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COMPASS
COMPETENCE
ASSESSMENT

MODEL & GUIDELINES

FOR THE DEVELOPMENT AND ASSESSMENT OF GENERIC COMPETENCES

Erasmus+ Project COMPASS: In support of students' competence assessment
No. 2023-1-LT01-KA220-SCH-000156521

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COMPASS COMPETENCE ASSESSMENT

COMPASS Model and Guidelines

for the Development and Assessment of Generic Competences

Erasmus+ Project
COMPASS – In support of students' competence assessment
Project No. 2023-1-LT01-KA220-SCH-000156521

ŠIUOLAIKINIŲ DIDAKTIKŲ CENTRAS
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Contents

COMPASS Model
for the development and assessment of generic competences

Introduction

In this document, we introduce a model for the development and assessment of competences, which is symbolically named COMPASS, just like our project. Our intention is to provide guidance for planning the development and assessment of competences, rather than a rigid framework that overlooks contextual differences.

The COMPASS development and assessment model aims to be universal and adaptable to any national curriculum. Different countries' curricula and legislation use different names for competences, provide different configurations and lists, and emphasise different competences, because of the different approaches to competence development (see "COMPENDIUM of scientific literature on competence development and assessment" and "BRIEF REVIEW of competence development and assessment policies and practices in general education").

The COMPASS Model is versatile so it can be used to design, implement and assess learning experiences aimed at developing competencies. The assessment practices and examples presented in this document focus on the development and assessment of the most common generic competences, which encompass a larger number of individual competences specified in national curricula.

In this COMPASS Model, **competence** is defined as a sum of a person's knowledge, attitudes, skills and values manifested in concrete actions. Competence refers to a person's ability to act appropriately or respond adequately in a situation that requires a specific solution. In the context of competence development, it denotes a quality acquired by the learner, manifested in reflection and action.

Competence assessment is an integral part of competence development. It refers to the ability of the teacher and the pupil to "see" and recognise what a student is capable of in order to support the student in their personal development. It happens throughout the teaching and learning process and consists of various actions, such as collecting and using evidence of student capabilities to plan further learning and development of these capabilities. This means that decisions made concerning assessment have a significant influence on how competence development is supported and facilitated and, therefore, on what learners learn.

Five domains of competences

In order to cover all the competences to be developed, despite the fact that they are grouped differently in different countries, we have decided to group them in five domains: 1 – thinking and learning to learn; 2 – managing and taking care of oneself; 3 – interacting with and relating to others; 4 – living in and contributing to the wider society and the world; 5 – living with technology. This decision is based on a thorough analysis of the scientific literature, a review of education policy documents and existing practices. We came to the conclusion that there is a lack of a holistic approach to competences, and that the fragmentation of competences often makes them difficult to understand, to grasp, to see in a wider context.

As everything in education, and in life, is interconnected, it is understandably difficult to distinguish where one competence ends and another begins. There are no strict dividing lines. Therefore, to show that the competences are intertwined, we have illustrated them with a Venn diagram (Figure 1).

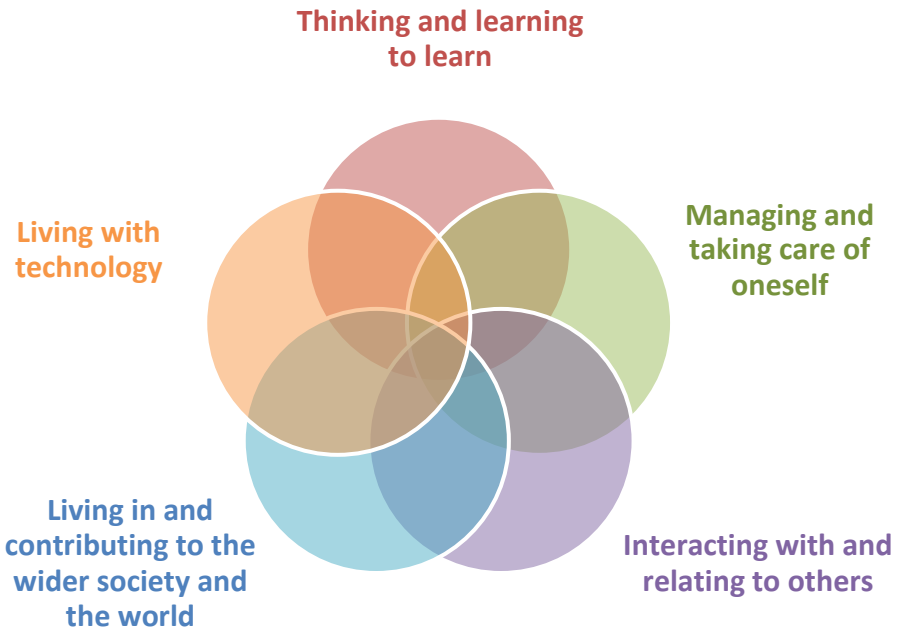


Figure 1. Interrelation between five COMPASS competence domains (developed by authors)

The Thinking and learning to learn domain includes thinking about one's learning, learning by thinking and reflecting on learning.

The Managing and taking care of oneself domain includes self-knowledge, self-management and self-regulation, i.e. the relationship with oneself.

The Interacting with and relating to others domain covers communication and collaboration, socialization, building or creating relationships.

The Living in and contributing to the wider society and the world domain includes a sense of belonging to and relationships within the community, the wider society and the world.

The Living with technology domain includes digital competence – the ability to deal critically with information, to act safely in a digital environment, to develop resilience to cyber threats.

How do these fit in with the national frameworks?

The five selected domains of competence cover, to some extent, all seven transversal competence domains in *the Finnish Core Curriculum for basic education*, the seven general competence domains in *the General Curricula for Pre-primary, Primary, Primary and Secondary Education* of Lithuania, the key competences in the *Romanian National Curriculum,* although the competences are grouped differently here (more in the "BRIEF REVIEW of competence development and assessment policies and practices in general education").

1. **Thinking and learning to learn** is, as a whole, identical to the first set C1 of the Finnish model. In the context of the Lithuanian competence inventory, this corresponds to the competences of *cognition and creativity*. In the Romanian context, this domain is covered in each of the eight key competences – literacy; multilingual; mathematical, scientific, technological and engineering; digital; personal, social and learning to learn; civic, legal and environmental protection; entrepreneurship; cultural awareness and expression.

2. **Managing and taking care of oneself** refers, in addition to competence domain C3, to *the cultural and interaction competences* in competence domain C2 in Finland, as does the COMPASS Model competence domain. In the Lithuanian curriculum, it refers to *social*, *emotional and health* competences. In the Romanian context, it is most closely related to the *personal, social and learning to learn* competence.

3. **Interacting with and relating to others** corresponds to the interaction competence in Finnish context, and is reflected in the *social-emotional and communication* group of competences in Lithuanian curricula. *Personal, social and learning to learn,* as well as *cultural awareness and expression* competences in the Romanian curriculum can be included in this domain of the COMPASS project.

4. **Living in and contributing to the wider society and the world** domain can be found in the *cultural* competence, *interaction, and expression* component of the Finnish curriculum and, above all, in the *Working life* competence and *entrepreneurship* component. This component is equal to the *civic, cultural and creativity* competences in Lithuania. *Civic, legal and environmental protection*, *entrepreneurship, cultural awareness and expression competences* in the Romanian system of education are relevant to this competence domain.

5 **The living with technology domain** covers not only *the digital* competence of the Finnish curriculum, but also the ethical and safe use of information technology in the C3 component and the domains of participation, involvement, and *building a sustainable future* in C7. In Lithuania, this component covers digital competence, similar to Finland and has to do with ethical, critical and safe use of technologies. The same in Romanian educational context.

An approach to modelling

Competence encompasses a person's knowledge, skills, attitudes, and values, all of which are manifested in their actions and reflections. It signifies an individual's capability to act suitably or respond appropriately in specific situations. Within educational settings, competence represents a learner-acquired quality that is evident through their reflective and actionable responses to learning challenges.

Developing students' competences, the planning of learning, teaching and learning, and assessment for and of learning form a whole, and no single component can be implemented in isolation. Planning, teaching and learning, and assessment are closely intertwined, and any strategy that impacts one element will affect the others (Figure 2).

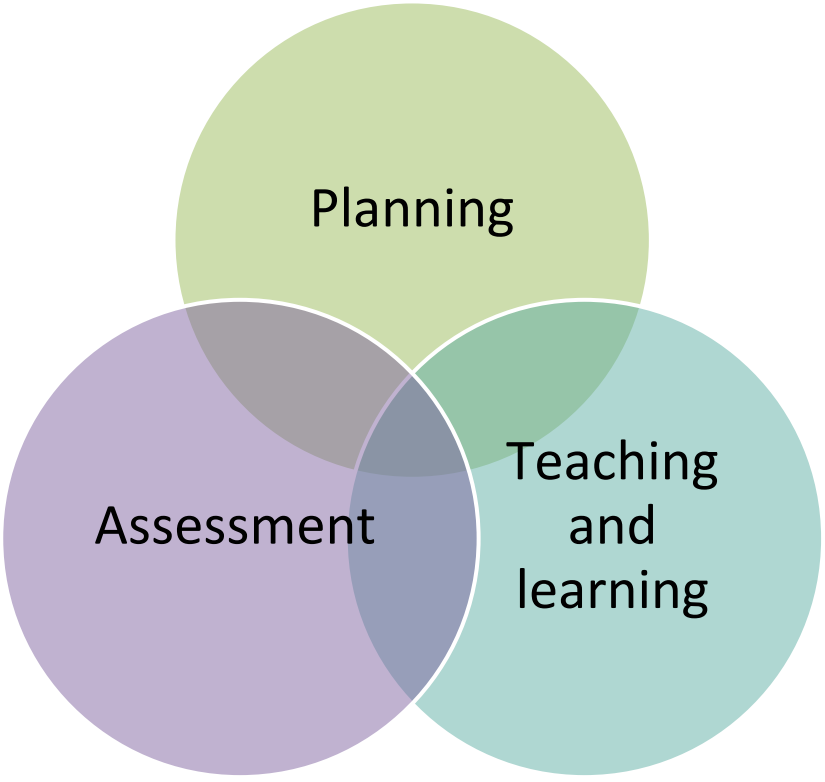


Figure 2. Three components of competence development and assessment (developed by authors)

Good assessment *of and for learning* is aligned with planning, so the teacher should consider how the learners will progress from where they currently are in their understanding and capability to where they are going. Related to teaching, teachers should be clear about the learning intentions and ensure they have shared these with the students. It is also always essential to understand

what learning and having learnt will look like, or in other words, how you know that learning has taken place.

Assessment is a way to understand what students know and can do, but it is not as simple as measuring physical traits like height or weight. Assessments are used to interpret cognitive skills, knowledge and wider generic competences, which aren't usually visible on the surface. That is why it is essential to use various tools, like observation forms, checklists, portfolios, tests, learning diaries, quizzes, to make the competences visible.

Competence-based assessment is a systematic process of reasoning from evidence, where information gathered about students' learning is used to make informed conclusions about their development. This includes assessing not only knowledge, but also skills, attitudes, and volition—all key dimensions of competence.

At the core of effective assessment lies the assessment triangle, a framework introduced by Pellegrino et al. 2001, which highlights three interdependent components: cognition, observation, and interpretation. These elements must work in harmony to ensure assessments are meaningful, accurate, and supportive of student growth (Figure 3).

