



UNIVERSITÀ DEGLI STUDI DI MILANO



4EU+ Education Framework: examples of good practices in teaching and learning
Group leader – University of Milan





Table of contents

Executive summary	4
I. Introduction	5
II. Methodology	6
III. Summary of the findings	7
Research-based education	7
Active learning	14
Critical thinking	20
Self-directed learning	24
Intercultural and inclusive education	28
IV. Conclusions	33
References	35





UNIVERSITÀ DEGLI STUDI DI MILANO





Executive summary

Developing a common challenge-based framework for education is one of the three aims¹ that 4EU+ intends to achieve toward the construction of an integrated European University. In that respect, WP2 will support the design of a novel educational experience for 4EU+ students, through flexible, student-centred learning pathways based on innovative pedagogies.

The first step along this pathway is represented by task 2.1, titled “*Creation of the 4EU+ framework of educational activities*”, whose main outcome will be the *4EU+ Educational Framework Initial* represented by milestone 2.1.

To establish a solid foundation, we present here the analysis of the results of an open-question survey to which all six universities have been invited to answer. The survey is aimed at sketching a picture of the educational landscape that currently characterizes the six university, with particular reference to five leading 4EU+ concepts. The emerging definitions for these five concepts are:

- **research-based education (RBE)**
is a student-centred form of active education based on the practical approaches, methods, processes, and results of research, particularly recent research: students learn as researchers, with a curriculum largely designed around inquiry-based activities; teachers keep the division of roles between teacher and students to a minimum, and facilitate, supervise, and mentor students as if they were early-career researchers. The expected outcome are a young professionals that can investigate problems with a critical spirit, collect evidence by referring to a variety of sources, make rational decisions based on discussions/interactions with interested parties, fully aware of the consequences that these decisions can have, and are able to simplify and communicate complex content outside academia.
- **active learning**
occurs when the students are actively involved in the learning process and participate beyond passive listening to support their own learning. It is an overarching concept for a range of empirically validated teaching strategies, the teacher assigns encouraging tasks and supports students in performing them and in learning how to learn effectively through meaningful activities. Learning thus becomes active knowledge construction, in which new information is being connected and related to prior knowledge of the student. Active learning has been demonstrated to improve student engagement and outcomes as well as their problem-solving skills.
- **critical thinking**
may be defined as careful, goal-directed thinking, i.e. the ability to engage in purposeful, self-regulatory judgment based on rigorous intellectual concepts and principles. It allows students to orchestrate and self-regulate their own learning strategies and it describes the ability to analyse information objectively, evaluate this information, and come to an informed judgment. Critical thinking plays a special role in academic learning by providing an opportunity for students to reflect on the nature of knowledge; inquiring into the process of knowing, making connections between areas of knowledge, becoming aware of their perspectives and those of the various groups whose knowledge they share, and coming to conclusions about issues by directly contributing to knowledge.

¹ 4EU+ Mission Statement, p. 7 available at https://4euplus.eu/4EU-10-version1-4eu_mission_statement.pdf





Beyond being an academic value, critical thinking is crucial in any democratic society to face challenges unbeknownst at present, and against populist usage of distorted news.

- **self-directed learning**

is a process in which students take responsibility for their learning (student-centered learning). It is first and foremost the external management of the learning process which can lead to high levels of active engagement, as students take initiative in their own learning – they can identify their learning needs, set their learning goals, formulate appropriate learning strategies, monitor and evaluate them, and choose resources and methods for learning in order to perform at their best.

- **intercultural and inclusive education**

refers to a set of educational strategies developed to assist teachers in responding to the many issues created by the rapidly changing demographics of their students. Beyond including different values, beliefs, and perspectives in teaching, inclusive education is predicated on the principle of equity for all students by removing the barriers to educational opportunities and success. It is not just delivering course content about diversity. It involves fostering an inclusive climate in the classroom and a sense of community among students and facilitating student learning with a variety of instructional techniques and assessments. A intercultural teaching approach includes not only knowledge about the histories, cultures, and contributions of diverse groups but also affective competencies such as self-reflexion, change of perspective, flexibility, openness, and tolerance as well as behavioral skills like stress and conflict management, communication skills, and strategies to handle critical incidents and culture shock. In addition, the instructor formulates the course material, the activities, and the modes of delivery in such a way that they reach each member of the class independent of their social, economic, or ethnic background. Intercultural and inclusive education thus empowers all students to attain their maximum potentials as learners and to become socially cognizant and dynamic people in local, national, and international situations.

The findings (in terms of definitions, examples, suggestions and applications) reveal how we reached the threefold goal of the survey:

- to define a "4EU+ innovative education and learning pathway";
- to support teachers in the designing phase of the educational proposals;
- to provide input for the academic development activities that have to be implemented within the EUP 4EU+.

The findings of the survey present a first set and a non-exhaustive list of definitions, suggestions, examples, and applications for each concept which will be regularly edited and updated according to the concrete implementation of the educational projects funded through the 4EU+ EUP.

I. Introduction

The present report outlines a preliminary analysis of the results collected from the six partner universities during a survey covering five key concepts of the educational 4EU+ framework.





These key concepts, also outlined in the 4EU+ application form as well as in the Mission Statement, are:

- **Research-based education** on which the 4EU+ students will receive a strong experience within the curricula proposed at different levels and in different areas. The 4EU+ Alliance is structured around each universities' numerous collaborations in research illustrating bottom-up links between the academic staff and laboratories².
- **Active learning** to engage students as active players in the entire learning process;
- **Critical thinking** as a key competence that each 4EU+ student will reinforce during learning.
- **Self-directed learning** that will provide each 4EU+ student with the ability to organize and articulate their curricula around a personalized pedagogical pathway.
- **intercultural and inclusive education** that represents one of the key approaches defined in the 4EU+ framework as it shapes the design of the educational experience offered to students, meant as a multicultural experience.

The findings of the survey outline definitions, suggestions, examples, and applications of the main educational aspects that will first serve to create a 4EU+ initial framework of educational activities, and then shape the 4EU+ vision on innovative pedagogies, thus defining a common structure.

The purpose of the survey is threefold: first, it will allow defining a "4EU+ innovative education and learning pathway"; second, the outcome of the survey will support teachers in the designing phase of the educational proposals. Third, the results will serve as an input for the academic development activities that have to be implemented within the project.

The analysis of the results will also deepen the definition of the expected profile of the 4EU+ student, as outlined in the Mission Statement. Furthermore, it serves to delineate how the pedagogical system is useful to the students by suggesting good practices, examples and methods for the implementation of the five key concepts analysed. At the same time, these suggestions can be provided to teachers to implement their educational proposals in a student-centred perspective.

Overall, this informal report survey provides evidence to achieve the milestone 2.1 "4EU+ Education Framework initial".

II. Methodology

Overall, the aim of this survey was to collect each university's angle on the key concepts that will shape the 4EU+ vision on innovative pedagogies.

To this end, the questionnaire was designed to identify definitions, examples, best practices and suggestions for each of the key concepts, namely research-based education, active learning, critical thinking, self-directed learning and intercultural and inclusive education .

² Cfr. 4EU+ Mission Statement, p.5





The survey was addressed to pedagogical experts of each university, representatives of WP2 within the EUP 4EU+. Specifically, we collected information from profiles as different as Vice-Rectors for Education, Educational Staff Developers, Heads of Service Center for Teaching and Learning, Coordinators of Digital Education and Learning, Advisors for Distance Learning, Members of the Steering Committee of the Innovation Centre at the Faculty of Science, and Innovation in Teaching and Learning Experts.

The same questions were asked for each concept with the aim to obtain:

- consistent definitions, in line with the 4EU+ objectives;
- examples and best practices;
- suggestions for implementing each concept at the different level of study (bachelor, master and post-graduate);
- suggestions for implementing each concept in the structure of the offering (single course, module, study program);
- applications in face-to-face, blended, and online teaching;
- “Translation” of each concept into 4EU+ academic development actions suggesting methodologies and formats to facilitate and optimize teachers’ training.

The questionnaire was prepared and administered by using Google forms. The results were analysed to obtain a common framework of reference in the form of a “living” document to be regularly updated, also beyond the achievement of Deliverable 2.1 – 4EU+ Innovative Education due in April 2021.

III. Summary of the findings

The establishment of a common pedagogical system within 4EU+, shaped around the above-mentioned key concepts, is useful to develop the 4EU+ learning pathway. Moreover, by framing definitions and making suggestions on the implementation of methods and approaches, it will be possible to specify the framework for the 4EU+ expected student profiles and provide initial guidance to teachers in the design process.

