visualise historical battles in their actual geographical location using tablets or smartphones.

Implementation: Prepare the lesson by ensuring that all students have access to AR-enabled devices and the necessary apps. Begin the lesson with a discussion about the historical context of the battle, then use the AR app to bring the event to life and encourage students to explore different outcomes based on historical choices.

Example 2: Virtual Reality in Science Education

Activity: Introduce VR simulations that allow students to experience astronomical phenomena, such as walking on the surface of Mars or observing a solar eclipse.

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Realisation: Set up VR stations and prepare guided tours of the solar system. After the VR experience, lead a discussion with the students about the physical conditions of each planet and the challenges of space travel.

Example 3: AR for Language Learning

Activity: Use AR flashcards to enhance vocabulary learning, where scanning a card reveals interactive content such as pronunciation, use in a sentence and related visuals.

Implementation: Distribute AR flashcards and make sure students know how to use them. Incorporate these cards into a language activity where students practise forming sentences with new words and then share their sentences with the class for real-time feedback.

These examples show how AR/IR technologies can be used in a variety of subjects to improve understanding and engagement and provide an enriching learning experience for students. By incorporating these innovative tools, teachers can create dynamic lessons that not only support traditional educational goals, but also prepare students for a technologically advanced world.

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Assessment: Evaluation of AR/IR Integration and Capability Development

Introduction

The assessment phase is crucial for evaluating the effectiveness of AR/IR-supported learning units and the competences developed through their use. It helps teachers to systematically assess student progress, provide targeted feedback and identify areas for improvement. This ensures that the integration of AR/IR technologies not only engages students, but also significantly improves learning outcomes and aligns them with specific educational objectives.

Figure 9: Assessment

Assessment Framework

1. *Competence assessment strategies*

Awareness of skills development: Teachers need to be aware of the importance of assessing competences, which can vary greatly depending on the learner group, educational setting and level of formalisation.

For example, the use of AR/IR in a science lesson may be more structured and assessment-oriented than a more exploratory use in an art lesson. Assessments should be flexible yet structured enough to provide meaningful insights into students' competencies in using AR/IR technologies.

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Integrated assessments: Assessments should be seamlessly integrated into learning activities. For example, as students participate in an AR simulation of a historical event, embedded assessment tools can measure how students interact with the content, answer quizzes in the simulation, and complete tasks set in the AR environment. This provides a continuous stream of performance data while keeping the learning experience immersive and engaging.

2. *Methods for assessing AR/IR competences*

Formative assessments:

General quizzes and surveys: Use AR/IR-enabled quizzes to quickly assess understanding of new concepts. For example, after an AR tour of the solar system, students can be asked to match planets with their properties in a short quiz.

Interactive tasks: Implement tasks that require active participation with AR/IR tools. For example, students could use VR to perform a virtual dissection, with the system tracking each step and providing feedback on accuracy and technique.

Summative assessments:

Research projects: Students could use AR to collect data for a biology project, such as observing different ecosystems or animal behaviour on a virtual safari. The project would culminate in a detailed report and presentation of the findings.

Essays and presentations: After experiencing historical events in VR, students could write an essay or prepare a presentation discussing the impact of these events on modern society, incorporating the findings from their immersive experience.

Peer teaching: Older or more experienced students could create an AR tutorial for younger students that teaches a simple scientific concept such as photosynthesis. This will assess both the older students' understanding of the topic and their ability to teach it using AR tools.

3. *Documenting and demonstrating learning*

Develop a portfolio: Students should create a digital portfolio that includes videos of their AR/IR projects, screenshots of key activities and reflective writing about their experiences. This portfolio will serve as tangible evidence of their learning journey.

Performance rubrics: Create detailed rubrics that clearly define expectations for each AR/IR project. These rubrics should assess the technical skills, creativity, critical thinking and problem solving skills demonstrated in the use of AR/IR technologies.

Digital badges: Award digital badges for achievement of specific AR/IR skills or milestones within projects. These badges serve as recognition of students' efforts and skills and provide an additional element of motivation.

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4. *Quality assurance*

Develop criteria: Establish clear, transparent criteria for all assessments to ensure that they are valid, reliable and consistent across different learning scenarios. This is particularly important when using AR/IR tools, as the novelty and engagement factor should not overshadow the actual learning outcomes.

Feedback mechanisms: Develop a system that allows for immediate and constructive feedback. For example, after a VR-based geography lesson, students could receive personalised feedback based on their navigation choices and answers to experiential questions.

5. *Other practical examples*

Scenario-based assessments: In a history lesson, students could use AR to explore a virtual ancient city and complete tasks that require them to solve historical puzzles based on their understanding of the period.

Creative integration projects: In an art class, students could use AR to create an interactive gallery of their artwork, allowing viewers to experience the art in an enhanced way, such as seeing the layers of colour or the historical context of the works.

Technology design assignments: Advanced students could be tasked with designing a simple VR learning game for younger students to teach basic maths skills through interactive puzzles and challenges in a VR environment.

By enhancing assessment strategies with AR/IR technologies, teachers can not only make learning more interactive and engaging, but also gain a more nuanced understanding of student performance and areas for improvement.

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Core Competence: Augmented and Immersive Reality in Education

The integration of Augmented Reality (AR) and Immersive Reality (IR) into education offers a unique opportunity to enhance traditional teaching methods and engage students in unprecedented ways. By addressing the complexities of modern education, AR and IR provide tools that can transform classrooms into dynamic learning environments that offer immersive and interactive experiences not possible through traditional means.

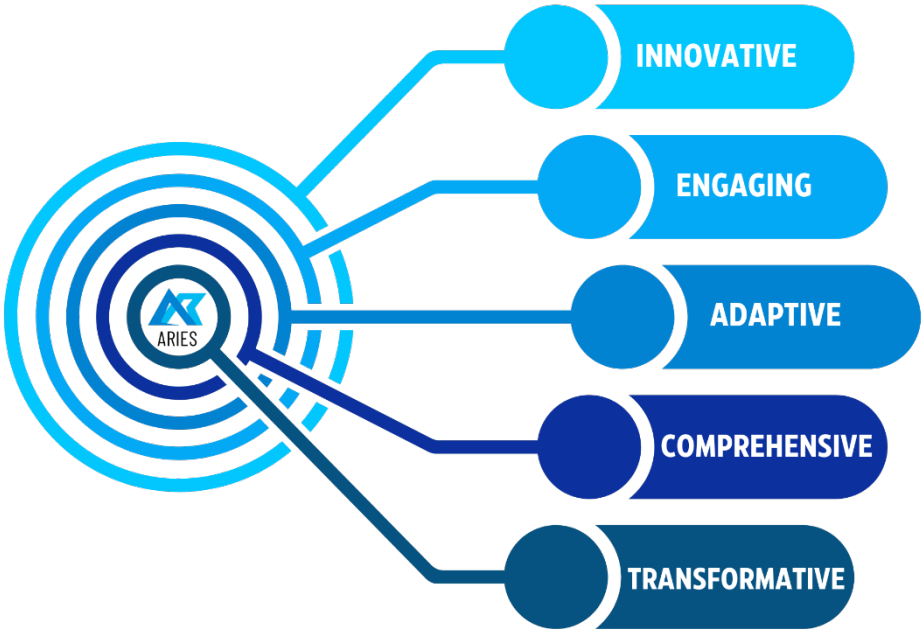

Figure 10: Core Competence

Motivate students and teachers alike

AR and IR technologies can significantly increase student engagement and motivation by making learning experiences more vivid and interactive. These technologies appeal to the visual and experiential learning style, bringing abstract concepts to life and making difficult subjects more accessible and enjoyable. For teachers, AR and IR are not just new tools to manage, but exciting opportunities to revitalise their teaching methods, explore new pedagogical strategies and connect with their students on a deeper level.

Flexible integration into existing teaching formats

One of the greatest strengths of AR and IR technologies is their versatility and adaptability across different subjects and levels of education. Whether it's enhancing a science lesson with a 3D model of human anatomy, exploring historical battles in immersive VR, or analysing literature through

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interactive AR stories, these technologies can be seamlessly integrated into existing curricula. They allow teachers to enhance their lesson plans without having to overhaul their entire teaching approach.

- Subject specific adaptation: AR and IR can be tailored to the specific needs of a subject to improve understanding and retention. For example, in science classes, AR can be used to simulate experiments that would be too costly or dangerous to perform in a real lab, while in art classes, students can use IR to explore art galleries from around the world.
- Accessibility at all levels of education: These technologies are not limited to higher education or specialist schools. They can be used in primary, secondary and higher education, with each level having the complexity and depth appropriate to the age and educational level of the students.
- Inclusion of diverse learning needs: AR and IR are particularly beneficial in meeting the diverse needs of learners, including those with special educational needs. They offer customisable experiences that can be adapted to individual learning paces and styles, ensuring that all students have the same opportunities to learn.

New perspectives on teaching and learning

The use of AR and IR in education encourages both students and teachers to view learning as a dynamic and interactive process. The dynamic in the classroom shifts from traditional lecture-based learning to an engaging, student-centred approach. This not only enhances the learning experience, but also prepares students for skills that are increasingly important in a digitalised world, such as digital literacy, critical thinking and creative problem solving.

By using AR and IR, educators can create a learning environment that is not only more engaging and informative, but also more in tune with the technological advances that are shaping our world. This introduction aims to encourage educators to explore these technologies without feeling overwhelmed. It highlights how easily AR and IR can be integrated into their current teaching methods to improve both teaching effectiveness and student learning outcomes.

The Core Competence: Implementation and Facilitation of Augmented and Immersive Reality in the Classroom

The core competence "Implementation and Facilitation of Augmented and Immersive Reality in the Classroom" is at the heart of the ARIES project. This competence enables teachers to effectively integrate AR and IR technologies into their teaching practice in order to improve student engagement and learning outcomes. The competence includes the ability to explain and communicate the concepts of AR and IR, to facilitate their integration into the classroom and to reflect on their effectiveness in order to continuously improve the learning experience.

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Key aspects of the competence

- Understanding and communicating: Teachers need to have a clear understanding of what AR and IR are, the rationale for using these technologies in the classroom, the methods involved in their use, and how to communicate these concepts effectively to students.
- Application and facilitation: Teachers should be able to apply AR and IR tools in different educational contexts, design content using these technologies, and facilitate their use to enhance student learning.
- Motivation and reflection: Teachers should be motivated to explore and implement AR and IR in their classrooms, inspire students to use these technologies, and reflect on the results to refine their teaching strategies.

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AR/IR Competence description

A teacher is able to explain and communicate (basically understand), facilitate, integrate and reflect on augmented and immersive reality.

Therefore, he/she is able to integrate AR and IR concepts (covering the state of the art in the field and related methodology) into his/her teaching style to enhance the students' learning experience.

The teacher knows...

- what it is
- know the reasons for using the technology,
- know the methods,
- know how to apply the concepts (technology and methods).

The teacher will be able to...

- communicate the AR + IR concept,
- apply the approach,
- create and develop content with AR + IR.

The teacher is motivated (feels)...

- is motivated ("intrinsic"),
- encourage student engagement and participation,
- inspire students to engage and develop in this area.

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AR/IR Reference System

	Knowledge		Skills		Attitude	
L	**Level Titles**	**Level description**	**Level Titles**	**Level description**	**Level Titles**	**Level description**
5	Know where else (knowledge for Transfer)	The teacher has reached the highest level of knowledge at which they can apply their understanding of AR and IR beyond the classroom. They can adapt and transfer their knowledge and skills to new contexts and disciplines, exploring innovative ways of using these technologies in different educational settings and beyond traditional boundaries.	Developing/ Constructing Transfer	The teacher not only masters augmented and immersive reality, but also becomes a creator and innovator in this field. They develop new AR and IR applications, construct interactive learning experiences and transfer their expertise to other disciplines and contexts. At this level, the aim is to push the boundaries of AR and IR technology and contribute to its further development in education and beyond.	Incorporation, Internalisation	The teacher fully incorporates augmented and immersive reality into their teaching philosophy and practice. They seamlessly integrate these technologies into all aspects of their lesson design, curriculum development and assessment strategies. AR and IR become integral parts of their pedagogical approach, enabling innovative and transformative learning experiences that empower students to succeed in an increasingly digital world.
4	Know when (Implicit understanding)	The teacher has developed an intuitive understanding of when and where to use AR and IR in an educational context. They can recognise opportunities within the curriculum where these technologies can enhance learning outcomes. This understanding is based on experience and reflection.	Discovering/acting independently	The teacher independently explores and utilises augmented and immersive reality technologies. They experiment with new tools and techniques and adapt their strategies to the students' needs. This includes taking the initiative, learning from mistakes and continuously refining the use of AR and IR to achieve better educational outcomes.	Commitment Volition	The teacher shows great commitment to integrating augmented and immersive reality into the classroom. They invest time and effort in using these technologies effectively, persistently overcoming challenges and continuously improving their practice.
3	Know how	The teacher has the necessary capabilities to use AR and IR effectively. They understand the methods and techniques for integrating these technologies into the classroom. This includes selecting appropriate AR/IR tools, designing interactive learning experiences and troubleshooting technical issues.	Deciding/ selecting	The teacher demonstrates the ability to make informed decisions and select appropriate augmented and immersive reality tools and resources for specific educational purposes. They will be able to evaluate different AR and IR applications, considering factors such as relevance to learning objectives, ease of use and suitability for students' needs. They need to weigh up different options and select the	Appreciation Motivation	Teachers show a strong motivation and appreciation for augmented and immersive reality in the classroom. They are enthusiastic about the potential of these technologies to enhance learning experiences and are committed to integrating them effectively into their teaching practice. This includes recognising the value of AR and IR, remaining motivated to explore new possibilities and

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	Knowledge		Skills		Attitude	
L	**Level Titles**	**Level description**	**Level Titles**	**Level description**	**Level Titles**	**Level description**
				most effective solutions to enhance the teaching and learning experience.		appreciating the impact they can have on student engagement and achievement.
2	Know why (Distant understanding)	The teacher understands the rationale for using AR and IR in the classroom. They can explain the pedagogical goals and benefits associated with integrating these technologies, such as increasing student engagement, deepening understanding of complex concepts and fostering creativity.	Application, Imitation	The teacher can actively engage with augmented and immersive reality tools and applications. They can operate basic AR and IR systems, navigate through virtual environments and use simple functionalities. In addition, they will be able to imitate techniques and approaches demonstrated by others and apply them in their own teaching practice with guidance and support.	Curiosity Perspective taking	The teacher begins to consider different viewpoints on augmented and immersive reality in education, including those of students, colleagues and experts. This promotes a deeper understanding of the benefits and challenges.
1	Know-what / know that	The teacher understands the basic concepts and terminology related to augmented and immersive reality. He/she can define what AR and IR are, identify common applications and recognise the potential benefits for education.	Perceiving	The teacher is able to perceive augmented and immersive reality in action. They will be able to recognise where AR and IR technologies are used, whether in education or in real-life applications. This includes recognising the basic features and functionalities of AR/IR systems and understanding their potential applications.	Self-oriented, neutral	The teacher demonstrates a basic awareness and orientation towards augmented and immersive reality in education. They have an open attitude towards exploring new technologies but may not yet fully understand their potential impact or relevance to the teaching and learning process.

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Opportunities and challenges of implementation

Integrating Augmented Reality (AR) and Immersive Reality (IR) into the classroom offers teachers an exciting opportunity to improve their teaching methods and increase student engagement. Not only do these technologies make learning more interactive and immersive, but they also support the development of critical skills in both students and teachers. This section explores practical strategies for implementing AR and IR in different subjects, while also addressing the challenges that can arise. By focusing on skill development as a core benefit, teachers can use AR and IR to enrich the educational experience and help students develop important skills for the future.