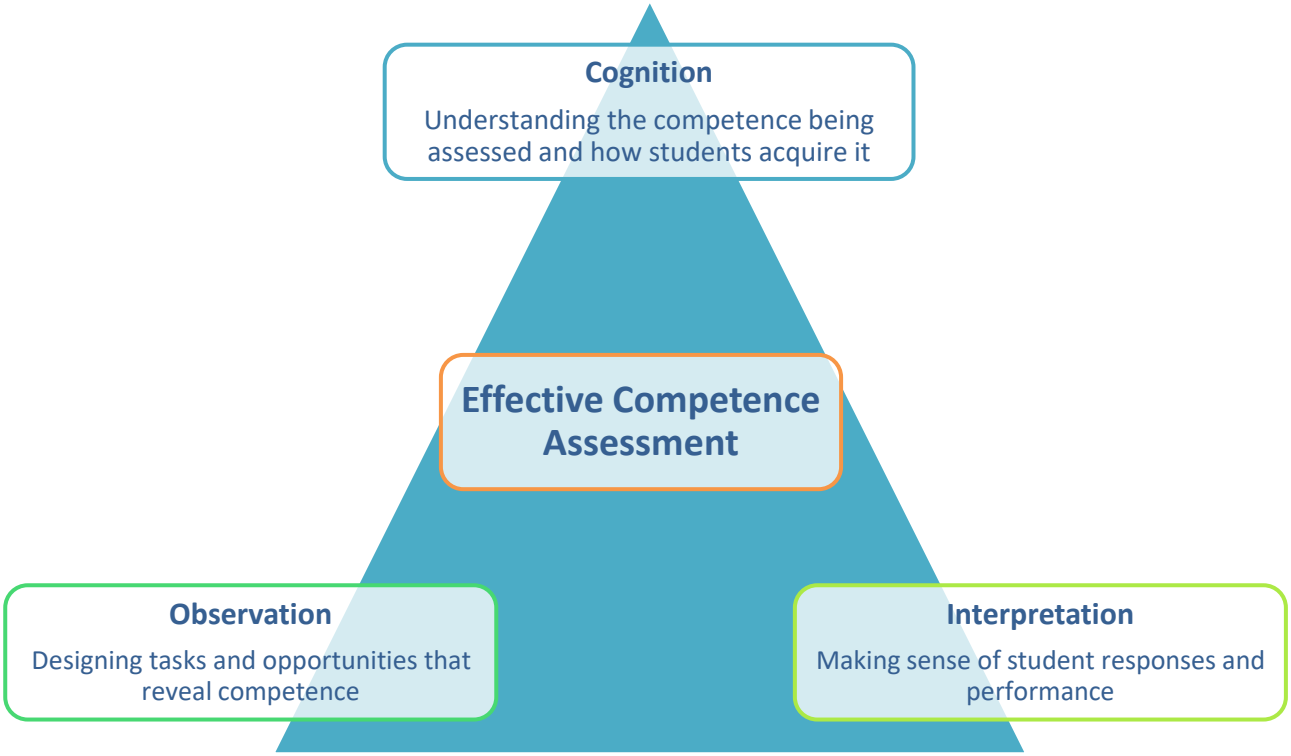


Figure 3. The assessment triangle (Pellegrino et al., 2001) [1]

[1] Pellegrino, J., Chudowsky, N. & Glaser, R. (Eds.). (2001). *Knowing what students know: The science and design of educational assessment*. The National Academies Press. https://doi.org/10.17226/10019

Cognition

Cognition refers to the teacher's understanding of the competence being assessed and of how students typically learn and develop that competence. This requires familiarity with learning sciences, including developmental stages, common misconceptions, and cognitive strategies. Strong knowledge in these areas enables teachers to anticipate learning challenges, recognize growth, and design assessments that are instructionally meaningful.

Observation

This involves creating tasks or learning activities that allow students to demonstrate the targeted competences. For example, in mathematics, instead of being asked the correct answer to an equation, students might be asked to explain their reasoning or apply a concept to a real-world scenario. In language learning, students could prepare an oral presentation or participate in a structured debate to show communication skills and content understanding.

The goal is to design tasks that make thinking visible and reveal deeper layers of competence beyond surface-level responses.

Interpretation

This step involves making sense of student responses through appropriate methods—such as rubrics, or performance descriptors, or qualitative feedback. Teachers must connect what students have demonstrated to learning goals and progression levels. For instance, a rubric assessing teamwork might include dimensions like contribution, listening, and conflict resolution. Interpretation provides the bridge from observation to action: it reveals what the student has mastered and what support is needed next.

The effectiveness of an assessment hinges on the intentional alignment of cognition, observation, and interpretation. If the assessment task does not reflect the targeted competence—or if the scoring method doesn't match the learning goals—, teachers risk making incorrect inferences about student progress. For example, giving a multiple-choice test to assess critical thinking is misaligned: the task doesn't match the cognitive depth required.

When teachers implement the assessment triangle model in practice, they develop a deeper and clearer understanding of student growth across multiple areas of competence. This approach enables them to provide more meaningful feedback that enhances students' self-awareness and fosters motivation. Assessment shifts from being merely a judgmental tool to becoming a dynamic part of the learning process—formative, instructional, and responsive to individual needs. By aligning assessment with competence descriptions from the curriculum, teachers can translate abstract goals into concrete, observable learning outcomes and tailor their support strategies accordingly. For instance, in a science classroom, a teacher might design an experiment where students are not only expected to

carry out procedures, but also to justify their hypotheses and reflect on their findings. Through such an activity, the teacher observes students' scientific reasoning and, by interpreting their responses, determines whether they are ready to progress or require additional support.

The assessment triangle supports a holistic, learner-centered approach that is essential for competence-based or competence-enriched education. By thoughtfully aligning all three elements, teachers can ensure that assessments are not only accurate, but also that they drive meaningful, ongoing learning.

The COMPASS development and assessment model

Figure 4 presents the holistic COMPASS Model of competence development and assessment. The Model provides a view of teacher actions as well as actions from a student perspective.

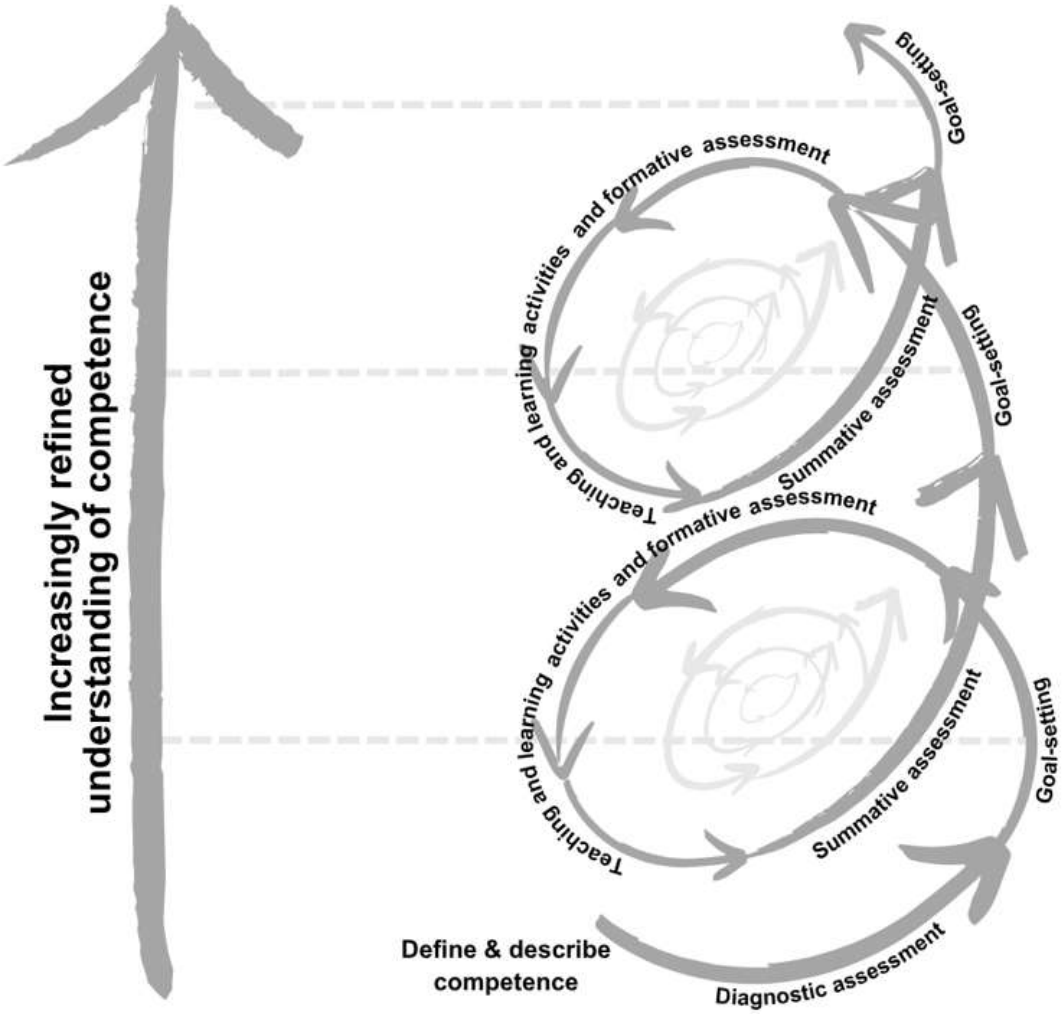


Figure 4. COMPASS Model for the development and assessment of generic competences (developed by authors)

This picture can also be interpreted as a planning tool for competence development and assessment when the teacher asks questions of this kind:

- *How do I and my students name and describe the specific competence to be developed, improved?* (define & describe competence)
- *How do I and my students know what evidence highlights the state of a specific competence?* (diagnostic assessment)
- *How do my students develop competences: a) how do they need to be prepared and what do I need to do to prepare my students? b) how do they gain experience in specific competence development (tasks, activities, etc.)? c) how do I support students' growing awareness of their own improvement in the learning process?* (teaching-learning activities & formative assessment)
- *How do my students and I know that a specific competence has been improved, developed and at what level?* (summative assessment)
- *What comes next? How do we build on what we have achieved?* (new goal setting or reformulation of a previous goal)

The proposed Model is defined by two major elements: the pattern of a spiral to suggest continuous competence development, accompanied by a vertical line to suggest continuously increasing understanding of the target competence. The action words in the Model are not marked with the actors (students and teachers) carrying them out for two reasons. The first reason is to keep the Model as simple as possible, in other words, to avoid complicating it. The second reason is that some actions can be carried out by both: the role of the teacher can, at times, be played by students themselves, as in peer learning and peer assessment.

The perspective that our Model intends to convey is, however, *that the learner is the main actor* of learning, and his active role is therefore essential, while the teacher facilitates the learning, creates the optimal context for learning and guides the learners as would an expert in learning and a person who has reached an advanced level of mastery of the target competence. The teacher's role is that of someone who might say: “I have been down this path, so I can guide you as you walk it. I cannot force you to take this road, but I can share all the advantages of doing so and all the good things you might get as a reward for making it. I can break down your full journey into manageable segments. I can tell you where we are now as we set off together, what our next milestone could be, and how to get there. I can also point out the hurdles and ways to overcome them. I will be your companion, and I will help you find other valuable companions along this journey. You will see that with every milestone reached your journey and your destination will get clearer“.

Competence assessment is part of the competence development process. In our understanding, competence development should start with defining or rather describing in observable terms the target competence. Any competence tends to be complex, hard to slice out

and have it stand on its own. This is even more so in the case of what we call generic competences. Therefore, in a purposeful learning context, such as in following a curriculum, while understanding the complexity hidden behind the name of any one competence, a somewhat arbitrary decision ought to be made, which will be reflected in the description of the target competence. This is the primary role of the teacher, who needs this clear – albeit somewhat arbitrary – definition of the competence intended to be developed and its specific components so as to be able to design a diagnostic assessment. Remember: what cannot be measured cannot be improved.

Once the definition is set in clear, observable terms, the diagnostic assessment should reveal to the student and the teacher where the student stands now – at this first step taken together with this specific teacher or facilitator. The findings from the diagnostic assessment allow the teacher to help the students set specific achievable goals within their own zone of proximal development. Think of it like this: imagine the learning the student is embarking on as something that can be mapped out and represented as something that would look like the layout of a town or a city, with many streets and roads and corners and landmarks. Diagnostic assessment is meant to help the student figure out where he is relative to this map (and the curriculum would be the direction she needs to move towards, in broad terms: north-north-east, or south-west, etc.).

Then comes goal-setting, which – in terms of navigating the layout of a city – would be like deciding the next corner to reach: something in sight, that is. If the goal cannot be understood (i.e. is not in sight), one cannot really say: that is my goal. The teacher's role here is to make sure the student moves in the right direction (north-north-east, or south-west, etc., i.e. in accordance with the curriculum), and that she can see the next corner clearly – or at least landmarks leading to it. As if the teacher were directing someone who does not know his way and has no map: “you will be passing the grocery store and doing a slight right, and then the playground will be in sight“).

