

iPeer Project

Reinventing the STEM VET via Peer-assisted Learning and Innovative Pedagogy



Competence Evaluation Model



Co-funded by the
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of the European Union



Title: Peer-Assisted Learning – Competence Evaluation Model

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1. Summary

The aim of the iPEER project is to expand the skills, knowledge, and values of STEM VET learners through the establishment of well-structured and effective peer learning circles using a variety of methods, including peer-to-peer learning, peer tutoring, and innovative pedagogy. The project also seeks to enhance the active and intended usage of new pedagogical methods and digital tools by the students, as well as to reduce the number of early leaving VET learners.

The goal of the iPEER Competence Evaluation Model (CEM) is to aid in assessing the competencies of young teachers, tutors, and VET providers in the areas of peer-assisted learning, innovative pedagogy, and digital tools usage. The model is presented in two versions: The first is based on Bloom's Taxonomy. The second is based on the EQF framework and is divided into Level 3 and Level 4 competencies. It includes a requirement table for each competence, as well as an evaluation system for obtaining the certificate.

2. The iPeer Project

This report is part of the iPeer project, “Reinventing the STEM VET via Peer-assisted Learning and Innovative pedagogy” which was co-financed by Erasmus+ KA2 – Cooperation for innovation and the exchange of good practices, project no. 2020-1-BG01-KA226-VET-095211. As the report should be considered in light of the project’s focus and goals, we next present the project briefly.

2.1 Aim

While entering a post crisis world, and facing the needs of multipurpose professionals, the iPeer project is aimed at expanding the baseline of skills, knowledge and values for STEM VET learners by establishing well-structured and effective peer learning circles, using a variety of methods. Moreover, the project focuses on expanding the learning opportunities by introducing cutting edge methods, e.g., peer-to-peer learning, peer tutoring and innovative pedagogy, and thus boosting the quality of the learning experience in VET professional schools and centres.

2.2 Objectives

- Establishing a new and unique methods for digitized peer-assisted learning in distant classes and small COVID-19 secured participatory classes in- and outside- school premises.
- Implementing a new model for learning stimulation, e.g., peer-tutoring or cooperative learning to cover the knowledge gap generated by the hyper accelerated post crisis technological society;
- Enhancing the active and intended usage of new pedagogical methods by the students, e.g., peer-to-peer learning, tutoring, flipped classroom, project-based learning, etc. to prolong the daily learning curve of learners; ensure full participation; get instant feedback (incl. on sensitive or uncomfortable subjects) or improving the learning flow;
- Evolving the role of the Alumni clubs and Bright learners in-school societies by assigning a new teaching role to the students, hence improving the knowledge base of the younger generation by covering the gaps between the expected skills, as defined by the descriptor;
- Reducing the number of early leaving VET learners via boosting an early warning system in the partner countries as defined by EQAVET, and implementing indicator #4, i.e., the completion rate in STEM VET targeted programs: the number of persons having successfully completed/abandoned VET programs, according to the type of programs and the individual criteria.

2.3 Project partnership

The project is implemented by 8 partners:

- Foundation 4.0 (Bulgaria)
- Narxoz University (Kazakhstan)

- VšĮ Inovacijų biuras (Innovation Office) (Lithuania)
- Avenatura Marao clube (Spain)
- ESMOVIA (Spain)
- BICERO Ltd. (Slovenia)
- ACCEU GmbH (Germany)
- Professional School of Mechanical and Electrical Engineering from the city Pirdop (Bulgaria)

2.3 Intellectual outputs

The project will produce the following outputs:

- **IO1:** Elaborating a new EQAVET related pedagogical methodology for cooperative learning and cross-age peer tutoring.
- **IO2:** Elaborating a pilot peer-assisted learning curriculum for covering existing knowledge gaps in pilot professions and VET subjects, e.g., automation (systems automation, process automation, and robotics); public healthcare VET specializations, and computer science, e.g., applied computer science and script development. Introduction of jigsaw methods, scaffolding, learning circles and gamification.
- **IO3:** Elaborating of extensive inventory with peer assisted and state of the art digital pedagogical tools, as well as tools for tutoring and empathic learning.
- **IO4:** Elaborating a competence model and automated evaluation system.

The project has been implemented in Bulgaria (The40F and PGME, Pirdop), Slovenia (BICERO), Germany (ACCEU), Portugal (AMC), Lithuania (Inovaciju biuras), Spain (ESMOVIA) and Kazakhstan (Narxoz University).