Below are some ideas and approaches to use as inspiration and a starting point:

Options for Implementation

1. *Subject-specific integration*

Science and Maths:

- An opportunity: AR and IR provide powerful tools for visualising complex concepts such as molecular structures, geometric shapes or astronomical phenomena, making abstract ideas more tangible and understandable for students.
- Skills development: By using these technologies, students can develop critical thinking and problem-solving skills when interacting with virtual models and simulations. For example, exploring a 3D model of the solar system in AR can deepen students' understanding of planetary motion and spatial relationships.
- Example: A chemistry teacher could use AR to allow students to virtually mix chemicals and observe reactions in a safe, controlled environment. This not only enhances understanding, but also improves students' scientific skills and ability to hypothesise and draw conclusions from observed phenomena.

History and Social Studies:

- An opportunity: Using IR technologies can create historical experiences that transport students back in time and allow them to explore different cultures and historical events in a way that textbooks alone cannot.
- Skills development: These experiences help students to develop empathy, perspective taking and a deeper understanding of historical contexts. Engaging with historical events through IR can also develop analytical skills as students compare historical interpretations and make connections to current issues.
- Example: A history class could use VR to take a virtual walk through ancient Rome, where students can explore the architecture, daily life and major events of the time. This experience not only enhances their understanding of history, but also encourages them to think critically about how historical narratives are constructed.

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Languages:

- Opportunity: AR can be used to bring literary works to life, providing students with a more engaging and interactive way to explore texts. By integrating visual and contextual elements, AR can enhance comprehension and make literature more accessible.
- Skills development: By interacting with AR-enhanced texts, students can develop advanced reading and writing skills such as text analysis and interpretation. This approach also encourages creative thinking as students explore alternative narratives and perspectives within literary works.
- For example, students could use AR to explore the setting of a novel where scanning a page with a device reveals additional content such as animated scenes, character biographies or thematic explanations. This interactive approach helps students make a deeper connection with the material and encourages a love of reading and critical analysis.

Art and Design:

- An opportunity: AR and IR can be integrated into art and design lessons to explore different artistic techniques, historical art movements and design principles. Students can create digital artwork using AR or visit virtual galleries to study famous works.
- Skills development: These technologies can help students develop visual literacy, technical skills in digital design, and a broader understanding of art history and its impact. In addition, students can develop their creativity and innovation by experimenting with AR/IR in their own artistic projects.
- For example, art students could create AR-enhanced works that allow viewers to interact with the artwork, such as a painting that reveals its creative process or historical context when viewed through an AR app. This not only enriches the artistic experience, but also allows students to reflect on the connection between traditional and digital art forms.

2. *Interdisciplinary Projects*

STEAM projects:

- The opportunity: AR and IR technologies are ideal for interdisciplinary projects that combine science, technology, engineering, arts and mathematics (STEAM). These projects encourage students to apply knowledge from different disciplines in creative and innovative ways.
- Skills development: Through STEAM projects, students can develop a range of skills including problem solving, collaboration and design thinking. The integration of AR/IR fosters an environment where students can experiment, iterate and refine their ideas, leading to a deeper understanding of the interconnectedness of different fields.
- Example: In one project, students could use AR to design a sustainable city that incorporates principles of environmental science, engineering and urban planning. Students could then present their designs in a VR environment that allows others to explore the city and provides a platform for discussion and feedback.

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Cultural and Global Studies:

- An opportunity: AR and IR can be powerful tools for exploring global cultures, languages and geopolitical issues. These technologies allow students to experience cultural events, practices and landmarks from around the world, fostering global awareness and empathy.
- Skills development: By engaging in AR/IR experiences that showcase different cultures, students can develop cultural competence, empathy and a global perspective. These skills are important for navigating an increasingly interconnected world.
- Example: In a language course, students could use VR to take part in a cultural festival in a country where the target language is spoken. This immersive experience helps them practise the language in context while gaining a deeper understanding of the culture's traditions and social norms.

3. *Active learning and student engagement*

Gamification:

- An opportunity: AR/IR tools can be used to gamify learning experiences and make teaching more interactive and engaging. Gamification can motivate students to actively engage in learning as they are rewarded for progress and success in a game-like environment.
- Skills development: Through game-based learning, students can develop their resilience, strategic thinking and decision-making skills. The interactive nature of these tools also helps students develop digital literacy and technology skills.
- Example: In geography classes, an AR-based scavenger hunt could be conducted where students search for geographical features around the school or classroom while solving tasks related to map reading, climate zones or population distribution. This activity not only reinforces geographical knowledge, but also encourages teamwork and critical thinking.

Student-centred learning:

- The opportunity: AR/IR technologies allow students to take control of their learning by creating their own content. This approach fosters a sense of ownership among students as they become active participants in the educational process.
- Skills development: By developing their own AR/IR projects, students improve their creativity, technical and project management skills. They also learn to communicate their ideas effectively and collaborate with their peers.
- Example: In science class, students could develop an AR app that simulates a natural ecosystem and allows users to explore the relationships between different species and environmental factors. This project not only deepens their understanding of ecological principles, but also sharpens their skills in programming, design and scientific communication.

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Challenges and how to overcome them

1. **Technical barriers**

Challenge: Not all schools have the technology or infrastructure to fully implement AR/IR tools. Issues such as limited access to equipment, software compatibility and network connectivity can hinder the effective use of these technologies.

Solution: Start with easily accessible AR/IR tools, such as mobile apps that are compatible with devices students already own. Explore opportunities for grants, donations or partnerships with technology companies to purchase the necessary equipment. Schools can also consider using AR/IR resources in different classes to ensure wider access.

2. **Teacher training and confidence**

Challenge: Teachers may feel overwhelmed by the technical aspects of AR/IR or unsure of how to effectively integrate these tools into their teaching.

Solution: Provide comprehensive professional development programmes that focus on practical, hands-on training with AR/IR technologies. Encourage peer mentoring and the formation of teacher learning communities where educators can share tips, resources and success stories. Providing ongoing support and resources will help build teachers' confidence and competence in using these tools.

3. **Equity and access**

Challenge: It can be difficult to ensure that all students have equal access to AR/IR tools, especially in schools from different socio-economic backgrounds.

Solution: Use AR/IR in group activities where equipment is shared, or rotate students using the technology to ensure everyone gets a chance. In addition, schools should look for funding opportunities to provide AR/IR tools to students who would not otherwise have access, ensuring inclusion in technology-enhanced learning.

4. **Ethical and privacy concerns**

Challenge: The use of AR/IR involves the collection and processing of data, raising concerns about privacy and the ethical use of technology in education.

Solution: Schools and teachers should adhere to strict privacy policies and educate students about the importance of digital citizenship. Establishing clear guidelines for the use, storage and sharing of student data will help maintain trust and protect student privacy. Teachers should also model ethical behaviour when using technology and instil these values in their students.

By focusing on these implementation strategies and overcoming potential challenges, teachers can effectively integrate AR and IR into their classrooms. This will not only enrich the learning experience, but also

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promote the development of key skills that will prepare students for the demands of the 21st century. Prepare for the 21st century Teachers are encouraged to see AR and IR not as an additional burden, but as powerful tools that can enhance their teaching and provide new opportunities for student engagement and learning.

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III. Generic Competences

Transversal competences are the essential skills and abilities that support effective teaching and learning in different contexts. In the ARIES competency framework, these competencies are particularly important as they provide teachers with the tools to effectively integrate AR/IR technologies into their teaching, while fostering the development of these skills in their students. Unlike domain-specific skills, which focus on specific subject areas, generic skills are broad and transferable, allowing teachers to guide students through a wide range of challenges and learning opportunities.

The framework divides generic competences into three key areas: social, personal and organisational. Each area encompasses a set of skills that are essential for creating a collaborative, supportive and effectively managed classroom environment. These competencies not only enhance a teacher's ability to use AR/IR technologies, but also contribute to the overall development and adaptability of their students.

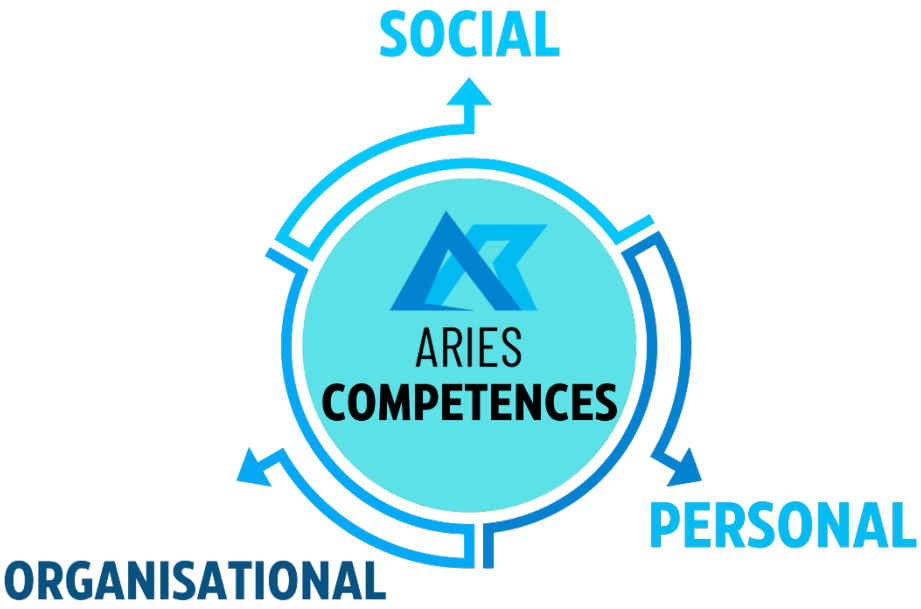

Figure 11: Generic competences

By focusing on these general competencies, teachers can better support their students in developing the skills needed to succeed in an increasingly complex and interconnected world. As teachers strengthen their own competencies in these areas, they are better able to guide their students to do the same, fostering a dynamic and holistic learning environment. The following sections examine

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each of these skill areas in detail, highlighting their importance and providing practical strategies for developing these skills in teachers and students.

Social competence: The foundation for effective collaboration

The importance of social competences

Social competences form the backbone of effective collaboration and communication in the classroom. These competences are essential for fostering a productive and harmonious learning environment in which students can work towards common educational goals. Within the ARIES project, social competences are seen as cross-cutting and generic, as they are universally applicable across different subjects and learning contexts. Regardless of the specific academic skills or knowledge being taught, the ability to communicate effectively, work in teams and take leadership is critical to student success.

Figure 12: Social competences

Key Social Competences for Students

The ARIES Competence Framework identifies six key social competences that students need to develop:

- **Teamwork (Intercultural):** Collaborating with peers, respecting different points of view, and working effectively in a multicultural classroom environment.
- **Communication:** Clearly conveying ideas, actively listening, and engaging in meaningful dialogue with classmates and teachers.

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- **Leadership:** Resolving conflicts, focusing on group goals, and motivating others to achieve common educational objectives.
- **Conflict Management:** Handling and resolving conflicts constructively, finding mutually acceptable solutions.
- **Empathy in Collaboration:** Navigating complex interpersonal dynamics, resolving conflicts constructively, and fostering a supportive and inclusive classroom environment.
- **Emotional Intelligence:** Recognizing, understanding, and managing one's own emotions as well as the emotions of others to create a positive learning environment and support classmates' emotional well-being.

Facilitating Social Competences

Teachers play a crucial role in facilitating the development of these social competences within different subjects. By integrating activities and practices that promote teamwork, communication, leadership, conflict management, empathy, and emotional intelligence, teachers can create a holistic learning environment that not only enhances academic learning but also prepares students for collaborative and socially dynamic future endeavours.

Implementation Overview for Teachers

- **Teamwork (Intercultural):** Incorporate group projects and activities that require collaboration among students from diverse backgrounds. Encourage respect for different perspectives and foster a multicultural learning environment.
- **Communication:** Design classroom activities that require clear and effective communication, such as presentations, debates, and peer feedback sessions. Emphasize active listening and meaningful dialogue.
- **Leadership:** Provide opportunities for students to take on leadership roles in group activities. Teach conflict resolution strategies and focus on motivating peers to achieve common goals.
- **Conflict Management:** Create scenarios and role-playing exercises that allow students to practice handling and resolving conflicts constructively. Guide students to find mutually acceptable solutions.
- **Empathy in Collaboration:** Promote activities that involve understanding and navigating complex interpersonal dynamics. Encourage students to reflect on their interactions and support a supportive classroom environment.
- **Emotional Intelligence:** Incorporate lessons on recognizing and managing emotions. Use mindfulness activities and discussions to help students understand the impact of emotions on behaviour and learning.

By focusing on these competences, students will be better equipped to navigate the complexities of interpersonal relationships and group dynamics, leading to improved academic outcomes and a more positive school experience. This structured approach ensures that social competences are embedded in the learning process, fostering both personal and collective success.

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Social Competences: Description + Reference System

The following section lists the social competences recorded in the ARIES project. The competences are first described using the three dimensions of the LEVEL5 approach and then a reference system is presented based on this. If necessary, this reference system can be further customised for the respective class context so that the associated learning path fits the respective subject.

Teamwork (Intercultural)

Competence Description

Teamwork (Intercultural) is the ability to collaborate effectively with peers from diverse cultural backgrounds, respecting different points of view, and working efficiently in a multicultural classroom environment. Developing this competence will benefit students by enhancing their ability to function in diverse teams, fostering mutual respect, and preparing them for global citizenship. It encourages adaptability, cultural sensitivity, and cooperative problem-solving, which are essential skills in today's interconnected world.

Knowledge

- The student knows how to build trust and respect with peers from different cultures.
- The student knows effective intercultural communication techniques.
- The student knows the benefits of diversity.
- The student knows how cultural differences influence teamwork and collaboration.
- The student knows how to address culture-related conflicts and misunderstandings.

Skills

- The student is able to communicate clearly with peers from different cultural backgrounds.
- The student is able to integrate well with classmates of different cultures.
- The student is able to reflect on their own cultural influences in teamwork.
- The student is able to exchange knowledge and experiences with peers from different cultures.
- The student is able to give and receive feedback effectively across cultural boundaries.
- The student is able to manage difficulties, stress, and frustration from intercultural misunderstandings.
- The student is able to make themselves understood in diverse cultural contexts.
- The student is able to identify and adapt to culture-based problems and misunderstandings.

Attitude

- The student is motivated to value integrity and respect diversity.

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- The student is committed to appreciating different cultural backgrounds.
- The student is inspired to foster a positive attitude towards interacting with people from different cultures.
- The student is determined to avoid miscommunication and support others in intercultural interactions.

This structured approach ensures that students not only learn about intercultural teamwork but also develop the skills and attitudes necessary to thrive in diverse environments. Teachers can use this framework to guide their instruction and create activities that promote these competences in the classroom.

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REFERENCE SYSTEM – Teamwork

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	The student understands how to apply intercultural teamwork principles in various global contexts and can strategize ways to transfer these skills to new and unfamiliar cultural settings.	Developing, constructing, transferring	The student can develop new strategies for intercultural teamwork, construct innovative solutions to cultural conflicts, and transfer these skills to different contexts.	Incorporation	The student fully incorporates respect for cultural diversity into their personal values and demonstrates this consistently in their interactions.
4	Knowing when (implicit understanding)	The student implicitly understands when to apply specific intercultural communication techniques and can navigate cultural differences without explicit guidance.	Discovering acting independently	The student can independently discover ways to integrate cultural diversity into teamwork and act without needing direct supervision.	Commitment	The student is committed to fostering a positive and inclusive environment, actively promoting cultural understanding and respect.
3	Knowing how	The student knows how to implement effective intercultural communication techniques and can actively use them in teamwork situations.	Deciding/ selecting	The student can decide on the best approaches to use in intercultural teamwork and select appropriate methods for effective communication.	Motivation/ appreciation	The student is motivated to engage with diverse cultures and appreciates the value of intercultural teamwork.