Once the goal(s) are set, the teacher's role is to help the student reach it effectively. This can be done by way of instruction (“walk down the road, but do not run, and neither stop on the way to watch the shop windows, look out for the pitfall halfway through, when you have reached the corner you should be able to see a red brick two-storey building with three large windows“), by modelling (“Look, I am that little dot moving down the road heading to the corner, watch my pace, watch how I avoid the pitfall, and now I have reached the red-brick two-storey building with the large windows), demonstrating or having someone demonstrate (“You have seen me/ Sally walk to the corner, you noticed I/Sally did not run, I/Sally did not stop either, and I/ Sally was careful to avoid the pitfall, and I/Sally did reach the red-brick two-storey building; now you do it and I'll be right behind watching you do it“).

Then comes the student's turn to practise doing the task(s): walking at the right pace, avoiding the pitfall, etc. The teacher's task is to watch the student practice it and make sure there are many opportunities for her to check in with the teacher or a fellow student to see how well she is doing: is the pace right? Has the pitfall been avoided? Has no wrong corner been taken?

And finally – has the red-brick house been reached? This is a formative assessment, peppered with plenty of feedback.

After practice comes the time for the student to demonstrate that she can do the task independently – i.e. the time for summative assessment. No check-ins this time, no help from anyone as she sets out to reach the red-brick house. The student now has to be able to show that she can get there, as practiced before. This, of course, will provide information about how successfully the student has managed the task, but also ample food for thought about the process, and about the next goal(s). This time, the student's understanding of what the competence really means, and how it can be developed will have deepened, it will have got clearer. And this new understanding will also aid the next goal-setting. This is the start of a new loop in the development of the targeted competence.

To sum up, competence assessment accompanies competence development and blends in with it. The first type of assessment from the perspective of the student-teacher duo is diagnostic assessment, which informs goal setting. The ensuing learning process is pervaded by formative assessment, and the loop of the spiral ends with summative assessment, which in turn provides input for the next goal setting. While summative assessment is certainly not the goal of learning, its role is to establish the extent to which competence development has taken place and to validate progress so that one can confidently move to the next stage.

COMPASS Guidelines for the development and assessment of generic competences

Introduction

The COMPASS Model Implementation Guidelines are designed to explain in more detail:

Chapter A: how to think about and prepare for the development and assessment of competences, *i. e. how to plan*.

Chapter B: how to organise and implement the learning activities in which competences are developed, i.e. *how to provide ample opportunities for learning and acquiring competence*.

Chapter C: how to understand if and how competence is developed in the learning process and at the end of it – whether and to what extent the planned competences have been achieved, i.e. *how to evaluate.*

Chapter D: we look more closely at three different types of assessment – diagnostic, formative and summative.

Chapter E: The Guidelines also provide a concrete example of how the COMPASS Model can be implemented in a specific educational activity, by describing each part of the spiral model.

CHAPTER A:
How do we plan for learning?

In most cases, the national curriculum is “competence-enriched”, meaning that the generic competences are taught and acquired as part of traditional subjects, not separately. The idea is that each subject may and is expected to enhance the generic competences using the objectives, content and methods of its own field of knowledge and skills. This is important to keep in mind when planning lessons. The objectives must combine both the subject-specific learning objectives, and the objectives of the generic competences in an appropriate way. Naturally, different subjects are linked to generic competences in different ways. For example, mathematics lessons teach different thinking skills compared to creative writing. In history, the content and objectives have a higher potential of developing and reinforcing civic competences, while in music, the content is less accommodating of civic competences and may be more difficult to discern.

In some cases, for example, in Finland, the links between subjects and generic competences are already described in the curriculum, which facilitates the teacher's planning. It should be remembered that it is essential that, when the objectives of a learning situation include both subject objectives and objectives for more generic competences, both objectives should also be reflected in the assessment criteria and methods. For example, suppose the aim of a language lesson is to learn argumentation and thereby strengthen civic engagement skills as a civic competence. In that case, the assessment should focus on both language skills and civic engagement skills and related attitudes.

The key idea in planning for learning is putting the learners at the centre of the planning process; this means considering the general and individual learning outcomes and how the learning process will support the development of the learning outcomes: the competences. The learner-centred approach ensures that educational activities are not just about content delivery or focusing on the teacher's instruction, but also about fostering the capacities that students need to apply knowledge in practical and meaningful ways. This shift emphasises the end goal of education—competence development rather than mere knowledge acquisition.

Planning of the activities involves thinking through and anticipating the whole process, from deciding which competences will be developed and for what purpose, to evaluating the overall results achieved. In the planning phase, diagnostic assessment is a form of stocktaking to support the teacher in planning instruction to support learning. It is used to inform both the teacher and the student about the level of competence already mastered. The data thus collected will act not just as the baseline for future assessment of competence development, but also as input for planning learning. Diagnostic assessment helps the teacher to define and set objectives and help students understand what they already know and where to pay attention, for example, when starting a new learning project or course.

To effectively incorporate competence development in lesson planning, the following strategic recommendations might be helpful:

1. **Tie outcomes to learner competence:** Educational activities should prioritise student competence development over teacher-led instruction. For instance, rather than merely teaching comparison methods, a competence-focused outcome would be for students to "identify, analyse, and articulate three key similarities and differences within a given context", "Interact with, prompt and respond to contributions of at least 3 other students" or "identify and correlate information presented in at least 3 different ways: tables, graphs, charts, written text."[1]

2. **The outcomes should be focused:** Concentrate on developing a single, substantial specific competence per lesson or project even though the lesson or project may provide an opportunity for practising other competences as well. This approach simplifies the learning process and enhances the depth of understanding, enabling students to apply this competence independently across various contexts.

3. **Ensure outcomes make the competences visible:** Outcomes should be explicitly defined to allow for measurable demonstration of competence. For example, rather than stating that students should "appreciate the importance of environmental conservation", a better outcome would be, "Students will describe and document three specific actions they have taken to contribute to nature conservation", or "students will adapt their reasoning as new information becomes available". Formulating tasks like that allows the students to showcase their knowledge, skills, values, and attitudes.

4. **Specify and detail desired competences:** Outcomes should clearly articulate the expected competences, avoiding broad or ambiguous goals. It means avoiding vague statements such as "the student develops his or her abilities" or "the student prepares a presentation about the European Union". Specific activity outcomes incorporate what the students should know and how they can use this knowledge and apply it to other contexts, meaning what they are able to do or, even better, what they will have done. The specific outcome might be, "Students will prepare a detailed presentation on the European Union's environmental policies, demonstrating their understanding and ability to apply this knowledge in local environmental initiatives", or "Students will engage their audience by addressing questions and adjusting their oral presentation according to the answers received".

The effectiveness of learning activities is gauged by the visible and measurable development of competences. Educators need to design outcomes that not only challenge students, but also provide clear evidence of their learning progress, which the students can grasp and use as a

[1] Vacaretu, A. & Proal, H. (2016). *Guidelines for assessing students' skills developed through math research*. Ecou Transilvan Publishing House. https://matlanproject.weebly.com/uploads/4/2/9/1/42916225/evaluarea_competentelor_en-final.pdf

reference for self-assessment. This approach transcends the acquisition of factual knowledge, focusing instead on applying knowledge through developed skills and attitudes. For instance, students may learn about climate change, learning strategies, or orchestral compositions. Yet, the real value of this knowledge is realised when students can:

Apply knowledge to actions: For instance, explain and personally implement measures to mitigate climate change.

Utilise and reflect on learning strategies: For instance, demonstrate and justify the use of specific learning strategies in their academic tasks.

Integrate knowledge in broader contexts: For instance, describe how different orchestra sections work together to create symphonic music, applying this understanding to team collaboration concepts.

CHAPTER B: How do we provide opportunities for gaining knowledge and practicing skills? What does competence-oriented learning look like?

Competence-oriented approaches focus on equipping students with the skills, knowledge, attitudes, and volition they need to succeed in both academic and real-world settings. This method emphasises practical skills alongside theoretical knowledge, encouraging students to apply what they learn in varied contexts. The instruction must allow students to practise their skills and reflect on their values and attitudes needed for their development.

Competence-oriented approaches, such as project-based, arts-based, inquiry-based, experiential or work-based learning, improve learning outcomes and learner engagement. At the same time, they offer opportunities for innovation, collaboration and cross-curricular learning; they put learners at the centre and ask for their active participation. Competence-oriented approaches increase the learners' overall motivation, performance and active participation when combined with social and emotional learning, such as health-enhancing physical activities.

Showcasing the competences. Recognising what the students are able to do is crucial in competence development and assessment. There are four main modes of showcasing competence– doing, making, speaking, and writing. Although these different modes are not precise or mutually exclusive, they are all important in the context of competence development and assessment. In addition to considering the four modes, the learning environment where assessment is carried out should provide the students with opportunities to practise and showcase their competences in real-life situations.

There are some central ideas and strategies that are useful when implementing a competence-oriented approach in teaching and learning:

Problem-based learning

One of the most effective ways to implement competence-oriented learning is to integrate real-world problem-solving tasks right from the planning phase. This can be achieved through case studies, project-based learning, or simulations that reflect actual challenges relevant to the subjects taught. For example, in the context of biology and geography, learning can be subsumed to preparing to have a dialogue on whether it is better to be vegan or eat meat to mitigate climate change.

Examples of problem-based approach
Competence domains: various

Content area: various
Link: https://helpfulprofessor.com/problem-based-learning-examples/

Collaborative learning

Collaborative learning environments allow students to engage with their peers in solving complex problems, thus mirroring the collaborative nature of most modern workplaces. Using roles and responsibilities to ensure active participation is helpful. Group projects encourage the sharing of diverse ideas and perspectives, fostering a deeper understanding of concepts and issues, and allowing students to practise interpersonal skills and teamwork simultaneously. For instance, in social studies, students can organise a picnic for the elderly people near the school and prepare a theatre play or music performance to entertain them.

Examples of collaborative learning
Competence domains: thinking and learning to learn
Content area: generic
Link: https://pz.harvard.edu/thinking-routines

Phenomenon-based learning

Phenomenon-based learning is a holistic approach to learning when phenomena are studied using knowledge from various subjects, and across different subjects, in and out of the classroom. Students are involved in hands-on activities and are able to apply, as well as develop knowledge, skills and attitudes toward different real-world issues. Phenomenon-based learning eliminates strict lines of demarcation between subjects, showing their interconnectedness in various real-life contexts.

Examples of phenomenon-based learning
Competence domains: thinking and learning to learn; living with technology, interacting with and relating to others; living in and contributing to the wider society and the world
Content area: generic
Links:

- https://www.youtube.com/watch?v=4ipk3dWsrXE
- http://www.phenomenaleducation.info/phenomenon-based-learning.html

Technology-based learning

Incorporating technology can enhance competence-based learning by providing students access to information and tools used in professional environments. For instance, using software for graphic design in an art class or simulation programs in science can provide hands-on practice with tools that professionals use, enhancing both understanding and skill acquisition. ICT tools can also personalise the learning experience. Adaptive learning platforms and educational apps can

customise educational content to meet individual student needs, tracking progress and adjusting the difficulty of tasks according to their skill level. These tools can also facilitate flipped classrooms and blended learning approaches, where students can access lectures online and use classroom time for interactive and hands-on activities. For example, in maths, the students can study the new content before the lessons by watching videos, and during the lessons, they can do collaborative problem-solving by applying the learned content and practising their cooperation and communication skills.

Examples of technology-based learning
Competence domains: various
Content are: various
Links:

- https://www.kialo-edu.com/?utm_source=Adwords&utm_medium=SEM&utm_campaign=InnovativeLearning&utm_content=InnovativeLearning_Virtual_HP
- https://www.teacheracademy.eu/blog/best-edtech-tools/
- https://www.prodigygame.com/main-en/blog/27-brilliant-ways-to-use-technology-in-the-classroom/

Student-led initiatives

To truly prepare students for the future, we must encourage them to take charge of their learning. This can be facilitated by giving students choices in their projects or learning methods, thus fostering a sense of autonomy. Moreover, teaching them to set their own learning goals and reflect on their achievements can instil lifelong learning habits. Also, student-led initiatives like fundraising events, mini-companies, or a school newspaper teach them leadership, project management, and civic responsibility.