3. Competency assessment

Before presenting the results specific to the iPeer project, this section first presents information on competency assessment in general, serving as a basis for the later content presented.

3.1 Introduction

A competency assessment compares someone's abilities to the requirements of their profession. A competency model defines these needs. To be useful, competency models should only include tasks and skills that are crucial to success in the role, rather than every activity people conduct on the job (as determined by a typical work task analysis).

The assessment is carried out on the stated tasks and skills, and a rating is assigned depending on how they complete the activity, which indicates their proficiency level. A competency assessment, in other words, examines how (behaviors) someone executes what (job or skill). The specified proficiency level of the individual is then compared to the goal level, defining proficiency or skill gaps for each task and skill.

3.2 Goals of Competency Assessment Models

The goals of competency assessment models are to measure and evaluate individuals' professional competencies at various phases of professional growth. The evaluation methods are designed to evaluate knowledge, decision-making, performance, personal characteristics, and integrated practice-based abilities and tasks. In assessing competencies, the models also aim to establish validity, feasibility, and practicability. Furthermore, the assessment models seek to find numerous assessment methods that can be coupled to provide a more comprehensive assessment of competencies. These models are created to fulfil the field's needs and financial resources while also aligning with the experiences of other professionals.

3.3 Elements of Competency Assessment Models

- **Validity:** The assessment models should be able to measure the intended competencies reliably and effectively.
- **Feasibility and Practical Considerations:** The models should be practical and possible to implement, considering aspects like cost, administration technique, and time restrictions.
- **Fidelity to Practice:** The assessment models should be congruent with the tasks and skills done in real-world professional practice.
- **Multiple Assessment Methods:** Because no single assessment method can evaluate all skills, it is critical to employ numerous assessment methods that test various areas of competence.
- **Integration of Knowledge and Decision Making:** Competency assessment models should include assessments of both knowledge and decision-making abilities.

4. iPeer input for CEM

The iPeer Competence Evaluation Model will be based on specific input from other work conducted within the project. This core input will be presented next.

4.1 The iPeer learning units/curriculum

A core element of the iPeer project is the development of learning units and a curriculum for those who aim to advance their knowledge, skills and competencies in peer-assisted learning. The 8 learning units developed in the project are presented below.

1. Peer Assisted Learning (PAL) basic

This unit provides a foundation for understanding the fundamental principles and concepts of Peer Assisted Learning (PAL). It covers the definition of PAL as well as its benefits and impact on teaching and learning.

2. Effective Communication and Collaboration in PAL

This unit focuses on the importance of effective communication and collaboration within the PAL framework. It emphasizes the development of active listening skills, providing constructive feedback, and fostering a supportive learning environment.

3. PAL Strategies and Techniques

This unit describes strategies and techniques that can be employed in PAL settings. It highlights various approaches such as peer review, discussion groups and Gestalt pedagogy. It discusses the benefits of these strategies and provides practical guidance on implementing them effectively to enhance learning outcomes.

4. Implementing PAL in the Classroom

This unit addresses the practical aspects of implementing PAL within a traditional classroom setting. It covers strategies for integrating PAL activities into the curriculum.

5. Implementing PAL in an online environment and emerging trends

This unit explores the adaptation of PAL to an online learning environment, considering the increasing prevalence of remote and virtual education. It covers the introduction of various tools and platforms for the successful integration of PAL.

6. Cultural Competence and Diversity in PAL

This unit highlights the importance of cultural competence and diversity awareness within PAL initiatives. It explores how cultural differences and diverse perspectives can enrich the learning process.

7. Ethical Considerations in PAL

This unit focuses on the ethical considerations that arise when implementing PAL. It discusses issues such as professional ethics and confidentiality.

8. Assessing and Evaluating PAL

This unit covers methods and approaches for assessing and evaluating the effectiveness of PAL interventions by presenting different assessment strategies.

4.2 iPeer Learning Outcomes

The following lists present the learning outcomes of each of the priority presented learning units. These learning outcomes are a critical input for the competence evaluation model development.

1. Peer Assisted Learning (PAL) basics

- Students will be familiar with definition and principles of PAL.
- Students will be familiar with benefits and potential impact on teaching and learning.
- Students will be able to define roles and responsibilities of participants in PAL.