A non-exhaustive list of references will be provided at the end of this report.

Research-based education

Emerging definition

Research-based education (RBE) is a student-centred form of active education based on the practical approaches, methods, processes, and results of research, particularly recent research: students learn as researchers, with a curriculum largely designed around inquiry-based activities; teachers keep the division of roles between teacher and students to a minimum, and facilitate, supervise, and mentor students as if they were early-career researchers. The expected outcome are a young professionals that can investigate problems with a critical spirit, collect evidence by referring to a variety of sources, make rational decisions based on discussions/interactions with interested parties, fully aware of the consequences that these decisions can have, and are able to simplify and communicate complex content outside academia.





Research-based education is clearly a pillar concept within the Alliance. All 4EU+ Universities are research Universities: “our strong research collaborations and our long and profound tradition for connecting research and education are thus an ideal basis on which we can build a common core curriculum, which will provide students with rigorous research-based education”³.

All undergraduate students in 4EU+ Universities should experience learning through and about research and inquiry by integrating that into the curricula. By constructing knowledge, students are guided in cultivating their critical thinking and their curiosity for them to contribute effectively to the creation of new knowledge.

RBE has a content component, which provides education on the most recent topics, including latest research results in curricula and an engagement component, which involves students in the process of inquiry, inviting them to assist in research projects and encouraging them to apply this initial experience of a research process in conducting their own individual research.

RBE is rooted within a constructivist paradigm of learning and is therefore centred on the learner’s activity. It strives to synchronize research and learning cycles and thereby facilitates a productive environment in which disciplinary competencies can be developed.

Overall, RBE results in making informed and intentional teaching decisions, based on educational research (experiments) and on learning theories (attention, understanding, thinking skills, making meaning of, creative thinking, memory and retrieval), as opposed to uninformed and intuitive teaching.

Active participation in research does prepare students to participate in society. Critical thinking and personal development are two of the pillars of RBE that are to be combined with the competence’s development and employability.

Best practices

Within the 4EU+ Alliance, best practices in RBE are represented by:

- a three-year project on research-based teaching in all disciplines issued by one respondent. Professors from all disciplines are invited to plan and implement a research-based teaching project that starts in the first undergraduate semester and it is planned and executed in collaboration with students.
- a programme on the pedagogical skills enhancement run by one respondent. The core of the programme comprises seminars and workshops complemented by self-study and utilisation of e-learning.

The first step to expose students and teachers to RBE consists in clearly expressing the intended learning outcomes of a course. In this way, students can be involved in activities that encourage critical thinking and personal development: inquiry-based activities, practicing in laboratory environments, problem-solving approaches, critical evaluation of articles, production of research laboratory procedures and/or protocols.

³ 4EU+ Mission Statement, p.5





Students and teachers can be further engaged by: the periodical adaptation of the course offer, to include recent research development and methodology in the field; the students' preparation of micro-research project as part of their course assignments; the students' involvement in ongoing research projects that are thematically linked to the study programmes they follow; the facilitation (also financial) of students' research groups/science clubs and independent research projects and conferences.

Few practical examples include:

- A summer course on philosophy of mathematics was combined with a short international online conference bringing prominent scholars together and allowing them to discuss among themselves and with the students.
- In an introductory course in Nano-science first year students are engaged working on a specific research question using state-of-the-art experiments from the nano-science toolbox. In previous years, students have published their findings in a peer-reviewed journal.
- In a bachelor course at the faculty of Law, students are engaged in doing a "reality check" on a debated law on transparency in public administration. The course aims at including creative law students as co-researchers in an empirical project on openness. The end goal is to write a collective publication containing the main results and the main methodological challenges of the work

Suggestions for implementation at the various level of study

The implementation of RBE at the various level of study may differ considering the level of expertise in pedagogy and didactics and depending on the study program.

In general, it is suggested that teachers-beginners should start with effective use of learning outcomes and then gradually develop further skills. Disciplinary and interdisciplinary seminars can be organized, during which students are presented with and present themselves current research results, e.g. hands-on experience of learning to participate in a peer-review system, learning to speak in public and with the public.

The provisions of courses and workshops to enhance students' skills that are key in a research process can be organized, including academic writing, grant application and project proposal writing, successful presentation, science communication and facilitating the participation of students in scientific/research networking activities.

All undergraduate students should experience learning through, and about, research and inquiry. To this aim, a research-active curriculum should be designed for as many students as possible. For example, under the supervision of a researcher, students can take part in the faculty's ongoing research. They can participate in carrying out experiments in small groups, gaining an overview of what scientific research is and who are involved. It is crucial that the RBE students experience the typical research-cycle (select a field of interest, look for and read the relevant literature, highlight an open question in the field, make a hypothesis, collect and analyse data, summarize the research results, communicate the research results).

At the bachelor's level, it is suggested that students are involved in research-based activities to develop specific competencies, learn actively through activities such as inquiry, collaboration and practice,





familiarization with the latest research-like methodologies and processes, research developments in the field as well as teaching students how to read and discuss research articles, thereby getting a feeling of “real” research work. When direct involvement in research activities is not possible, students should experience the typical research-cycle within their courses.

At the master level, students may be assisted with their individual or group research projects, which more likely can occur in a real (or close to real) research context. The integration of young researchers and students into ongoing research projects and existing research networks is deemed essential to foster RBE as well as hosting research seminars and workshops and encouraging cooperation among young researchers of 4EU+ Universities.

At the completion of RBE activities, bachelor students would be able to assist in research projects led by other researchers, and master students would be able to prepare individual or team micro-research projects.

Suggestions for implementation in the structure of the offering

Overall, acknowledging the RBE has many different expressions at different levels and disciplinary significations is an important first step, as is requiring staff to be active researchers. The next step then is considering how student can become contributors or co-creators of research.

In a short-term activity, a single course, a module or a study program, RBE can be implemented in the structure of the offering by designing the study program according to the principles of *Biggs constructive alignment*, which requires alignment between the three key areas of the curriculum, namely, the intended learning outcomes, what the student does in order to learn, how the student is assessed⁴. In the words of Biggs, by using constructive alignment: “*the learner constructs his or her own learning through relevant learning activities. The teacher’s job is to create a learning environment that supports the learning activities appropriate to achieving the desired learning outcomes. The key is that all components in the teaching system - the curriculum and its intended outcomes, the teaching methods used, the assessment tasks - are aligned to each other. All are tuned to learning activities addressed in the desired learning outcomes. The learner finds it difficult to escape without learning appropriately.*” The way to link research to teaching is two-fold: research is used to train future researchers and research-style activities are used to get students engaged with their subject and become active and independent learners.

The implementation of RBE is likely to be more successful when it has clear aims at the institutional and departmental level. When thinking about the right RBE/IBL strategy at departmental level, it is suggested to start backwards from the skills and competences you want your graduates to be able to demonstrate upon graduation.

RBE can also be implemented by engaging students in research projects that promote research activity for both teachers and learners, through reading/discussing draft article or performing suitable empirical research and by using online mobility to bring other researchers in symposia that relate to a course taught.

⁴ Cfr.

http://www.ucdoer.ie/index.php/Using_Biggs%27_Model_of_Constructive_Alignment_in_Curriculum_Design/Introduction





Moreover, the implementation of RBE may occur by promoting student active learning, plan instructional activities, such as Activating prior knowledge, Advance organizers, Formative assessment, Frequent testing, student's participation on task choice (to increase internal motivation) and incentives for additional tasks (external motivation).

Transversal module courses – intensive, short series of seminars, webinars or workshops – run by invited experts in the field, with active participation of students, dedicated to specific subjects and/or skills (such as academic writing or research proposal writing) could be integrated in the curricula.

Suggestions for the application of RBE in face-to-face, blended and online teaching

General suggestions are:

- the definition of clear learning outcomes for teacher and students
- the definitions of sources for covering knowledge gap for insufficient prior knowledge
- the submission of frequent formative assessment⁵.

Face-to-face teaching

Face-to-face teaching is likely to be the ideal environment where RBE can be implemented as it implies interaction with academic teachers/researchers and peer student. It can provide opportunities for a synchronous and immediate collaboration among students while they study in specific environments as laboratories and/or when they work in group.

Academic teachers can choose topics that give students opportunities to solve specific research problems or prepare micro-research projects, either individually or in teams, which are then presented in class or during dedicated discussion sessions, project seminars, workshops, journal clubs or experimental work.