Examples of student led initiatives
Competence domains: various
Content are: various
Links:

- https://www.sek.es/en/studentledinitiatives/
- https://anythingbutlectures.ca/student-led-project-ideas'
- https://le.unimelb.edu.au/teaching-learning-assessment/building-cohorts-creating-community/student-led-activities

Authentic learning environments

Authentic learning environments are settings that are or closely mimic real-life or workplace situations, making the learning experience more relevant and engaging. These environments can be created by designing the classroom and learning activities to reflect real-world tasks. For instance, a science teacher could create a laboratory setting that mimics a professional research lab, complete with real experiments and data analysis tasks. This approach helps students

understand theoretical knowledge and significantly enhances practical skills by providing a realistic context to apply their learning. Also, museums, libraries and other institutions are authentic learning environments that may support competence development.

Examples of authentic learning environments
Competence domain: living in and contributing to the wider society and the world
Content area: arts, history
Link: https://www.guggenheim.org/accessibility/guggenheim-for-all/guggenheim-for-all-toolkit/teaching-strategies-for-museum-educators/pedagogical-approaches-to-museum-teaching

Bringing in experts

Whenever possible, bring in experts from various fields to discuss their experiences and the skills needed in their professions. This can provide students with insights into how their learning applies in the workplace and motivate them to acquire and refine the necessary competencies. For example, invite guest speakers or take students on field trips to see how skills like communication and teamwork are utilised in real workplaces.

Examples of bringing in experts
Competence domain: various
Content area: various
Link:
https://education.gov.scot/media/fi4hwzzb/involvementofexternalexpertsinschooleducation.pdf
Competence domain: Thinking and learning to learn
Content area: science
Link: https://www.youtube.com/watch?v=2Tr6ebntTbw

Doing

Examples: practical work, laboratory work, procedure, creative performance
Students' experience: authentic, motivating, physical presence makes it engaging; immediate feedback may be productive for learning

Examples of project-based approach
Competence domains: Living in and contributing to the wider society and the world / Thinking and learning to learn/ interacting with and relating to others
Content area: various
Link: https://www.youtube.com/watch?v=sD7CZL9PpF4

Making

Examples: producing a tangible item: making the product is the vehicle for learning, an artistic composition, a scale model, a working prototype, a website/blog/podcast.
Students' experience: authentic, stimulating and exciting, physical presence, engaging, should be combined with reflection
Competence domain: various
Content area: various
Link: https://www.experientiallearningdepot.com/experiential-learning-blog/how-to-add-design-thinking-to-your-curriculum

Speaking

Examples: prepared formal presentations, interviews, dialogues, debates, argumentation, justification, peer teaching, elevator pitch
Students' experience: active listening, exploration of problems, oral expression, communication and collaboration
Competence domain: various
Content area: various
Link: https://www.edutopia.org/article/practical-steps-for-introducing-debate-in-elementary-school/

Writing

Examples: essay, report, reflective journal, workbook, learning diary, short answer exam-type questions, ICT-tools, etc.
Students' experience: express understanding, review and refine, time to reflect individually or as a group.
Competence domain: Thinking and learning to learn/ interacting with and relating to others/ living with technology
Content area: various
Links:

- https://info.thinkcerca.com/writing-across-the-curriculum-guide
- https://www.edutopia.org/article/why-students-should-write-all-subjects/

CHAPTER C:
How do we assess competences?

Competence assessment is widely discussed in the "COMPENDIUM of scientific literature on competence development and assessment", which also provides examples of relevant assessment practices.

The Compendium concludes that while there are numerous presentations of effective practices and research supporting competence assessment, it remains a significant challenge. Schools employ diverse and creative strategies for formative assessment, yet reliable tools for assessing generic competencies are scarce. Often, these competencies are still judged based on a teacher's subjective perception. In educational settings, fostering an environment that supports competence-oriented teaching and learning is crucial. Teachers are not expected to assess general competences daily as they do with subject knowledge. Recognising these competences involves observing students over extended periods as they engage in complex tasks across various situations.

Competence-focused approaches emphasises the idea that learners are not empty vessels to be 'filled' with knowledge or 'trained' in skills, but that they learn by actively building their knowledge and skills. This implies a move away from a transmission approach to teaching, which is characterised by telling the learners, towards an approach that involves learners taking an active role in their learning.

In this approach, learners need to learn to take responsibility for their learning. They need to become more and more aware of how they learn and what they need to do to learn better by developing their metacognitive skills. This involves stepping back from the everyday subject-focused tasks and activities in the classroom to take some time to reflect on the processes of learning and thus learn how to learn. Thinking and learning to learn is one of the most prominent generic competences underlying the development of other competences and lifelong learning. Its basic educational purpose is to develop an active approach to learning and a positive attitude towards learning in students and to enable them to apply the acquired knowledge and skills in different situations and contexts.

In general, it should be emphasised that in a competence-oriented context, assessment focuses on *assessment for* and *as learning* during the process rather than on *assessment of learning* at the end of a stage of the process. Shifting the focus from traditional assessments to more formative, competence-oriented assessments that allow students to demonstrate their knowledge and skills in practical ways is necessary. This might include portfolios, presentations, or practical demonstrations rather than traditional pen-to-paper or oral quizzing exams. Such assessments not

only measure learning outcomes, but also contribute to learning by allowing students to apply what they know in meaningful ways.

Also, continuous feedback is essential in a competence-oriented learning context. It helps students understand their progress in acquiring knowledge and skills and developing attitudes. Effective feedback should be timely, specific, and constructive, allowing students to reflect on their learning processes and outcomes. This can be implemented through peer reviews, teacher assessments, or self-assessment exercises.

Assessment follows a process called “reasoning from evidence”. This means that the information gathered from the assessment is used to draw conclusions about a student's competences. The process involves three critical elements: cognition, observation and interpretation (Figure 3).

1. **Cognition:** Understanding of the competence and how students develop the competences being assessed
2. **Observation:** Designing assessments that effectively reveal students' knowledge, skills, attitudes and volition
3. **Interpretation:** Analysing the results to draw meaningful conclusions about student learning and development of the competences.

All three of the above listed elements have to be present in all forms - diagnostic, formative and summative – of assessment.

CHAPTER D:
Three types of assessment – diagnotic, formative and summative

Diagnostic assessment

Diagnostic assessment is a form of assessment used prior to embarking on new learning activities and is aimed at the identification of students' knowledge and skills, strengths and needs of improvement. Diagnostic assessment helps teachers to develop teaching-learning plans for individual students, groups of students and the entire class. In short, diagnostic assessment provides information about the current level of students' competences.

Examples of diagnostic assessment across various subjects: Know-Want to know-learn (K-W-L); quizzes, essays, concept maps; interviews; rubrics, tests, etc.

For more diagnostic assessment examples, see:
https://www.icasassessments.com/blog/diagnostic-assessments-teachers-guide-examples/

It is important to note that diagnostic assessment is not a judgement, but rather a form of stocktaking, of establishing the starting point on the path to the students' further development. It provides understanding of the "status quo", and helps design learning activities that support and reveal progress in learning in observable ways, through the learning process, so that students' acquisitions can be understood and interpreted clearly.

Formative assessment

Formative assessment can be described as *assessment for learning*. It includes monitoring of learning, done by both the student and the teacher, continuous feedback, self-evaluation and peer feedback or assessment.

A theoretical framing, summarised in Figure 5, analyses the roles of the teacher, the peers and the student in terms of where the student is now, where they are going and how they will get there. It draws out the connections between good assessment and planning, teaching and learning. It also highlights the purposes of assessment, such as eliciting evidence of learning, moving learners forward in their thinking, and developing students' responsibility for their own learning.

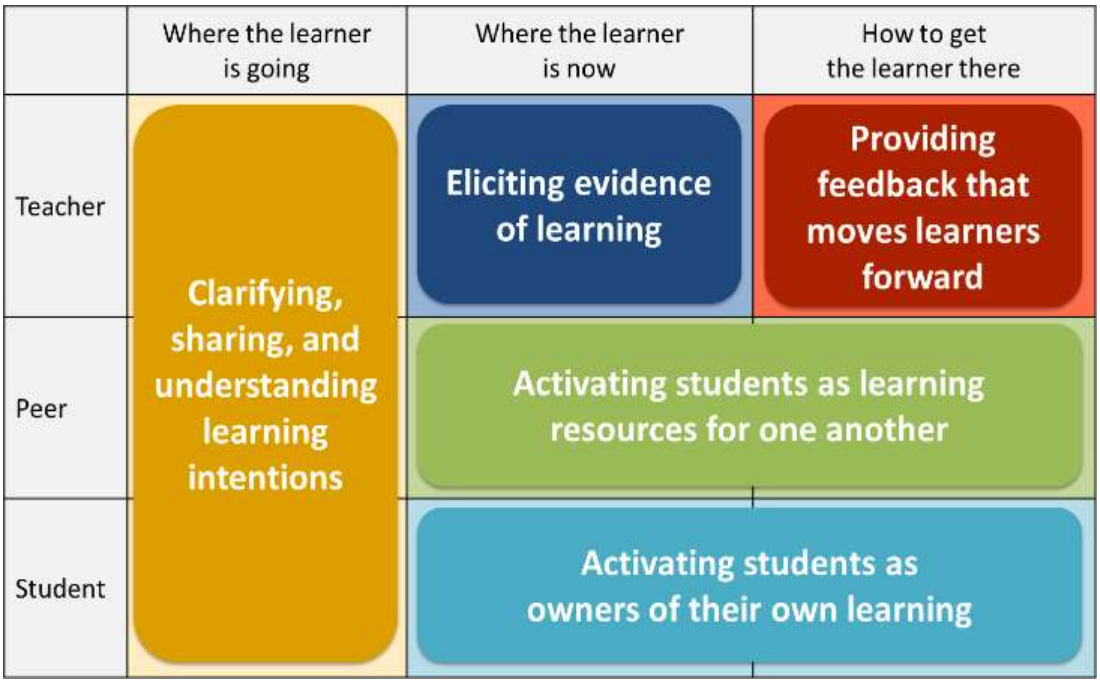


Figure 5. Formative assessment (Black & Wiliam, 2009)[1]

The five key strategies for formative assessment reflect the theoretical framing above. Feedback, as well as self-and peer-assessment are discussed in more detail in the next chapters.

Five key strategies

1 Clarifying, sharing and understanding learning intentions and success criteria

The strategy involves clearly defining the learning intentions, what students are expected to learn, and how they will know they have learned it, so the success criteria are described. This transparency helps students understand the purpose of their learning activities and the standards they need to meet. It might be good to involve the students and ask them to discuss and re-write the aims and the criteria in their own words to get a deeper understanding of the aims.

2 Eliciting evidence of learning

Gathering evidence of student learning is crucial for understanding their progress and needs. The evidence can come from various sources, such as questioning, discussions, observations, and student work. Effective questioning is important, like using open-ended questions to stimulate thinking and gather detailed responses. Also,

[1] Black, P. & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability, 21* (1), 5–31. https://doi.org/10.1007/s11092-008-9068-5

incorporating techniques like wait time to allow students to formulate their answers is important. Employing diverse formative assessment methods such as quizzes, exit tickets, and think-pair-share activities is useful for gauging understanding of student learning. Regular observation of students during activities provides information on their engagement in learning and skill development.

3 Providing feedback that moves learning forward

Feedback should be specific, actionable, and focused on guiding students towards improvement. Effective feedback consists of three basic elements: what the student did well, what needs improvement, and how to improve. It is crucial to provide feedback promptly while the learning experience is still fresh in students' minds and to allow students to reflect on the feedback and set goals for their next steps.

4 Activating learners as instructional resources for one another

Students can be valuable resources for each other's learning. Collaborative learning and peer assessment foster a supportive learning environment where students can share knowledge and feedback. It is useful to pair or group students and encourage them to support each other's learning through regular check-ins and discussions.

5 Activating learners as owners of their own learning

Encouraging students to take responsibility for their learning increases their motivation and engagement. This involves helping them develop self-regulation skills and a growth mindset. A good way to activate learners is to encourage them to set personal learning goals and monitor their progress using reflective tools and activities such as learning journals, portfolios or exit tickets where they can contemplate their learning experiences and outcomes.

Feedback

Effective feedback is a cornerstone of learning, especially in nurturing generic competences such as critical thinking, communication, collaboration, or self-regulation. According to various studies, both positive and negative feedback may be beneficial to learning.

To optimise its effectiveness, feedback must adhere to certain principles that align closely with educational goals and learning processes. Here are some key features of effective feedback, accompanied by examples. These features may be prioritised depending on the learning context:

Specific and clear: Feedback should be particular and understandable. For instance, instead of saying, “Good job on the presentation”, more effective feedback would be, “Your introduction clearly outlined the argument, which helped structure the presentation effectively“.