2. Effective Communication and Collaboration in PAL

- Students will be able to perform active listening and effective questioning techniques.
- Students will be able to provide constructive feedback and support.
- Students will be able to build trust and rapport with peers.
- Students will be able to initiate collaborative problem-solving and decision-making.

3. PAL Strategies and Techniques

- Students will be able to apply: Action Learning Groups
- Students will be able to apply: Debates
- Students will be able to apply: Discussion Groups
- Students will be able to apply: Peer teaching
- Students will be able to apply: Peer instruction
- Students will be able to apply: Peer review
- Students will be able to apply: Peer Coaching
- Students will be able to apply: Teams
- Students will be able to apply: Think-Pair-Share
- Students will be able to apply: Jigsaw
- Students will be able to apply: RoundRobin
- Students will be able to apply: Fishbowl
- Students will be able to apply: PBL - Peer Assessment
- Students will be able to apply: Social and emotional learning
- Students will be able to apply: Gestalt pedagogy

4. Implementing PAL in the Classroom

- Students will be able to identify suitable PAL opportunities and contexts (classes, lessons) where and when to use it.
- Students will be able to plan and organize PAL activities.
- Students will be able to create/modify/update a curriculum that includes PAL.
- Students will be able to address logistical considerations and challenges.

5. Implementing PAL in online environment and emerging trends

- Students will be able to apply: Mastodon - social media peer groups
- Students will be able to apply: Google Meet - breakout rooms
- Students will be able to apply: Chat apps (Snapchat)
- Students will be able to apply: Padlet
- Students will be able to apply: Jigsaw
- Students will be able to apply: Storyline
- Students will be able to apply: ComPAIR
- Students will be able to apply: Quizlet
- Students will be able to apply: Tynker
- Students will be able to apply: TimelineJS
- Students will be able to apply: Kumu
- Students will be able to apply: Elinkio
- Students will be able to apply: Teachfloor
- Students will be able to apply: Brainly
- Students will be able to apply: Google classroom
- Students will be able to apply: Kahoot
- Students will be able to apply: Jamboard

6. Cultural Competence and Diversity in PAL

- Students will be able to recognize and value diverse perspectives and experiences.
- Students will be able to promote inclusive and equitable PAL environments.
- Students will be able to address cultural biases and stereotypes.
- Students will be able to ensure cultural sensitivity and respect in PAL interactions.

7. Ethical Considerations in PAL

- Students will be able to maintain confidentiality and privacy.
- Students will be able to respect professional boundaries.
- Students will be able to address power dynamics and professional ethics in PAL relationships.

8. Assessing and Evaluating PAL

- Students will be able to select appropriate assessment methods for PAL.
- Students will be able to evaluate the impact of PAL on teacher practice and student learning.
- Students will be able to monitor and evaluate the effectiveness of PAL.
- Students will be able to use assessment results to adapt future PAL activities.

5. Existing frameworks for iPeer CEM

The competence evaluation model will be based on two main frameworks, namely Bloom's Taxonomy and the EQF.

5.1 Blooms taxonomy

Bloom's Taxonomy is a classification system that organises several levels of thought and should be considered when developing course objectives. Course objectives are concise statements that define what students will know at the end of the course. While many instructors have learning objectives in mind while designing a course, not all of them write them down. When learning objectives are defined explicitly, their full potential is fulfilled. Writing specific learning objectives is essential when developing and presenting a course.¹

Original Bloom's taxonomy from 1956

Bloom's taxonomy was developed in the 1940s by Benjamin Bloom and his collaborators Max Englehart, Edward Furst, Walter Hill, and David Krathwohl in the belief that this classification would be useful in better assessing college student performance.

Bloom and his colleagues improved and modified the framework at the American Psychological Association convention every year for the next 16 years. The final edition, Taxonomy of Educational Objectives, was published in 1956, depicting the path of educational accomplishment through six orders of learning.