A pedagogical approach that can be used to boost RBE are Problem-based learning (PBL) and/or Team-based learning (TBL), which are based on seeking new knowledge and understanding it. They are student-centred and student-directed, with teachers acting as facilitators. The inquiry can promote students' ability 'to think critically and reflectively about the production of knowledge boosting students' research skills such as the ability to formulate questions, search and review the scientific literature, and collect and analyse data. In TBL, the student is also exposed to group working, which fosters soft skills that are particularly useful for the 4eu+ student as EU citizen.

Other techniques and activities that are helpful in the application of RBE in face-to-face teaching and enhance discussion and critical thinking are, but not limited to, flipped classroom, discussion fuzzy points, peer-assessment of students' work (criteria, rubrics), case studies, "what if" cases, open books exams, moderated classroom discussion such as in small/big groups, including simple voting systems, think – pair – share, adding short conversations and sharing among participants (Buzz groups).

Blended teaching

⁵ Cfr <https://files.eric.ed.gov/fulltext/ED572935.pdf>





Blended teaching emerges as a good format for courses co-taught with external experts. The online part may be an introductory part of the course, during which students are equipped with a background knowledge that allows them to participate more actively in the second part of the course.

The second part enables a more in-depth analysis of the course topic, as well as an opportunity to include both academic and non-academic perspectives of other experts in the field.

The blended format also provides an opportunity to bring together researchers with broad expertise and students from different universities; the online part enables an exchange and collaboration between students and teachers from different universities, allowing students to experience different approaches and to prepare for their individual (project-based) work.

Some approaches and techniques that can be applied to face-to-face teaching also apply to blended teaching, for example inverted/flipped classroom scenarios, research-led online and research-tutored activities as well as engaging students in research discussion during the session, planning a project effectively (SWOT) in order to conduct an in-depth analysis of proposals, decisions or problems.

Online teaching

RBE can be applied in online teaching by proposing activities of inquiry type. Students follow the educational frame teachers have prepared to work autonomously for achieving the intended outcome. E-discussions with the participants allows to explore core issues and topics for team learning. The development of IT tools and existence of different types of online software made synchronous online teaching possible.

RBE conducted online synchronously can be nearly as effective as the one carried out face-to-face, as demonstrated during the COVID-19 pandemic. However, RBE applications in online teaching depend on the discipline as, for example, online teaching in hands-on experimental science might be difficult. At the same time, online teaching can be utilized for some competencies in research-oriented teaching. i.e. with online courses to enhance scientific writing or other skills important for research.

Furthermore, digital mobility and online academic events can be used more actively to allow students to interact with a scientific community, for instance by bringing in international guest speakers, collaborators and other students to classroom discussions. Research and small experiments can be carried out by students at home or online (depending on subject) in groups or individually.

Suggestions to translate in 4EU+ academic development actions (methodologies and formats)

To link research to teaching there are two main levels of commitment: at the Departments level by developing departmental research culture for all teachers and students and at the Institutions level by helping teachers/students to properly design/experience their courses and learning activities.

Providing training to students will ensure their active participation in RBE (workshops on presentation skills, argumentation, academic writing, science communication and the use of new media) and provides them with opportunities to put into practice their theoretical and methodological knowledge as well as their skills and competences. This include undertaking investigations, meeting researchers and participating in their work, engaging with “real world” research studies, and hence developing new knowledge.





Teacher-wise, undertaking research-based teaching workshops allows teachers to visualize the research cycle in their discipline, understand how students undergo the entire research cycle in their curriculum, identify courses and scaffold the increase of competencies needed for research-based learning in a specific discipline.

Based on the above-reported comments, the 4EU+ academic development actions might include dedicated meetings and/or workshops on RBE, to trigger the creation of a 4EU+ innovative teacher's community. Suggestions to disseminate best practices in the RBE academic development include the introduction of an Online Journal where teachers describe their best practice according to the principles of scholarship of teaching.

In addition, a key action is represented by academic development programmes to grow a substantial training offer for academic teachers on how to:

- continuously revise and improve their course offer based on latest research developments and methodologies, including tools for online/blended teaching and methodologies of teaching along with dedicated support (e.g. ABC LD method)
- embed research-based components in their courses (teaching methodology, teaching in virtual multicultural environments)
- develop socio-psychological and management skills of teaching in a multicultural environment

As mentioned above, one respondent conducts research-based teaching and learning workshops, which will be adapted for the 4EU+ environment and subsequently administered to the academic staff. The workshop can be conducted for teachers across all universities but from the same discipline (i.e. Life Science, Cultural Science etc.).

The development of a 4EU+ platform for the academic development might be useful to provide exchange of best practices, sharing of expertise, a place where innovative teachers from the 4EU+ Alliance meet and find the best fitting suggestions and the best fitting collaborations for their needs.





Active learning

Emerging definition

Active learning occurs when the students are actively involved in the learning process and participate beyond passive listening to support their own learning. It is an overarching concept for a range of empirically validated teaching strategies, the teacher assigns encouraging tasks and supports students in performing them and in learning how to learn effectively through meaningful activities. Learning thus becomes active knowledge construction, in which new information is being connected and related to prior knowledge of the student. Active learning has been demonstrated to improve student engagement and outcomes as well as their problem-solving skills.

Active learning is another pillar concept within the Alliance aiming at engaging students in the entire learning process. Students-centredness is a key educational commitment in 4EU+ that, to a certain extent, is already a common component of the educational activities proposed within 4EU+ Universities and innovative techniques are already implemented but needs to be further explored, by keeping in mind that its proper design and implementation require time and resources.

Active learning can take place in various organizational forms of teaching, depending also by the learning objective, from individual work, seminar groups to large lectures. It harnesses the benefits of curiosity-driven methods and effective methods to learn actively, including group discussions, debates, RBL/PBL/TBL, case studies, role-plays and diverse assessment practices, thus stimulating the learner's critical thinking skills.

Active learning facilitates deeper learning approaches, collaborative learning and rethinks the role of educators. Active learning approaches place a greater degree of responsibility on the learner. The instructor guidance is crucial. Furthermore, challenge-based and transformative learning aim to effect a fundamental change in society; hence, active learning has a holistic outlook and dimension.

Best practices

The respondents identified many examples of best practices to implement active learning among students, both within 4EU+ Universities and outside. These best practices include suggested methods such as discussion session, reading seminars, case studies, flipped classroom, scenario-based learning, fieldwork, role-play, simulation, peer review sessions. Moreover, students' projects carried out for the entire duration of course and presented as a part of a final exam, are found to facilitate interaction and active participation of students.

Recognized best practices within 4EU+, implemented at different Departments are the Cooperative Learning approach, team-based learning approach, the use of the Concept Tests, and Just-in-time teaching. One respondent uses the Sandwich principle⁶, which is a general architecture of a learning-session that involves the students actively, to the planning of every kind of course. According to the Sandwich principle, students

⁶ http://www.bhmed-emanual.org/chapter_1_the_sandwich_design_of_teaching_and_learning





are not only passive recipients of information, they have also the possibility to discuss in pairs or small groups about what they have heard and, afterwards, to confront their point of view with other colleagues⁷. A hands-on example is represented by a third-year undergraduate biology course in entomology that was redesigned with a focus on the students' active participation. The design built on the Theory of Didactical Situations (TDS) originally developed for teaching mathematics. The core of TDS is that the students are presented with an activity, typically a problem they need to solve. The students then work on the problem, articulate suggested solutions that are presented to the teacher and the class. The suggested solutions are validated and the teacher 'institutionalizes' the activity, that is, helps the students see how the specific activity and solutions they were engaged with applies in a more general way across contexts.

The activities in the entomology course were centred around two classes designated to synthesize the course content involving two board-games that the students were playing and that the teacher designed for the class. Each board game concerned 'Evolutionary synthesis', but of different groups of insects. During the 90 min activity, students were to construct a phylogenetic tree by placing cards correctly on the board game. In doing this, the students drew on the teaching at the course and had to consider various elements of entomology to form their arguments.

Suggestions for implementation at the various levels of study

To implement active learning at the various level of study, respondents suggest considering teaching from the student's perspective, analysing the knowledge in the subject proposed and specifying what the student can study himself.

Other suggestions involve teaching the application of knowledge, anchoring important contexts, clarifying complex places and developing activities based on socio-constructive principles by putting students learning at the centre. What needs to be considered is the complexity of the task the students are presented with and the extent to which students are expected to work independently with the assignment or problem. One respondent also suggests following the Sandwich principle in any kind of course by designing the teaching learning activities according to the learning objectives and according to the constructive alignment theory⁸, in alignment with the assessment tasks.