Linked to learning outcomes and success criteria: Feedback should directly relate to the learning objectives and criteria established at the outset. For example, if a learning outcome is to enhance analytical skills, feedback might highlight how well the student applied these skills in dissecting a case study or how much better she did compared to previous tasks.

Includes learning cues: Effective feedback provides hints or cues that guide students on how to improve. For example, if a student struggles with essay structure, the feedback could be, "Consider using a clear thesis statement at the end of your introduction to guide your argument".

Includes strategies, not solutions: To support metacognition, feedback should offer strategies for improvement rather than direct answers. This might look like suggesting, "Try using mind-mapping techniques to organise your thoughts before writing", rather than correcting the essay structure directly.

Actionable and achievable: Feedback should be practical, offering students clear next steps. For example, "To strengthen your argument, provide more evidence from credible sources in your next essay. Here is a list of databases you might find useful".

Focus on the process, not the learner or the task: This helps to cultivate a growth mindset by emphasising effort and strategies over innate ability. Instead of "You're not good at math", feedback should be, "Let's look at different approaches to solve this type of problem".

Well-timed: Timing can significantly impact the effectiveness of feedback. It should be given when students still have the opportunity to use the feedback in subsequent tasks. For example, providing immediate feedback during a practical skill session allows students to try again more effectively.

For more feedback examples, see:

- https://helpfulprofessor.com/positive-feedback-examples/
- https://education.nsw.gov.au/teaching-and-learning/professional-learning/teacher-quality-and-accreditation/strong-start-great-teachers/refining-practice/feedback-to-students/feedback-practices-and-strategies
- https://www.edutopia.org/article/how-give-positive-feedback-student-writing/

Student self-assessment

Student self-assessment and reflection are crucial in competence development. These practices are not merely academic exercises; they are fundamental in helping students become active participants in their learning processes, fostering skills necessary for lifelong learning and adaptability in the face of future challenges.

Self-assessment involves students evaluating their own work and learning processes against set criteria and/or learning outcomes. It is crucial to share assessment criteria with students beforehand. This transparency enables students to understand the expectations and standards

they are being evaluated against, which is fundamental for effective self-assessment and learning. When students are aware of the criteria, they can more accurately judge their own work and that of their peers and guide their learning processes towards progress in specific skills or knowledge areas. This method encourages students to take ownership of their learning, making them more accountable and motivated. It helps students identify their strengths and areas for improvement, fostering a growth mindset that is essential in a competence-oriented approach. For instance, after completing a project, students might reflect on how effectively they collaborated with peers, which is a key competence in both educational and professional settings.

Reflection and self-assessment allow students to think critically about their learning experiences, understanding what methods or strategies worked, what didn't, and why. Self-assessment serves as a practical application of metacognitive practices. When students engage in self-assessment, they perform a metacognitive activity—they reflect on their understanding and skills, assess their strategies, and decide on future actions based on their conclusions. Metacognition, often described as “thinking about thinking”, is a higher-order thinking skill that involves awareness of and control over one's cognitive processes. It includes planning how to approach a given learning task, monitoring learning and progress, and evaluating the effectiveness of learning strategies employed. The relationship between self-assessment and metacognition is symbiotic, enhancing students' ability to regulate their own learning in a competence-oriented educational approach (Figure 6).

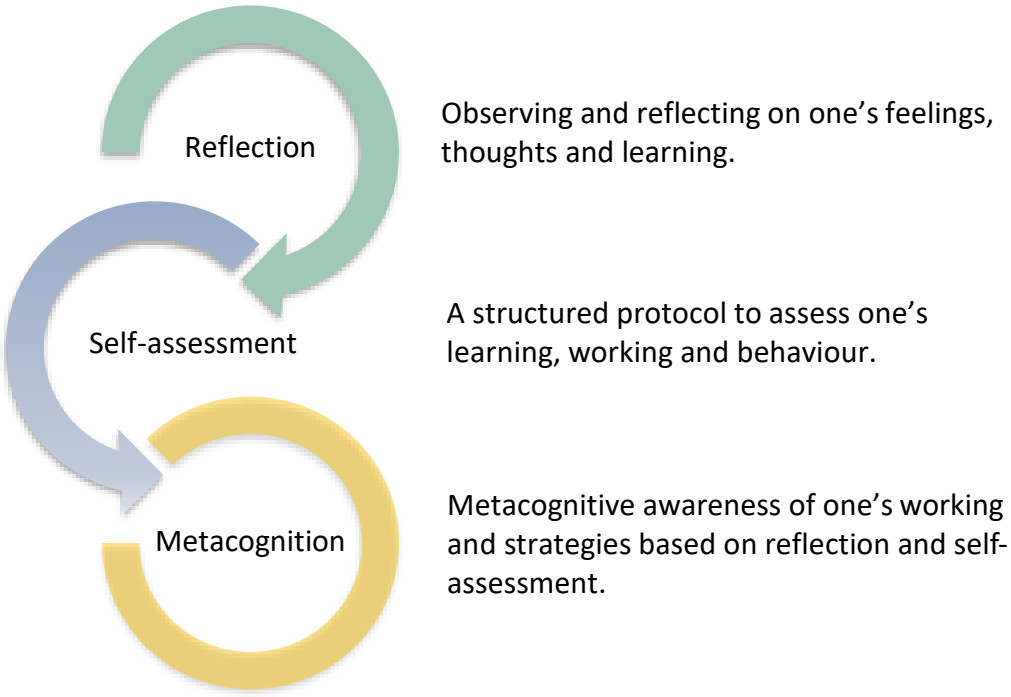


Figure 6. Self-assessment develops metacognitive awareness (Ouakrim-Soivio, 2024[1])

Depending on the methods used, self-assessment practice may deepen students' learning by linking theory with practice and promoting the ability to adapt and apply learning in various

[1] Ouakrim-Soivio, N. (2024) *Assessment of and for learning*. Otava.

contexts. For example, after a science experiment, students might reflect on the problem-solving strategies they employed and how these could be transferred to different subjects or real-life scenarios.

Implementing self-assessment practices effectively can take various forms, such as:

Self-assessment grid: The students are asked to rate their own learning on certain aspects of a scale. For example, from "hardly there" to "obviously there" (see an example in the Annex 1).

Learning journals: Students keep regular entries that detail what they've learned, questions they might have, and insights into their learning preferences and styles. This can help teachers gauge the progress in developing specific competencies, such as critical thinking or self-directed learning.

Goal setting and progress reviews: Students set learning goals based on their self-assessments and periodically review their progress with their teachers. This approach can foster skills such as planning and organisation, crucial for personal and professional success and for activating learners as owners of their learning.

Bob Tree: It is a visual tool for students' self-assessment. The image of a branching tree and the various stylised figures of a little creature illustrating different moods and actions allow students to find themselves in this image and to describe and reflect upon their own state of mind, mood and current situation, and better understand it. It can also be used as an introduction to reflecting on the specific learning activities in relation to the students' physical, emotional state of being or summing-up of learning experiences during the day (Annex 2).

Incomplete sentences: This approach is helpful in guiding students to reflect on their progress as well as on their own practices that have contributed to the progress. One technique is to use questions for looking back *(I used…; I learned…; I tried to…; I succeeded..; I should have..*), and questions for looking forward *(I am motivated to…; I wish I…; Next time I could…)*. If teachers practice this constantly, self-assessment will become a built-in routine.

For an interdisciplinary project- and inquiry-based approach to support learning skills and reflection, which further feed into students' motivation for learning, see the article Teaching and Learning High School Mathematics through an Interdisciplinary Approach[1].

For more self-assessment examples, see:

- https://www.3plearning.com/blog/fun-ways-students-self-assess-mathematics-confidence/; https://helpfulprofessor.com/self-assessment-examples/
- https://www.theeducationhub.org.nz/wp-content/uploads/2018/03/How-to-successfully-introduce-self-assessment-in-your-classroom.pdf

[1] Vacaretu, A. (2011). *Teaching and learning high school mathematics through an interdisciplinary approach*. https://www.academia.edu/4987423/Teaching_and_learning_high_school_mathematics_through_an_interdisciplinary_approach

Peer-assessment

Peer-assessment is a strategy whereby students assess and provide feedback on each other's work using a set of well-understood and agreed criteria. This process can be formative, helping to refine works in progress, or summative, summarising the process. While commonly applied to written assignments, peer-assessment is also valuable for presentations, performances, and other varied formats.

In terms of competence development, peer-assessment is particularly effective. It enables students to engage actively in their learning process by making them both assessors and learners. By assessing each other's work, students develop a clearer understanding of quality standards and learn to give constructive feedback, enhancing social and interpersonal competencies. This dual role helps students develop critical analytical skills and self-reflective practices essential for continuous learning and improvement. They gain insights into their own strengths and weaknesses, fostering a better understanding of their learning journey.

Additionally, peer-assessment encourages more frequent and immediate feedback, which is crucial for making timely improvements. This method also helps students develop the ability to critically evaluate the quality of work, a skill that is indispensable in professional and lifelong learning contexts. The process not only promotes responsibility and independence, but also enhances students' engagement and ownership of their learning.

However, the effectiveness of peer- and self-assessment hinges on careful planning and implementation. Risks include the potential for students to feel unprepared for evaluative roles, but these can be mitigated through effective practice and clear guidelines. Examples of peer-assessment: Peer evaluation of a creative task in social science (Annex 3); Peers' feedback for self-improvement in arts lesson (Annex 4); Peers' feedback for self-improving in language lesson (Annex 5).

Group assessment

Students can also evaluate their group projects – how they worked on them, how they each contributed to the group's work, and how they presented them. In the example in the annex you can see the criteria for evaluating group projects that the pupils have developed together with a teacher (Annex 6).

For a complex example of competence development and assessment of cooperative problem solving, see Guidelines for assessing students' skills developed through math research[1].

[1] Văcăreţu, A. S. & Proal. H. (2016). *Guidelines for assessing students' skills developed through math research*. Ecou Transilvan Publishing House.
http://matlanproject.weebly.com/uploads/4/2/9/1/42916225/evaluarea_competentelor_en-final.pdf

Summative assessment

Summative assessment is the assessment of students' knowledge, skills, and individual progress after a longer period of learning – at the end of a unit, semester, trimester, month, a year, and so on. The results of summative assessment are usually expressed in grades or other formal qualifier systems. It helps teachers and students answer the question: How do my students and I know at what level a specific competence is mastered?

The notion of summative assessment is quite clear in terms of evaluating students' subject knowledge and academic achievement. How is it used to assess students' progress in the development of generic competencies? In the COMPASS Model, competence is defined as the sum of a person's knowledge, attitudes, skills, and values manifested in concrete actions. The picture below demonstrates what assessment methods could be used to help students demonstrate their progress at different levels of competence development (Figure 6).