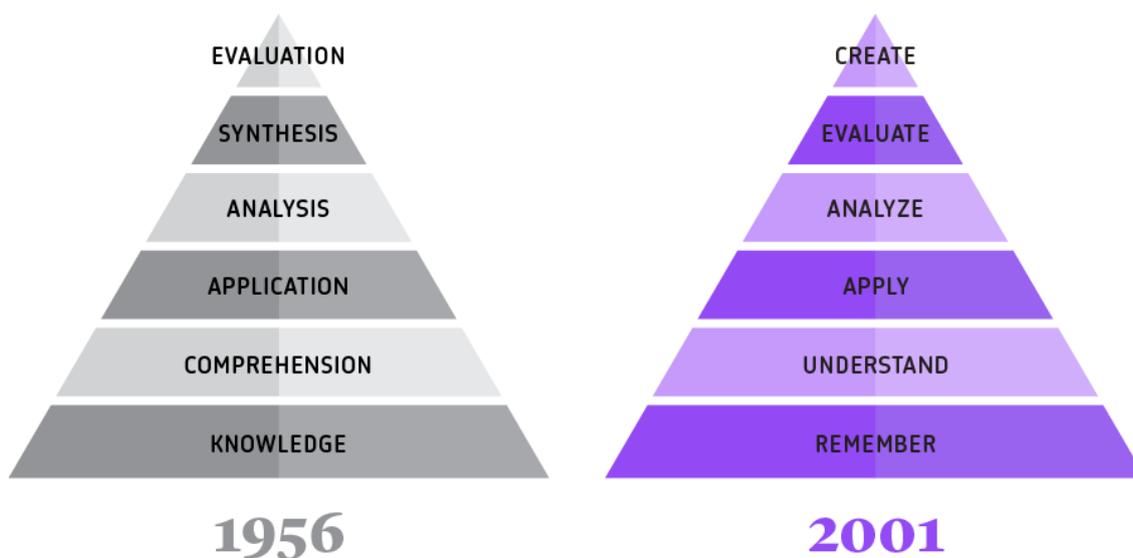
Revised Bloom's taxonomy from 2001

In 2001, a group of cognitive psychologists, curriculum theorists, instructional researchers, and testing assessment specialists led by Lorin Anderson, a Krathwohl colleague and former Bloom's pupil, set out to reorganize and improve Bloom's taxonomy. In comparison to the original static, one-dimensional levels of educational objectives, this entailed putting together a series of more dynamic notions for the classification system.

The use of verbs to substitute nouns is central to the revision of Bloom's taxonomy, making it clearer to learners what is expected of them.²

¹ Taken from: <https://bloomstaxonomy.net/>

² Taken from: <https://tophat.com/blog/blooms-taxonomy/>



Tophatmonocle Corp, Original Bloom's Taxonomy vs the Revised Taxonomy. 2023, <https://tophat.com/blog/blooms-taxonomy/>

Level 1: Remembering

This level helps build a solid foundation and acts as a steppingstone towards more complex learning. At this level, students are asked to memorize and recall facts.

Level 2: Understanding

This level asks students to explain course concepts in their own words.

Level 3: Applying

This level encourages students to extend their learning outside the classroom by finding similarities and differences in the real world.

Level 4: Analysing

This level allows students to use their critical thinking skills to understand how or why different concepts work together.

Level 5: Evaluating

This level asks students to make value judgments about the material they've learned.

Level 6: Creating

This level encourages students to demonstrate their knowledge by building something tangible or conceptual.³

³ Taken from: <https://tophat.com/blog/blooms-taxonomy/>

5.2 European Qualifications Framework (EQF)

The European Qualifications Framework (EQF) is a common European reference framework that links different countries' national qualifications systems together. It provides a common language to describe qualifications in terms of learning outcomes and competencies, regardless of the country in which the qualification was obtained. The EQF aims to facilitate lifelong learning and mobility of individuals between different countries, as well as to promote transparency, recognition, and comparability of qualifications across Europe.

The EQF consists of eight reference levels, from Level 1 for basic skills and competencies to Level 8 for advanced research skills and competencies. Each level is defined by a set of descriptors that describe what an individual knows, understands, and is able to do, based on learning outcomes. The learning outcomes of the EQF are defined in terms of (1) knowledge, (2) skills and (3) responsibility and autonomy.

- **Knowledge:** it is described as theoretical and/or factual.
- **Skills:** they are described as cognitive (involving the use of logical, intuitive, and creative thinking) and practical (involving manual dexterity and the use of methods, materials, tools and instruments).
- **Responsibility and autonomy:** they are described as the ability of the learner to apply knowledge and skills autonomously and with responsibility.

The following is a detailed description of levels 3 to 7.