At the practical level, active learning can be implemented at the various level of study by using different pedagogical techniques. Those techniques include, but are not limited to, **experiential learning**, which consists of activities that engage students in carrying out a task and reflecting afterwards on the experience gathered. **Inquiry-based learning**, in which relevant problems are introduced at the beginning of the instruction cycle and are used to provide the context and motivation for the learning that follows. **Project-based learning**, through which students develop a question and are guided through research under the teacher's supervision. These techniques can be conducted, among other things, in discussion sessions, reading seminars, and peer review sessions.

⁷ See <http://www.bhmed-emanual.org/book/export/html/30#:~:text=Abstract,that%20involves%20the%20students%20actively.&text=It%20is%20based%20on%20the,takes%2045%20or%2090%20minutes>.

⁸J. B. Biggs and C. Tang, *Teaching for quality learning at university*, Open University Press/Mc Graw-Hill Education, 2011





Suggestions for implementation in the structure of the offering

There is a general agreement that learning is an active process of construction. Hence, active learning is fundamentally an important aspect of learning in general and should be present in all parts of the provision of the programmes: at course level, in the modules and in the study programme as a whole. The kinds of active learning that are appropriate will vary with the content as well as the context.

Most respondents consider that the suggestions, methods and techniques provided for implementing active learning at the various levels of study might be suitable also in the structure of the offering. In courses, modules and study programs teachers should be facilitators of knowledge. At the same time, students need to be considered co-creators of their own knowledge by suggesting to explore **research-, problem- or inquiry-based learning** and participate in the decision-making processes concerning learning and assessment methods.

In practical terms, this is realized through:

- requesting oral presentations of students work
- selecting or creating suitable study materials for independent self-study (textbooks, scripts and articles on each topic)
- preparing assignments for students and create a motivation system so that students prepare for lessons in advance
- using authentic practical tasks as starters for learning, eventually in collaboration with stakeholders from society

Moreover, curricula should allow students to take active learning introduction courses at the beginning of their studies.

Suggestions for the application of active learning in face-to-face, blended and online teaching

In applying active learning to face-to-face, blended or online teaching, a first suggestion is asking students to work in groups, for example by using the **team-based learning** approach.

Secondly, teachers should be encouraged to reflect and discuss assignments in class, assign tasks for individual and group work, provide formative feedback and scaffolding, where needed. This will help teachers in respecting the limits of attention and working memory.

Thirdly, it is suggested following the Sandwich principle and so align teaching-learning activities to course objectives and assessment tasks. Any collaborative learning technique that is in alignment with the objectives can be applied, including **problem-based learning**.

Finally, for tasks in large groups, it is possible to use also use digital collaborative tools such as *padlet*, *answer garden*, *oncoo*, *mentimeter* etc.

Face-to-face teaching

Face-to-face teaching is the most natural way for active learning to be promoted as students engage in a discussion with their teacher in the same room. Face-to-face teaching is the only way to ensure full participation of all students in an equal way. Moreover, face-to-face teaching ensures equal access to





education for all, as individual access to technology and the Internet cannot be taken for granted. Limiting the teaching offer only to online or blended teaching can exclude students from disadvantaged backgrounds from full participation in classes.

Effective suggested techniques are:

- the **Jigsaw classroom**, a research-based cooperative learning technique which consists of dividing the classroom into groups that are given assignments. The aim is that each member of each group becomes an expert on a specific topic and then shares the expertise/knowledge thus acquired with the other students through the formation of new groups. Since each student is in this way in a group in which each group is represented, all students can learn the essence of all the tasks.
- **Think-pair-share** encourages active students' involvement and re-elaboration: a question is asked to the class; each student reflects on it individually for a few minutes, after which pairs are formed; each pair discusses the answer to the question, sharing doubts and perplexities; a summary is then shared with the whole class.
- **The fishbowl** is a technique that allows students to structure in-depth discussions and gives them the opportunity to observe group discussions in a discussion context. Students sit in a circle around an inner circle of no more than five students. The students in the inner circle discuss a given topic while those in the larger circle observe them and take notes both on content and group process. Inner circle students are challenged to participate in a high-level discussion while the observers listen to the discussion and critique contents.
- **Peer instruction** is a learning system that involves students preparing to learn outside of class by doing pre-class readings. Then, in class, the instructor engages students by posing prepared conceptual questions called ConcepTests that are based on student difficulties. If, after the first vote on the answer, there is less than 30% of good answers, the Instructors adds some information and repeats the process from the beginning. On the other hand, if there is more than 70% of good answers, the Instructor may skip the second vote and ask students to explain the correct answer. This may be done by using a polling device (clicker or smartphone) and then verbal interactions among students to solve problem of social distancing in class.

Other examples might be buzz groups, reflection notes, student presentations of homework, board games, role plays, classroom discussions, etc.

Blended teaching

Blended teaching facilitates active learning activities based on the collaboration between students and teachers from different universities. For example, during the in-classroom part, the teacher could provide students with background knowledge needed to conduct research and carry out their projects. During the on-line sessions, students could discuss their progress, receive feedback from teachers as well as provide feedback to each other. Moreover, students should work and learn autonomously before sessions of assessment and reformulation of questions with in-depth discussions to be held during the in-classroom part.

However, an important point is that the blended teaching should avoid separating the two parts by letting students be actively feeding into the teaching in one of the forms, but not in the other.





According to the respondents, one of the best blended implementations of active learning is the **flipped/inverted classroom** scenario that reverses the traditional learning environment: the acquisition phase takes place outside the classroom, with the student using online tools, videos, e-learning platforms etc. Students work through the theoretical background themselves activating knowledge and comprehension, with some additional tasks in terms of application. The face-to-face situation will be used for more discursive formats (collaborative, active learning) to reach for the domains of application, analysis, synthesis and evaluation. The application of flipped classroom allows students to consolidate their knowledge in practice and it also develops students' communication, team working and critical thinking skills. Typical flipped classroom scenarios include Problem-Based Learning (PBL) and Team-Based Learning (TBL).

Online teaching

Active learning can be triggered in online teaching by using technologies that support collaborative processes enabling online discussions or that allow to upload team project documents to be used by all students. However, in most disciplines, active learning is not efficient if only asynchronous online teaching is used

In synchronous online teaching, a suggestion is to use collaborative online tools and apply the Sandwich principle. Online hackathons, in which students are asked to jointly solve an open problem presented by their teachers, are example of effective active learning done synchronously online. During hackathons, teachers do not stress their presence, but are available on chat to help students.

Asynchronous online teaching forms are represented by Massive Open Online Courses (MOOC) or Small Private Online Courses (SPOC), which may have the needed flexibility for the active learners to control the sequence and timeline of content presentation. Students can also create their own learning pathway by combining different modules and courses, as well as through Open Educational Resources (OER).

Other techniques combining synchronous and asynchronous teaching are the application of the flipped classroom method, PBL or case studies where students are being asked to solve problems / cases in their discipline and then the teacher and the students together reflect on how their work is going, what they would need differently, how they could improve their learning. Give exercises and homework to do, and then discuss and interpret them with face-to-face live class or live remote session will also trigger active learning in online teaching.

A practical example is first-year course in mathematics for non-mathematics students where students actively work on exercises in online group via the Zoom platform for example. Following a synchronous lecture, students were divided into breakout rooms with the task of working on an assignment. Instead of calculating, the focus of the assignments was that students in groups should reflect on questions concerning the concepts. The groups should prepare arguments and solutions to the assignments and share them on padlet. Following this sharing of arguments and solutions, the teacher commented and discussed the students' propositions using a combination of video and hand-written sketches. Compared to in-class teaching, it is particularly important that the instructions to and expectations of the students are made very clear from the beginning.

Suggestions to translate active learning in 4EU+ academic development actions (methodologies and formats)





Active learning is a shared element of the educational activities proposed within the 4EU+ universities. To encourage active learning in collaborative 4EU+ educational projects, most of the respondents suggest workshops on active learning for academic staff (tips, best practices, examples) and other capacity building workshops. Typical examples include but are not limited to ABC, student-centred teaching, blended learning, digital video recording, analysing observation methods, development of education materials, and peer-to-peer support.

One respondent affirmed that the covid-19 pandemic accelerated the digitalisation of all those contents provided in introductory educational development courses so they can be easily shared with 4EU+ academic staff. Moreover, providing courses to academic staff on innovative methods and technologies, will be helpful in stimulating active learning (e.g. on how to organise student hackathons).