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2	Knowing why (distant understanding)	The student understands the underlying reasons for cultural differences and the importance of diversity in teamwork.	Using, imitating	The student can use learned intercultural communication techniques and imitate effective practices observed in others.	Perspective taking	The student can take the perspective of others from different cultural backgrounds and empathize with their experiences.
1	Knowing what	The student knows basic intercultural communication concepts and can identify different cultural perspectives.	Perceiving	The student can perceive cultural differences and begin to understand their impact on teamwork.	Self-orientation	The student recognizes their own cultural biases and begins to orient themselves towards understanding and accepting cultural diversity.

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Communication

Competence Description:

Communication competence is the ability to convey ideas clearly, listen actively, and engage in meaningful dialogue with classmates and teachers. This competence is essential for creating an inclusive and effective learning environment. Developing strong communication skills benefits students by enhancing their ability to articulate thoughts, understand others, and collaborate effectively in both academic and social settings.

Knowledge

- The student knows the principles of clear and effective communication.
- The student knows different communication styles and their appropriate uses.
- The student knows active listening techniques and their importance.
- The student knows the role of non-verbal communication in conveying messages.
- The student knows how to adapt communication strategies to different audiences and contexts.

Skills

- The student is able to articulate thoughts and ideas clearly and concisely.
- The student is able to actively listen and provide constructive feedback.
- The student is able to engage in meaningful dialogue and discussions.
- The student is able to use non-verbal cues effectively to support verbal communication.
- The student is able to adapt their communication style to suit different audiences and situations.

Attitude

- The student is motivated to communicate openly and honestly.
- The student is committed to listening and understanding others' perspectives.
- The student is inspired to engage in collaborative and respectful dialogue.
- The student is determined to overcome communication barriers and foster understanding.

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REFERENCE SYSTEM – Communication

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	The student understands how to apply communication principles in various contexts, including unfamiliar and complex environments, and can strategize their communication approach accordingly.	Developing, constructing, transferring	The student can develop new communication strategies, construct effective messages, and transfer these skills to different contexts and audiences.	Incorporation	The student fully incorporates effective communication practices into their personal values and demonstrates this consistently in their interactions.
4	Knowing when (implicit understanding)	The student implicitly understands when to use specific communication techniques and can navigate conversations effectively without explicit guidance.	Discovering acting independently	The student can independently discover and apply effective communication methods and act without needing direct supervision.	Commitment	The student is committed to fostering open and honest communication, actively promoting understanding and collaboration.
3	Knowing how	The student knows how to implement effective communication strategies and techniques in various situations.	Deciding/ selecting	The student can decide on the best communication approaches to use in different situations and select appropriate methods for effective dialogue.	Motivation/ appreciation	The student is motivated to engage in effective communication and appreciates the value of clear and respectful dialogue.
2	Knowing why	The student understands the reasons behind different	Using,	The student can use learned communication	Perspective taking	The student can take the perspective of others in

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	(distant understanding)	communication styles and the importance of effective communication.	imitating	techniques and imitate effective practices observed in others.		conversations and empathize with their viewpoints.
1	Knowing what	The student knows basic communication concepts and can identify different communication styles and techniques.	Perceiving	The student can perceive different communication styles and begin to understand their impact on interactions.	Self-orientation	The student recognizes their own communication habits and begins to orient themselves towards improving their communication skills.

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Leadership

Competence Description

Leadership competence is the ability to inspire and guide others towards achieving common educational goals. This involves resolving conflicts, focusing on collective objectives, and motivating peers. Developing leadership skills benefits students by enhancing their ability to take initiative, influence positive change, and foster a collaborative learning environment. Effective student leaders are able to manage group dynamics, promote teamwork, and create an inclusive atmosphere conducive to learning.

Knowledge

- The student knows the principles of effective leadership.
- The student knows different leadership styles and their appropriate applications.
- The student knows conflict resolution strategies.
- The student knows how to set and communicate clear goals.
- The student knows the importance of motivating and supporting peers.

Skills

- The student is able to resolve conflicts constructively.
- The student is able to focus efforts on achieving common educational goals.
- The student is able to mobilize and motivate peers.
- The student is able to communicate goals and expectations clearly.
- The student is able to provide guidance and support to peers.

Attitude

- The student is motivated to take initiative and lead by example.
- The student is committed to fostering a positive and inclusive learning environment.
- The student is inspired to encourage and support peers in their learning journeys.
- The student is determined to resolve conflicts and promote teamwork.

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REFERENCE SYSTEM – Leadership

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	The student understands how to apply leadership principles in various contexts, including unfamiliar and complex environments, and can strategize their leadership approach accordingly.	Developing, constructing, transferring	The student can develop new leadership strategies, construct effective leadership approaches, and transfer these skills to different contexts and groups.	Incorporation	The student fully incorporates effective leadership practices into their personal values and demonstrates this consistently in their interactions.
4	Knowing when (implicit understanding)	The student implicitly understands when to use specific leadership techniques and can navigate leadership roles effectively without explicit guidance.	Discovering acting independently	The student can independently discover and apply effective leadership methods and act without needing direct supervision.	Commitment	The student is committed to fostering a positive and inclusive learning environment, actively promoting teamwork and collaboration.
3	Knowing how	The student knows how to implement effective leadership strategies and techniques in various situations.	Deciding/ selecting	The student can decide on the best leadership approaches to use in different situations and select appropriate methods for guiding peers.	Motivation/ appreciation	The student is motivated to engage in effective leadership and appreciates the value of guiding and supporting peers.

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2	Knowing why (distant understanding)	The student understands the reasons behind different leadership styles and the importance of effective leadership.	Using, imitating	The student can use learned leadership techniques and imitate effective practices observed in others.	Perspective taking	The student can take the perspective of others in leadership roles and empathize with their experiences.
1	Knowing what	The student knows basic leadership concepts and can identify different leadership styles and techniques.	Perceiving	The student can perceive different leadership styles and begin to understand their impact on group dynamics.	Self-orientation	The student recognizes their own leadership habits and begins to orient themselves towards improving their leadership skills.

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Conflict Management

Competence Description

Conflict Management is the ability to handle and resolve conflicts constructively, finding mutually acceptable solutions. This competence is crucial for maintaining a harmonious and productive classroom environment. Developing conflict management skills benefits students by enhancing their ability to navigate disagreements, promote understanding, and foster a positive learning atmosphere. Effective conflict management helps students build stronger relationships, reduces stress, and improves overall group dynamics.

Knowledge

- The student knows the principles of conflict resolution.
- The student knows different conflict management styles and their appropriate uses.
- The student knows the steps of the conflict resolution process.
- The student knows the importance of empathy and active listening in resolving conflicts.
- The student knows how to identify the root causes of conflicts.

Skills

- The student is able to handle conflicts constructively.
- The student is able to find mutually acceptable solutions.
- The student is able to use active listening and empathy in conflict situations.
- The student is able to de-escalate tense situations.
- The student is able to mediate disputes between peers.

Attitude

- The student is motivated to approach conflicts with a positive and open mindset.
- The student is committed to finding fair and peaceful solutions.
- The student is inspired to promote understanding and cooperation among peers.
- The student is determined to reduce tension and build a supportive classroom environment.

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REFERENCE SYSTEM – Conflict management

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
L	Level title	Level description	Level title	Level description	Level title	Level description
5	Knowing where else (knowledge for transfer)	The student understands how to apply conflict management principles in various contexts, including unfamiliar and complex environments, and can strategize their approach to conflict resolution accordingly.	Developing/ constructing/ transferring	The student can develop new conflict management strategies, construct effective solutions, and transfer these skills to different contexts and conflicts.	Incorporation	The student fully incorporates effective conflict management practices into their personal values and demonstrates this consistently in their interactions.
4	Knowing when (implicit understanding)	The student implicitly understands when to use specific conflict management techniques and can navigate conflict situations effectively without explicit guidance.	Discovering/ acting independently	The student can independently discover and apply effective conflict management methods and act without needing direct supervision.	Self-regulation/ determination	The student is motivated to engage in effective conflict management and appreciates the value of resolving disputes constructively.
3	Knowing how	The student knows how to implement effective conflict management strategies and techniques in various situations.	Deciding/ selecting	The student can decide on the best conflict management approaches to use in different situations and	Motivation/ appreciation	The student is motivated to engage in effective conflict management and appreciates the value of resolving disputes constructively.

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				select appropriate methods for resolving disputes.		
2	Knowing why (distant understand-ing)	The student understands the reasons behind different conflict management styles and the importance of effective conflict resolution.	Using/ imitating	The student can use learned conflict management techniques and imitate effective practices observed in others.	Perspective taking	The student can take the perspective of others in conflict situations and empathize with their experiences.
1	Knowing what	The student knows basic conflict management concepts and can identify different conflict management styles and techniques.	Perceiving	The student can perceive different conflict situations and begin to understand their impact on group dynamics.	Self-orientation	The student recognizes their own conflict management habits and begins to orient themselves towards improving their conflict resolution skills.

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Empathy in collaboration

Empathy in Collaboration is the ability to understand and share the feelings of others, navigate complex interpersonal dynamics, and foster a supportive and inclusive classroom environment. This competence is crucial for creating a collaborative atmosphere where students feel valued and understood. Developing empathy benefits students by enhancing their ability to build strong relationships, resolve conflicts constructively, and work effectively in diverse teams. Empathy in collaboration leads to greater emotional intelligence, improved communication, and a more cohesive learning environment.

Knowledge

- The student knows the principles of empathy and its importance in collaboration.
- The student knows how to recognize and understand the emotions of others.
- The student knows the impact of empathy on group dynamics and relationships.
- The student knows strategies for demonstrating empathy in various situations.
- The student knows the role of active listening in empathic interactions.

Skills

- The student is able to identify and understand the emotions of peers.
- The student is able to express empathy through verbal and non-verbal communication.
- The student is able to navigate and manage complex interpersonal dynamics.
- The student is able to provide emotional support and foster inclusivity.
- The student is able to mediate conflicts with an empathetic approach.

Attitude

- The student is motivated to value and practice empathy in interactions with peers.
- The student is committed to creating a supportive and inclusive classroom environment.
- The student is inspired to understand and appreciate diverse perspectives.
- The student is determined to foster positive relationships and promote understanding.

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REFERENCE SYSTEM – Empathy in Collaboration

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	The student understands how to apply empathy in various contexts, including unfamiliar and complex environments, and can strategize their empathic approach accordingly.	Developing, constructing, transferring	The student can develop new empathy strategies, construct effective empathic responses, and transfer these skills to different contexts and interactions.	Incorporation	The student fully incorporates empathy practices into their personal values and demonstrates this consistently in their interactions.
4	Knowing when (implicit understanding)	The student implicitly understands when to use empathy and can navigate interpersonal dynamics effectively without explicit guidance.	Discovering acting independently	The student can independently discover and apply effective empathy methods and act without needing direct supervision.	Commitment	The student is committed to fostering a supportive and inclusive classroom environment, actively promoting understanding and collaboration.
3	Knowing how	The student knows how to implement effective empathy strategies and techniques in various situations.	Deciding/ selecting	The student can decide on the best empathy approaches to use in different situations and select appropriate methods for demonstrating understanding.	Motivation/ appreciation	The student is motivated to engage in empathetic interactions and appreciates the value of understanding and supporting peers.
2	Knowing why (distant understanding)	The student understands the reasons behind different empathy	Using, imitating	The student can use learned empathy techniques and	Perspective taking	The student can take the perspective of others and

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		techniques and the importance of empathy in collaboration.		imitate effective practices observed in others.		empathize with their experiences and feelings.
1	Knowing what	The student knows basic empathy concepts and can identify different empathy strategies and techniques.	Perceiving	The student can perceive different emotional cues and begin to understand their impact on interactions and group dynamics.	Self-orientation	The student recognizes their own empathic habits and begins to orient themselves towards improving their empathy skills.

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Empathy in collaboration

Empathy in Collaboration is the ability to understand and share the feelings of others, navigate complex interpersonal dynamics, and foster a supportive and inclusive classroom environment. This competence is crucial for creating a collaborative atmosphere where students feel valued and understood. Developing empathy benefits students by enhancing their ability to build strong relationships, resolve conflicts constructively, and work effectively in diverse teams. Empathy in collaboration leads to greater emotional intelligence, improved communication, and a more cohesive learning environment.

Knowledge

- The student knows the principles of empathy and its importance in collaboration.
- The student knows how to recognize and understand the emotions of others.
- The student knows the impact of empathy on group dynamics and relationships.
- The student knows strategies for demonstrating empathy in various situations.
- The student knows the role of active listening in empathic interactions.

Skills

- The student is able to identify and understand the emotions of peers.
- The student is able to express empathy through verbal and non-verbal communication.
- The student is able to navigate and manage complex interpersonal dynamics.
- The student is able to provide emotional support and foster inclusivity.
- The student is able to mediate conflicts with an empathetic approach.

Attitude

- The student is motivated to value and practice empathy in interactions with peers.
- The student is committed to creating a supportive and inclusive classroom environment.
- The student is inspired to understand and appreciate diverse perspectives.
- The student is determined to foster positive relationships and promote understanding.

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REFERENCE SYSTEM – Empathy in Collaboration

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	The student understands how to apply empathy in various contexts, including unfamiliar and complex environments, and can strategize their empathic approach accordingly.	Developing, constructing, transferring	The student can develop new empathy strategies, construct effective empathic responses, and transfer these skills to different contexts and interactions.	Incorporation	The student fully incorporates empathy practices into their personal values and demonstrates this consistently in their interactions.
4	Knowing when (implicit understanding)	The student implicitly understands when to use empathy and can navigate interpersonal dynamics effectively without explicit guidance.	Discovering acting independently	The student can independently discover and apply effective empathy methods and act without needing direct supervision.	Commitment	The student is committed to fostering a supportive and inclusive classroom environment, actively promoting understanding and collaboration.
3	Knowing how	The student knows how to implement effective empathy strategies and techniques in various situations.	Deciding/ selecting	The student can decide on the best empathy approaches to use in different situations and select appropriate methods for demonstrating understanding.	Motivation/ appreciation	The student is motivated to engage in empathetic interactions and appreciates the value of understanding and supporting peers.
2	Knowing why (distant understanding)	The student understands the reasons behind different empathy	Using, imitating	The student can use learned empathy techniques and	Perspective taking	The student can take the perspective of others and

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		techniques and the importance of empathy in collaboration.		imitate effective practices observed in others.		empathize with their experiences and feelings.
1	Knowing what	The student knows basic empathy concepts and can identify different empathy strategies and techniques.	Perceiving	The student can perceive different emotional cues and begin to understand their impact on interactions and group dynamics.	Self-orientation	The student recognizes their own empathic habits and begins to orient themselves towards improving their empathy skills.

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Personal competences

Personal competences are essential for students' overall development and success, both academically and personally. These competences encompass a variety of skills and attributes that enable students to navigate challenges, think critically, and adapt to changing circumstances. By developing these competences, students are better prepared to face the dynamic demands of life and learning.