Level 3:

- **Knowledge:** Knowledge of facts principles, processes and general concepts, in a field of work or study.
- **Skills:** A range of cognitive and practical skills required to accomplish tasks and solve problems by selecting and applying basic methods, tools, materials and information.
- **Responsibility and autonomy:** Take responsibility for completion of tasks in work or study; adapt own behaviour to circumstances in solving problems.

Level 4:

- **Knowledge:** Factual and theoretical knowledge in broad contexts within a field of work or study.
- **Skills:** A range of cognitive and practical skills required to generate solutions to specific problems in a field of work or study.
- **Responsibility and autonomy:** Exercise self-management within the guidelines of work or study contexts that are usually predictable but are subject to change; supervise the routine work of others, taking some responsibility for the evaluation and improvement of work or study activities.

Level 5:

- **Knowledge:** Comprehensive, specialised, factual and theoretical knowledge within a field of work or study and an awareness of the boundaries of that knowledge.
- **Skills:** A comprehensive range of cognitive and practical skills required to develop creative solutions to abstract problems.

- Responsibility and autonomy: Exercise management and supervision in contexts of work or study activities where there is unpredictable change; review and develop performance of self and others.

Level 6:

- Knowledge: Advanced knowledge of a field of work or study, involving a critical understanding of theories and principles.
- Skills: Advanced skills, demonstrating mastery and innovation, required to solve complex and unpredictable problems in a specialised field of work or study.
- Responsibility and autonomy: Manage complex technical or professional activities or projects, taking responsibility for decision-making in unpredictable work or study contexts; take responsibility for managing professional development of individuals and groups.

Level 7:

- Knowledge: Highly specialised knowledge, some of which is at the forefront of knowledge in a field of work or study, as the basis for original thinking and/or research. Critical awareness of knowledge issues in a field and at the interface between different fields.
- Skills: Specialised problem-solving skills required in research and /or innovation in order to develop new knowledge and procedures and to integrate knowledge from different fields.
- Responsibility and autonomy: Manage and transform work or study contexts that are complex, unpredictable and require new strategic approaches; take responsibility for contributing to professional knowledge and practice and/or for reviewing the strategic performance of teams.

6. Occupations and Profiles

When designing a competence evaluation model, it is important to consider the profiles and responsibilities of those for whom the model is created. Below we outline different profiles and their responsibilities.

VET Teacher/Trainer

- planning and delivering vocational education and training courses in STEM fields
- be knowledgeable in the subject area and possess strong pedagogical skills to facilitate effective peer-to-peer and peer-assisted learning activities
- be able to evaluate and monitor the progress of learners, providing feedback and support as necessary

Learning Designer/Instructional Designer

- designing and developing learning materials and activities for various learning contexts
- be able to create effective instructional strategies using peer-assisted and collaborative learning methods
- having knowledge of learning technologies and digital tools to support and enhance learning experiences

Education Consultant

- provide advice and guidance to educational institutions and organizations on improving the quality of education and training programs
- knowledge of current trends and best practices in education, particularly in the field of STEM education
- strong analytical and problem-solving skills to identify areas for improvement and recommend appropriate solutions

e-Learning Specialist

- developing and managing online learning programs and resources
- expertise in learning management systems and digital tools for peer-assisted and collaborative learning
- be able to design and develop multimedia learning materials that engage learners and support their learning needs

Curriculum Developer

- designing and developing educational curricula and course materials
- knowledge of learning theories and pedagogical methods, particularly peer-assisted and collaborative learning.
- strong research and analytical skills to evaluate the effectiveness of educational programs and make data-driven recommendations for improvement

7. The iPeer CEM

Integrating the inputs presented before, two different competence evaluation model have been developed, one based on Bloom's Taxonomy, and one based on EQF.

7.1 iPeer CEM (using Bloom's Taxonomy)

In the iPeer Competence Evaluation Model, the different learning objectives have been assigned to the levels of Bloom's taxonomy to indicate the cognitive complexity and skill development associated with each objective.

An overview of how the learning objectives correspond to the Bloom's taxonomy levels is presented below.

Understand (Level 2 of Bloom's Taxonomy):

This level focuses on developing a foundational understanding of the concepts and principles of PAL. Learners at this level comprehend the definition and basic principles of PAL and recognize the benefits and potential impact it can have on teaching and learning. They are familiar with the fundamental concepts and terminology related to PAL.