Critical thinking

Emerging definition

Several different definitions of **critical thinking** exist, which generally include the rational, sceptical, unbiased analysis, or evaluation of factual evidence. Keeping this in mind, within 4EU+, *critical thinking may be defined as careful, goal-directed thinking, i.e. the ability to engage in purposeful, self-regulatory judgment based on rigorous intellectual concepts and principles. It allows students to orchestrate and self-regulate their own learning strategies and it describes the ability to analyse information objectively, evaluate this information, and come to an informed judgment. Critical thinking plays a special role in academic learning by providing an opportunity for students to reflect on the nature of knowledge; inquiring into the process of knowing, making connections between areas of knowledge, becoming aware of their perspectives and those of the various groups whose knowledge they share, and coming to conclusions about issues by directly contributing to knowledge. Beyond being an academic value, critical thinking is crucial in any democratic society to face challenges unbeknownst at present, and against populist usage of distorted news.*

A key factor to implement critical thinking is the capability of evaluating sources, such as data, facts, observable phenomena, and research findings by judging the validity and reliability of the assumptions.

Critically thinking students will also acquire and augment other skills including analytical, evaluative and problem-solving skills, awareness of one's attitudes and assumptions, the correlative dispositions to care about the dignity and worth of every person⁹, the ability to identify the relevance of arguments, and to select a relevant source for arguments.

Best practices

Respondents enumerated several examples that show how critical thinking is embedded in the 4EU+ university culture, as a fundamental academic value that constitutes the cornerstone of the university teaching philosophy. Critical thinking is also mentioned in one respondent's Code of Ethics. Also, best practices within the Alliance related to critical thinking involve the organization of several courses specifically focused on the development of critical thinking in selected fields such as teaching and media literacy, history, critical thinking in economics and philosophy, sociology, strategic communication and public relations, courses for future journalists, critical media theory and many others. Furthermore, critical interpretation of theories, analysis of literary sources, correct interpretation of research results and statistical data is part of most courses at all faculties and is set as a key requirement for final bachelor's, master's and doctoral theses.

Some respondents provide general examples for use in practical activities that will therefore be designed to improve and stimulate critical thinking. These include building-up confidence in students to articulate their opinions and views during discussion session courses, teaching students the basic principles of quality academic debate, introducing elements of academic debate in class, assisting students in analysing their ideas while asking for examples, similarities, assumptions, inconsistency/alternatives, expose students to real-life cases of scientific or scholarly controversy, questioning prior assumptions, using classification, and deciding what data or information support (or not) an idea/hypothesis/opinion. A problem-solving approach in teaching helps fostering critical thinking. Problem-solving is a kind of critical thinking that is likely to help

⁹ Cfr. <https://plato.stanford.edu/entries/critical-thinking/#DefiCritThin>





students to go beyond the surface structure of a problem and go deeper by transferring knowledge to problems with new surface structures.

Suggestions for implementation at the various levels of study

Starting from the fact that a critical thinking approach needs to be embedded into the general approach to higher education, the respondents provided different suggestions for implementing critical thinking at the various levels of study.

Critical thinking can be included in the academic teaching format through myth-bashing courses, during which students debate on popular myths and stereotypes, critical research reading and discussion seminars with a small number of students, so that everyone can take part in a discussion.

Critical thinking can be also implemented when students consciously reflect on their core ideas and are encouraged in asking questions and discussing similar causes to some facts related to a wide range of other topics, as well as covering the specific cause. This will encourage students' sensitivity, novelty, and awareness of thinking in different contexts.

Another suggestion is to teach students how to use the critical thinking model to evaluate information by means of a three-stage model, adapted from LearnHigher (<http://www.learnhigher.ac.uk/>). The three stages (description, analysis, evaluation) are undertaken via questions aimed to understand, analyse, and evaluate something, such as an information source¹⁰.

Finally, the respondents suggested including the Spider web model by Van den Akker, who elaborated nine elements to promote critical thinking:

- 1) Learning activities during lessons (with higher cognitive difficulty),
- 2) Teachers' role should be more structured in the beginning and more opened towards the end of the course (focus should shift to students),
- 3) Having good materials (students can choose from),
- 4) Grouping students – not only to groups where students know each other but preferably groups with a different aspect (age, level of study, discipline, nationality etc.),
- 5) Location of learning – slowly shifting towards flipped classroom,
- 6) time – teachers need to plan the class carefully, building critical thinking skills needs a lot of time,
- 7) Assessment - some elements of critical thinking are stressed more in some courses than in other,
- 8) Aims and objectives – teachers have to express aims and objectives clearly and in the beginning of the courses,
- 9) Content – content should address all groups of students (culture, gender, language etc. wise).

Suggestions for implementation in the structure of the offering

To implement critical thinking in the structure of the offering it is considered important to firstly plan it from the beginning of the course/module/study program design process. Like scientific methods themselves, critical thinking must be adapted to and refined within the contexts of specific learning topics. In addition, the respondents suggested the introduction of elements of Oxford-style debating in curricula, which consists

¹⁰ https://library.leeds.ac.uk/info/1401/academic_skills/105/critical_thinking/2





in organising workshops and providing a platform upon which students can practice and improve their debating skills.

Finally, critical thinking may be implemented by specifying the requirements for critical work with information sources and empirical data for all individual student work, from small seminar papers to final theses. Other suggestions include analysing model situations and their limits, discussing the possible effects of changes in interfering conditions on the results, proposing activities that enhance perseverance, discipline, integrity, curiosity, civility, imagination, responsibility, tolerance for ambiguity and the ability to develop critical reasoning.

Suggestions for the application of critical thinking in face-to-face, blended and online teaching

All the respondents provided suggestions for the application of critical thinking that may be valid for face-to-face, blended and online teaching.

Face-to-face

Encouraging discussions, learning by imitation how the expert thinks critically, and reaching group decisions are activities that are particularly suitable to face-to-face teaching. All activities that facilitate the development of the art of self-directed, self-disciplined reasoning, logical thinking abilities for reaching an affective dimension of thinking and an emotional intelligence indispensable for open-minded critical thinking are to encourage while designing face-to-face teaching activities.

Moreover, one approach that might prove efficient is the “scaffolding” method. It is a teaching concept associated with assessing through dialogue the level of students’ thinking and moving it on through a systematic series of questions. Scaffolding’ comes into play when students cannot make any reasonable response to such questions: the ‘scaffolder’ might then point out the assumptions underlying the issue and use a series of questions to lead the students to understand why they are problematic.

Blended

For blended teaching, it could be appropriate for an independent self-study to choose professional texts that offer different perspectives on the researched issues and offer case studies where a broader context that transcends other disciplines needs to be considered. Other suggestions include discussing different perspectives, showing that scientific conclusions do not stay unchanging, but evolve over time together with the development of human knowledge.

Online

Critical thinking implementation in online teaching can follow the same suggestions presented above. Overall, give adequate subjects to think about, and then discuss it with all group can be done physically as well as with online synchronous discussions. Sometimes online may work even better, as in the case of breakout rooms, whose setting up online may be easier than in a physical classroom.

Suggestions to translate critical thinking in 4EU+ academic development actions (methodologies and formats)

Teachers who present and prepare 4EU+ collaborative educational projects might be trained with specific workshops, during which participants should discuss examples of best practice in a given field.





Training for academic teachers can be conducted on how to install critical thinking in students, including elements such as logic and conditional reasoning, how to teach data and information literacy, how to teach students to detect cognitive biases and make evidence-based opinions and decisions, how to teach students to build their argumentation and to respect their interlocutors representing opposite views, how to conduct fishbowl debates and Oxford-style debates, introduction to critical thinking in academic culture.

Moreover, teachers should learn to teach from multiple perspectives and focus on connections and similarities of content and be trained to facilitate the exchanges and collaboration, open-minded tolerance, guidance on how to help students to achieve a better understanding of their way of learning and thinking .





Self-directed learning

Emerging definition

Self-directed learning is a process that leads to high levels of active engagement as students take their personal responsibility and initiative over their learning through mainly inquiry type and problem-based learning activities and approaches. In this way, each 4EU+ student develops the ability to organize and articulate his or her curricula around a personalized pedagogical pathway and by developing also metacognitive skills, they are prepared to act effectively in the academic environment and beyond as they are encouraged to develop their critical thinking and research skills.

Within 4EU+, self-directed learning is a process in which students take responsibility for their learning (student-centered learning). It is first and foremost the external management of the learning process which can lead to high levels of active engagement, as students take initiative in their own learning – they can identify their learning needs, set their learning goals, formulate appropriate learning strategies, monitor and evaluate them, and choose resources and methods for learning in order to perform at their best.

It is necessary to promote metacognitive skills that allow students to reflect and direct their own thinking such as "self-responsibility", "motivation", "time management", "learn how to learn", teamwork, and communication. For including the cognitive and motivational dimensions of learning, self-directed learning integrates self-management (contextual process), self-monitoring (cognitive responsibility) and motivational (assuming personal responsibility) issues associated with an educational context.