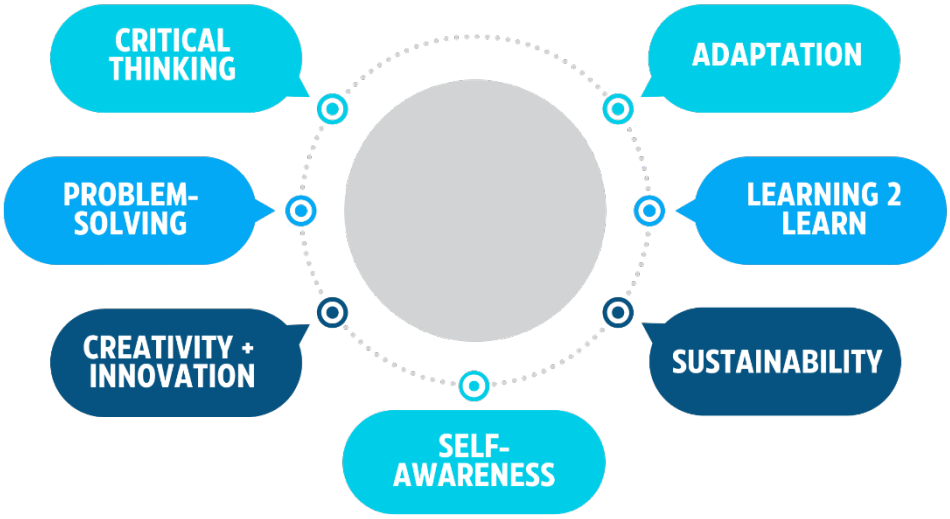

Figure 13: Personal competences

Key Personal Competences for Students

Students develop critical thinking and problem-solving skills to effectively analyze situations and find solutions, fostering their ability to navigate challenges in academic and personal contexts. They also cultivate creativity and innovation, encouraging them to explore new ideas and approaches, which are essential for personal growth and adapting to changing environments.

- **Critical Thinking:** Students develop the ability to analyse information objectively, evaluate arguments, and make reasoned judgments, which enhances their capacity to understand complex issues and make informed decisions.
- **Problem-Solving**: Students acquire skills to identify challenges, explore alternative solutions, and implement effective strategies, enabling them to tackle obstacles and achieve desired outcomes in various academic and personal contexts.
- **Increased Creativity and Innovation:** Students are encouraged to think creatively and generate new ideas.
- **Greater Self-Awareness:** Students gain insight into their strengths and weaknesses, enhancing personal and academic growth.

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- **Ethical and Sustainable Thinking:** Students incorporate ethical considerations and sustainability into their decision-making processes.
- **Learning to Learn:** Students adopt a mindset of lifelong learning, ensuring adaptability and continuous improvement.
- **Resilience and Adaptability:** Students develop the ability to bounce back from setbacks and adapt to changing circumstances.

Facilitation Personal Competences

For teachers, personal competences are crucial in creating and maintaining a supportive and effective learning environment. These competences enable teachers to model positive behaviours, encourage student development, and continuously improve their teaching practices. By fostering these competences, teachers can significantly enhance the learning experience for their students.

Implementation Overview for Teachers

- **Critical thinking** is essential for teachers to analyze classroom situations, evaluate information objectively, and make informed instructional decisions. Teachers can foster critical thinking skills by incorporating case studies and real-world scenarios into their lessons, providing students with opportunities to analyze complex issues and develop reasoned arguments.
- **Problem-solving competence** enable teachers to identify educational challenges, explore various solutions, and implement effective teaching strategies tailored to students' needs. Teachers can enhance students' problem-solving abilities through collaborative activities such as group projects and classroom discussions, encouraging them to apply critical thinking to practical situations and develop innovative solutions.
- **Creativity and innovation** are important as teachers foster an environment where creativity is valued and nurtured. By integrating creative projects and encouraging innovative thinking, teachers can inspire students to explore new ideas and approaches to learning.
- **Self-awareness** involves teachers reflecting on their strengths and weaknesses, seeking continuous improvement in their teaching practices. Regular self-assessment and feedback sessions can help teachers identify areas for growth and implement strategies for professional development.
- **Ethical and sustainable thinking** is essential for teachers to incorporate ethical considerations and sustainability into their teaching methods. They can integrate discussions on ethics and sustainability into various subjects, encouraging students to consider the broader impact of their decisions.
- **Learning to learn** is a competence where teachers model lifelong learning and encourage students to develop a mindset of continuous improvement. By sharing their own learning experiences and promoting reflective practices, teachers can motivate students to adopt a proactive approach to their education.
- **Resilience and adaptability** help teachers assist students in developing the ability to bounce back from setbacks and adapt to changing circumstances. Creating a supportive classroom

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environment where mistakes are viewed as learning opportunities can build students' resilience and adaptability.

By focusing on these competences, the ARIES project aims to equip both teachers and students with the tools necessary for personal and professional success. Teachers play a crucial role in facilitating the development of these competences, creating an environment where students can thrive and reach their full potential.

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Personal Competence: Description + Reference System

Critical Thinking

Competence Description

Critical thinking is the ability to analyse information objectively, evaluate arguments, and make reasoned judgments. This competence is fundamental for students as it enhances their capacity to understand complex issues and make informed decisions, which is essential for academic success and personal development. Critical thinking enables students to navigate the vast amount of information they encounter, discern credible sources from unreliable ones, and build well-supported arguments. By developing critical thinking skills, students become better equipped to tackle real-world problems, engage in meaningful discussions, and contribute thoughtfully to their communities and future workplaces. This competence not only aids in their current educational pursuits but also prepares them for lifelong learning and informed citizenship.

Knowledge

- The student knows how to distinguish between facts and opinions.
- The student knows various logical reasoning techniques and how to apply them.
- The student understands the importance of evidence in supporting arguments.
- The student is aware of common logical fallacies and how to avoid them.
- The student knows how to critically evaluate sources of information.

Skills

- The student is able to identify and articulate key issues and arguments in a text.
- The student is able to assess the validity and reliability of different sources.
- The student is able to construct well-reasoned arguments and counterarguments.
- The student is able to apply critical thinking skills in both written and oral communication.
- The student is able to recognize biases and assumptions in their own thinking and that of others.

Attitude

- The student is motivated to seek out and consider multiple perspectives before forming a judgment.
- The student is committed to ongoing self-assessment and reflection to improve their critical thinking abilities.
- The student values intellectual honesty and is open to changing their mind based on new evidence.
- The student is driven by a desire to understand complex issues deeply and thoroughly.
- The student is inspired to engage in thoughtful and respectful debates and discussions.

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REFERENCE SYSTEM – Problem solving

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	The student transfers critical thinking skills to new and unfamiliar contexts effectively.	Developing, constructing, transferring	The student develops new critical thinking strategies and adapts them to various contexts.	Incorporation	The student shows initial interest in developing critical thinking competence.
4	Knowing when (implicit understanding)	The student consistently uses critical thinking skills in diverse and complex situations.	Discovering acting independently	The student applies critical thinking skills creatively to solve complex problems.	Commitment	The student considers others' viewpoints and recognizes the value of multiple perspectives.
3	Knowing how	The student can apply critical thinking techniques to analyze simple arguments and problems.	Deciding/ selecting	The student independently evaluates arguments and makes reasoned judgments.	Motivation/ appreciation	The student is motivated to engage in and appreciates the importance of critical thinking activities.
2	Knowing why (distant understanding)	The student understands the importance and relevance of critical thinking in various contexts.	Using, imitating	The student uses basic critical thinking skills to analyze straightforward issues.	Perspective taking	The student is committed to continuously improving their critical thinking competence.

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1	Knowing what	The student knows basic definitions and concepts of critical thinking.	Perceiving	The student can identify key components of an argument.	Self-orientation	The student fully integrates critical thinking into their daily learning and problem-solving processes.

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Problem-solving

Competence Description

Problem-solving is the ability to identify challenges, explore alternative solutions, and implement effective strategies to overcome obstacles. This competence is crucial for students as it equips them with practical tools to navigate academic, personal, and future professional situations. Developing problem-solving skills enables students to approach complex issues methodically, think creatively, and make decisions confidently. By honing these skills, students can tackle various problems they encounter in their studies and daily lives, fostering resilience and adaptability. This competence not only supports their current learning and development but also prepares them to handle future challenges with a proactive and solutions-oriented mindset.

Knowledge

- The student knows the steps involved in the problem-solving process.
- The student understands different problem-solving techniques and strategies.
- The student knows how to gather and analyse relevant information.
- The student understands the importance of brainstorming and generating multiple solutions.
- The student knows how to evaluate the effectiveness of different solutions.

Skills

- The student is able to identify and define problems clearly.
- The student is able to brainstorm and generate a range of potential solutions.
- The student is able to evaluate and compare different solutions based on criteria such as feasibility and impact.
- The student is able to implement chosen solutions effectively and efficiently.
- The student is able to monitor and assess the outcomes of implemented solutions and make necessary adjustments.

Attitude

- The student is motivated to approach problems with a positive and proactive attitude.
- The student is committed to persevering through challenges and setbacks.
- The student values creativity and innovation in the problem-solving process.
- The student is driven by a desire to find effective and practical solutions.
- The student is inspired to collaborate with others and seek diverse perspectives in solving problems.

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REFERENCE SYSTEM – Problem solving

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	The student transfers problem-solving skills to new and unfamiliar contexts effectively.	Developing, constructing, transferring	The student develops new problem-solving strategies and adapts them to various contexts.	Incorporation	The student fully integrates problem-solving into their daily learning and decision-making processes.
4	Knowing when (implicit understanding)	The student consistently uses problem-solving skills in diverse and complex situations.	Discovering, acting independently	The student applies problem-solving skills creatively to tackle complex challenges.	Commitment	The student is committed to continuously improving their problem-solving skills.
3	Knowing how	The student can apply problem-solving techniques to straightforward issues.	Deciding/ selecting	The student independently evaluates and selects the best solutions to problems.	Motivation/ appreciation	The student is motivated to engage in and appreciates the importance of problem-solving activities.
2	Knowing why (distant understanding)	The student understands the significance of problem-solving in various contexts.	Using, imitating	The student uses basic problem-solving techniques to address simple issues.	Perspective taking	The student considers multiple viewpoints and approaches when solving problems.
1	Knowing what	The student knows basic concepts and steps of problem-solving.	Perceiving	The student can recognize and identify problems.	Self-orientation	The student shows initial interest in developing problem-solving skills.

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Increased Creativity and Innovation

Competence Description

Creativity and innovation involve the ability to think outside the box, generate new ideas, and implement innovative solutions. This competence is essential for students as it nurtures their ability to approach problems and tasks with a fresh perspective, encouraging originality and adaptability. Developing creativity and innovation skills empowers students to explore unconventional solutions, drive progress, and adapt to changing environments. These skills are crucial not only for personal growth but also for contributing to the evolving demands of the modern world. By fostering creativity and innovation, students enhance their potential for academic success, career advancement, and meaningful contributions to society.

Knowledge

- The student knows various techniques and methods for generating creative ideas.
- The student understands the principles of innovation and its importance in different contexts.
- The student knows the difference between creativity and innovation and how they complement each other.
- The student understands how to evaluate the feasibility and potential impact of innovative ideas.
- The student knows how to use feedback to refine and improve their creative ideas.

Skills

- The student is able to brainstorm and generate original ideas.
- The student is able to apply creative thinking techniques to solve problems.
- The student is able to develop and refine innovative ideas into practical applications.
- The student is able to collaborate with others to enhance creativity and innovation.
- The student is able to take calculated risks to implement innovative solutions.

Attitude

- The student is motivated to explore and experiment with new ideas.
- The student is committed to continuous learning and improvement in creativity and innovation.
- The student values open-mindedness and the willingness to challenge the status quo.
- The student is driven by a desire to contribute unique and valuable solutions.
- The student is inspired to embrace change and adapt to new opportunities and challenges.

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REFERENCE SYSTEM – Creativity

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	The student transfers creativity and innovation skills to new and unfamiliar contexts effectively.	Developing, constructing, transferring	The student develops new creative strategies and adapts them to various contexts.	Incorporation	The student fully integrates creativity and innovation into their daily learning and problem-solving processes.
4	Knowing when (implicit understanding)	The student consistently uses creativity and innovation skills in diverse and complex situations.	Discovering, acting independently	The student applies creativity and innovation skills to complex challenges.	Commitment	The student is committed to continuously improving their creativity and innovation skills.
3	Knowing how	The student can apply creative thinking techniques to generate and develop ideas.	Deciding/ selecting	The student independently develops and selects innovative solutions.	Motivation/ appreciation	The student is motivated to engage in and appreciates the importance of creativity and innovation activities.
2	Knowing why (distant understanding)	The student understands the significance of creativity and innovation in various contexts.	Using, imitating	The student uses basic creative thinking techniques to explore new ideas.	Perspective taking	The student considers multiple viewpoints and approaches when generating ideas.
1	Knowing what	The student knows basic concepts and techniques of creativity and innovation.	Perceiving	The student can recognize opportunities for creativity and innovation.	Self-orientation	The student shows initial interest in developing creativity and innovation skills.

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Self-awareness

Competence Description

Self-awareness involves recognizing and understanding one's own emotions, strengths, weaknesses, values, and drives. It is crucial for personal development and effective interpersonal relationships. For students, developing self-awareness helps them better manage their emotions, set realistic goals, and make informed decisions. By becoming more self-aware, students can navigate their educational journeys with a clearer sense of purpose and direction. This competence also fosters empathy and improves communication, as students who understand themselves are better equipped to understand and relate to others.

Knowledge

- The student knows their own strengths and weaknesses.
- The student understands the impact of their emotions on their behaviour and learning.
- The student knows their core values and motivations.
- The student understands how self-awareness contributes to personal and academic growth.
- The student knows techniques for reflecting on their experiences and behaviours.

Skills

- The student is able to identify and articulate their emotions and reactions.
- The student is able to assess their strengths and areas for improvement.
- The student is able to set realistic and meaningful personal goals.
- The student is able to reflect on their actions and learn from their experiences.
- The student is able to use self-awareness to enhance their interpersonal relationships.

Attitude:

- The student is motivated to understand themselves better.
- The student is committed to personal growth and continuous self-improvement.
- The student values honesty and openness in self-reflection.
- The student is driven by a desire to align their actions with their values.
- The student is inspired to use self-awareness to foster positive relationships and environments.

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REFERENCE SYSTEM – Self-awareness

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	The student transfers self-awareness skills to new and unfamiliar contexts effectively.	Developing, constructing, transferring	The student develops new self-awareness strategies and adapts them to various contexts.	Incorporation	The student fully integrates self-awareness into their daily learning and interactions.
4	Knowing when (implicit understanding)	The student consistently uses self-awareness in diverse and complex situations to guide their actions and decisions.	Discovering, acting independently	The student applies self-awareness to enhance their learning and personal development.	Commitment	The student is committed to continuously improving their self-awareness.
3	Knowing how	The student can apply self-awareness techniques to recognize their emotions and behaviours.	Deciding/ selecting	The student independently sets realistic personal goals based on self-awareness.	Motivation/ appreciation	The student is motivated to engage in self-reflection and values its importance.
2	Knowing why (distant understanding)	The student understands the significance of self-awareness in personal and academic contexts.	Using, imitating	The student uses basic self-assessment techniques to understand their strengths and weaknesses.	Perspective taking	The student considers how their emotions and behaviors affect themselves and others.
1	Knowing what	The student knows basic concepts of self-	Perceiving	The student can recognize their own emotions and reactions.	Self-orientation	The student shows initial interest in developing self-awareness.

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		awareness and its components.				