Apply (Level 3 of Bloom's Taxonomy):

Learners at this level go beyond understanding and begin to apply their knowledge and skills in practical situations. They demonstrate their ability to utilize PAL strategies, techniques, and tools effectively. They can define the roles and responsibilities of participants in PAL, actively engage in communication and collaboration, provide constructive feedback, and employ various PAL methods. They also address logistical considerations, promote inclusivity, and respect cultural diversity within PAL interactions.

Analyse (Level 4 of Bloom's Taxonomy):

At this level, learners critically examine the impact of PAL on teacher practice and student learning. They evaluate the outcomes and effects of PAL interventions, identifying strengths and areas for improvement. Learners at this level analyse data, gather evidence, and draw conclusions regarding the effectiveness of PAL in achieving educational goals.

Evaluate (Level 5 of Bloom's Taxonomy):

Learners at this level engage in ongoing monitoring and evaluation of PAL implementation. They assess the effectiveness and success of PAL activities, considering factors such as engagement, collaboration, learning outcomes, and overall satisfaction. They use evaluative criteria to make informed judgments and decisions about the value and impact of PAL in different contexts.

Create (Level 6 of Bloom's Taxonomy):

This level involves the highest level of cognitive complexity and creativity. Learners at this level demonstrate the ability to design, plan, and organize PAL activities. They create and modify curricula that incorporate PAL effectively. They use assessment results and feedback to adapt and innovate PAL practices, contributing to the continuous improvement of PAL approaches.

CEM Model

Level	Level 2	Level 3		Level 4	Level 5	Level 6
Topics	Peer Assisted Learning (PAL) basics	Effective Communication and Collaboration in PAL PAL Strategies and Techniques Implementing PAL in the Classroom	Implementing PAL in online environment and emerging trends Cultural Competence and Diversity in PAL	Ethical Considerations in PAL Assessing and Evaluating PAL	Assessing and Evaluating PAL	Implementing PAL in the Classroom Assessing and Evaluating PAL
Competencies	Understand	Apply		Analyse	Evaluate	Create

7.2 iPeer CEM (using EQF)

The second competence evaluation model was built based on the EQF framework by mapping the project's specific objectives and required competencies onto the relevant EQF levels and descriptors. This allowed for a clear and structured evaluation system to be developed, with specific requirements and evaluation criteria for each competency at Level 3 and Level 4. By aligning the CEM with the EQF, the iPEER project is able to ensure that a certification process is transparent, comparable, and recognized across Europe.

CEM Level 3

This level is designed for young teachers, tutors, and VET providers who are new to their professions or have some experience but need to further develop their skills in order to successfully implement the iPEER project. Level 3 of the CEM focuses on building the foundational competencies needed to participate in the project effectively. These competencies include skills such as understanding the significance of peer-assisted learning, organizing a PAL session, and using digital tools to enhance the learning experience. Teachers who successfully demonstrate the competencies at this level will be better equipped to engage in peer-assisted learning, assess their student's progress, and plan and deliver effective learning activities.

The following table outlines the competencies required for young teachers, tutors, and VET providers.

Competency Area	Competencies
Knowledge	Understanding of the concepts and theories of peer-assisted learning (PAL), cooperative learning, active learning, and other pedagogical approaches. Understanding of the significance of PAL methodology and the zone of proximal development in the post-COVID era. Familiarity with the implementation and effects of different types of PAL.
Skills	Ability to plan and facilitate peer-assisted learning sessions, including creating a common ground, organizing a PAL, and building a spiral curriculum. Ability to use PAL digital tools and methodologies, such as learning management systems, social media, video conferencing, communication tools, document collaboration and project management tools, media authoring tools, and mobile apps. Ability to interrelate a PAL class to a Bloom's assessment scheme.
Attitudes	Willingness to engage in continuous professional development and to adopt new teaching methods and tools. Willingness to work collaboratively with other teachers, tutors, and VET providers.

Table 2.2 Competencies required for young teachers, tutors, and VET providers at Level 3

CEM Level 4

Level 4 of the CEM is intended for experienced teachers, tutors, and VET providers who have a deep understanding of peer-assisted learning and want to further enhance their skills in order to implement the iPEER content at a higher level. At this level, competencies include the ability to

design and deliver complex learning activities, to interrelate PAL with Bloom's assessment scheme, and to monitor and assess learning progress effectively. Teachers who successfully demonstrate the competencies at this level will be able to design and deliver PAL activities that challenge and engage their students while providing meaningful feedback and guidance to help them achieve their learning goals.