The set of skills developed during the academic education pathway prepares students to act effectively in the academic environment and beyond as they are encouraged to develop their critical thinking and research skills. During classes students acquire knowledge and skills necessary to perform both individual work and teamwork. Classes teach students how to acquire knowledge in a self-sufficient way, organize it skilfully and how to present it properly in writing (academic writing) and verbally (presentation, discussion, debate).

Best practices

Respondents identified several best practices within and outside 4EU+ Universities. Two respondents provided examples on different optional courses including *Effective Learning, Metacognitive Abilities and their Development, Efficient Academic Study* as well as teaching material offered to teachers in a blended format that can be translated into English to be available for the 4EU+ Universities.

In practical terms, examples of best practices in self-directed learning include inquiry type and problem-based learning activities, such as collection and analysis of data, data comparison, constructive feedback, wall of questions, autonomously directed projects, reverse classroom, open-ended projects and case-based teaching. These approaches and techniques allow complex problems rooted in real-world situations to be used to motivate students to discover important concepts and their interconnections. In such a manner, students reflect on the problem or inquiry and formulate both what they already think they know and what they need to learn for a better understanding and ability to handle the situation.





The development of flexible learning environments that support students' decisions about pace and scope of learning activities are warmly recommended.

Other examples include the creation of activities that support students in weighing outcomes, considering the possible results, helping students take greater ownership of content and method and allowing a wide variety of sources and resources to be used especially when technology is involved, e.g. blogs, wikis. Giving students the possibility of choosing a course evaluation method on an individual basis, offering students several options of assignments and exams that allow students to choose the form that fits their learning preferences are other example of self-directed learning.

Suggestions for implementation at the various levels of study

The above-mentioned best practices within 4EU+ are efficiently implemented at the various levels of study by two respondents, including through open optional courses/seminars on effective learning strategies for freshmen students.

The suggestions provided to implement self-directed learning at the bachelor or master level include a student-centred teaching and learning initiative that encourages students to develop their personal responsibility and control over their learning. Students are suggested to begin their studies by attending a common introductory course at the bachelor level where PBL is introduced and all the important information about learning strategies are explained. This allows teaching students how to acquire knowledge, study effectively and manage their study goals, by embedding brainstorming and brainwriting sessions during classes, providing students with regular feedback and encouraging them to provide constructive feedback and motivation to each other.

Students should be aware of their learning strategies and of when/how to use them appropriately. At the same time, teachers should assess the course tasks, monitor student performance, and give them feedback. In order to become self-regulated, students need to be aware of a meta-level of the core content and the values in the domain studied. A meta-level is also necessary for the awareness of effective strategies for learning and the influence of the students' own concerns and interests.

Suggestions for implementation in the structure of the offering

To implement self-directed learning in the structure of the offering, respondents suggested some of the same approaches and techniques explained above. Other suggestions entail teaching students how to use metacognition, teaching them specific strategies to diagnose prior knowledge, setting the course goals, and defining study strategies that pursuit these goals. Furthermore, it is suggested proposing students to take an active role in managing their learning. Teachers should guide them in developing their meta-cognition abilities in terms of knowing what one knows, and what one needs to understand better for being in control of their own responsibility as well as in control of achieving meaningful learning outcomes. This is a critical issue, as there may be a discrepancy between the perceived value of a given learning outcome between students and teachers.

Suggestions for the application of self-directed learning in face-to-face, blended and online teaching





Respondents provided several suggestions to implement self-directed learning that could be valid for face-to-face, blended and online teaching.

Face-to-face

In face-to-face teaching, respondents suggested promoting the value of learning by showing a different source of motivation (social, knowledge, token etc.) for an individual course and showing professional way of thinking (it is not necessary to teach what students can read by themselves). Face-to-face teaching should promote mastery thorough discussions and other activities that promote higher-order thinking.

Schedule Learning Sessions is a suggested technique that gives clear meaning to the students to understand the gain, for example, of a problem-solving approach where students can work autonomously and prepare a return session. The contents are the combination of a cooperation where each one has the same responsibility towards his colleagues.

Inquiry type activities facilitate a self-directed learning where nevertheless the teacher guidance and feedback are essential. The role of the teacher/facilitator is essential because it has to build a cooperative learning environment, help to motivate and direct the students' learning experience, facilitate students' initiative for learning, be available for consultations as appropriate during the learning process, and serve as an advisor rather than a formal instructor.

Moreover, Faculties help students learn to frame the right questions, formulate problems in clear and organized language, explore alternatives, and make effective decisions. By solving problems, students learn to generate procedures that they can use again when they encounter another similar situation.

Blended

To implement self-directed learning, the suggestions provided for face-to-face teaching can be suitable also for blended teaching. The possibilities to learn at different paces and through different modalities is a main potential of online and blended learning. Setting appropriate level of challenge for all students and provide them with a list of easy questions, promote metacognition and help students to diagnose their study progress. Tools like quizzes can allow student to go over materials for as long as needed and for repetition.

Moreover, self-directed learning can be fostered through the implementation of cooperative learning. Teachers need to communicate clearly to the students and guide them on the way they can reach their learning objectives. Design a coherent work program with distance and face-to-face sessions, where students, after having worked autonomously, can have feedback and collaborative activities, helps motivations and develops transversal skills.

Online

The suggestions for the implementation of self-directed learning in online teaching are similar to the ones for blended teaching; nevertheless, it is very important to propose a very clear guidance to the students to achieve the intended outcomes by being able to take fully part on their learning and develop a more responsible attitude, which influence directly their intrinsic motivation.

Also, providing different sources that employ different sources of motivation foster self-directed learning as well as having a test and/or questionnaire that allow to find out the level of self-directed learning and





metacognition and how to increase it. For example, MOOCs and OER platforms also allow student to pick and mix from materials and media types.

In a way, self-directed learning is even more key when the students undergo a fully online experience, in which being directed by the teacher is more difficult.

Suggestions to translate self-directed learning in 4EU+ academic development actions (methodologies and formats)

Self-directed learning, above all, requires the right preparation of students to be more independent and even self-sufficient in acquiring knowledge, to manage their own learning goals, to ask for feedback and not to be afraid to fail.

Overall, the communication of learning goals between students and the teacher is important to ensure that students can map out their learning goals and improve self-directed learning. To state the learning goals, it might be useful to have learning contracts that can give ownership to students over their learning at the outset of a project or class, that induce students to reflect on how they learn, by establishing clear goals and project timelines.

Teacher trainings on self-directed learning should focus on bolstering students' confidence and enhancing the students' abilities described above. Training for teachers should help them to better guide students during their learning and how to learn better and more effectively by proposing concrete learning activities that teachers can design.

Training for teachers involve self-experience seminars where teachers should acquire metacognitive and motivational strategies. The way to achieve this is to become aware of their cognitive style and metacognitive strategies and to confront them with colleagues. Furthermore, it is suggested to teach teachers how to ask proper questions that promote metacognition and trust students that they can learn, providing them with formative feedback and, if needed, with necessary scaffolding.





Intercultural and inclusive education

Emerging definition

Intercultural and inclusive education is the co-existence of diverse cultures, beliefs and behaviours that recognizes and respects the presence of all diverse groups in an organisation or society. It acknowledges and values their socio-cultural differences; it encourages and enables their continued contribution within an inclusive cultural context which empowers all within the organisation or society; it is a transformative movement that yields critical thinking aiming at promoting social justice and democratic principles from a student-centred perspective.

Intercultural and inclusive education in teaching is a practice of giving equal attention to and respecting various backgrounds and contexts when discussing a topic and various different learning styles of students, especially in a multicultural context. All students with a different background are equally capable and the educational system should address everyone equally.

Intercultural and inclusive education refers to a set of educational strategies developed to assist teachers in responding to the many issues created by the rapidly changing demographics of their students. Beyond including different values, beliefs, and perspectives in teaching, inclusive education is predicated on the principle of equity for all students by removing the barriers to educational opportunities and success. It is not just delivering course content about diversity. It involves fostering an inclusive climate in the classroom and a sense of community among students and facilitating student learning with a variety of instructional techniques and assessments. A intercultural teaching approach includes not only knowledge about the histories, cultures, and contributions of diverse groups but also affective competencies such as self-reflexion, change of perspective, flexibility, openness, and tolerance as well as behavioral skills like stress and conflict management, communication skills, and strategies to handle critical incidents and culture shock. In addition, the instructor formulates the course material, the activities, and the modes of delivery in such a way that they reach each member of the class independent of their social, economic, or ethnic background. Intercultural and inclusive education thus empowers all students to attain their maximum potentials as learners and to become socially cognizant and dynamic people in local, national, and international situations.

Incorporating multicultural education techniques into the classroom allows all students to adapt easier to different contexts and environments and therefore to be able to perform better in their future career.

Teachers should align the curriculum with the groups being taught, rather than about them. It is the teacher's responsibility to personalize the curriculum to reach every student.

Best practices

Best practices to foster intercultural and inclusive education within 4EU+ involve the organization of workshops for teachers on multicultural communication and working with students with multicultural background. One respondent organizes multicultural workshop for Erasmus+ students at the beginning of each semester as well as intercultural courses. Moreover, legal aid and psychological support on issues of dealing with discrimination are provided. Another respondent developed a series of exploratory projects on educational challenges in the international classroom with lecturers and students from Pharmacy,





Medicine, Plant and Environmental Sciences, Mathematics, and Theology. The framework combined pedagogy with culture and language, and within this the subprojects focused on how to draw on all students' strengths and competences and thus to respect differences without losing sight of common educational goals and interactional practices. Exemplary practices included strategic use of several languages for learning purposes, inviting and supporting open dialogue with reference to students' previous learning experience, the use of case-material taken from several contexts and with a global outlook, and students in clinical work organized in tandems cutting across language and national background.

At the master level, the same respondent developed programs in which students are trained in conducting cultural analysis and solving problems of interculturality in corporations, public institutions and NGOs (e.g. the programmes of Applied Cultural Analysis, Global Health, Advanced Migration Studies etc.).

Outside 4EU+, examples of best practices are represented by the five teaching principles described by Columbia University¹¹:

- 1) Establish and support a class climate that fosters belonging for all students
- 2) Set explicit student expectations
- 3) Select course content that recognizes diversity and acknowledges barriers to inclusion
- 4) Design all course elements for accessibility
- 5) Reflect on one's beliefs about teaching to maximize self-awareness and commitment to inclusion.

Representative ways to deal with intercultural and inclusive education are based on working on the learning content by proposing materials that include multiple cultural perspectives and references, considering the different cultures of the students and teachers, incorporating learning experiences relevant or recognisable from all, and promoting discussion opportunities and sharing. Activities that promote critical analysis and thinking that consider the heterogeneity of students and promote the equity of opportunities may foster intercultural and inclusive education.

Suggestions for implementation at the various levels of study

Intercultural and inclusive education pertains to the course content and, to a minor extent, to the course methodology. Overall, any module taught within 4EU+ with a project-based objective should aim at mixing students of different universities. In the 4EU+ context, a multicultural approach would be to encourage students to follow, as part of their study programmes, courses delivered by other 4EU+ member universities and taught in languages other than their native one (e.g. German students attending a course on European law in French); language proficiency (minimum B2 level) appears to be an obstacle to fast implementation.

Suggestions to implement intercultural and inclusive education at the various levels of study provide that teachers should make it common practice and start each course by getting to know the students, incorporating experiential learning components and customising courses to include contexts that may be relevant to students' backgrounds and their real-life experience.

¹¹ <https://cpb-us-w2.wpmucdn.com/edblogs.columbia.edu/dist/8/1109/files/2020/02/Guide-for-Inclusive-Teaching-at-Columbia-Accessibility-Revisions-15-January-2020-FINAL.pdf>





It is important to have an open dialogue in which students feel free to draw on their previous experience in order to recontextualize this into new learning goals and in which lecturers may voice their expectations concerning student-lecturer interaction, study groups, student behaviour etc. This often includes considering ways of communicating across media and language barriers, but also to openly address crosslinguistic issues.

Teachers should also develop assignments that showcase students' different backgrounds and experiences, checking for prior knowledge of culture, showing students the value of diversity and include a reflective component afterwards. Other suggestions involve scaffolding knowledge and cultural gaps, setting a program of mentors and mentees, promote student-student rapport and student study groups.

Suggestions for implementation in the structure of the offering

Intercultural and inclusive education can be implemented in the structuring of the offering following the same suggestions proposed for the implementation at the various levels of study. It is suggested that students are encouraged to honour their (cultural) heritage, valuing their real-life experience and connect them with course content (activities, homework etc.). 4EU+ students should gain multiple viewpoints and communicate within a different context.

Also, intercultural and inclusive education may be implemented by offering a selection of critical readings that are inclusive of various perspectives and which include other viewpoints, using examples in class that draws from other cultures.

Also, discussing research studies with similar problems addressed in other parts of the world and news that addresses issues discussed in class with an international/diverse element foster intercultural and inclusive education. Other suggestions may involve sharing teaching practices, decisions, and rationales with students whenever possible, assigning projects that engage students' autonomy, designing assignment rubrics as a class, facilitating peer-to-peer feedback with intentional pairing/grouping of students, providing a loose structure to guide the feedback and engaging in concurrent and retrospective critical reflections to be shared whenever possible.

Suggestions for the application of intercultural and inclusive education in face-to-face, blended and online teaching

All the suggestions provided above for the implementation of the concept in the structure of the offering as well as at the various level of study are suitable also for the implementation of intercultural and inclusive education in face-to-face, blended and online teaching.

Face-to-face

To implement intercultural and inclusive education in face-to-face teaching, the respondents suggested that teachers make themselves aware of their own biases and set the safe learning environment for all students. However, it can be more difficult to implement since it needs a lot of mixing of students within different universities. Whenever it is feasible, it can be done by, for example, favouring exchanges discussions workgroup.





Moreover, suggestions involve the usage testimonial readings as they involved empathy for the person's story, but it also required students to interrogate their own responsibility in that person's experiences. This allows accepting personal complicity and responsibility in order to turn students' knowledge and empathy into action.

In addition, sharing of students' experiences and background knowledge brought into class (face-to-face or virtual) activities and assignments can be applied to implement intercultural and inclusive education . Field experience might be a good form of assessment by writing, for example, a creative journal and collectively write a rubric through which the students practice a multicultural education approach that supports community building, agency, authority, and creativity.

Finally, respondents suggested to educate students to be aware of what they think they already know, or to make them question things they normally take for granted to educate their interpretations regarding what they hear and see.

Blended

Most of the respondents' suggestions for face-to-face teaching are valid also for blended teaching. In addition, respondents suggested implementing intercultural and inclusive education in blended teaching by building multiply opportunities for practice and building scaffolding into course assignments. Moreover, what it can be difficult nowadays with the covid-19 pandemic, can be easily implemented through a blended approach, which means discussions with students from different universities in the same group.

Online

For online teaching the same suggestion above mentioned apply. In addition, a good suggestion is using course materials that address different cultural backgrounds.

Suggestions to translate intercultural and inclusive education in 4EU+ academic development actions (methodologies and formats)

To translate intercultural and inclusive education in 4EU+ academic development actions, suggested formats are workshops on anti-discrimination and training courses for academic teachers and administrative staff, where the educational gains of intercultural and inclusive education should be reflected. These workshops include workshop on multicultural communication and working with students with multicultural background, on developing equality attitude, as well as providing legal aid and psychological support on issues dealing with discrimination, supported by each university's anti-discriminatory legislation.

Work on subjects such as the heterogeneity of the students, student- centred teaching, self-directed learning, research-based education, competence-based learning will foster intercultural and inclusive education .

Moreover, a critical and dialogical model can be used to help teachers learning multicultural education as a process that requires teacher educators to scaffold complex ideas, by using dialogical approaches to learning that incrementally build on emergent and shared knowledge. How to obtain relevant information about students and the ways in which the diversity may challenge the teaching practices and get to voice these in an open space may furthermore be addressed in open dialogue with colleagues, possibly as part of a seminar on the challenges of internationalization.





Finally, students should be more active in preparation of the 4EU+ offering and in clarifying the ways in which intercultural and inclusive education can be addressed. Introducing concepts of Universal Design for Learning in Higher Education, UDL, and Using Understanding by Design in the Culturally and Linguistically Diverse Classroom may be helpful in translating intercultural and inclusive education into 4EU+ academic development actions.





IV. Conclusions

The scope of this survey was trying to define concepts that represent core principles on which the vision of 4EU+ is built and that contribute to move forward the creation of an integrated European University.

The first set of key concepts identified are research-based education, active learning, critical thinking, self-directed learning and intercultural and inclusive education .

For each of these concepts, the partner universities were asked to explain the most consistent definition in line with the objectives of 4EU+, to give examples of best practices, to provide suggestions on how to apply each concept at the various level of study, within the structure of the offering, and within the type of teaching, face-to-face, blended and online.

This has been done in order to provide a general 4EU+ educational framework that, on the one hand to the students and on the other hand to the teachers, allows them to build their own learning pathway and to design their teaching activity respectively. Moreover, these concepts contribute to the determination of the type of student that 4EU+ wants to educate and train.

For the five different concepts proposed by the partner universities, the main challenge is to find a common definition for each single concept in order to have at the end a 4EU+ definition. For most of the concepts, it was possible to identify similarities in the definitions, and differences in the suggestions for applications. This, however, is a positive factor because it contributes to enriching the set of suggestions that teachers may implement in the designing of the educational proposals offered to students.

With reference to research-based education, it is interesting to note that not only the definition proposed by all the respondents is very similar, but also that some of the best practices identified are coming from within the 4EU+ Universities, which proves the efficiency, on one hand, of the techniques and approaches used internally, and, on the other hand, the fact that those concepts are effectively embedded into the structure of 4EU+ Universities and centred on the learners' activity, thus pursuing the student-centredness value.

As far as active learning is concerned, all the respondents proposed similar approaches to implement the concept into courses, at the various levels of study and within different mode of teaching through team-based learning, cooperative learning and inquiry-based learning. In particular, the flipped classroom technique is a technique suggested in the application of research-based education, active learning and critical thinking by the respondents at the various level of study, and in blended and face-to-face teaching which demonstrated that this method is highly recommended to teachers while designing their educational activities. However, it was also underlined by the respondents that in research-based education and active learning, face-to face teaching is the best way to effectively apply the concepts, also to increase inclusiveness. As research-based education and active learning, also critical thinking plays a crucial role within the 4EU+ partner Universities as fundamental academic value which makes the implementation of the concept smoother in building the 4EU+ European University.

The application of the five concepts analysed in the structure of the offering, at the various levels of study and in different modes of teaching require students to act more and more as co-creators of their own





knowledge and participate in decision-making processes. At the same time, it is deemed essential that teachers should clearly express the expected learning outcomes at the beginning of each activities and should act more and more as facilitators, encouraging group activities and shifting the focus on students so to allow them to self-direct their learning.

To this end, a variety of workshop to teachers were proposed by all the respondents on all five topics thus providing inputs on academic development actions. Some of the workshops mentioned are already conducted within 4EU+ partner Universities, representing examples of best practices.

Therefore, it is recommended to share the existing workshops and make them available to all 4EU+ teachers, in order to make academic staff more acquainted with fundamental 4EU+ concepts and contributing, on a practical level, to design the educational experience more effectively, and to realize the 4EU+ vision and mission.





References

Research-based education

Pedagogical Skills Enhancement Programme at the Charles University
<https://paedagogium.cuni.cz/PAEDEN-5.html>

University of Maryland Baltimore County – Faculty Development Centre
<https://fdc.umbc.edu/>

Harvard's Centers for Teaching and Learning
<https://www.hsph.harvard.edu/office-of-education/harvards-centers-for-teaching-and-learning/>

Carnegie Mellon University - Eberly Center, Principles of Teaching and Learning
<https://www.cmu.edu/teaching/principles/index.html>

The Association of Universities in the Netherlands - University Teaching Qualification
https://www.vsnu.nl/en_GB/utq

Vanderbilt University
<https://cft.vanderbilt.edu/guides-sub-pages/understanding-by-design/>

“Willkommen in der Wissenschaft / Welcome to Science”
<https://www.uni-heidelberg.de/lehre/praxis/foI.html> (in German)

Constructive Alignment in Curriculum Design
http://www.ucdoer.ie/index.php/Using_Biggs%27_Model_of_Constructive_Alignment_in_Curriculum_Design/Introduction

Summary of research on online and blended learning programs that offer What's Known differentiated learning options
<https://files.eric.ed.gov/fulltext/ED572935.pdf>

Online teaching:
https://www.researchgate.net/publication/278796763_Principles_of_Effective_Online_Teaching

<https://www.worldcat.org/title/handbook-of-research-on-online-discussion-based-teaching-methods/oclc/1130320074>

Example of online teaching in life sciences:
<https://www.uni-heidelberg.de/slk/Schreiben.html> (in German)

RBE academic development
<https://www.ucl.ac.uk/teaching-learning/connected-curriculum-framework-research-based-education>

Active learning





Klemenčič, M., Pupinis, M., Kirdulytė, G. (2020). 'Mapping and analysis of student-centred learning and teaching practices: usable knowledge to support more inclusive, high-quality higher education', NESET report, Luxembourg: Publications Office of the European Union
https://nesetweb.eu/wp-content/uploads/2020/03/NESET_AR2-2019.pdf

University of Minnesota
<https://cei.umn.edu/active-learning>

University of Leicester
<https://www2.le.ac.uk/offices/lli/developing-learning-and-teaching/enhance/strategies/active-learning>

Promoting active learning in universities
<https://eua.eu/downloads/publications/eua%20tpg%20report%205-%20promoting%20active%20learning%20in%20universities.pdf>

Cooperative learning
<http://www.phil.muni.cz/journals/index.php/studia-paedagogica/article/view/1135> (available in Czech and English)

Team-based learning
https://www.youtube.com/watch?v=Stf_chs9IsM

Implementation of active learning
<https://education.viewsonic.com/active-learning-classrooms/>

http://depts.washington.edu/next/Active_Learning-Strategies_for_Success.pdf

Cummings C., Mason D., Shelton K. and Baur K. *Active Learning Strategies for Online and Blended Learning Environments. Flipped Instruction: Breakthroughs in Research and Practice.* (2017), DOI: 10.4018/978-1-5225-1803-7.ch006

Critical thinking

Definition

R.T. Pithers & Rebecca Soden (2000) *Critical thinking in education: a review*, Educational Research, 42:3, 237-249, DOI: 10.1080/001318800440579

Kennedy, M., Fisher, M. B., & Ennis, R. H. (1991). *Critical Thinking: Literature Review and Needed Research.* In L. Idol, & B. P. Jones (Eds.). Educational Values and Cognitive Instruction: Implications for Reform, Hillsdale, NJ: Lawrence Erlbaum.





<https://plato.stanford.edu/entries/critical-thinking/#DefiCritThin>

Best practices

<https://classes.berkeley.edu/content/2020-Spring-LS-22-1-LEC-1>

<https://www.tandfonline.com/doi/abs/10.3200/AEPR.109.4.21-32>

https://library.leeds.ac.uk/info/1401/academic_skills/105/critical_thinking/2

The spider web model by Van den Akker

https://www.researchgate.net/figure/2-Curricular-Spider-Web-Model-Van-den-Akker-Thijs-2009-The-more-recent-and-more_fig2_316191392

Self-directed learning

Definition

[https://www.researchgate.net/profile/D_Garrison/publication/249698827_Self-](https://www.researchgate.net/profile/D_Garrison/publication/249698827_Self-Directed_Learning_Toward_a_Comprehensive_Model/links/542afc8a0cf29bbc126a7c78.pdf)

[Directed_Learning_Toward_a_Comprehensive_Model/links/542afc8a0cf29bbc126a7c78.pdf](https://www2.le.ac.uk/offices/lli/developing-learning-and-teaching/teaching-and-learning-approaches-menu/independent-learning/self-directed-learning)

<https://www2.le.ac.uk/offices/lli/developing-learning-and-teaching/teaching-and-learning-approaches-menu/independent-learning/self-directed-learning>

Best practices

<https://is.cuni.cz/studium/predmety/index.php?do=predmet&kod=MB180C38> (in Czech)

https://ciel.viu.ca/sites/default/files/ten_metacognitive_teaching_strategies.docx

<https://www.uni-heidelberg.de/slk/Studyskills.html> (in German)

Blended teaching

<https://www.lifescied.org/doi/pdf/10.1187/cbe.12-03-0033>

Comparison of metacognition assessment tools

<https://www.improvewithmetacognition.com/wp-content/uploads/2017/01/Santangelo-Metacog-Assessment-Tool-Comparison.pdf>

intercultural and inclusive education

Best practices

<http://en.rownowazni.uw.edu.pl/>

<https://www.edglossary.org/multicultural-education/>

<https://files.eric.ed.gov/fulltext/EJ1173736.pdf>





https://cpb-us-w2.wpmucdn.com/edblogs.columbia.edu/dist/8/1109/files/2020/02/Guide-for-Inclusive-Teaching-at-Columbia_Accessibility-Revisions_15-January-2020_FINAL.pdf

Academic development

<http://www.ascd.org/ASCD/pdf/siteASCD/publications/books/Using-UBD-Culturally-Diverse-Sample-Chapters.pdf>

http://udloncampus.cast.org/page/udl_landing