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REFERENCE SYSTEM – Self-efficacy

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	Knowing where else self-efficacy can be applied strategically, transferring it to new challenges and contexts.	Developing, constructing, transferring	Developing and transferring advanced self-efficacy skills to tackle complex challenges.	Incorporation	Incorporating self-efficacy into one's mindset and inspiring others to believe in their abilities.
4	Knowing when (implicit understanding)	Knowing when to apply self-efficacy by maintaining motivation and seeking support when needed.	Discovering acting independently	Discovering one's strengths and acting independently to achieve goals.	Commitment	Commitment to believing in oneself and persisting in the face of challenges.
3	Knowing how	Knowing how to build self-efficacy through setting achievable goals and overcoming obstacles.	Deciding/ selecting	Deciding to set and pursue goals with confidence.	Motivation/ appreciation	Motivation and appreciation for building and maintaining self-efficacy.
2	Knowing why (distant understanding)	Understanding why self-efficacy is important and its impact on personal and professional success.	Using, imitating	Using basic strategies to build self-confidence and motivation.	Perspective taking	Perspective taking to understand the impact of self-efficacy on achieving success.

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1	Knowing what	Knowing what self-efficacy is and its basic role in achieving goals.	Perceiving	Perceiving one's own abilities and potential for success.	Self-orientation	Self-orientation towards recognizing the importance of self-efficacy.

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Sustainability and Environmental Responsibility

Competence Description

Ethical and sustainable thinking involves understanding and applying ethical principles and sustainable practices in decision-making processes. For students, developing this competence is crucial as it empowers them to consider the broader impact of their actions on society and the environment. Ethical and sustainable thinking fosters a sense of responsibility, integrity, and long-term vision. Students who cultivate this competence are better equipped to contribute positively to their communities and the world, promoting social justice and environmental stewardship. By integrating ethical and sustainable considerations into their thinking, students can make informed, responsible choices that align with their values and the greater good.

Knowledge

- The student knows fundamental ethical principles and theories.
- The student understands the importance of sustainability and its impact on the environment and society.
- The student knows the global challenges related to sustainability and ethics.
- The student understands the relationship between ethical behaviour and long-term success.
- The student knows how to identify and evaluate ethical dilemmas and sustainable solutions.

Skills

- The student is able to analyze situations from an ethical perspective.
- The student is able to identify sustainable practices and integrate them into their daily life.
- The student is able to evaluate the long-term consequences of their actions.
- The student is able to engage in discussions about ethical and sustainable issues.
- The student is able to develop and propose ethical and sustainable solutions to problems.

Attitude

- The student is motivated to act with integrity and responsibility.
- The student is committed to promoting sustainability and ethical behaviour.
- The student values the importance of making decisions that benefit the greater good.
- The student is driven by a desire to contribute to a fair and sustainable world.
- The student is inspired to lead by example in ethical and sustainable practices.

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REFERENCE SYSTEM – Sustainability and Environmental Responsibility

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	The student transfers ethical and sustainable thinking skills to new and unfamiliar contexts effectively.	Developing, constructing, transferring	The student develops new ethical and sustainable strategies and adapts them to various contexts.	Incorporation	The student fully integrates ethical and sustainable thinking into their daily decision-making processes.
4	Knowing when (implicit understanding)	The student consistently uses ethical and sustainable thinking in diverse and complex situations.	Discovering, acting independently	The student applies ethical and sustainable thinking to complex challenges.	Commitment	The student is committed to continuously improving their ethical and sustainable thinking.
3	Knowing how	The student can apply ethical principles and sustainable practices to decision-making.	Deciding/ selecting	The student independently evaluates and selects ethical and sustainable solutions.	Motivation/ appreciation	The student is motivated to engage in ethical and sustainable practices and values their importance.
2	Knowing why (distant understanding)	The student understands the significance of ethical and sustainable thinking in various contexts.	Using, imitating	The student uses basic ethical and sustainable decision-making techniques.	Perspective taking	The student considers the impact of their actions on others and the environment.

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1	Knowing what	The student knows basic concepts of ethics and sustainability.	Perceiving	The student can recognize ethical and sustainability issues.	Self-orientation	The student shows initial interest in developing ethical and sustainable thinking.

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Learning2Learn - Learning through Experience

Learning to learn is the ability to effectively acquire, process, and retain new information and skills throughout one's life. This competence is essential for students as it empowers them to become autonomous, self-motivated learners capable of adapting to new challenges and environments. By developing learning to learn skills, students can take control of their educational journeys, set realistic learning goals, and apply various strategies to achieve them. This competence not only enhances academic performance but also fosters a lifelong passion for knowledge and personal growth.

Knowledge

- The student knows various learning strategies and techniques.
- The student understands the importance of goal setting and self-assessment in the learning process.
- The student knows how to access and evaluate different sources of information.
- The student understands the role of motivation and perseverance in successful learning.
- The student knows how to create a conducive learning environment.

Skills

- The student is able to set realistic and achievable learning goals.
- The student is able to apply different learning strategies to various subjects and tasks.
- The student is able to monitor and assess their own learning progress.
- The student is able to seek out and utilize resources to support their learning.
- The student is able to adapt learning strategies based on their effectiveness and personal preferences.

Attitude

- The student is motivated to take responsibility for their own learning.
- The student is committed to continuous improvement and lifelong learning.
- The student values the process of learning and the effort it requires.
- The student is driven by curiosity and a desire to explore new ideas.
- The student is inspired to overcome challenges and persist in the face of difficulties.

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REFERENCE SYSTEM – Learning2Learn

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	The student transfers learning strategies to new and unfamiliar contexts effectively.	Developing, constructing, transferring	The student develops new learning strategies and adapts them to various contexts.	Incorporation	The student fully integrates learning to learn into their daily educational and personal practices.
4	Knowing when (implicit understanding)	The student consistently uses appropriate learning strategies in diverse and complex situations.	Discovering, acting independently	The student adapts and refines learning strategies based on their effectiveness.	Commitment	The student is committed to continuously improving their learning strategies and approaches.
3	Knowing how	The student can apply various learning strategies to different contexts and tasks.	Deciding/ selecting	The student independently selects and applies effective learning strategies.	Motivation/ appreciation	The student is motivated to engage in continuous learning and values its importance.
2	Knowing why (distant understanding)	The student understands the importance of effective learning strategies and self-assessment.	Using, imitating	The student uses basic learning strategies and techniques.	Perspective taking	The student considers the impact of their learning strategies on their overall success.
1	Knowing what	The student knows basic concepts of learning strategies and techniques.	Perceiving	The student can recognize their learning needs and preferences.	Self-orientation	The student shows initial interest in developing learning to learn skills.

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Resilience and Adaptability

Competence Description

Resilience and adaptability are crucial personal competences that enable individuals to navigate challenges, setbacks, and changes effectively. Resilience involves the capacity to recover from difficulties and maintain a positive outlook despite adversity. Adaptability, on the other hand, is the ability to adjust to new conditions, learn from experiences, and stay flexible in the face of changing circumstances. For students, developing resilience and adaptability not only enhances their academic performance but also prepares them for the unpredictable nature of life. These competences foster a growth mindset, allowing students to view challenges as opportunities for learning and personal development.

Knowledge

- The student knows the importance of resilience and adaptability in personal and academic life.
- The student understands the factors that contribute to resilience, such as emotional regulation, social support, and coping strategies.
- The student knows various techniques to manage stress and recover from setbacks.
- The student understands the concept of a growth mindset and its role in adaptability.
- The student knows how to identify and leverage strengths to overcome challenges.

Skills

- The student is able to stay calm and composed under pressure.
- The student is able to apply coping strategies to deal with stress and adversity.
- The student is able to reflect on experiences and learn from them to improve future responses.
- The student is able to adapt to new situations and embrace change positively.
- The student is able to seek support and resources when faced with difficulties.
- The student is able to set realistic goals and persevere in achieving them despite obstacles.

Attitude

- The student is motivated to view challenges as opportunities for growth.
- The student is committed to maintaining a positive outlook in the face of adversity.
- The student values flexibility and is open to change.
- The student is driven by a desire to continuously improve and adapt.
- The student is inspired to support others in developing resilience and adaptability.

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REFERENCE SYSTEM – Resilience and Adaptability

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	The student transfers resilience and adaptability skills to new and unfamiliar contexts effectively.	Developing, constructing, transferring	The student develops new resilience and adaptability strategies and adapts them to various contexts.	Incorporation	The student fully integrates resilience and adaptability into their daily educational and personal practices.
4	Knowing when (implicit understanding)	The student consistently uses resilience and adaptability skills in diverse and complex situations.	Discovering, acting independently	The student adapts and refines resilience and adaptability strategies based on their effectiveness.	Commitment	The student is committed to maintaining a positive outlook and flexibility in the face of adversity.
3	Knowing how	The student can identify factors that contribute to resilience and apply strategies for adaptability.	Deciding/ selecting	The student independently applies effective resilience and adaptability strategies.	Motivation/ appreciation	The student is motivated to engage in continuous improvement of resilience and adaptability skills.
2	Knowing why (distant understanding)	The student understands the importance of resilience and adaptability in overcoming challenges.	Using, imitating	The student uses basic coping strategies to manage stress.	Perspective taking	The student considers the impact of resilience and adaptability on their overall success.
1	Knowing what	The student knows basic concepts of resilience and adaptability.	Perceiving	The student can recognize stress and adversity.	Self-orientation	The student shows initial interest in developing resilience and adaptability.

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Organisational Competences

Organisational competences are essential skills and abilities that enable individuals to effectively manage projects, resources, and relationships within the educational environment. For students, developing these competences helps in planning and executing tasks, making informed decisions, and adapting to changing circumstances. For teachers, these competences facilitate efficient classroom management, resource allocation, and the creation of a supportive learning atmosphere.

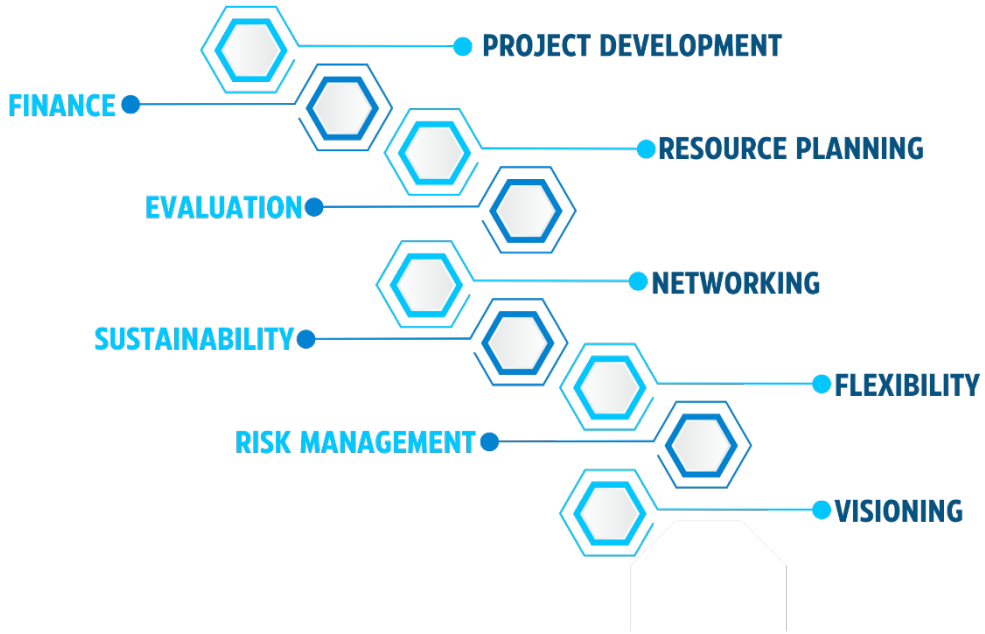

Figure 14: Organisational competences

Purpose:

The purpose of integrating Organisational competences into the curriculum is to equip both students and teachers with the tools they need to navigate complex educational tasks and projects. By fostering these skills, we aim to create a structured and efficient learning environment where educational goals are met, and both personal and academic growth are encouraged.

Benefits:

Supporting the development of Organisational competences in students brings numerous benefits. For students, these competences foster independence, critical thinking, and the ability to tackle complex tasks with confidence. As students become more adept at managing projects and resources, they gain valuable skills that are applicable in various aspects of life, both academically and professionally.

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For teachers, integrating these competences into lessons not only enhances students' learning experiences but also contributes to the teacher's own professional growth. Teachers who facilitate these skills in their classrooms improve their own abilities in project management, resource allocation, and strategic planning. This dual development creates a more dynamic and responsive educational environment, benefiting both teachers and students.

By including Organisational competences in different tasks and lessons, teachers can create a more engaging and effective learning experience, fostering a classroom culture that values efficiency, innovation, and adaptability. This holistic approach ensures that both students and teachers are better prepared to meet future challenges and opportunities.

Key Organisational Competences for Students

Organisational competences are crucial for students to effectively manage projects, resources, and relationships within the school environment. These competences help students plan and execute tasks, make informed decisions, and adapt to changing circumstances, thereby preparing them for future challenges. The following competences will be explained in detail:

- **Project Development**: Planning and executing school projects effectively.
- **Resource Planning and Mobilising Resources**: Identifying and managing resources for school projects.
- **Financial and Economic Literacy**: Understanding financial principles and economic factors.
- **Evaluation (Valuing Ideas)**: Assessing the feasibility and impact of ideas and projects.
- **Networking**: Building and maintaining professional relationships.
- **Flexibility (Coping with Ambiguity, Uncertainty, and Risk)**: Adapting to changing circumstances and managing uncertainty.
- **Strategic Planning and Visioning**: Setting long-term goals and planning steps to achieve them.
- **Sustainability and Environmental Responsibility**: Integrating sustainable practices into daily activities.
- **Risk Management**: Identifying and mitigating risks in projects.

Facilitating Organisational Competences

In the Organisational competence area, teachers play a pivotal role in fostering these skills in students. By effectively facilitating Organisational competences, teachers not only enhance students' ability to manage projects and resources but also refine their own professional skills. This dual focus on student development and teacher growth creates a robust and dynamic educational environment.

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Implementation Overview for Teachers

- **Project Development**: Project development involves the ability to initiate, plan, execute, and close projects effectively, ensuring they meet objectives and are delivered on time and within budget. Teachers can implement project development skills by incorporating project-based learning in their curriculum, planning classroom projects that align with educational goals, guiding students through the project lifecycle, and providing feedback on their progress. Additionally, teachers can model effective project management techniques through their own professional development initiatives.
- **Resource Planning and Mobilizing Resources**: Efficient resource planning involves identifying, allocating, and managing resources to achieve educational goals. Teachers can practice resource planning by creating detailed lesson plans that outline the necessary resources for each activity and engaging in professional development to learn about new resources and technologies that can enhance their teaching. Collaborating with colleagues to share resources and best practices is another effective strategy.
- **Financial and Economic Literacy**: Understanding financial principles and economic factors is crucial for teachers to make informed decisions regarding budget allocation and resource management in their classrooms. Teachers can incorporate financial literacy into their teaching by integrating real-world economic concepts into lessons and managing classroom budgets and resources efficiently. Involving students in budget planning for classroom projects can also provide practical experience.
- **Evaluation (Valuing Ideas)**: The ability to assess and value ideas based on their potential impact and feasibility is essential for fostering innovation and creative problem-solving in the classroom. Teachers can implement evaluation techniques by using rubrics and assessment criteria to evaluate student projects and ideas. Encouraging peer reviews and group discussions can help students learn to value diverse perspectives and ideas. Providing constructive feedback guides students in refining their ideas.
- **Networking**: Building and maintaining professional relationships provide teachers with support, resources, and opportunities for professional growth. Teachers can expand their professional networks by participating in educational conferences, joining professional organizations, and engaging in online communities. Networking with colleagues within the school fosters collaboration and resource sharing.
- **Flexibility (Coping with Ambiguity, Uncertainty, and Risk)**: The ability to adapt to changing circumstances and manage uncertainty is crucial for teachers to create a resilient and responsive learning environment. Teachers can cultivate flexibility by designing adaptable lesson plans that can be modified based on student needs and feedback. They should also practice and model problem-solving strategies in the face of unexpected challenges and encourage students to develop these skills.
- **Strategic Planning and Visioning**: Crafting and implementing long-term strategic plans ensure that teachers align their teaching with the school's vision and future educational trends. Teachers can engage in strategic planning by setting long-term goals for their professional development and classroom objectives. Participating in school-wide planning initiatives and contributing to the school's vision helps align their efforts with broader educational goals.

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- **Sustainability and Environmental Responsibility**: Integrating sustainable practices into classroom activities promotes environmental responsibility and long-term ecological balance. Teachers can incorporate sustainability into their lessons by teaching students about environmental issues and encouraging eco-friendly practices. Implementing classroom projects that focus on sustainability, such as recycling programs or conservation efforts, raises awareness and fosters responsible behaviour.
- **Risk Management**: Identifying, analysing, and mitigating risks is essential for protecting the educational environment from potential threats and ensuring continuity and resilience. Teachers can implement risk management strategies by conducting regular safety drills and developing contingency plans for classroom activities. Educating students about safety protocols and encouraging them to think proactively about potential risks further enhances the learning environment's safety and resilience.

By focusing on these key Organisational competences, teachers can create a more effective and dynamic educational environment, fostering the growth of both their students and themselves.

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Organisational Competences: Description + Reference System

Project Management

Competence Description

The learner is competent in executing projects in an efficient and successful way by structuring necessary project activities and applying a constant plan-do-check approach until the end of the project. The learner knows about project management theory and how to execute project activities and monitor their level of success and quality. He/she is able to act accordingly and adapt and develop strategies work in project teams or even lead them. He/she is aware of the advantages and disadvantages of turning a task or a venture into a project and to apply project management approaches respectively.

Knowledge

The learner...

- knows about the core project processes and project phases
- knows about crosscutting tasks like dissemination, evaluation, monitoring and exploitation
- has knowledge of at least one project management approach and of variations in regard to other approaches
- has knowledge on how to plan project activities according to the objectives and to monitor the accomplishment and quality of sub-tasks
- knows when to assign more resources to open tasks
- knows how to structure a project
- knows how to transform a theoretical project plan into reality
- has the knowledge to develop projects along a strategic approach in the own professional environment

Skills:

The learner...

- is able to apply strategies and techniques to fulfil the tasks assigned to him/her by the project management
- is able to select certain project tasks according to the own abilities
- is able to plan and attribute project tasks to other (capable) team members
- is able to apply a plan-do-check procedure to monitor the project
- is versatile to connect other approaches like team building or diversity management to the own project team

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Attitude

The learner...

- is open towards applying project management approaches and techniques
- has a positive attitude towards project management
- is aware of the strengths and the weaknesses of project management
- integrates the concept into his/her professional values

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REFERENCE SYSTEM – Project Management

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	Knowing how to assess which PM tools are adequate in any situation. Knowing how to plan new ventures with a strategic project management approach.	Developing, constructing, transferring	Strategically adapting and applying PM tools for new contexts. Discussing and sharing information about PM with other colleagues and experts.	Incorporation	Having internalised what to anticipate in steering projects. Inspiring others to improve their PM competences.
4	Knowing when (implicit understanding)	Knowing how different PM tools can be used in different phases of the life cycle of a project. Knowing how to apply them in project situations.	Discovering acting independently	Adapting certain project management tools to the specific context. Seeking for more specific information and applying other PM tools.	Commitment	Being determined to improve own PM competences and to prioritise it to other activities for this purpose.
3	Knowing how	Knowing different PM tools and instruments.	Deciding/ selecting	Actively applying specific tools for PM in project planning and implementation	Motivation/ appreciation	Valuing project management abilities and being motivated to develop and apply them.
2	Knowing why (distant understanding)	Knowing that PM techniques are needed in order to successfully complete project work.	Using, imitating	Occasionally applying a few PM tools – offered by others – in parts the own project work.	Perspective taking	Being curious about different PM approaches and tools and their potential for the own work.

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1	Knowing what	Knowing that PM exists as a methodology.	Perceiving	Recognising situations in which certain PM techniques and tools are used.	Self-orientation	Feeling the impulse to learn more on PM methodologies in a specific work situation.

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Resource Planning and Mobilising Resources

Competence Description

Resource Planning and Mobilising Resources is an essential Organisational competence that involves the strategic allocation and management of resources—such as human, financial, material, and informational assets—to achieve Organisational goals efficiently and effectively. This competence ensures that resources are used optimally to support project completion, enhance productivity, and drive Organisational success. Effective resource planning and mobilization are critical for maintaining operational efficiency, reducing waste, and ensuring that the right resources are available at the right time to meet the organization's needs.

Knowledge

- The learner knows: The fundamental principles and methodologies of resource planning and allocation.
- The learner has the knowledge: Of different types of resources (human, financial, material, informational) and their roles within the organization.
- The learner knows: How to assess resource requirements for various projects and Organisational activities.
- The learner has the knowledge: Of best practices and tools for resource management, including budgeting, forecasting, and scheduling.
- The learner knows: The implications of resource allocation decisions on overall Organisational performance and project outcomes.

Skills

- The learner is able to: Identify and assess resource needs for different projects and Organisational activities.
- The learner is able to: Allocate and reallocate resources efficiently to meet changing project demands and Organisational priorities.
- The learner is able to: Utilize resource management tools and software to track and optimize resource usage.
- The learner is able to: Develop and implement resource plans that align with Organisational goals and objectives.
- The learner is able to: Coordinate and communicate resource requirements and adjustments with stakeholders and team members.

Attitude

- The learner is motivated: To ensure efficient and effective use of Organisational resources.
- The learner is committed: To continuous improvement in resource planning and management practices.

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- The learner likes to inspire: Others to value resource efficiency and contribute to optimal resource utilization.
- The learner is proactive: In identifying potential resource constraints and finding solutions to overcome them.
- The learner appreciates: The strategic importance of resource planning in achieving long-term Organisational success.

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REFERENCE SYSTEM – Planning and Resource Management

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	Profound knowledge on how to transfer planning and resource management methodologies into other contexts.	Developing, constructing, transferring	Adapting and further developing planning and resource management methodologies in the own (professional) context.	Incorporation	Having internalised to plan and manage resources in an effective and sustainable way. Inspiring others to apply resource management techniques.
4	Knowing when (implicit understanding)	Practical knowledge on different planning and resource management methodologies and in which situations which tool is appropriate.	Discovering acting independently	Seeking for more specific information on planning and resource management methodologies and enlarging the own portfolio of tools.	Commitment	Feeling the need for implementing planning and resource management methodologies in the own context. Being determined to improve own competences regarding planning and resource management methodologies.
3	Knowing how	Theoretical know-how on different planning and resource management methodologies. Knowing how to apply them in project situations.	Deciding/ selecting	Actively applying specific tools in planning and implementation and resource controlling and optimisation.	Motivation/ appreciation	Appreciating the value of planning and resource management methodologies and being motivated to apply them.

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2	Knowing why (distant understanding)	Understanding the reasons why appropriate planning is crucial for success.	Using, imitating	Occasionally planning actions and consciously allocating resources when being instructed to or following the example of others.	Perspective taking	Being curious about different approaches to manage resources and their potential for own work.
1	Knowing what	Knowing that Planning and Resource Management is needed in projects.	Perceiving	Recognising situations where planning is needed without acting.	Self-orientation	Relating planning and resource management only to own resources.

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Financial and Economic Literacy Competence

Competence Description

Financial and Economic Literacy is a critical Organisational competence that involves understanding and applying financial principles and economic factors to influence Organisational decision-making and strategic planning. This competence ensures that individuals can make informed financial decisions, develop effective financial plans, and comprehend the broader economic environment that impacts the organization. Mastery of this competence enhances an organization's ability to manage its financial resources effectively, optimize economic opportunities, and sustain long-term growth and stability.

Knowledge

- The learner knows: The fundamental concepts of finance, including budgeting, financial statements, and cash flow management.
- The learner has the knowledge: Of economic principles and how economic trends affect Organisational performance.
- The learner knows: How to interpret financial statements and use them to assess the financial health of the organization.
- The learner has the knowledge: Of various financial instruments and their applications in Organisational finance.
- The learner knows: The principles of risk management and how to mitigate financial risks.

Skills

- The learner is able to: Develop and manage budgets, ensuring alignment with Organisational goals and objectives.
- The learner is able to: Analyze financial statements and reports to make informed decisions.
- The learner is able to: Apply economic analysis to evaluate market conditions and forecast financial performance.
- The learner is able to: Utilize financial tools and software for planning and decision-making.
- The learner is able to: Implement risk management strategies to protect the organization's financial interests.

Attitude

- The learner is motivated: To continuously improve their financial knowledge and stay updated with economic trends.
- The learner is committed: To maintaining financial integrity and transparency in all financial dealings.
- The learner likes to inspire: Confidence in financial planning and decision-making among team members and stakeholders.

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- The learner is proactive: In identifying financial opportunities and mitigating potential economic threats.
- The learner appreciates: The strategic importance of financial literacy in achieving long-term Organisational success.

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REFERENCE SYSTEM – Financial and Economic Literacy

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L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	Knowing advanced financial and economic strategies and how to apply them in diverse and complex Organisational environments. Understanding how financial literacy can drive strategic decision-making and long-term growth.	Developing, constructing, transferring	Integrating financial literacy into strategic planning and leadership. Developing new financial strategies and transferring knowledge to various Organisational contexts.	Incorporation	Valuing financial literacy as essential for effective leadership and Organisational success. Being committed to fostering a culture of financial literacy within the organization and inspiring others to value financial management.
4	Knowing when (implicit understanding)	Knowing when to apply specific financial and economic strategies based on the Organisational context. Understanding the subtle cues that indicate the need for particular financial decisions.	Discovering acting independently	Actively seeking opportunities to apply financial and economic principles independently. Resolving financial challenges with innovative solutions.	Commitment	Committed to continuously improving financial skills and encouraging team members to practice financial literacy. Demonstrating a commitment to financial integrity and transparency.
3	Knowing how	Knowing how to apply financial and economic principles to real-world	Deciding/ selecting	Being able to choose and apply appropriate financial and economic techniques in	Motivation/ appreciation	Appreciating the importance of financial literacy in Organisational success.

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		scenarios. Understanding how to analyse financial statements, create budgets, and make informed financial decisions.		different scenarios. Making informed financial decisions that align with Organisational goals.		Being motivated to enhance personal financial knowledge and skills.
2	Knowing why (distant understanding)	Knowing why financial literacy is crucial for Organisational success. Understanding the impact of economic trends and financial decisions on Organisational performance.	Using, imitating	Communicating financial information effectively and reacting to economic cues by following established practices. Applying basic financial tools and techniques.	Perspective taking	Being curious about economic trends and perspectives, and willing to learn more about financial management and economic analysis.
1	Knowing what	Knowing the basic concepts of finance and economics, such as budgeting, financial statements, and market dynamics. Recognizing the fundamental elements of financial management and economic principles	Perceiving	Recognizing financial and economic concepts and how they relate to Organisational activities. Engaging in basic financial interactions and practices.	Self-orientation	Understanding the benefits of financial literacy and being open to learning and practicing basic financial techniques. Showing a personal interest in mastering financial concepts.

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Evaluating/Reflecting

Competence Description

Evaluation (Valuing Ideas) is a vital Organisational competence that involves the ability to assess and value ideas, projects, and initiatives based on their potential impact and feasibility. This competence ensures that individuals can critically analyse various options, consider multiple perspectives, and make informed decisions that align with Organisational goals and values. Mastering this competence helps organizations identify the most promising opportunities, allocate resources effectively, and drive innovation and growth.

Knowledge

- The learner knows: The fundamental principles of evaluation and the criteria for assessing the value of ideas and projects.
- The learner has the knowledge: Of different evaluation methodologies and tools, such as cost-benefit analysis, SWOT analysis, and feasibility studies.
- The learner knows: How to gather and interpret relevant data to inform evaluation processes.
- The learner has the knowledge: Of the factors that influence the potential impact and feasibility of ideas, including market conditions, Organisational capabilities, and stakeholder interests.
- The learner knows: The importance of aligning evaluations with Organisational goals and strategic priorities.

Skills

- The learner is able to: Apply various evaluation methodologies to assess the value of ideas and projects.
- The learner is able to: Collect and analyze data to inform evaluations and make evidence-based decisions.
- The learner is able to: Identify and weigh the potential benefits and risks associated with different ideas and initiatives.
- The learner is able to: Communicate evaluation findings effectively to stakeholders, providing clear and actionable recommendations.
- The learner is able to: Develop and refine evaluation frameworks to improve the accuracy and relevance of assessments.

Attitude

- The learner is motivated: To seek out and evaluate new ideas and opportunities for Organisational improvement and innovation.
- The learner is committed: To maintaining objectivity and rigor in the evaluation process, ensuring that decisions are based on sound analysis and evidence.

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- The learner likes to inspire: A culture of continuous improvement and critical thinking within the organization, encouraging team members to value and engage in evaluation activities.
- The learner is proactive: In identifying potential areas for evaluation and initiating assessments to support strategic decision-making.
- The learner appreciates: The importance of evaluation in achieving long-term Organisational success and is dedicated to enhancing their own evaluation skills and knowledge.

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REFERENCE SYSTEM – Evaluating/Reflecting

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	Knowing how to strategically integrate evaluation outcomes into the organisational and/or individual practice in order to achieve the collaborative goals.	Developing, constructing, transferring	Developing own evaluation and adaptation strategies and an on-going participatory culture of evaluation within the organisation, promoting (self-) evaluation to achieve envisaged goals.	Incorporation	Inspiring others to value evaluation, reflection and individual and organisational learning. Inspiring others to develop their evaluation competences.
4	Knowing when (implicit understanding)	Knowing when (time schedule) to organize different phases of the evaluation (information gathering, processing, analysis, reporting) appropriate to the work plan of the organisation in coordination with organisation leaders.	Discovering acting independently	Searching for evaluation techniques and independently applying the (self-)evaluation with appropriate techniques and methods, within the given purpose of the evaluation.	Commitment	Being determined to improve reflection and evaluation competences with respect to individual and organisational learning.
3	Knowing how	Knowing how to organise (self-) evaluation as a reflective and interactive learning process. Knowing	Deciding/ selecting	Making conscious choices on objectives, issues to evaluate; the methods and instruments of evaluation	Motivation/ appreciation	Finding it important that team members/ colleagues value evaluation and reflection. Being motivated to improve own

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		pertinent methods and techniques that can be introduced as an evaluation.		that seem more pertinent for the given case.		evaluations and reflection competence.
2	Knowing why (distant understanding)	Knowing why reflection and (self-)evaluation are important to facilitate individual and collective learning/ performance via evidence-based decision-making.	Using, imitating	Occasionally evaluating processes and products using existing models and techniques.	Perspective taking	Generally feeling that reflection and evaluation make sense in order to best achieve collaborative goals.
1	Knowing what	Knowing that evaluation is an important process to improve quality.	Perceiving	Recognising evaluation and reflection processes.	Self-orientation	Passive approach to evaluation and reflection, unless it refers to issues of personal relevance.

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Networking

Competence Description

Networking is an essential Organisational competence that involves building and maintaining professional relationships to provide support, resources, and opportunities for the organization. Effective networking enhances collaboration, fosters knowledge exchange, and opens doors to new opportunities and partnerships. Mastering this competence helps individuals and organizations create a robust support system, leverage collective expertise, and achieve strategic goals through a well-connected network of professional contacts.

Knowledge

- The learner knows: The fundamental principles of networking and the importance of building professional relationships.
- The learner has the knowledge: Of various networking strategies and techniques, including in-person and online networking.
- The learner knows: How to identify and approach potential networking contacts and opportunities.
- The learner has the knowledge: Of the tools and platforms that facilitate effective networking, such as LinkedIn and professional associations.
- The learner knows: The role of networking in achieving Organisational goals, securing resources, and accessing new opportunities.

Skills

- The learner is able to: Initiate and maintain professional relationships through effective communication and engagement.
- The learner is able to: Utilize networking tools and platforms to expand their professional network.
- The learner is able to: Identify and pursue networking opportunities that align with Organisational goals and personal career development.
- The learner is able to: Leverage their network to gain insights, support, and resources for Organisational projects and initiatives.
- The learner is able to: Facilitate connections between network contacts and foster a collaborative environment.

Attitude

- The learner is motivated: To actively seek out and engage with new networking opportunities.
- The learner is committed: To maintaining and nurturing professional relationships over the long term.
- The learner likes to inspire: A culture of networking within the organization, encouraging colleagues to build and utilize their professional networks.

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- The learner is proactive: In offering support and resources to their network contacts, building a reputation as a valuable connection.
- The learner appreciates: The mutual benefits of networking and is dedicated to contributing positively to their professional community.

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REFERENCE SYSTEM – Networking

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	Knowing how to integrate networking into various activities and in the collaboration with colleagues and stakeholders. Knowing how to help other people act successfully in different networking structures.	Developing, constructing, transferring	Actively planning and creating networking opportunities to improve knowledge and to establish new ways of collaboration others. Being able to transfer networking approaches to other areas of life.	Incorporation	Having internalised to network at any occasion. Enjoying networking and inspiring others to improve their networking competence.
4	Knowing when (implicit understanding)	Knowing how and when to apply different networking techniques for concrete tasks or goals. Knowing how to act in different networking structures.	Discovering acting independently	Deliberately seeking networking opportunities and researching for new networking techniques. Choosing adequate networking techniques according to goals and interlocutors and to act appropriately.	Commitment	Feeling the need to be pro-active and creative in networking. Being determined to improve networking competence.
3	Knowing how	Knowing different networking techniques and	Deciding/ selecting	Taking part in networking activities and applying basic	Motivation/ appreciation	Valuing networking in general.

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		practices for sharing, learning, promoting ideas and building contacts.		networking techniques in a correct way to contribute to reaching a goal.		Being motivated to improve own networking competence.
2	Knowing why (distant understanding)	Knowing that through networking one can learn, build useful contacts and spread info to different target groups.	Using, imitating	Talking to others, trying to learn from them and building contacts following the example of others or when being instructed to.	Perspective taking	Being interested in the benefits of networking and considering learning more about it.
1	Knowing what	Knowing the concept of networking.	Perceiving	Seeing and recognising values and opportunities of networking for collaboration.	Self-orientation	Relating to networking in own life and for own benefits.

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Flexibility (Coping with Ambiguity, Uncertainty, and Risk)

Flexibility, defined as the ability to cope with ambiguity, uncertainty, and risk, is an essential Organisational competence. This competence involves adapting to changing circumstances, managing uncertainty, and making informed decisions under conditions of risk. Mastering flexibility helps individuals and organizations navigate complex and unpredictable environments, seize emerging opportunities, and maintain resilience in the face of challenges.

Knowledge

- The learner knows: The fundamental principles of risk management and decision-making under uncertainty.
- The learner has the knowledge: Of strategies and techniques for coping with ambiguity and adapting to change.
- The learner knows: The impact of uncertainty and risk on Organisational performance and decision-making processes.
- The learner has the knowledge: Of tools and frameworks for assessing and mitigating risks.
- The learner knows: The importance of flexibility in achieving long-term Organisational resilience and success.

Skills

- The learner is able to: Assess and analyze risks to make informed decisions in uncertain environments.
- The learner is able to: Adapt plans and strategies in response to changing circumstances and new information.
- The learner is able to: Implement effective risk management practices to minimize negative impacts on the organization.
- The learner is able to: Communicate effectively during times of uncertainty, providing clear guidance and support to team members.
- The learner is able to: Demonstrate resilience and maintain productivity in the face of ambiguity and unexpected challenges.

Attitude

- The learner is motivated: To embrace change and view uncertainty as an opportunity for growth and innovation.
- The learner is committed: To maintaining a positive and proactive approach in uncertain situations.

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- The learner likes to inspire: Confidence and adaptability within the team, encouraging colleagues to stay resilient and resourceful.
- The learner is proactive: In seeking out information and resources to better understand and manage risks.
- The learner appreciates: The value of flexibility in navigating complex environments and is dedicated to developing this competence further.

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REFERENCE SYSTEM – Flexibility/Adaptability

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	Knowing multiple adaptation strategies and knowing how to adapt to changing requirements in various contexts. Analyzing the impact of changing ones behaviour.	Developing, constructing, transferring	Developing and applying tailored adaption strategies for any situation that lead to the best possible result. Being able to perform adequately in unknown situations	Incorporation	Having incorporated to adapt to changing conditions and to let go of initial plans and procedures. Inspiring others to become more flexible.
4	Knowing when (implicit understanding)	Knowing when and how to adapt the own behaviour, Attitude and thinking to changing conditions in order to cope with a situation.	Discovering acting independently	Developing own behavioural strategies and methods to adapt to changes and working on becoming more flexible. Analysing situations and acting accordingly.	Commitment	Being determined to adapt to changing conditions for the sake of a good result.
3	Knowing how	Knowing how to be flexible. Knowing how to adapt the own behaviour, perception and thinking to changing circumstances.	Deciding/ selecting	Deciding how to adapt to changes based on familiar behaviours. Adapting own behaviour to changing conditions in known situations.	Motivation/ appreciation	Valuing flexibility and adaptability. Being motivated to improve own capability to adapt to changing conditions and to show flexibility.

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2	Knowing why (distant understanding)	Knowing why one should be flexible and that there are benefits and disadvantages of being flexible.	Using, imitating	Adapting to changing conditions when being asked to or as instructed or by imitating the behaviour of others.	Perspective taking	Being interested in how others behave in different situations. Being interested to learn how to become more flexible.
1	Knowing what	Knowing what it means to be flexible and that flexibility is expected in many working areas.	Perceiving	Perceiving situations that require being flexible (without acting).	Self-orientation	Not being interested in adapting to changing conditions. Only considering adapting for personal benefit.

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Strategic Planning and Visioning

Competence Description

Strategic Planning and Visioning is a critical Organisational competence that involves crafting and implementing long-term strategic plans aligned with the organization's vision. This competence ensures sustainable growth and adaptability to future challenges. Mastering strategic planning and visioning enables individuals and organizations to set clear goals, anticipate future trends, and navigate the complexities of the business environment, thereby ensuring long-term success and resilience.

Knowledge

- The learner knows: The fundamental principles of strategic planning and the key components of a strategic plan.
- The learner has the knowledge: Of various strategic planning frameworks and methodologies, such as SWOT analysis, PEST analysis, and scenario planning.
- The learner knows: How to align strategic plans with the organization's vision, mission, and values.
- The learner has the knowledge: Of the factors that influence strategic planning, including market trends, competitive landscape, and internal capabilities.
- The learner knows: The importance of regular review and adaptation of strategic plans to ensure ongoing relevance and effectiveness.

Skills

- The learner is able to: Develop comprehensive strategic plans that align with the organization's vision and long-term goals.
- The learner is able to: Use strategic planning tools and frameworks to analyze internal and external environments.
- The learner is able to: Implement strategic plans effectively, ensuring alignment across all levels of the organization.
- The learner is able to: Monitor and evaluate the progress of strategic initiatives, making adjustments as needed.
- The learner is able to: Communicate the strategic vision and plan effectively to stakeholders, fostering a shared understanding and commitment.

Attitude

- The learner is motivated: To think long-term and consider the broader impact of strategic decisions.
- The learner is committed: To aligning personal and team efforts with the organization's strategic goals and vision.

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- The learner likes to inspire: A shared vision and strategic thinking within the organization, encouraging others to contribute to the strategic planning process.
- The learner is proactive: In seeking out new opportunities and anticipating future challenges to inform strategic planning.
- The learner appreciates: The value of strategic planning in achieving sustainable growth and is dedicated to continually enhancing their strategic planning skills.

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REFERENCE SYSTEM – Strategic Planning and Visioning

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L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	Knowing advanced strategic planning strategies and how to apply them in diverse and complex Organisational environments, and understanding how strategic planning can drive long-term growth and adaptability.	Developing, constructing, transferring	Integrating strategic planning into leadership and management processes and developing new strategic planning strategies while transferring knowledge to various Organisational contexts.	Incorporation	Valuing strategic planning and visioning as essential for effective leadership and Organisational success and being committed to fostering a culture of strategic thinking within the organization and inspiring others to value strategic planning.
4	Knowing when (implicit understanding)	Understanding when to apply specific strategic planning techniques based on the Organisational context, and recognizing the cues that indicate the need for strategic adjustments.	Discovering acting independently	Actively seeking opportunities to apply strategic planning principles independently and resolving strategic challenges with innovative solutions.	Commitment	Being committed to continuously improving strategic planning skills and encouraging team members to practice strategic thinking, demonstrating a commitment to long-term Organisational success.
3	Knowing how	Knowing how to craft and implement strategic plans that align with the organization's vision and	Deciding/ selecting	Choosing and applying appropriate strategic planning techniques in different scenarios and	Motivation/ appreciation	Appreciating the importance of strategic planning in Organisational success and being motivated to enhance

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		understanding the methods and tools for effective strategic planning.		making informed strategic decisions that align with Organisational goals.		personal strategic planning knowledge and skills.
2	Knowing why (distant understanding)	Understanding why strategic planning and visioning are crucial for Organisational success, and the impact of long-term strategies on Organisational performance and adaptability.	Using, imitating	Communicating strategic plans effectively and reacting to Organisational cues by following established strategic planning practices and applying basic strategic planning tools and techniques.	Perspective taking	Being curious about strategic trends and perspectives, willing to learn more about strategic planning and visioning, and valuing diverse perspectives on strategic development.
1	Knowing what	Knowing the basic principles of strategic planning and visioning and recognizing the fundamental elements of developing long-term strategic plans.	Perceiving	Recognizing factors that influence strategic planning and visioning and engaging in basic strategic planning practices and interactions.	Self-orientation	Understanding the benefits of strategic planning and visioning for Organisational success, being open to learning and practicing basic strategic planning techniques and showing a personal interest in mastering strategic planning concepts.

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Sustainability and Environmental Responsibility

Competence Description

Sustainability and Environmental Responsibility is a critical Organisational competence that involves integrating sustainable practices and principles into Organisational operations. This competence ensures that an organization operates in an environmentally responsible manner, contributing to long-term ecological balance. Mastering sustainability and environmental responsibility enables individuals and organizations to reduce their environmental impact, enhance resource efficiency, and contribute positively to global sustainability efforts, thereby ensuring long-term viability and reputation.

Knowledge

- The learner knows: The fundamental principles of sustainability and environmental responsibility.
- The learner has the knowledge: Of various sustainable practices and how they can be integrated into Organisational operations.
- The learner knows: The environmental regulations and standards relevant to their industry and region.
- The learner has the knowledge: Of the tools and frameworks for assessing and improving environmental performance, such as life cycle analysis and carbon footprint measurement.
- The learner knows: The importance of sustainability in achieving long-term Organisational success and the benefits of adopting environmentally responsible practices.

Skills

- The learner is able to: Identify and implement sustainable practices within their organization.
- The learner is able to: Assess the environmental impact of Organisational activities and develop strategies to mitigate negative effects.
- The learner is able to: Utilize tools and frameworks to measure and report on sustainability performance.
- The learner is able to: Develop and manage sustainability initiatives that align with Organisational goals.
- The learner is able to: Communicate the importance and benefits of sustainability to stakeholders, fostering a culture of environmental responsibility.

Attitude

- The learner is motivated: To integrate sustainability into all aspects of their work and Organisational processes.
- The learner is committed: To continually improving the organization’s environmental performance and sustainability efforts.
- The learner likes to inspire: A culture of environmental responsibility within the organization, encouraging colleagues to adopt sustainable practices.

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- The learner is proactive: In seeking out new sustainability opportunities and staying informed about environmental trends and innovations.
- The learner appreciates: The importance of sustainability in protecting the environment and ensuring long-term Organisational success.

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REFERENCE SYSTEM – Sustainability and Environmental Responsibility

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L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	Knowing advanced sustainability strategies and how to apply them in diverse and complex Organisational environments, and understanding how sustainability can drive Organisational innovation and long-term ecological balance.	Developing, constructing, transferring	Integrating sustainability into strategic planning and leadership and developing new sustainable strategies while transferring knowledge to various Organisational contexts.	Incorporation	Valuing sustainability as essential for effective leadership and Organisational success and being committed to fostering a culture of sustainability within the organization and inspiring others to value environmental responsibility.
4	Knowing when (implicit understanding)	Understanding when to apply specific sustainable practices based on the Organisational context and the subtle cues that indicate the need for environmental strategies.	Discovering acting independently	Actively seeking opportunities to apply sustainability principles independently and resolving environmental challenges with innovative solutions.	Commitment	Being committed to continuously improving sustainability skills and encouraging team members to practice sustainability, demonstrating a commitment to environmental integrity and responsibility.
3	Knowing how	Knowing how to implement sustainable practices within Organisational	Deciding/ selecting	Choosing and applying appropriate sustainable techniques in different	Motivation/ appreciation	Appreciating the importance of sustainability in Organisational success and being motivated

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		operations and understanding the methods and tools for assessing and improving environmental performance.		scenarios and making informed decisions that align with Organisational environmental goals.		to enhance personal sustainability knowledge and skills.
2	Knowing why (distant understanding)	Understanding why sustainability and environmental responsibility are crucial for Organisational success and the impact of environmental factors on Organisational performance and long-term viability.	Using, imitating	Communicating sustainability information effectively and reacting to environmental cues by following established practices and applying basic sustainable tools and techniques.	Perspective taking	Being curious about environmental trends and perspectives, willing to learn more about sustainability and environmental responsibility, and valuing diverse perspectives on sustainability.
1	Knowing what	Knowing the basic concepts of sustainability and environmental responsibility and recognizing the fundamental elements of sustainable practices and principles.	Perceiving	Recognizing environmental factors and their impact on Organisational activities and engaging in basic sustainability practices and interactions.	Self-orientation	Understanding the benefits of sustainability in Organisational success and being open to learning and practicing basic sustainable techniques, and showing a personal interest in mastering sustainability concepts

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Risk Management

Competence Description

Risk management involves identifying, analysing, and mitigating risks to protect the organization from potential threats. Effective risk management ensures Organisational continuity, resilience, and the ability to navigate uncertainties and challenges. This competence encompasses understanding risk management principles, developing strategies to address risks, and fostering a culture of risk awareness and proactive mitigation within the organization.

Knowledge

The learner: ...

- Knows the basic principles of risk management and the fundamental elements of identifying, analysing, and mitigating risks.
- Knows why risk management is crucial for Organisational success and understands the impact of potential threats on performance and resilience.
- Knows how to implement risk management strategies to protect the organization and ensure continuity and resilience.
- Knows when to apply specific risk management techniques based on Organisational context and recognizes the cues indicating the need for risk mitigation.
- Knows advanced risk management strategies and how to apply them in diverse and complex environments, understanding how risk management drives resilience and continuity.

Skills

The learner: ...

- Is able to recognize potential risks and their impact on Organisational activities, engaging in basic risk identification and mitigation practices.
- Is able to communicate risk management information effectively and react to potential threats by following established practices and applying basic mitigation tools and techniques.
- Is able to choose and apply appropriate risk management techniques in various scenarios, making informed decisions that align with Organisational goals.
- Is able to actively seek opportunities to apply risk management principles independently, resolving risk-related challenges with innovative solutions.
- Is able to integrate risk management into strategic planning and leadership, developing new strategies and transferring knowledge to various Organisational contexts.

Attitude

The learner: ...

- Is motivated to understand the benefits of risk management for Organisational success and is open to learning and practicing basic risk management techniques, showing a personal interest in mastering the concepts.

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- Is curious about potential threats and risk management perspectives, willing to learn more about risk mitigation, and values diverse perspectives on risk management.
- Appreciates the importance of risk management in Organisational success and is motivated to enhance personal risk management knowledge and skills.
- Is committed to continuously improving risk management skills and encouraging team members to practice risk mitigation, demonstrating a commitment to Organisational resilience and continuity.
- Incorporates risk management as essential for effective leadership and Organisational success, fostering a culture of risk awareness within the organization and inspiring others to value risk management.

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REFERENCE SYSTEM – Risk Management

	KNOWLEDGE		SKILLS//CAPABILITIES		ATTITUDE/VALUES	
L	Level Titles	Level description	Level Titles	Level description	Level Titles	Level description
5	Knowing where else (strategic transfer)	Knowing advanced risk management strategies and how to apply them in diverse and complex Organisational environments and understanding how risk management can drive Organisational resilience and continuity.	Developing, constructing, transferring	Integrating risk management into strategic planning and leadership and developing new risk management strategies while transferring knowledge to various Organisational contexts.	Incorporation	Valuing risk management as essential for effective leadership and Organisational success and being committed to fostering a culture of risk awareness within the organization and inspiring others to value risk management.
4	Knowing when (implicit understanding)	Understanding when to apply specific risk management techniques based on the Organisational context and recognizing the cues that indicate the need for risk mitigation.	Discovering acting independently	Actively seeking opportunities to apply risk management principles independently and resolving risk-related challenges with innovative solutions.	Commitment	Being committed to continuously improving risk management skills and encouraging team members to practice risk mitigation, demonstrating a commitment to Organisational resilience and continuity.
3	Knowing how	Knowing how to implement risk management strategies that protect the organization from potential	Deciding/ selecting	Choosing and applying appropriate risk management techniques in different scenarios and making	Motivation/ appreciation	Appreciating the importance of risk management in Organisational success and being motivated to enhance

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		threats and ensure continuity and resilience.		informed risk mitigation decisions that align with Organisational goals.		personal risk management knowledge and skills.
2	Knowing why (distant understanding)	Understanding why risk management is crucial for Organisational success and the impact of potential threats on Organisational performance and resilience.	Using, imitating	Communicating risk management information effectively and reacting to potential threats by following established risk management practices and applying basic risk mitigation tools and techniques.	Perspective taking	Being curious about potential threats and risk management perspectives, willing to learn more about risk mitigation, and valuing diverse perspectives on risk management.
1	Knowing what	Knowing the basic principles of risk management and recognizing the fundamental elements of identifying, analysing, and mitigating risks.	Perceiving	Recognizing potential risks and their impact on Organisational activities and engaging in basic risk identification and mitigation practices.	Self-orientation	Understanding the benefits of risk management for Organisational success and being open to learning and practicing basic risk management techniques and showing a personal interest in mastering risk management concepts.

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IV. Assessment methods

As the use of Augmented Reality (AR) and Immersive Reality (IR) in education becomes more widespread, it is important to have assessment methods that effectively measure both student learning and engagement with these technologies. These assessment variations are intended to provide practical strategies for assessing students' understanding, skills and abilities when using AR/IR in a variety of subject areas.

Each of the methods presented here is simple and adaptable, allowing teachers to integrate AR/IR into their existing assessment practices. Whether you are assessing basic knowledge, applied skills or collaboration, these variations provide reliable ways of measuring student progress and the effectiveness of AR/IR in improving learning outcomes.

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Reflective Diary

Method Description	A self-evaluation tool where students document and reflect on their learning experiences, particularly with AR/IR technologies.	**Instructions**	Provide time for students to write daily reflections on their interactions with AR/IR, focusing on their learning, feelings, and challenges.
Application in AR/IR:	Students reflect on their use of AR/IR tools, detailing how these technologies enhanced their understanding of the subject matter.		
	Example		
	After completing a VR simulation of a historical event, such as the signing of the Declaration of Independence, students write daily reflections. They describe the key moments of the simulation, their feelings as they "witnessed" the event, and how this immersive experience changed their understanding of the historical context. Students might reflect on questions such as "How did being 'present' at the signing affect your perception of the event?" and "What new insights did you gain about the people involved?		
Advantages:	Encourages deep reflection and self-assessment; provides insights into student engagement with AR/IR.	**Disadvantages:**	Time-consuming; requires consistent effort and ability for self-reflection.

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Concept Map

Method Description	A visual representation that shows the relationships between different concepts within a subject, emphasizing understanding of AR/IR integration.	**Instructions**	Ask students to create a concept map that connects AR/IR tools to the topics they are studying.
Application in AR/IR:	Helps students visually map out how AR/IR technologies relate to their learning, identifying key connections and gaps.		
	Example		
	In a biology class, students are studying the human circulatory system. Using an AR app that overlays a 3D model of the heart on their textbooks, they create a concept map. The central node is "Human Circulatory System," with branches leading to "Heart Structure," "Blood Vessels," "Oxygen Exchange," and "Nutrient Transport." Students link these nodes with their interactions in the AR app, detailing how oxygen flows from the lungs to the heart and through the body, and how nutrients are absorbed and distributed.		
Advantages:	Facilitates visual learning and organization of ideas; identifies gaps in understanding.	**Disadvantages:**	Can be challenging for students unfamiliar with visual mapping techniques.

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Group Discussion

Method Description	A moderated discussion where students share their experiences and insights, particularly about their use of AR/IR technologies.	**Instructions**	Organize group discussions after AR/IR activities to explore student perspectives and collective understanding.
Application in AR/IR:	After using VR to explore the ancient city of Pompeii before the eruption of Mount Vesuvius, students gather in groups to discuss their experiences. The discussion might focus on how the VR experience provided insights into daily life in Pompeii, the architecture, and the societal structure. Students compare the VR experience with traditional textbook learning, debating how immersive technology changed their perception of historical events and the effectiveness of this learning method.		
	Example		
	A discussion on the effectiveness of a VR-based history lesson where students evaluate the immersive nature of the technology?		
Advantages:	Encourages collaborative learning and critical thinking; provides a platform for peer learning.	**Disadvantages:**	May be dominated by more vocal students; requires skilled moderation.

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Augmented Reality-Based Quizzes

Method Description	Interactive quizzes that use AR to enhance the assessment experience by engaging students with visual and tactile learning.	**Instructions**	Design quizzes where students use AR apps to scan objects or images that reveal questions related to the subject matter.
Application in AR/IR:	AR-based quizzes assess students' understanding of concepts by making the quiz interactive and engaging.		
	Example		
	In a geography class, students are learning about different biomes. The teacher creates an AR quiz where students use their devices to scan images of different ecosystems (e.g., a rainforest, desert, tundra) posted around the classroom. Each scan reveals a series of multiple-choice questions related to the biome, such as identifying the primary flora and fauna, climate characteristics, and the impact of human activity on the ecosystem. The quiz could include interactive elements, like adjusting climate variables to see how the biome changes.		
Advantages:	Engages students in a dynamic way; provides immediate feedback.	**Disadvantages:**	Requires access to AR-enabled devices.

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Virtual Reality Simulations as Assessments

Method Description	Use VR simulations to create immersive scenarios where students apply their knowledge in realistic contexts.	**Instructions**	Develop VR simulations that align with lesson objectives, and assess students based on their decisions and problem-solving skills within the simulation.
Application in AR/IR:	VR simulations provide a realistic environment for students to demonstrate their understanding and decision-making skills.		
	Example		
	In a government and politics course, students use a VR simulation to play the role of an EU politician during a critical legislative period. The simulation presents them with a series of bills to vote on, each with detailed background information and possible consequences. Students must navigate through complex scenarios, taking into account factors such as public opinion, party manifestos and personal ethics. Their decisions and reasoning are recorded and used to assess their understanding of the legislative process and their ability to apply ethical reasoning in government.		
Advantages:	Provides immersive learning experiences; assesses critical thinking and problem-solving in real-time.	**Disadvantages:**	Requires VR equipment; can be costly and resource-intensive.

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Portfolio

Method Description	A curated collection of student work that demonstrates learning and application of AR/IR over time	**Instructions**	Guide students in compiling a portfolio that includes screenshots, project reports, and reflections on their use of AR/IR.
Application in AR/IR:	Throughout a semester-long project on renewable energy, students use AR to visualize different renewable technologies, such as wind turbines and solar panels. They compile a digital portfolio that includes 3D models they created, reflective journals on how these technologies can be applied locally, and reports on the potential impact of these technologies. The portfolio also includes peer feedback on their presentations, screenshots of AR visualizations, and video reflections on how their understanding of renewable energy evolved over time.		
	Example		
	A student's portfolio might include a video walkthrough of an AR project and written reflections on the learning process.		
Advantages:	Provides a comprehensive view of student progress; encourages reflection and self-assessment.	**Disadvantages:**	Time-consuming to compile and assess; requires clear guidelines.

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Case Study

Method Description	An in-depth analysis of a particular instance or project where AR/IR was used, assessing how well students apply their knowledge.	**Instructions**	Assign case studies that involve analysing the use of AR/IR in specific contexts, followed by a detailed report or presentation.
Application in AR/IR:	Students analyse and present findings on how AR/IR technologies were used in a real-world scenario.		
	Example		
	In an economics class, students analyze a case study on the rise of a tech startup that successfully integrated AR into its product offering. The case study details the company's journey, including initial challenges, market analysis, and the impact of AR on customer engagement. Students use AR to explore the company's headquarters and product development process, then write a report evaluating the company's strategies, the effectiveness of the AR integration, and lessons that can be applied to other industries.		
Advantages:	Encourages critical thinking and application of knowledge; connects learning to real-world contexts.	**Disadvantages:**	May be challenging for students unfamiliar with case study methodology.

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Role Play with AR/IR

Method Description	Role-playing involves students acting out scenarios using AR/IR technologies to demonstrate understanding and application of concepts.	**Instructions**	Design role-playing activities where students use AR/IR to step into specific roles relevant to the lesson.
Application in AR/IR:	Students use AR/IR tools to simulate real-world scenarios, demonstrating their understanding of the subject matter.		
	Example		
	In a sociology class, students are tasked with role-playing as city planners addressing urbanization challenges. Using AR, they view a digital overlay of their city that highlights current infrastructure, population density, and areas prone to pollution. Students assume roles such as environmental scientists, local government officials, and community activists. They must collaborate to design an urban expansion plan that addresses housing shortages while minimizing environmental impact. The role play concludes with a presentation of their plans using AR to show proposed changes in real-time.		
Advantages:	Engages students in active learning; helps develop empathy and deeper understanding.	**Disadvantages:**	Some students may feel uncomfortable with role-playing; requires careful planning and guidance.

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Peer Review in AR Projects

Method Description	A peer review system where students assess each other's AR/IR projects, providing constructive feedback.	**Instructions**	Organize sessions where students present their AR/IR projects and receive feedback from peers using a structured rubric.
Application in AR/IR:	Students critically evaluate the use of AR/IR in their peers' projects, fostering analytical skills and collaborative learning.		
	Example		
	In a history class, students create AR projects where they reconstruct historical landmarks, like the Roman Colosseum, using 3D modeling software. During peer review sessions, students present their AR-enhanced models, explaining their design choices and historical accuracy. Peers use a structured rubric to evaluate the project, focusing on the accuracy of historical details, creativity in the use of AR, and the effectiveness of the presentation. Reviewers provide constructive feedback, suggesting improvements or alternative approaches.		
Advantages:	Promotes critical thinking and reflective learning; encourages collaboration.	**Disadvantages:**	May require guidance to ensure constructive feedback; peer evaluations can vary in quality.

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Self-Assessment with AR Checklists

Method Description	Students use self-assessment tools to evaluate their own learning and progress with AR/IR technologies.	**Instructions**	Provide self-assessment checklists that guide students in evaluating their use of AR/IR tools and understanding of the content.
Application in AR/IR:	Students reflect on their proficiency and confidence in using AR/IR through structured self-assessment.		
	Example		
	In an environmental science course, students use an AR app that overlays environmental impact data on real-world locations, such as a local park. After the AR-enhanced field trip, students complete a self-assessment checklist where they rate their understanding of topics like biodiversity, pollution sources, and conservation strategies. The checklist also includes questions about how confident they felt using the AR tool, whether it helped them grasp complex environmental issues, and areas where they need further study.		
Advantages:	Fosters self-reflection and ownership of learning; can be integrated with other assessments.	**Disadvantages:**	Relies on student honesty; may not always align with teacher evaluations.

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Interactive Case Studies with AR/IR

Method Description	Interactive case studies involve students using AR/IR tools to explore and analyze real-world scenarios within their subject area.	**Instructions**	Develop case studies that incorporate AR/IR elements, allowing students to interact with and explore the scenario before presenting their findings.
Application in AR/IR:	Students engage with AR/IR-enhanced case studies, providing a deeper understanding of the content through interactive exploration.		
	Example		
	In a business and management class, students study a case where a retail company used AR to enhance customer experiences in-store. The AR application allowed customers to visualize how furniture would look in their homes before purchasing. Students use AR to explore different sections of a virtual store, analyze customer behavior data, and assess the company's decision-making process. They present their findings on how AR influenced sales, customer satisfaction, and the company's brand image, discussing potential improvements.		
Advantages:	Engages students in active problem-solving; connects theory to practice in an immersive way.	**Disadvantages:**	Requires resources for developing AR/IR-enhanced case studies.

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Digital Storytelling with AR

Method Description	Students create digital stories that incorporate AR elements to enhance the narrative and demonstrate their understanding.	**Instructions**	Assign digital storytelling projects where students use AR to bring elements of their story to life, integrating visual and interactive content.
Application in AR/IR:	Students use AR to create interactive stories, showcasing their creative and analytical skills.		
	Example		
	In an English literature class, students are assigned to create digital stories that retell classic fairy tales with modern twists. Using AR, students design interactive elements that allow readers to engage with the story in unique ways—such as clicking on an object to reveal a character's thoughts or exploring different settings by moving their device. For instance, while reading a modernized version of "Cinderella," users can interact with a virtual shoe to unlock hidden backstory elements or see alternate endings depending on the choices they make.		
Advantages:	Encourages creativity and deeper engagement with the subject matter; integrates technology with traditional storytelling.	**Disadvantages:**	May require technical skills that some students need to develop; can be time-consuming to create.

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Mixed Reality Escape Rooms

Method Description	An escape room experience using mixed reality where students solve subject-related puzzles to "escape."	**Instructions**	Design a mixed reality escape room with challenges that require the use of AR/IR to solve subject-specific problems.
Application in AR/IR:	Students use AR/IR tools to solve puzzles and challenges, applying their knowledge in a gamified learning environment.		
Example			
	In a chemistry class, students participate in a mixed reality escape room where they must solve a series of puzzles related to chemical reactions to "escape" from a virtual lab. Each puzzle might involve identifying unknown substances using virtual lab equipment or balancing chemical equations to neutralize a simulated hazard. The escape room is designed using AR overlays and VR simulations, creating a highly immersive and challenging environment that tests students' knowledge and application of chemistry concepts.		
Advantages:	Highly engaging and interactive; promotes teamwork and problem-solving.	**Disadvantages:**	Requires significant preparation and resources; may not appeal to all students.

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