Competency Area	Competencies
Knowledge	In-depth understanding of the concepts and theories of PAL, cooperative learning, active learning, and other pedagogical approaches. Advanced understanding of the implementation and effects of different types of PAL. Familiarity with the interrelations between PAL and other pedagogical approaches, such as common didactics, and PAL in an online or hybrid environment.
Skills	Ability to design and implement innovative PAL methods to cover knowledge gaps generated by the hyper-accelerated post-crisis technological society, such as peer-tutoring or cooperative learning. Ability to teach higher and complex knowledge using PAL and the study group model. Ability to demonstrate good practices of PAL tools and techniques, such as extracurricular STEM for kids, and art & science for youth.
Attitudes	Strong commitment to improving the quality of the learning experience for STEM VET learners. Strong leadership skills, including the ability to motivate and inspire other teachers, tutors, and VET providers. Willingness to take responsibility for the success of the PAL program and to be accountable for the learning outcomes of the students.

Table 2.3 Competencies required for young teachers, tutors, and VET providers participating in the IPEER project at Level 4

Requirements for the Key Competencies in Each Level

Competence	EQF Level	Requirements
Knowledge of pedagogical theories and methodologies related to peer-assisted learning	Level 3	Understanding of learning theories such as the zone of proximal development, cooperative learning, active learning, etc. Knowledge of peer-assisted learning (PAL) methodology and its significance in the post-COVID era. Understanding of different PAL types and how to organize and facilitate PAL sessions
Digital literacy skills for PAL	Level 3	Proficiency in using digital tools for PAL, such as learning management systems, social media, video conferencing, communication tools, document collaboration and project management tools, media authoring tools, mobile apps. Knowledge of how to

		use digital tools to enhance PAL, including examples and case studies
Teaching higher and complex knowledge with combined peer-assisted pedagogical methods	Level 4	Ability to teach complex knowledge with combined PAL methods, such as harnessing the power of the storyline, vertical “phenomenon to solution tools” and building a spiral curriculum. Knowledge of the role of the study group and the teacher’s hour as an anchor for easy pivoting of the PAL curriculum. Ability to build a lesson or activity deck based on pre-chosen topics
Interpersonal and communication skills for PAL	Level 4	Ability to establish a common ground and create a positive and supportive learning environment for PAL sessions. Effective communication skills, including active listening, feedback, and conflict resolution. Ability to work collaboratively with colleagues and learners
Assessment and monitoring skills for PAL	Level 4	Knowledge of Bloom's Taxonomy and its application to PAL. Ability to interrelate PAL sessions to a Bloom's assessment scheme. Understanding of monitoring and assessment strategies for PAL, including formative and summative assessment methods. Ability to provide constructive feedback to learners

8. Evaluation

8.1 EQF-related evaluation guidance

To reach **CEM Level 3**, a candidate must meet the following requirements:

1. Completion of iPEER Peer-assisted learning curriculum.
2. Proficiency in using digital tools for teaching and learning, as demonstrated by the development of at least one lesson or activity using digital tools.
3. Proficiency in peer-assisted learning methodology, as demonstrated by the successful completion of at least one peer-assisted learning session.
4. Proficiency in designing and implementing STEM VET projects, as demonstrated by the successful completion of at least one project/class design.

To reach **CEM Level 4**, a candidate must meet the following requirements:

1. Completion of iPEER Peer-assisted learning curriculum and successfully pass all the required tests.
2. Proficiency in designing and evaluating STEM VET curricula, as demonstrated by the successful creation of at least one curriculum with iPEER PAL methods.
3. Proficiency in providing STEM education consultancy and advice, as demonstrated by the successful completion of at least one feedback report.
4. Proficiency in teaching implemented with iPEER learning methodologies in a PAL scenario, as demonstrated by the successful presenting or teaching at least one class.
5. Proficiency in collaboration and communication, as demonstrated by the successful completion of at least one collaborative project or team task.

8.2 Quantitative self-evaluation tool for learners (automated)

In order to support learners in evaluating their current abilities, a self-evaluation survey based on the iPeer learning outcomes has been created. Learners can fill in their current abilities and identify shortcomings that could be addressed by the iPeer course.