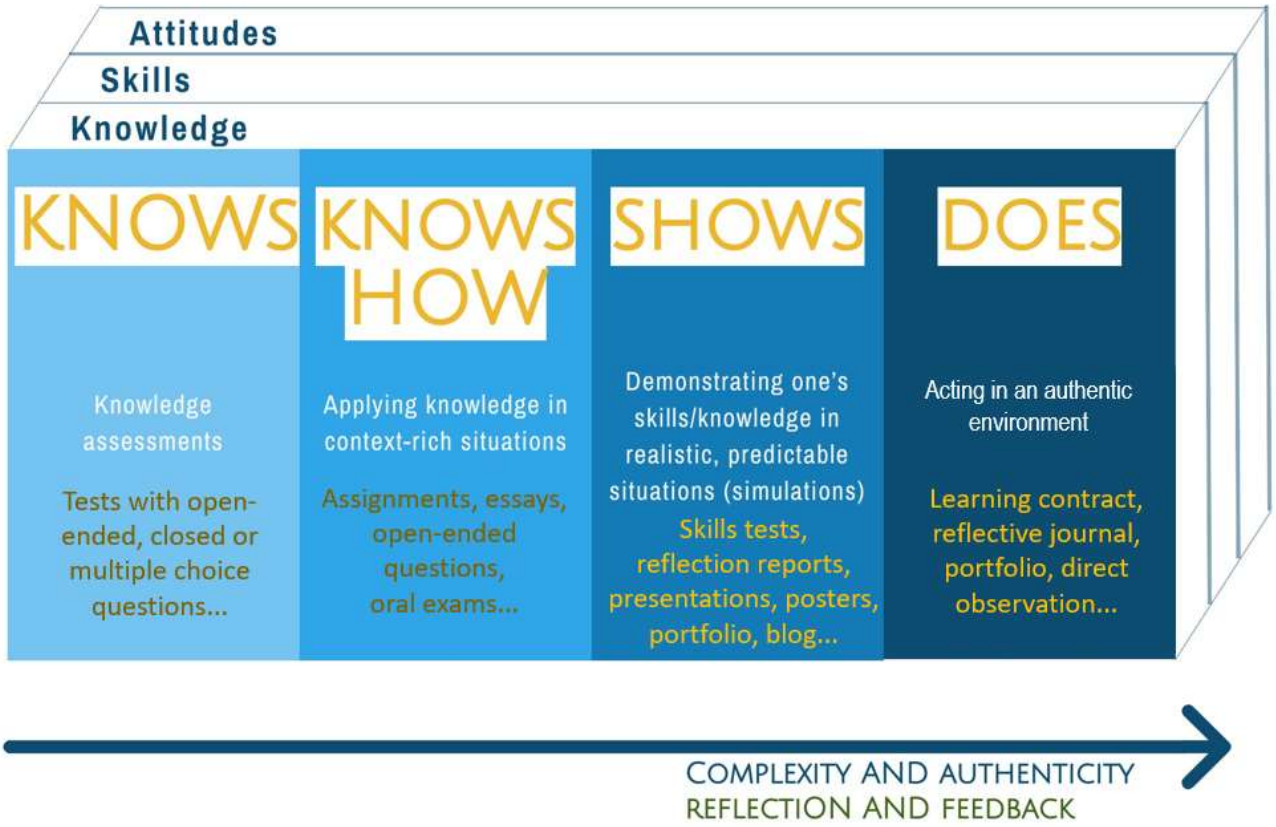


Figure 6. Summative assessment (modified according Ghent University, 2024[1])

[1] Ghent University. (May 29, 2024). *How to assess generic competencies?* https://educationtips.ugent.be/en/tips/evalueren-van-generieke-competenties/#3.AssessmentMethodsforGenericCompetencies

Generic competencies are gradually developed throughout the curriculum. Mastering competences requires regular practice and demonstration of knowledge, skills and attitudes in a learning environment where making mistakes is seen as an integral part of the learning process and where reflection and meaningful feedback are required. This means that for the summative assessment teachers should choose open assignments which allow students to demonstrate more capacities than just the academic knowledge, e.g. assignments with open-ended questions, essays, creative work, projects, presentations, posters, reflection reports, etc. (e.g. "The summative assessment at the end of the learning unit was realized through a project (…) through which the students could demonstrate the technical knowledge acquired and their progress in interacting with and relating to others. This project, based on the integration of previous mini-projects, was a collaborative experience, emphasizing the importance of teamwork and effective communication".). Summative assessment should be in harmony with diagnostic and formative assessments and, of course, must be aligned with the learning goals and outcomes planned to reach. Students' portfolios, reflective journals, and other collections of different assignments could be the object of summative assessment as well.

A few principles of summative assessment address the development of generic competences.

- Using rubrics to lay out the expected performance criteria for a range of grades or achievement levels. Rubrics should include not only academic targets, but also the elements of the generic competences that were included in the learning goals (e.g., students adjust to challenging communication circumstances (…) employing suitable nonverbal or paraverbal means).

- Designing clear, but open-ended and rich questions for essays and other assignments allowing students to express their academic knowledge, but at the same time to demonstrate their attitudes and the way they are constructing the meaning of their learning. (e.g. "Plan a trip to Germany. Gather diverse information and create a realistic travel plan.").

- Assessing comprehensiveness – providing an opportunity for students to consider the totality of a course's content, making broad connections, demonstrating synthesizing skills, and exploring deeper concepts that drive or found a course's ideas and content (e.g. in group activities, the student shows interest in other opinions, attentiveness to others, and constructive involvement in communication (…) through active listening techniques, appropriate expression of emotions, appropriateness of nonverbal and paraverbal elements for the communicative situation).

Providing clear parameters – ensuring that the parameters of the assignment are well defined (e.g., length of text, depth of response; e.g. Add pictures from (…) to match your slides. Write a travel diary about your experience. Describe the atmosphere, the game, and your feelings — make it lively and detailed! Write the diary in Finnish (or German, if you prefer) and make it at least 15 sentences long).

Summative assessment is usually related to grading. One of the biggest challenges for teachers is to grade students' progress in generic competences due to the complexity and boundlessness of the object of assessment. Grades used alone do not indicate students' prospects for further learning. Sometimes, grading could have a negative impact on students' motivation to learn. Teachers' observations on the quality of assignments and thorough feedback are of greater value than grades in promoting individual progress (e.g. Students see their growth and achievement in digital literacy through a systematic digital portfolio on Google Drive, where all their work, reflections, and evaluations are stored. They also saw the teacher's evaluations according to the criteria, not only the grade. They were able to clearly see their progress by comparing their first work with their most recent work and by looking at the badges and grades collected in Class Dojo.)

Examples of summative assessment across various subjects: tests; final essays; projects; reports; creative works, etc.

For group assessment examples, see:

- https://thirdspacelearning.com/blog/summative-assessment/
- https://poorvucenter.yale.edu/Formative-Summative-Assessments

CHAPTER E:
An example of COMPASS Model implementation

This is an example of a lesson series "Digital Project Development", aimed at students' digital competence development by learning to use digital tools for project work

Teacher's name: Agnė Motiejūnienė
Subject taught: ICT technologies/Project work
Competence development area: living with technology (digital competence in the national competence framework)
Students: 8th grade middle school (progymnasium) students
School: Antakalnis progymnasium, Vilnius, Lithuania

How do I and my students understand and define competence? (definition of a competence)

I myself, as a teacher, take initiative to introduce the description of the digital competences at the beginning of the lesson cycle, as it is presented in the general curriculum: *each student will be able to (1) use digital technologies in a purposeful, responsible and safe way (2) to search for information, (3) to critically evaluate, process and (4) to present it in the digital space.* I also take time to present more details and illustrations of what each of the four components means.

Then, by using the *Mentimeter* app (on a screen visible to all), students themselves add their own concepts and/or examples of digital competence. Then we discuss and summarise again together what this competence means to us.

What evidence do we, as teachers and pupils, have of the current situation? Where are we? (diagnostic assessment)

Students do self-evaluation and rate their digital competence based on the following criteria (Annex 7):

1. I use digital technologies to find information;
2. I use digital technologies to find and evaluate information;
3. I use digital technologies to find, evaluate and process information;
4. I use digital technologies to search, evaluate, process and share information securely;
5. I help others to use digital technologies effectively.

What do we and our students want to achieve? In how much time? (goal setting)

Goal setting is inextricably linked to self-assessment, so they overlap. For diagnostic assessment and goal setting, we have used the visual tool "Competence Tree" (Annex 8).

Students were given a *virtual leaflet (otherwise sticky note)* and they had to represent the tree as a digital competence in a digital space.

The structure of the "Competence Tree":
Root: "What do I already know?"
Trunk: "What do I want to learn?"
Leaves: "Where will I apply it?"

The overall goal of the learning activities was to improve each student's digital literacy skills over a 12-lesson cycle *(1 weekly lesson, 3 months)*, with a focus on finding, evaluating, processing and sharing information safely in the digital environment.

How should we and our students prepare?

I recommend teachers think about and prepare in advance the digital tools and instruments they will use in the classroom with students. It is important not only to test these tools, but also to anticipate possible technical failures and have a back-up plan. It is a good idea to prepare clear instructions for students on how to use the chosen digital tools. One should also think about tasks for learners of different abilities so that everyone can successfully engage in the learning process *(e.g. videos on how to access the digital tools, or visualised step-by-step instructions so that slower learners, who take time to engage, can do so at their own pace)*.

It is important to plan activities that will develop the competences and to think about the methods of assessment and evaluation (ideas and examples of concrete tasks are given below).

For homework, students should make sure they have a working device (computer, tablet) and a stable internet connection. If my students do not have access at home, I recommend doing the homework in the school library. It is important that students know already how and are able to log in to their Gmail account (in our school every student has his /her own and will have been able to do this since primary school). It is also important that students show willingness to learn new things and are not afraid to ask questions if they encounter difficulties.

It is important for both sides to agree on the rules of communication in virtual space and be ready to deal constructively with technical or learning challenges.

How will pupils gain experience in competence development? (tasks, activities, etc.)? (modelling and practising)

I, as a teacher, think about and plan different activities as opportunities to experience and develop digital competence by covering all four components of it:

1. Use digital technologies **in a purposeful, responsible and safe way**

- Security detectives' activity – students analyse the cases (groups are given different real cases, e.g. mass password cracking, identity theft, etc.) and identify possible online threats, suggesting rules for safe behaviour.
- A practical activity to assess the strength of their passwords and create secure passwords in their Gmail account, through which they will continue working.
- Safe Internet test on safe online behaviour.[1]

2. Information seeking

Information retrieval practice – students learn how to use search engines effectively, access different channels of information, learn about Google Scholar and how to spot "liars".

- Evaluating the credibility of sources – critical thinking exercises for evaluating sources of information.
- Hands-on activity using advanced Google search – students learn how to use filters and keywords.
- Source Detectives activity – students investigate how the same news story is reported in different sources.

3. Critical assessment, processing of information

- "Fact or lie?" a game where students analyse the information presented in different digital sources and make a reasoned judgement on its credibility.
- Credible source task – students create a list of criteria to assess the credibility of an online source.

4. Digital presentation

- Hands-on work with Google Docs document authoring tools (creating a document structure, using formatting tools, pagination and layout, inserting images and creating descriptions, citing sources and creating a reference list)
- Creating a project portfolio (organising material in Google Drive, creating a folder structure, creating a file naming system, managing access rights, using collaboration features)

[1] *Ar esi saugus internete*. https://testas.draugiskasinternetas.lt/

- Digital project management (tracking deadlines in Google Calendar, scheduling tasks, tracking progress, delivering final product in Google Classroom).

It may seem that all these tasks take up a large part of the lesson time, leaving little for other content, but this is not the case, as the development of competence in this case runs parallel to the students' deeper exploration of the project topic, with time allocated accordingly. Parallel to their interest in a particular topic (e.g. the Renaissance), the children also learn to search for information, to identify relevant sources, etc.

How will we support students in developing their self-awareness and competences? How will they know that specific competences are being developed? To what extent, at what level? (formative assessment)

Weekly progress assessment (using Google Forms), where pupils rate their own progress against the competences (Annex 9).

- How was it to work safely?
- Have you been able to find reliable information?
- How was it to assess and process it?
- Did you manage to deliver effectively?

Formative assessment is organised through the Class Dojo system, in which each student has a portfolio. According to the digital competences developed in the cycle, “plus badges” are created and collected by the students. The Class Dojo system immediately involves the parents, and the student sees the grades accumulated in their portfolio (Annex 10).

The following “**plus badges**”[1] are identified according to the topics being taught, and are assessed and then converted into a grade on a cumulative basis.

SAFE USE:

- “Security expert” (created a strong password);
- “Responsible internet user” (follows safe browsing rules);
- “Privacy guardian” (manages privacy settings properly);
- “Digital citizen” (communicating respectfully in virtual space).

INFORMATION SEARCH:

- “Search master” (found reliable sources);
- “Sourcebook” (uses various information channels);
- “Google guru” (effective use of search filters);
- “Information expert” (finds relevant information).

[1] These “plus budges” were suggested and generated by Claude (which is based on artificial intelligence) based on a request for a specific use in the Class Dojo app and the guidelines given for developing competence.

CRITICAL APPRAISAL:

- “Fact checker” (recognises reliable information);
- “Critical thinker” (evaluates sources in a reasoned way);
- “Analyst” (compares different sources);
- “Source detective” (separates facts from opinions).

INFORMATION PROCESSING:

- “Data controller” (organises information in an orderly manner);
- “Content creator” (creatively processes information);
- “Organised researcher” (logically structures the material);
- “Digital archivist” (preserves information properly).

PRESENTATION OF INFORMATION:

- “Master of presentations” (created an interesting presentation);
- “Document designer” (formatted a document neatly);
- “Cooperation star” (actively shared and collaborated);
- “Meeting deadlines” (submitting work on time).

HELPING OTHERS:

- “Digital mentor” (helping classmates);
- “Troubleshooter” (helped solve technical issues);
- “Team player” (actively contributed to the work of the group);
- “Helping hand” (sharing useful tips).

How will students know which competences they have improved, how and to what level? (summative assessment)

Students see their growth and achievement in digital literacy through a systematic digital portfolio in Google Drive, where all their work, reflections and evaluations are stored.

There, they also see the teacher's evaluations according to the criteria, not only the grade. They are able to clearly see their progress by comparing their first work with their most recent work and by looking at the badges and grades collected in Class Dojo (Annex 11).

Each student has a self-assessment form to assess their abilities in different areas of competence, from safe use of technology to information retrieval, critical evaluation, processing and presentation. In the final presentation of the project, they not only show the results of their work, but also reflect on their learning journey – where they started, the challenges they overcame, what

they have learned and where they would like to improve further. The teacher's detailed feedback on each part of the competences, together with concrete examples and recommendations, helps students to have a clear understanding of their achievements and to plan their next steps for improvement. All this material and experience will allow students to clearly see and assess how and to what extent they have improved their digital competence.

What's next? (A new goal setting)

Once we have successfully developed initial digital competence, where students learn to search, evaluate, process and present information in a safe and purposeful way, we can move towards the more complex goal of digital content creation and problem solving.

A new competence-related goal could be: each learner will be able to create and edit digital content in a variety of forms, using digital tools for creative problem solving and collaboration.

Final remarks

When working on digital literacy in the classroom, it is important to create a clear and coherent framework. Awarding Class Dojo badges immediately after a task is particularly effective, giving students immediate feedback and allowing them to see their progress. It is a good idea to determine in advance how many badges you need to collect for different grades, so that you have a clear grading system for your students. Regularly remind students that badges can be earned not only for individual achievement, but also for helping their classmates – this encourages cooperation and creates a positive learning environment.

Involve parents in the process by introducing them to the Class Dojo system to help ensure continuity of learning at home. I recommend that *Google Forms* reflections are carried out in class, not at home, and that you make sure you take time to discuss the results with the class. This helps students to understand their progress better and to formulate appropriate goals for improvement.

Although students choose their own object of inquiry, the methodology is well suited to a wide range of subjects. For example, in Lithuanian language classes, students can work on a project about a literary genre of their choice, in history classes about a historical event or personality, and in science classes about environmental issues. It is important to show students how digital competence relates to a particular subject and how these skills will be useful in other subjects. In this way, the development of digital competence becomes a natural part of the learning process, rather than a separate goal, and is integrated in a meaningful way into the content of the subject, helping students to gain deeper understanding of both the subject material and the importance of digital literacy.

ANNEXES

Annex 1: Self-assessment grid “Me as a learner”

Competence domains: Thinking and learning to learn; Managing and taking care of oneself

Content area: various

Me as a learner

Imagine that somebody/an invisible person was observing you during the school day.
What would he or she have seen? Color the band according to your self-assessment.

Hardly there	**Obviously there**

1. I am following the instructions and I am aware of what I should do.

2. I ask the teacher or peers if I don’t understand something.

3. I am planning my work before I start doing something.

4. When I start learning, I first think about what I already know about the theme.

5. I don’t give up even if the task is difficult for me.

6. I think about the tasks from different angles.

7. I know some learning strategies that I can use in learning situations.

8. I trust myself and I think I can manage.

9. For me learning is fun.

10. I am willing to do extra work in order to learn more.

11. I think it is ok to make mistakes and learn from them.

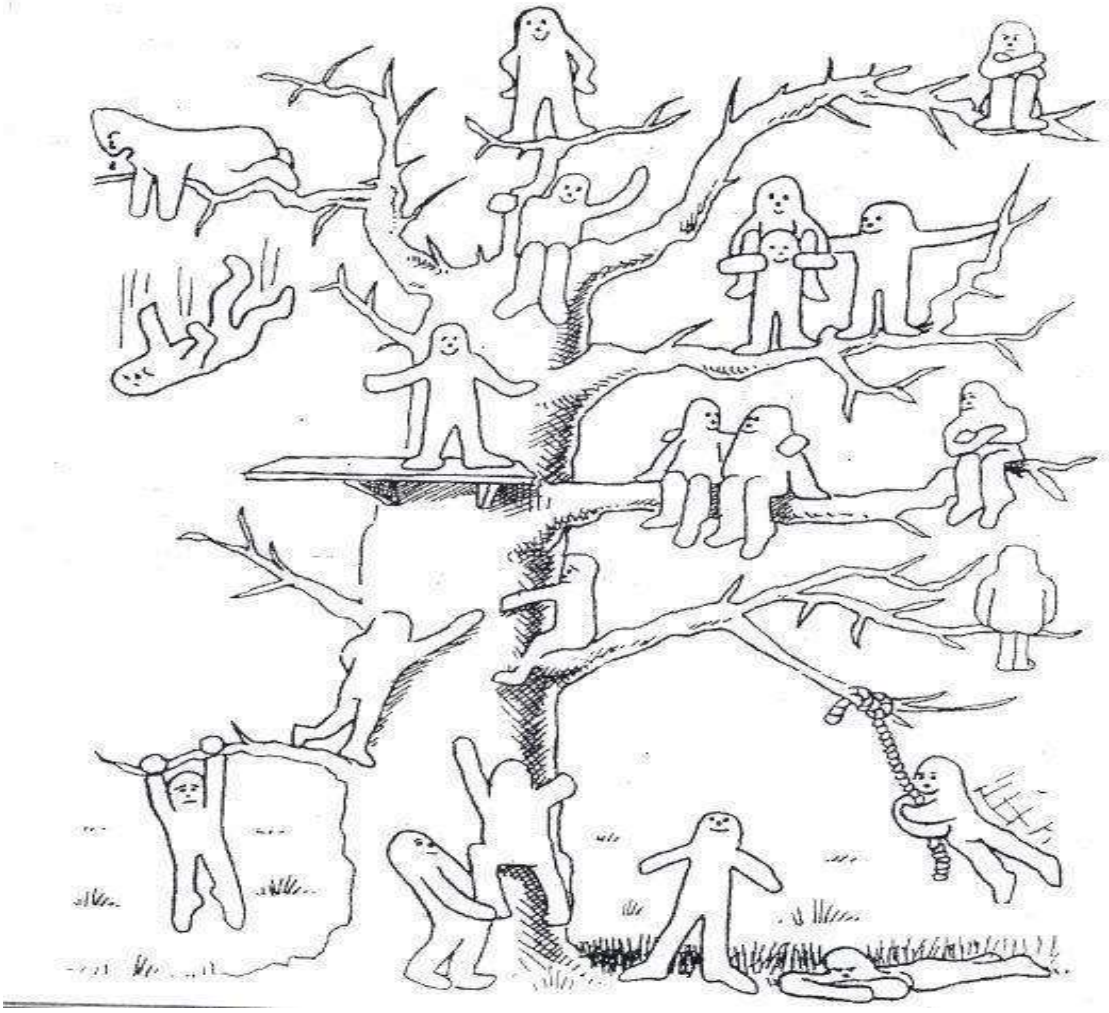
12. I try to learn from feedback I get form teachers and peers.

Nilivaara, 2016

Annex 2: Bob Tree

Competence domains: Thinking and learning to learn; Managing and taking care of oneself

Content area: in this example – Science, but it might be applicable to any



A. Choose the spot on the tree that best reflects how you feel <u>today</u>. Mark it. Write:

I chose this spot because...

.....
.....
.....

B. Evaluate laboratory work in a science classroom today

I found out/understood/learned (specify what)

.....
.....
.....

I already knew (specify what and why)

.....
.....
.....

Remained unclear

.....
.....
.....

C. Evaluate a field trip with a science teacher today

I found out/understood/learned (specify what)

.....
.....
.....

I already knew (specify what and why)

.....
.....
.....

Remained unclear

.....
.....
.....

Annex 3: Peer evaluation of a creative task

Competence domains: Thinking and learning to learn; Living with technology; Living in and contributing to the wider society and the world

Content area: Social studies

With your partner or group, create the most addictive "click news" possible, combining an attractive headline with an interesting picture, text or video.

- Start by searching for a news item with mis-, dis- or mal-information on social media services such as YouTube, Twitter, Facebook, Instagram, Snapchat, WhatsApp, etc.

Once the click news has been created, you will evaluate another group's news using the following criteria:

- How well the task was understood, i.e. how did the click news show mis-, dis-, or mal-information? How was the subject-based objective achieved?
- How were social media services used as an example? How did the aim of the subject matter and the transversal competence objective manifest itself in the click news?
- How well did the click news understand and highlight the importance of multiple literacies? How well did the pair or group apply the subject skill objective and the broad competence objective L4 in their output?

Please use the letters A to D in the peer feedback, described on the feedback form.

Once you have received feedback from your peers on your own click news, reflect further on

a) what you learned from the click news?

b) how can you use multiliteracy skills as part of your everyday life?

(Ouakrim-Soivio, 2022)[1]

[1] Ouakrim-Soivio, N. (2022). Laaja-alaisen osaamisen tavoitteet ja niiden arviointi osana oppiaineiden arviontia. In N. Hienonen, P. Nilivaara, M. Saarnio, & M-P. Vainikainen (Eds.), *Laaja-alainen osaaminen koulussa: Ajattelijana ja oppijana kehittyminen* (pp. 218–227). Gaudeamus.

Annex 4: Peers' feedback for self-improvement

Competence domains: Thinking and learning to learn; Interacting with and relating to others

Content area: Arts

Watch the video "Austin's butterfly*: Building excellence in student work"*[1]

[1] EL Education. (2012 , March 9). *Austin's butterfly: Building excellence in student work.* [Video]. Vimeo. https://vimeo.com/38247060

Annex 5: Peers' feedback for self-improvement

Competence domains: Thinking and learning to learn; Interacting with and relating to others

Content area: Writing/Languages

Watch the video "*Ladder of feedback"*[1]

[1] The Power of making thinking. (2019, November 5). *Ladder of feedback.* [Video]. YouTube. https://www.youtube.com/watch?v=c3SB3BFcTK4

Annex 6: Evaluation criteria for group projects

Competence domains: Thinking and learning to learn; Managing and taking care of oneself Interacting with and relating to others; Living with technology

Content area: various

EVALUATION CRITERIA FOR GROUP PROJECTS

(developed cooperatively by a teacher and 6th grade students, age 12–13)

SELECTION OF SOURCES

CRITERION	EVALUATION SCORE					
	5	**4**	**3**	**2**	**1**	**0**
Diversity *Encyclopaedias, dictionaries, journals, magazines, textbooks, web material, footage, people's stories, personal experiences, photographs, paintings, music, etc.*	At least 5 different types of sources.	At least 4 different types of sources.	At least 3 different types of sources.	At least 2 different types of sources.	1 source	Not specified.
Source	9–10	7–8	5–6	4–3	2–1	Not specified.
Reliability/traceability *The author and year of publication are listed, and the author's hypotheses and conclusions are stated. The information is searchable and verifiable.*	All the sources cited are reliable and traceable.	1–2 sources incompletely identified.	1–2 sources cannot be traced at all.	3 sources in total not traceable.	Not all sources can be traced.	Not specified.

PROJECT CONTENT

CRITERION	EVALUATION SCORE					
	5	**4**	**3**	**2**	**1**	**0**
Links to the project theme	All the material collected is relevant to the project theme.	Most of the material is related to the project theme.	Half of the material is related to the project theme.	More than half of the material is not relevant to the project theme.	Very little material related to the project theme.	Completely unrelated.
Links to the subject matter	The material is clearly related to more than 1	The material is clearly related to the subject.	Half of the material relates to the subject.	Less than half of the material is related to	Very little material is related to the subject.	Completely unrelated.

CRITERION	EVALUATION SCORE					
	5	4	3	2	1	0
	subject.			the subject.		
Interesting	All the material is interesting, engaging, thought-provoking, question-provoking and stimulating.	Most of the material is interesting, engaging, thought-provoking, question-provoking and stimulating.	Half of the material is interesting and engaging, but it raises few questions and does not encourage you to find out more.	Most of the material is neither interesting, nor engaging. It raises few questions and does not encourage you to find out more.	Very little interesting and engaging material. It does not stimulate thoughts, questions, or encourage you to learn more.	Not interesting at all.
Details	The material collected is very large and varied. The subject has been dealt with in a very broad and varied way.	There is a lot of material, just a bit lacking in variety. The subject is very broadly covered, but lacks a little diversity.	There is a lot of material, but it could be more and more varied. The topic lacks depth and diversity.	The material is sparse, lacking variety, depth and diversity.	There is very little material, no variety, and it is incomplete.	Completely incomplete.

PROJECT PRESENTATION

CRITERION	EVALUATION SCORE					
	5	4	3	2	1	0
Clear structure *(introduction, development of ideas, conclusions, recommendations*)	The whole structure was very clear.	1 part missing/1 part was unclear.	2 parts missing/2 parts unclear.	3 parts missing/3 parts unclear.	The whole structure was unclear.	No structure at all.
Precision, specificity, clarity	The whole presentation was precise, specific and clear.	There were only 1–2 unclear locations. I understood almost everything	There were 3–4 unclear locations. I understood about half.	There were many uncertainties. I only understood the major point.	It was difficult to understand. I barely understood anything	Completely impossible to understand. I didn't understand anything.
Details	Very detailed presentation – lots of different facts.	Presented in some detail – lots of facts.	Moderately comprehensive – lacks variety of facts.	Not fully presented – only some facts.	Very lacking in detail – one fact.	Incomplete – no facts.
Interesting	The presentation is very	The presentation is interesting, but	The presentation is quite inter-	The presentation is interesting,	The presentation is just a bit inter-	Not interesting at all.

CRITERION	EVALUATION SCORE					
	5	4	3	2	1	0
	interesting and inventive.	could have been more inventive.	esting, but lacks inventiveness.	but not at all inventive.	esting, not at all inventive	

TEAMWORK

CRITERION	EVALUATION SCORE					
	5	4	3	2	1	0
Idea generation	All and all the time.	Mostly all.	Half of the team actively participated.	Rarely all participants (usually one, every 3 lessons another).	The idea was generated by only one person.	No one generated ideas.
Planning	All and all the time.	Mostly all, but not all the time.	Half of the team actively participated.	Rarely all participants (usually one, every 3 lessons another).	Only one planned.	Nobody planned it.
Collection of material	Everyone collected materials, divided into tasks (who, what, from where).	Everyone collected, but there was no division of tasks (who, what, from where).	Half of the team actively collected.	Rarely all participants (usually one, others only made suggestions).	Material was collected by only one person.	No one collected the material.
Preparing the presentation	Everyone worked on the presentation, with a clear division of tasks.	Everyone worked on it, but there was no clear distribution of tasks.	Presentation by half the team.	Only one person made the presentation, the others only made suggestions.	The presentation was made by only one person.	No one made a presentation.

PERSONAL CONTRIBUTION

CRITERION	EVALUATION SCORE					
	5	4	3	2	1	0
Idea generation	I took the initiative, made 2 or more suggestions.	I supported my friends' initiatives and made 1 suggestion.	I didn't oppose my friends' initiatives, I made my own proposal.	I supported my friends' initiatives, but made no suggestions.	I did not support my friends' initiatives, and I did not make my own proposals.	I didn't do anything.
Planning	I made a plan and followed it. I led the team's planning work.	I helped draw up the plan. I took part in planning activities.	I didn't help make the plan, I just watched others work. I agreed to the plan.	I didn't help draw up the plan, I just watched others work. I didn't agree to the plan.	I didn't help to draw up the plan, I just watched and criticized the work of others.	I didn't do anything.
Collection of material	I collected the material, I collected more than we had agreed. I helped other team members.	I gathered the material from certain sources, as we had agreed.	I collected material from certain sources, as we agreed, just not as much as we agreed.	I collected material, but not the material and not as much as we had agreed.	I collected almost nothing.	I didn't do anything.
Preparing the presentation	I offered delivery options, I did most of the delivery (more than we had agreed). I helped other team members.	I was involved with everyone in the presentation, as we had agreed.	I was involved in the presentation, but not to the full extent (not exactly as we had agreed).	I was only slightly involved in the presentation. I made suggestions.	I was almost absent from the presentation. I made no suggestions, only comments, criticisms.	I didn't do anything.

Annex 7: Digital competence criteria

Criteria	1 level (Beginner)	2 level (Satisfactory)	Level 3 (Basic)	Level 4 (Advanced)	Level 5 (Expert)
Search for information	I use basic search engines. I find simple information. I need help formulating queries.	I search for information independently. I use several search sources. I know how to use keywords. I know how to use the search bar.	I use advanced search effectively. I find information in various sources. I formulate targeted queries.	I apply complex search strategies. I use academic sources. I filter results effectively.	I can teach others effective search techniques. I develop search strategies. I help others find information.
Assessment of information	I recognize obviously unreliable sources. I distinguish facts from advertising.	I evaluate the reliability of sources according to basic criteria. I compare several sources.	I critically evaluate information. I check the reliability of sources. I recognize bias.	I systematically analyse sources. I evaluate the competence of authors. I recognize manipulations.	I teach others to evaluate critically. I develop evaluation criteria. I advise on issues of information reliability.
Information processing	I can save information. I create simple documents. I need help organizing.	I systematize information according to criteria. I create documents with formatting elements.	I organize information effectively. I create structured documents. I use various formats.	I creatively transform information. I integrate different formats. I create original content.	I teach others information processing. I create processing systems. I improve work methods.
Safe sharing	I know the basic safety rules. I share information with help.	I apply security settings. I share content responsibly.	I ensure secure sharing. I manage privacy settings. I understand copyright.	I create secure sharing strategies. I manage access rights. I ensure data protection.	I consult on security issues. I teach safe sharing. I create security guidelines.
Use of technologies	I use basic functions. I work with help. I know basic tools.	I use tools independently. I solve simple problems.	I use technology effectively. I solve technical problems. I work with various tools.	I creatively apply technologies. I integrate different tools. I optimize work processes.	I help others use technology. I create training materials. I solve complex problems.
Collaboration and cooperation	I participate in group work. I follow instructions. I accept help.	I actively participate in the group. I share my ideas. I ask for help when I need it.	I use technology effectively. I solve technical problems. I work with various tools.	I coordinate the group's work. I initiate cooperation. I share my experience.	I lead groups. I mentor others. I develop collaboration strategies.

Annex 8: Competence tree

LEAVES
What do I want to learn?

TRUNK
Where will I use my knowledge?

ROOTS
What do I already know and can do?

LEAVES
Copy this sheet and write your thought

TRUNK
Copy this sheet and write your thought

ROOTS
Copy this sheet and write your thought

Annex 9: Self-assessment table for digital project management in the Google environment (provided in Google Forms)

Students name:
Class:

Abilities	Not able yet	Partially able	Very often able	Always able
Use of Google calendar				
I can create a new event	☐	☐	☐	☐
I can determine the date and time of an event	☐	☐	☐	☐
I can add reminders about upcoming deadlines	☐	☐	☐	☐
I can share calendar events with my classmates and teacher	☐	☐	☐	☐
Task planning				
I can create a task list in Google Docs or Google Keep	☐	☐	☐	☐
I am able to divide a project into smaller tasks	☐	☐	☐	☐
I am able to prioritize tasks	☐	☐	☐	☐
I can set deadlines for each task	☐	☐	☐	☐
Progress monitoring				
I know how to use Google Sheets to track progress	☐	☐	☐	☐
I am able to regularly update information about the work performed	☐	☐	☐	☐
I can create simple diagrams that visualize progress	☐	☐	☐	☐
I am able to use colour coding to indicate the status of tasks	☐	☐	☐	☐
Google class				
I know how to log in and find assignments	☐	☐	☐	☐
I am able to submit assignments on time	☐	☐	☐	☐
I can add comments to submitted work	☐	☐	☐	☐

Abilities	Not able yet	Partially able	Very often able	Always able
I am able to create a high-quality final product using Google tools	□	□	□	□
I can effectively present a project using Google Slides	□	□	□	□
Collaboration				
I am able to share documents with my classmates	□	□	□	□
I can edit shared documents in real time	□	□	□	□
I use the comment function effectively for collaboration	□	□	□	□
I am able to use Google Meet for group meetings	□	□	□	□
I adhere to the principles of digital ethics when working in a group	□	□	□	□

Overall self-assessment

My strengths in Google environment:

1. _____
2. _____
3. _____

I would like to improve:

1. _____
2. _____
3. _____

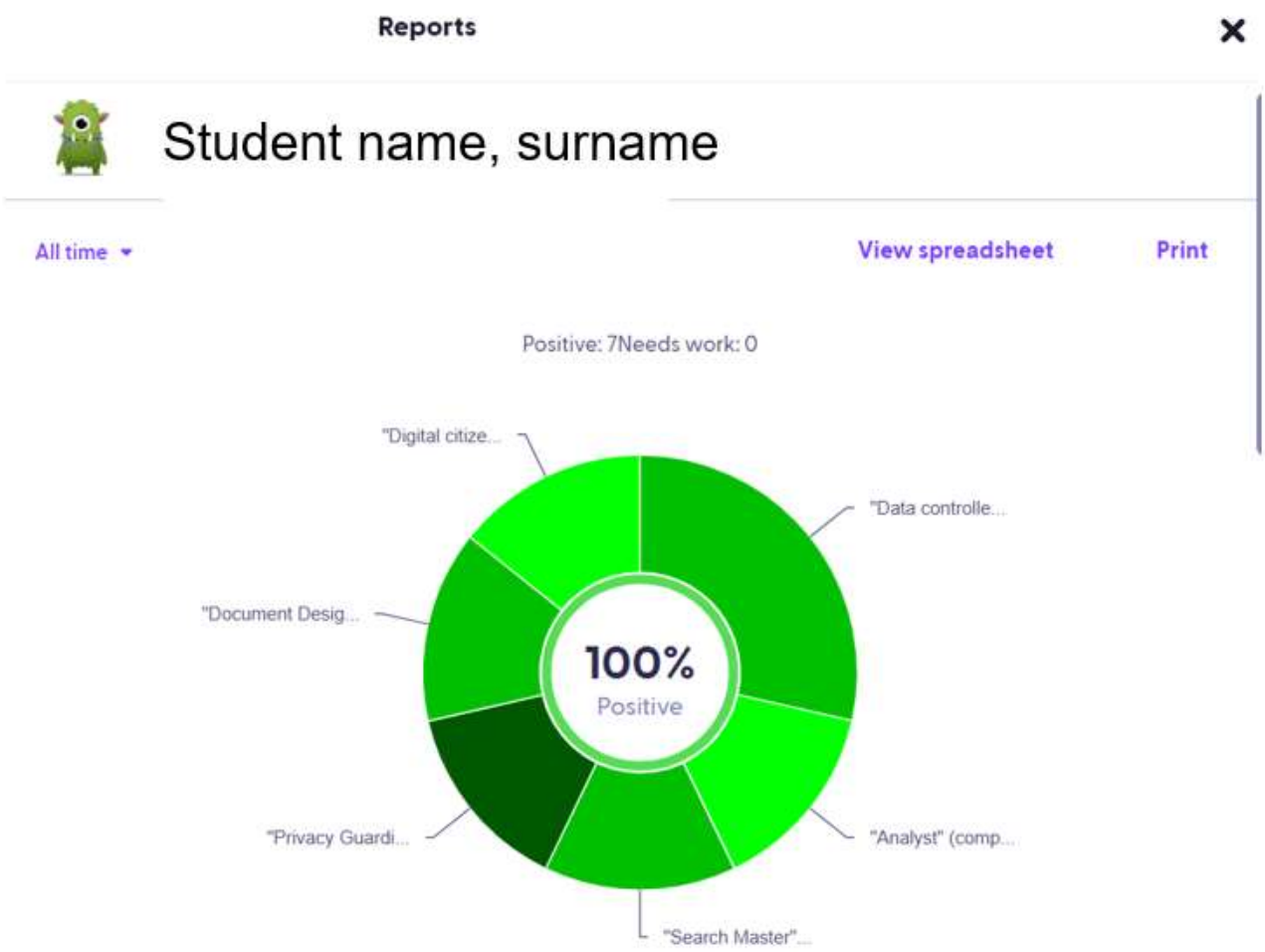
Teacher's comments:

_____

_____

_____

Annex 10: Self-assessment of digital competences by specific areas



Annex 11: Summative assessment