The Excel-based tool can be downloaded here:

<https://ipeer-self-evaluation.aceeu.org>

8.3 Quantitative evaluation tool for teachers (automated)

In addition to the self-evaluation tool, a tool for teachers (those educating the learners using the iPeer course) has been developed. The tool follows the same logic as the self-evaluation tool

The Excel-based tool can be downloaded here:

<https://ipeer-evaluation.aceeu.org>

9. Further operational tools

9.1 Lesson planner

We recommend to use the following lesson planner for creating and executing iPeer-based courses.

Title of the lesson:	[Insert title here]
iPeer learning unit relationship	[Insert one or more of the learning units]
EQF level(s)	[Insert EQF level(s)]
Learning outcomes	[List all learning outcomes]
Lesson duration	[Duration in minutes]
Core contents	[List of core contents]
Core activities	[List of core activities]
Materials required	[List of materials required for the lesson]
Evaluation	[Detailed description on the evaluation]

9.2 Grade book tool

Courses developed based on the iPeer material can take many forms and shapes and use a variety of forms to evaluate student performance. Generally speaking, it is recommended to evaluate all learning outcomes that are defined in the course description. The weighting might depend on the focus of the course. The following table presents a simplified view of a grade book tool where teachers can provide a mark (evaluation), and a weighting for each learning outcome, which together are summed up to a total per learning outcome and a total for the student. Depending on the grading system in the teacher's country, a final grade can be assigned (e.g. a 2.3 in the German system).

Learning unit / learning outcome	Mark	Weighting	Total
1. Peer Assisted Learning (PAL) basics			
Students is familiar with definition and principles of PAL.			
Students is familiar with benefits and potential impact on teaching and learning.			
Students is able to define roles and responsibilities of participants in PAL.			
2. Effective Communication and Collaboration in PAL			
Students is able to perform active listening and effective questioning techniques.			
Students is able to provide constructive feedback and support.			
Students is able to build trust and rapport with peers.			
Students is able to initiate collaborative problem-solving and decision-making.			
3. PAL Strategies and Techniques			
Students is able to apply: Action Learning Groups			

Students is able to apply: Debates			
Students is able to apply: Discussion Groups			
Students is able to apply: Peer teaching			
Students is able to apply: Peer instruction			
Students is able to apply: Peer review			
Students is able to apply: Peer Coaching			
Students is able to apply: Teams			
Students is able to apply: Think-Pair-Share			
Students is able to apply: Jigsaw			
Students is able to apply: RoundRobin			
Students is able to apply: Fishbowl			
Students is able to apply: PBL - Peer Assesment			
Students is able to apply: Social and emotional learning			
Students is able to apply: Gestalt pedagogy			
4. Implementing PAL in the Classroom			
Students is able to identify suitable PAL opportunities and contexts (classes, lessons) where and when to use it.			
Students is able to plan and organize PAL activities.			
Students is able to create/modify/update a curriculum that includes PAL.			
Students is able to address logistical considerations and challenges.			
5. Implementing PAL in online environment and emerging trends			
Students is able to apply: Mastodon - social media peer groups			
Students is able to apply: Google Meet - breakout rooms			
Students is able to apply: Chat apps (Snapchat)			
Students is able to apply: Padlet			
Students is able to apply: Jigsaw			
Students is able to apply: Storyline			
Students is able to apply: ComPAIR			
Students is able to apply: Quizlet			
Students is able to apply: Tynker			
Students is able to apply: TimelineJS			
Students is able to apply: Kumu			
Students is able to apply: Elinkio			
Students is able to apply: Teachfloor			
Students is able to apply: Brainly			
Students is able to apply: Google classroom			
Students is able to apply: Kahoot			
Students is able to apply: Jamboard			
6. Cultural Competence and Diversity in PAL			
Students is able to recognize and value diverse perspectives and experiences.			
Students is able to promote inclusive and equitable PAL environments.			
Students is able to address cultural biases and stereotypes.			
Students is able to ensure cultural sensitivity and respect in PAL interactions.			
7. Ethical Considerations in PAL			
Students is able to maintain confidentiality and privacy.			
Students is able to respect professional boundaries.			
Students is able to address power dynamics and professional ethics in PAL relationships.			

8. Assessing and Evaluating PAL			
Students is able to select appropriate assessment methods for PAL.			
Students is able to evaluate the impact of PAL on teacher practice and student learning.			
Students is able to monitor and evaluate the effectiveness of PAL.			
Students is able to use assessment results to adapt future PAL activities.			
Total			



Project Partners:

