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Curricular Package Design for Transversal Competencies Development in Virtual Classrooms



Presa Universitară Clujeană

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2022

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Funding: This book was elaborated under the EEA Financial Mechanism 2014–2021, project 21-COP-0004 Bringing Real Life into Virtual Classrooms, implemented by the West University of Timisoara, Romania, in partnership with the Norwegian University of Science and Technology, Norway.

Disclaimer: This work was realized with the EEA Financial Mechanism 2014–2021's financial support. Its content (text, figures, tables) does not reflect the official opinion of the Program Operator, the National Contact Point, or the Financial Mechanism Office. The responsibility for the information and views expressed herein lies entirely with the authors.

ISBN 978-606-37-1605-8

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INTRODUCTION

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There is no denying that life is simpler and more convenient today than it was in the past. On one hand, the introduction and development of technology have greatly improved people's quality of life. People can now connect with one another more easily than in the past and have better access to many resources. Moreover, human rights have greatly benefited from the passing of time. On the other hand, the unexpected acceleration in developing new technologies and inventions have created other unforeseen problems. The sheer amount of information available for anyone who has access to the internet is hard to manage. Furthermore, deciding on which piece of information is authentic or true is an even more present issue. New jobs are created but they come at the cost of other disappearing jobs and industries. Another key thing to reflect upon is that the requirements of the labor market are rapidly growing in complexity; professional skills are no longer the only criteria for getting hired, transversal competencies such as communication, critical thinking, teamwork and decision making are also paramount.

Now, more than ever, individuals need to grow a model that allows for perpetual and renewable skills/competencies development. The higher education institutions are responsible for embedding transversal competencies in each student through the updated curricula.

This book is addressed to teachers, trainers, or students (future professionals) who want to either design courses or programs aimed at training transversal skills in virtual classes or want to learn or improve something in their teaching activity.

The *Curricular Package Design for Transversal Competencies Development in Virtual Classroom* is an open educational resource (OER). The first chapter tries to find an answer to the question *How are transversal competences integrated in the HEIs curriculum?* The authors identified three modalities: as distinctive courses or other learning activities dedicated to one or more transversal competences; by courses or training sessions organized by different universities' departments (some of them in partnership with stakeholders) and integrated in the general curriculum, together with professional competences. The second chapter presents the role of learning outcomes, their importance both in curriculum and instruction, and includes some examples about how we can formulate learning outcomes based on different taxonomies.

The third chapter presents four instructional models: information processing, behavioral, social interaction and personal, each of them corresponding to a learning theory. For each model, the most important strategies are presented, with practical references to how they can develop transversal competencies and can be applied online. The fourth chapter is a collection of strategies and methods that could be used in the virtual classroom for developing transversal competences. Also there are presented a collection of methods that could be a good starting point in implementing in virtual classroom specific for developing certain categories of competences. Chapter five presents the differences between the traditional assessment of learning and transversal competences assessment. Also, we could find studies and examples of methods used for assessment of transversal competences.

The *Curricular Package Design for Transversal Competencies Development in Virtual Classroom* is available on the website www.VRclassrooms.uvt.ro and is disseminated through the events organized in the frame of the EEA 21-COP-0004 Bringing Real Life into Virtual Classrooms project, including the International Conference *Challenges and Benefits of Learning and Teaching in Virtual Classrooms*, at Timisoara, in June 2023.

Acknowledgements

This book was elaborated under the EEA Financial Mechanism 2014–2021, project 21-COP-0004 Bringing Real Life into Virtual Classrooms, implemented by the West University of Timisoara, Romania, in partnership with the Norwegian University of Science and Technology, Norway.

We would like to acknowledge with gratitude the kind assistance, valuable help and encouragement of Oana Ivan, Andra-Miruna Stan-Drăgotesc and Daniel Luches.

We are grateful to teachers, researchers and administrative staff at the Norwegian University of Science and Technology and at the West University of Timisoara.

Chapter I. TRANSVERSAL COMPETENCIES. HOW ARE THEY INTEGRATED IN THE HEIS CURRICULUM?

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ABSTRACT: Higher education institutions develop various teaching and learning strategies to enhance the transversal competencies relevance for the employability and work integration of their students and to be reactive to the labor market and community needs. In the European universities are dominant three ways of curricular integration of transversal competences:

- Through courses and other various learning activities dedicated to one or more transversal competencies, which are usually offered to students from several study programs and from various areas of study;
- By university specialized career departments which offer students and alumni a wide-list of short-term courses and trainings on transversal competencies, and also mediate various encounters between students and the world of work;
- The transversal competencies are integrated in the basic curriculum, in the fundamental, complementary and specialized disciplines, together with the professional competences.

Transversal competencies can be used in a wide variety of social and labor contexts. They are considered to occur and be relevant for all the field activities, professions, study programs and areas of knowledge. Under the names of *soft skills*, *transversal competencies*, *21st century skills*, *cross-cutting skills* and *transferable skills*, these are expected by employers for any position of responsibility and for the specialists in any economic sectors. "*Industry leaders seek skills sets that span disciplines*" such as effective communication and teamwork, analytics-based quantitative and intelligent information literacy, flexibility and adaptability etc., which can produce productivity gains in work and profit (Becerra, 2021). Employers require system engineers to be able to communicate effectively, naval engineers to understand how production costs are calculated, software developers to understand how an analysis of needs is elaborated. The skills that are most attractive to employers are: written and oral communication, teamwork, ethical decision-making, critical thinking, the ability to apply knowledge in cross-disciplinary and multi-cultural settings, to reflect on one's own work and on the results of work, the ability to adapt to change, creativity, to organize time and resources for the benefit of the organizational development (Sá & Serpa, 2018; Whittemore, 2018; World Economic Forum, 2018).

In the relationship between universities, the economic environment and the community, transversal skills are recognized for their positive impact on employment, professional integration and career development of higher education graduates. The demand for transversal competencies is increasing and there are strong arguments that graduates with such skills can achieve more easily the professional success, can better adapt to the rapid changes in the work organizations and have the capacity to produce significant positive impact on their community (Robertson, 2022; Becerra, 2021; World Economic Forum, 2018).

Thus, in order to face the challenges of the global labor market, the universities have integrated into the curricula of the study programs specific disciplines for the development of transversal competencies, have developed university departments specialized in mediation of internships, volunteering activities in the community and practice modules for companies in industry, in institutions and labor organizations, and have oriented the students towards transnational and international study programs, which put students and professors from several universities in the interdisciplinary context of collaborative learning, on real-cases from the world. These initiatives are explicitly aimed at developing transversal competencies, employability and competitively on the global labor market.

Current labor market trends dictate to a large extend the curricular approaches of universities. Higher education institutions reform their curricula to ensure the development of transversal competencies for students.

I.1. TRANSVERSAL COMPETENCIES ARE TARGETED THROUGH DEDICATED SUBJECTS OF STUDY

University courses developed to enhance the relevance of the transversal competencies are organized by specialized faculties of departments and are offered to students from different study programs.

Ghent University's Doctoral School offers „transferable skills“ through seminars grouped into five categories (see Table X). The activities are (co-)organized by the Doctoral School and faculties and are offered to PhD students from the fields of study: Arts, Humanities and Law, Social and Behavioral Sciences, Bioscience, Engineering, Natural Sciences, Life Sciences and Medicine (Ghent University, 2022).

Table 1. Ghent University offer of seminars in Transferable Skills
(adaptation after Ghent University, 2022)

Skill cluster	Transferable competencies	Examples of courses
Expertise	Research management Specialized knowledge	Postdoc Grant Writing Course Research Data management. A practical course GDPR in research

Critical Thinking	Project management Critical and analytical skills Innovative & creativity	Data manipulation, visualization and analysis in Python Expedition DO! Next-level searching for scientific information Speed reading
Professional leadership	Personal Effectiveness Informal leadership Career development	Applying for a post-PhD job Bounce! Working with confidence, slip-ups, stress and resilience From PhD to SME 2022 Interuniversity Job Market for Young Researchers 2022
Interpersonal skills	Communication Teamwork International & cross-cultural mindset	Knowledge for growth PhD Innovative Café Preparing for an international career Project management Turning research data into powerful visuals Let's Talk Science
Professionalism	Ethics and integrity Community engagement	How to get published Popular scientific writing: reach readers outside of academic walls An introduction to Engaged Learning for PhD students GDPR in research

In addition, Ghent University offers students the opportunity to choose courses and professional seminars that contribute to the development of transversal competencies. These courses are included in the *Research & Valorization* category. Examples of such specialized courses are: Getting started with Nvivo for qualitative data analysis, Dynamic report generation with R markdown, Upgrade your Python skills: data wrangling & plotting, Building interactive apps with Shiny in R, LISa-teams 2022, Courses and training in AI, Introduction to technology transfer skills, Global engagement module, Ethnographic research, Design and analysis of observational studies, Strategies in qualitative data-analysis from a grounded theory perspective, SPSS for beginners (Ghent University, 2022).

Norwegian University of Science and Technology offers the mandatory course *Experts in Teamwork* for students from all master study programs. The course develops teamwork skills through a project-based learning process. The projects are carried out by multidisciplinary teams of students and has an open curriculum, involving students and companies in the curriculum development process. The course provides insights into the dynamics of teamwork and includes collaboration with workers and employers in the industry. In addition to multidisciplinary team activities, students complete a *Book for Reflections* using a guide for writing reflections about the student team and about the process of developing the team's activity report. In all their activities, students are mutually dependent on the willingness to cooperate, the presence and contributions, the experience and background of the other students of their team members and experts with which they collaborate. They negotiate and develop a set of rules of cooperation that all participants sign after being approved by the teacher and who contain a set of priorities regarding: the

contribution of individual initiative during the preparation of the team project and the final result; communication rules and communication climate; and rules for solving problems and disagreements that may arise in teamwork and interpersonal relationships between team members. Student projects must clearly show the social benefits targeted and how the results can be implemented and continued. Equally, the submission of projects must include a description of the advantages of multi-disciplinary in developing the results achieved. At the end of the course, the presentation of the projects is open to the general public, and the students must invite the experts from the industry with whom they collaborated in the process of developing the project (Anderson, 2022).

L'Università di Torino has specialized courses for the development of transversal competencies, such as the *General Management Soft Skills* course offered to the MA students form the Management of Local Public Transport Companies and Mobility Services in the generic curriculum (L'Università di Torino, 2022). Complementary, L'Università di Torino offers specialized courses for career development, using a cross-disciplinary and transnational curriculum (L'Università di Torino, 2018).

University of Essex has developed the *Interdisciplinary Studies Centre*, where students can choose between study topics in the fields of humanities and social sciences and can learn and work together with researchers and teaching staff from different departments. The approach of the University of Essex was developed from the need for flexibility, customized learning plan, interdisciplinary and global focus. All these courses are framed in interdisciplinary modules and are taught by lecturers from different departments of the university. In addition, study abroad programs are promoted to enrich students' learning experiences with different cultural perspectives, language and communication skills (University of Essex, 2021).

Starting with the academic year 2014-2015, the West University of Timisoara has implemented a package of activities for students, organized as complementary disciplines that form transversal competencies, offered to students from cycle I, from all study programs, as part of their basic training. The disciplines offered are very varied and have in common the cross-sectional dimension and the assumed objective of developing the soft skills required on the market for graduates and thus increasing their employability: digital skills, personal and social skills, experiential learning, learning how to learn, awareness and express cultural identity. For example, in the frame of the *Classroom Laboratory* course: a) Students analyze their teamwork, and based on their understanding they reflect on how they communicate and collaborate, plan, make decisions, solve tasks, handle disagreements and relate to the academic, social, cultural and personal differences. In this way, students learn from their own experience, develop their teamwork skills and achieve the transversal competencies specified in the curricular description of the Classroom Laboratory course; b) Teaching staff's principal approach relies on the design of courses through need assessment. The need assessment process implies the collaboration with employers, policy makers and other stakeholders, in order to capture fresh data regarding contemporary needs of the labor

market. The learning activities also involve monitoring and feedback mechanisms that keep the need assessment up-to-date and enhance the continuous improvement of the components of the education model (VR-classrooms, 2022).

Complementary, the Department of International Relations of the West University of Timisoara offers numerous study programs abroad and intensive study programs for intern and international students who aim to improve soft skills. For example, it organizes annually for 70 international students from Bachelor and Master levels, the *West University Summer School*, lasting two weeks, receiving participants from 23 universities from various countries and continents. The wide range of courses within the summer school program supports the development of soft skills for participants, including courses aimed at developing personal skills, public speaking, collaboration in teams, communication and social skills (West University of Timisoara, 2022).

I.2. TRANSVERSAL COMPETENCIES ARE DEVELOPED BY THE UNIVERSITY'S CAREER DEPARTMENTS

If carried out in a professional, safe and relevant environment, the early professional insertion of the students already during their studies brings numerous benefits: it allows students to acquire professional experience that offers them multiple employment opportunities and can be harnessed in their careers; contribute to students' professional orientation because they gain the knowledge of how is more advantageous to make decisions about starting their careers; students may apply theoretical knowledge in practical work assignments; students avoid daunting work contexts on the informal labor market, precarious, low-paid jobs; increase the visibility of the university in the business environment, in non-academic areas, increase the academia relevance in labor market and local economy, and also can bring revenue to the university; it contributes to the successful integration of graduates into the world of work.

This curricular approach of practicing and developing transversal competencies for students is common for many higher education institutions which are very well connected to the world of work and brings relevant benefits for the society.

The University of Oxford, through the Careers Service, has developed a set of services for all students and alumni, which includes the online platform *Oxford Guide to Careers 2022* (Robertson, 2022) and is focused on a set of core employability skills, frequently required by all sectors activities and usually listed in the jobs description (CBI Report, 2009). In the curricular design of these training activities, the Careers Service at the University of Oxford started from employers needs assessment and explicit requirements for higher education graduates. The importance of developing and demonstrating skills that are not necessary developed through academic activities, and in particular commercial awareness and teamwork competencies have been taken into account. The way that transversal

competencies are operationalized into curriculum and extra-curricular learning activities are described in the Table 2.

Table 2. Developing work-relevant skills
(adapted after *The Oxford Guide to Careers 2022*, pp. 35-41)

Core skill	Skill description	...operationalized by learning activities as the following:
Initiative	To get things done Make things happen	Promoting an event and ensuring active participation. Implementation of an entrepreneurship activity (own business, a social economy enterprise, an organization). Development of a website for an association or organization. Involvement in activities to represent the interests and needs of a student organization. Organization of a charity or fundraising action.
Communication	To demonstrate interpersonal skills To empathize and convince To communicate in writing and orally	Attracting and involving participants and speakers in a social event. Attracting sponsorships for a student club. Persuading alumni to donate to a students' organization. Work experience in a position of public relations, in direct relations with customers. Writing a blog on a topic of personal interest and increasing the number of views. Involvement as a contributor to a student academic journal or student radio station. Development of advertising materials for a charitable organization. Creating YouTube presentations, a personal podcast. Involvement in public debates organized by the university. Volunteering at social events and actions. Volunteering at events to disseminate learning outcomes or to promote the university and the department.
Teamwork	To work in a group and to achieve tangible results	Practicing a team sport, in a sports club. Involvement in the production and organization of events for a choir, orchestra or music band. Contribution to decision-making in a students' organization. Involvement in team projects at the courses where this option is available. Involvement in student advisory groups. Involvement in teamwork for customers, companies, industry, students' association. Involvement in information campaigns, awareness for social causes, mental health, equality or social equity. Involvement in student teams working in the university's research laboratories.
Creativity	To be curious and innovative	Combating the resistance to change. Involvement in brainstorming activities for events. Involvement in actions of consistency, highlighting, design and performance of such actions.

	<p>To find alternative solutions</p> <p>To understand and take risks</p>	<p>Creating ideas for services and departments of the university.</p> <p>Involvement in entrepreneurial activities.</p>
Planning	<p>To organize people and resources</p> <p>To achieve predetermined goals and to meet the deadline</p>	<p>Organizing a prom, party, conference or campaign.</p> <p>Coordination of the electoral campaign for the election of students.</p> <p>Representing students in the decision-making bodies of the university or compete for the election of the management of a student association.</p> <p>Organizing an association or event to raise funds for a social cause.</p> <p>Organization of a sports, cultural or artistic event.</p> <p>Editing a student publication.</p>
Leadership	<p>To have the ability to motivate, influence and organize others</p> <p>To have a vision</p> <p>To involve others in the concretization of the vision and achieve quantifiable results</p>	<p>Having a leadership position.</p> <p>Producing or directing a play, organizing an event.</p> <p>Completing a leadership course.</p> <p>Volunteering in a youth organization.</p> <p>Involvement in a student organization.</p> <p>Promoting the university to the potential candidates for enrollment in the study programs offered by the university</p> <p>Having a leading position in a sport team (team captain), in a musical band.</p>
Self-management	<p>To manage time and tasks</p> <p>To demonstrate flexibility, resilience and performance based on the feedback received</p>	<p>Involvement in extra-curricular learning activities, in addition to the study program and activities at the university.</p> <p>Demonstrating up-skilling capacity by training in areas distinct from the one for which they are studying: a foreign language course, a web design course, a first-aid course.</p> <p>Set personal goals that require extracurricular training. For example, participating in a marathon.</p> <p>Participation in an organized challenge, such as a charitable action or intervention in a crisis situation.</p> <p>Involvement in a research project that is not part of the current activities.</p>
In-touch and agile	<p>To be aware of the general context and sensitive to the new emerging trends</p> <p>To demonstrate responsiveness to these emerging trends in a practical and productive way</p>	<p>Involvement in researching new trends in the field of specialization for which they are studying (How does machine learning influence sectors such as banking or consulting? How do robotics and artificial intelligence influence medicine, law, governance or manufacturing?)</p> <p>Involvement in zero-emission initiatives, zero single-use plastic products.</p> <p>Involvement in projects involving data analysis, machine learning, robotics.</p>

Computing & IT	IT skills	<p>Enrolling in IT courses.</p> <p>Enrolling in coding courses.</p> <p>Downloading of professional software and observe the level of competence during the trial period.</p> <p>Getting to know a new operating system.</p> <p>Designing an app.</p> <p>Development of a website for a student organization.</p> <p>Volunteering within a research project, department or student organization.</p> <p>Developing the design and updating a website.</p> <p>Attending Geek Night events to meet and interact with professional developers and designers.</p>
Commercial awareness	To understand the key factors of a successful business	<p>Organizing an event that brings profit, such as a concert, a ball, an exhibition with sale.</p> <p>Involvement in educational projects involving collaboration with the business environment.</p> <p>Enrollment in strategic management courses offered by the university.</p> <p>Negotiating with local business to obtain a sponsorship or a discount for members of the student organization.</p> <p>Enrolment and involvement in the activities of a student organization in the entrepreneurial area.</p> <p>Participation in entrepreneurial competitions, involvement in initiating a start-up.</p>

To support students in the development of the above-mentioned transversal competencies (Table 2), the University of Oxford offers dedicated study insight schemes, internships and personal development programs. For example, the *Oxford Strategy Challenge* (2022) is an experiential learning activity in which students take part in the development of a client-centric strategy in a real working context, during a week. Students are placed in teams of four members whose work is to provide advice on a client's project and to contribute effectively to a work organization. The first, each student team receives a brief description of a real challenge, and then, in a very short time, with a duration of five days, the team must develop a project through which to identify a solution for the challenge coming from the client. In this way, students are put into a real organizational situation, under time pressure, take part in the dynamics of some team processes and must be reactive to an unexpected challenge, to draw up, summarize and present to the client a viable practical result. Prior to the beginning of the relationship between the client, the students are preparing through online training sessions on how to relate to potential clients, what communication techniques are more suitable and how to report the identified practical recommendations to the client.

The Heriot-Watt University addresses cross-cutting competencies through the *Careers and Graduate Futures Service*, orienting students towards developing skills that make them competitive on the labor market, identify job offers for students and prepare them to apply

for a job, internship or volunteering program that would contribute significantly to the development of their professional profile (Heriot Watt University, 2022).

The National University of Ireland Galway offers courses specialized in the development of transversal competencies through the *Research Development Centre* (DRC). These are offered to students from PhD and MD Programs and include Innovation, Creativity, Entrepreneurship, Agility, Teamwork, Communication and presentation skills, etc. The transversal competencies are presented as *key assets* for the graduates' CV and for the development of their careers. Examples of dedicated disciplines are: Culture awareness in health and social care research, Academic English writing skills for graduate researchers' module, GreenLab principles and practice module (National University of Ireland Galway, 2022).

Similarly, the University of Cologne organizes soft-skills seminars and training courses through the *WiSo Career Service*: Project management, Presentation skills, Leadership (University of Cologne, 2022).

I.3. TRANSVERSAL COMPETENCIES ARE INTEGRATED INTO THE BASIC CURRICULUM

Higher education institutions can include learning objectives for transversal competencies in the curricula of the fundamental and specialized courses of the study programs, together with the professional competencies. In describing the activities for discipline that forms transversal competencies, it is stated that soft skills are just as important for the work integration as the professional development and a specialized diploma and academic degree.

For example, the University of Manchester lists among the competencies developed in the history courses, a variety of versatile and transferable skills, such as: Analysis, Critical reasoning, Teamwork, Argument and debate, Communication, Presentation, and Time management. The University of Manchester also offers students opportunities to volunteer in organizations around the world to support their development of transferable skills, but also other opportunities aiming the same goal: internship and other forms of gain work experience, scholarships funded by companies, part-time and occasional jobs, networking events, workshops and mentoring (University of Manchester, 2022).

Similarly, at the University of Navarre, the study programs of the Faculty of Economics and Business Administration cover soft skills such as Teamwork, Oral and Written Communication, Cooperation, Leadership, Ethics, Project Management. These soft skills are integrated into the fundamental, complementary and specialized courses of each study program, and are operated in compulsory study activities for all students, such as: elaboration of two projects during the semester period; learning experience in problem-based and crisis management contexts; case studies; work visits and cooperation with business experts, internship programs (Universidad de Navarre, 2022).

A similar approach can be found at the Latvijas Universitāte from Riga, that offers to doctoral students an intensive study program, called the *International Doctoral School for Soft Skills Improvement* for their success in research, academic and scientific innovation, through the Erasmus+ MODEST project. The transversal competencies pursued are: Academic writing for research publication purposes, Modern approaches towards creating successful presentations for scientific reports, Modern methodology of scientific research, Scientific ethics, Intellectual property, Project's preparation and management, Internationalization of research. The courses are taught by professors from universities in Latvia, Finland, Poland, Russia, Armenia and Belarus (Latvijas Universitāte, 2022).

CONCLUSIONS

The present study report presented examples of how universities approach the curricular design for the transversal competencies to enhance the relevance and quality of the teaching and learning activities. By implementing one or more of these curricular approaches, the higher education institutions prove the educational system flexibility, adaptability and relevance in relation with the employers needs assessment, the world of work requirements and societal needs when building and guiding the educational path for their students.

REFERENCES:

- Anderson, N. H., *Experts in Teamwork. Handbook for village supervisors and learning assistants*. Trondheim: Norges Teknisk-Naturvitenskapelige Universitet, 2022. <https://www.ntnu.edu/eit>
- Becerra, I., *The Need for Interdisciplinary in Higher Education*, Frobes Business Council, 2021. Retrieved from: <https://www.forbes.com/sites/forbesbusinesscouncil/2021/07/22/the-need-for-interdisciplinarity-in-higher-education/?sh=b4d2b731ad95>
- CBI Report, *Future fit. Preparing graduates for the world of work*, Confederation of British Industry: The Voice of Business, 2009. Retrieved from: <https://www.careers.ox.ac.uk/files/cbi-hre091-future-fit-reportpdf>
- Ghent University, *Transferable Skills Seminars (co-)organized by the Doctoral Schools*, 2022, Retrieved from: <https://www.ugent.be/doctoralschools/en/doctoraltraining/courses/transferableskills/all>
- Heriot Watt University, *Careers Service*, 2022. Retrieved from: <https://www.hw.ac.uk/study/why/careers-advisory-service.htm>
- Latvijas Universitāte, *Modernization of Doctoral Education in Science and Improvement of Teaching Methodologies (MODEST), Project no. 598549-EPP-1-2018-1-LV-EPPKA2-CBHE-JP*, 2022. Retrieved from: <https://www.modest.lu.lv/lv/>
- L'Università di Torino, *Prepare for your future career! Cross-border doctoral workshops*, 2018. Retrieved from: <https://en.unito.it/events/after-your-phd-prepare-your-future-career-cross-border-doctoral-workshops>
- L'Università di Torino, *General Management Soft Skills*, 2022. Retrieved from <https://en.unito.it/ugov/degrecourse/1170327>
- National University of Ireland Galway, *Transversal Modules*, 2022. Retrieved from: <https://nuigalway.ie/graduate-studies/currentstudents/gsmmodules/othertransversalmodules/>
- Robertson, A. (Editor), *The Oxford Guide to Careers 2021*, Careers Service: University of Oxford, 2022. Retrieved from: <https://www.careers.ox.ac.uk/develop-your-employability-skills>

- Sá, J. & Serpa, S. M., "Transversal Competencies: Their Importance and Learning Processes by Higher Education Students". *Educ. Sci.* 8 (126), 2018, pp. 1-12. <https://doi.org/10.3390/educsci8030126>.
- The Oxford Strategy Challenge, *Get Real-World client experience*, Careers Service Program, 2022. Retrieved from: <https://www.careers.ox.ac.uk/oxford-strategy-challenge>
- The Oxford University, *The Oxford Guide to Careers*, Careers service, 2022. Retrieved from: <https://www.careers.ox.ac.uk/guide>
- The University of Manchester, *University-wide careers and employability initiatives*, 2022. Retrieved from: <https://www.alc.manchester.ac.uk/history/study/careers-and-employability/>
- Universidad de Navarra, Dirección de Empresas y Estrategia. *Visión General del Programa, 4 años, 240 ECTS, Facultad de CC. Económicas y Empresariales*, 2022. Retrieved from: <https://www.unav.edu/documents/4599927/0/Direcci%C3%B3n+de+Empresas+definitivo+DES+CARGA.pdf>
- University of Cologne, *WiSo Career Service*, 2022. Retrieved from: <https://wiso.uni-koeln.de/de/praxis/wiso-career-service/>
- University of Essex, *Interdisciplinary Studies Centre*, 2022. Retrieved from: <https://www.essex.ac.uk/centres-and-institutes/interdisciplinary-studies>
- VR-classrooms, *The Classroom Laboratory NTNU-UVT Joint Course, EEA Grants 2014-2021, Bringing Real-Life into Virtual Classrooms (VRclassrooms)*, Project no. 21-COP-0004, 2022. Retrieved from: www.VRclassrooms.uvt.ro
- West University of Timisoara, *West University of Timisoara Summer School*, 2022. Retrieved from: <https://ri.uvt.ro/west-university-of-timisoara-late-summer-school-4th-edition-wut-summer-school/>
- World Economic Forum, *Future of Jobs Report, Centre for the New Economy and Society*, 2018. ISBN 978-1-944835-18-7, Retrieved from https://www3.weforum.org/docs/WEF_Future_of_Jobs_2018.pdf

Chapter II. LEARNING OUTCOMES

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ABSTRACT: In this chapter we focus on learning outcomes. Any activity, in order to be efficient, must be organized and planned meticulously, in advance. The didactic activity does not deviate from this principle. The first step in designing an instructional activity is establishing the learning outcomes. In this chapter, we have analyzed what learning outcomes mean, we have observed the positive aspects and the possible challenges in their implementation in an educational context and we have exemplified how to develop them by exploiting Bloom's taxonomy, for all three domains and on the SOLO taxonomy.

II.1. INTRODUCTION

Living in a dynamic and competitive world, characterized by change and speed is a challenge for everyone nowadays. Universities made no exceptions. Large access to education, diversity in students' cohorts, nontraditional students, and the demands of the labor market to have well-prepared students with well-defined learning results to specialization more visible to the labor market are challenges that universities have to face nowadays.

Universities must define the learning outcomes for every study program/specialization as a benchmark for assuring quality and efficiency (Maher, 2004). Learning outcomes could be identified at three different levels:

- the local level of higher education institutions: course units, modules, study programs, qualifications,
- the national level: qualifications frameworks and quality assurance systems,
- internationally: for recognition of studies and transparency purposes (Adam, 2004).

Biggs and Tang (2011) specified that the intended learning outcomes could be: at the institutional level, the degree program level, and the course level.

The development of a coherent and consistent set of learning outcomes is part of the current approaches that we find in universities, having direct implications, both at the curriculum level: construction/development of a study program and development of a discipline (Tam, 2014) but also at the instructional level (teaching-learning-assessment) and

the level of quality assurance mechanisms (Hansen et al., 2013; Randahn & Niedermeier, 2017).

In a world like ours, where the information explosion has a dizzying speed, where technology facilitates access to information in a very short time, where professions disappear and new ones appear, universities must prepare graduates for a world extremely dynamic and unpredictable. Learning outcomes could become an important tool in making learning and the results of learning more visible for students, teachers, employers, and society as a whole.

To the question *What else deserves to be taught because it deserves to be learned?* learning outcomes can be an important and relevant support element in finding possible answers.

II.2. WHAT ARE THE LEARNING OUTCOMES?

Defining learning outcomes brings the learning process and student-centered approach to the fore, because teaching is about organizing relevant learning situations that need to be designed, implemented, and evaluated.

Although there are different definitions of learning outcomes, by different authors or in different reports, they are not extremely different in meaning. The elements of phrases that we have restated in most of these definitions refer to:

- what a learner is expected to know, to do or to understand, and/or be able to demonstrate (Nusche, 2008);
- refers to a limited period (Gosling and Moon, 2001);
- a result of a learning period/experience (Otter, 1992; Watson, 2002);
- knowledge, skills, and attitudes (Svanstrom, Lozano-Garcia & Rowe 2008);
- written in a student-centered perspective; concise, meaningful, and achievable; that could be observed and demonstrated (Spady, 1988; Melton, 1996).

Based on the various definitions, some aspects are common: learning outcomes are focused on the learner and the learning process and not necessarily on the content and the learning outcomes, must be correlated with the assessment, and should be demonstrated by the students at the end of the learning process (a long or short period).

Maybe the definitions are not very clear or a little too general and some is overlapping with terms like aim/goal, objectives, or competencies. We will try to make some delimitations between those.

The aim/goal is more related and connected with teachers' intentions and teaching and learning outcomes. The aim is a broad statement that gives the direction of a learning experience and could be general or particular. For example, *the discipline will introduce students to the transversal competencies topic.*

The main overlapping is between learning outcomes and objectives. There are situations when those terms are used to mention one concept. Both of them could be

formulated based on Bloom's Taxonomy (Bloom, 1975) and there is not a precise and correct way to formulate the learning outcomes.

Learning objectives could be written in different ways:

- in some situations, they are written as a statement that expresses what we intend to teach, the main focus being on the topic or the content: *we will debate about the importance of developing transversal competencies in higher education;*
- in another context they are formulated in terms that express what students will learn: *students will argue the importance of integrating transversal competencies into the curriculum.*

The learning outcomes will focus on the student and how she/he will be able to demonstrate that they achieved the respective result, thus facilitating the learning assessment.

In the article *The emperor's new clothes: from objectives to outcomes*, Prideaux (2000) emphasized the main differences between learning outcomes and instructional objectives. The criteria are the following: the detail of specification; the level of the specification where the emphasis is placed; the classification adopted and interrelationships; the intent or observable result and the ownership of the outcomes.

Another concept that the learning outcomes intersects is the term competence. In some countries, the two terms competence and learning outcomes and sometimes the objectives are used to tell the same story. This thing is confusing most of the time. A competence or a set of competencies means that a person can demonstrate a certain capacity or skill and perform a task in a way that allows evaluation of the level of achievement (Adam, 2004). That is why competence is more related to the labor market and occupational standards and learning results are more related to a certain subject or a study program. The learning results from different subjects could be combined into competencies. Competencies are related to specific tasks, especially related to real-life situations.

Adam (2004) synthesizes the main characteristics of the learning outcomes and their various applications in the higher education system (Table 3):

Table 3. Towards a typology of learning outcomes and their multiple applications
(Adam, 2004, pp. 10-11)

Mode and area of application	Features and attributes
Module (learning outcomes employed at the level of the unit or module as statements that identify what a successful learner will be able to know, understand and/or, be able to do)	<p>Concerned with the achievements of the learner.</p> <p>Differ from 'aims' that indicate the intentions of the teacher.</p> <p>Directly link to a teaching strategy for the effective delivery of the learning outcomes.</p> <p>Directly link to an assessment strategy and appropriate assessment criteria.</p> <p>Are developed in a context of a wide range of internal and external reference points and influences.</p>
Assessment and grading criteria (at the level of the module, learning outcomes can be	Assessment criteria are the description of what the learner is expected to do to demonstrate that the learning outcome has

used to express the criteria that establish the standard of achievement and the relative performance of individuals)	<p>been achieved. These are normally written at the threshold level and distinguish the pass and fail threshold.</p> <p>Grading criteria refer to the precise quality of the achievement of the outcome. They distinguish the relative performance of each student. Grading criteria are also written as learning outcomes.</p>
<p>Unique individual qualification Descriptors (learning outcomes used for describing and expressing individual subject-specific qualifications validated/accredited by a Higher Education Institution)</p>	<p>Written individually or collectively by academics and are unique to a specific qualification and institution.</p> <p>Include subject-specific statements of skills, abilities, and understanding.</p> <p>Can include general transferable/transversal skills that are sought by employers.</p> <p>Will be created within the context of the appropriate national and/or international 'external reference points' and qualifications frameworks.</p>
<p>National qualification descriptors (learning outcomes as generic descriptions of types of qualifications)</p>	<p>Exemplify the generic (non-subject specific) outcomes of a nationally recognized qualification.</p> <p>Produced by appropriate national authorities.</p> <p>Will include statements of the wider abilities of a typical holder of the qualification (transferable/transversal skills).</p> <p>Linked to national-level descriptors. A generic qualifications descriptor can encompass several national-level descriptors to show a progression or just typify one level.</p> <p>Generally, describe the learning achieved by a student at the finish of a qualification (as do the international 'Dublin Descriptors').</p> <p>Act as an external reference point, for those at the institutional level, developing individual qualifications.</p>
<p>Cycle descriptors (Also known as the 'Dublin descriptors', describe the three cycles of the Bologna overarching qualifications framework in terms of learning outcomes)</p>	<p>Adopted by the 45 Bologna Process countries and used to express the three cycles of the 'framework for qualifications of the European Higher Education Area (EHEA)'.</p> <p>Are composed of generic statements of the typical expectations of achievement and abilities associated with awards that represent the end of each Bologna cycle.</p> <p>Function as meta-level international descriptors (guidance tools) that act as an external reference point for those developing 'new style' national qualifications frameworks and national levels descriptors.</p>
<p>National subject benchmark statements (learning outcomes employed as statements designed to make explicit the general subject-specific academic characteristics and standards of programs in the UK)</p>	<p>Subject benchmark statements set out expectations about standards of degrees in a range of subject areas.</p> <p>They describe what gives a discipline its coherence and identity, and define what can be expected of a graduate in terms of the techniques and skills needed to develop an understanding in the subject.</p> <p>These have been extensively developed in the UK by the Quality Assurance Agency (QAA).</p> <p>They function as subject-specific external reference points for curriculum designers.</p>

	Internationally, the Tuning project explores the significance of subject-specific and general competencies. It has encouraged detailed reflection on subject-specific learning outcomes associated with the first and second Bologna cycles.
National level descriptors (Learning outcomes employed as generic statements that describe the characteristics and context of learning)	<p>Designed to provide a shared understanding of each level and to facilitate the comparisons to be made between qualifications and learning at each level. A qualification will often straddle several levels.</p> <p>The number and complexity of national-level descriptors is a matter of national decision. They are often expressed in terms of knowledge and understanding, cognitive skills, practical applied skills, learner autonomy, etc.</p> <p>They can be expressed in terms of what the best student might achieve (aspiration) or minimum standards (threshold) or something in between.</p> <p>Act as an external reference point for those developing individual qualifications as well as modules and units.</p>

II.3. LEARNING OUTCOMES- A COIN WITH TWO FACES

One face of a coin is the benefits of creating, in higher education institutions, a culture that value the learning outcomes; and the other is the possible difficulties and challenges.

One face of the coin is the main advantage for universities as a whole, for teachers, students, employers, and for the wide public. One of the most important advantage is making the learning more visible and changing the accent from teaching to learning: a student-centered approach is a concern of higher education institutions, moving the accent from a content-based curriculum to a more student-centered approach. Learning outcomes represent a more realistic and genuine measure of the value of education than measures of teaching input (Maher, 2004). For teachers or staff from universities it is a good opportunity to make the program or the discipline more transparent for the public and themselves. For universities it is a way of presenting the products of their work to the public: the community as a whole, students, employers, and also a mechanism for quality assurance. On the other hand, the freedom of moving from one place to another raises the problem of recognizing the study. Defining the learning results of a program/specialization in one country could help the recognition of studies at another university, and it is a way of clarifying the specificity of a study program/specialization. Establishing learning outcomes for every program/study program could be a good instrument in clarifying the key topics and the approach of them, and could be a good opportunity to make the educational programs more attractive and more related to the labor market.

Reflecting systematically upon the main outcomes of the learning process, teachers could make their curriculum more relevant and focused. Selecting the teaching and learning activities and assessment methods and instruments based on the learning outcomes is a way to assure curriculum alignment.

For students, it becomes more clear what they have to learn in different programs or a certain subject, and thus contributes to a better understanding of what is expected of them, as well as the skills/competencies, understanding, and abilities that they will acquire on successful completion of their study (Adam, 2004). Many higher education institutions face the phenomenon of students dropping out, especially after the first year of study, because they do not have a clue about what is going on at universities or because they expected something else. Having a clear picture of the learning outcomes of a study program/specific subject could be a good starting point in understanding the universities' requirements and the specificity of a program or subject.

Few studies have addressed the problem of learning outcomes from the student's perspective. One of these is *Learning about learning outcomes: the student perspectives* (Brooks et al., 2014). The authors invited students from Biological Sciences, English, and Medicine at the University of Leicester to complete a questionnaire about their perceptions of learning outcomes. In the end, 918 students completed the questionnaire, and 20 of them were invited to a focus group for an in-depth study of the problem. Students said the learning outcomes are an important part of their learning experience, that help them to better orient inside the academic subject, but the learning outcomes should be sometimes more clearly formulated. For a part of the students, that are focused particularly on the evaluation as opposed to learning, the learning outcomes could be simply one more box to check.

Because learning is happening anywhere, in formal, non-formal, and informal contexts, the learning outcomes could facilitate the process of accreditation of learning and recognizing students' competencies. For example, students could see a subject's learning outcomes and could ask for recognition of their competencies. In this way, the learning path is more flexible and adapts to the student's needs.

Reflection and elaborating the learning outcomes both for a program and for a particular subject or topic could be a good opportunity for teachers to make visible to students what they intend to teach and help them make a good design of a course, articulating the learning outcomes, content, teaching strategies, and assessment. Also, this could be an opportunity to improve the curriculum and facilitate the students' learning.

Learning outcomes are important also for employers and the labor market in general. One of the main issues in the higher education area is how to make the educational offer more attractive and adapted to the labor market. Professional competencies related to a certain field are very important, but also the transversal competencies; the future skills are on the educational agenda and valued by employers.

At the international level, the process of study recognition could be easier, because of the learning outcomes. Living in a global world, the process of study recognition between different educational institutions and different countries is easier to be done than nowadays.

The other face of the coin is the possible difficulties or negative effects of the way how we understand to apply the learning outcomes starting from the premise that there is no perfect way to establish the learning outcomes.

One possible objection is related to the possibility of restricted creativity and the learning process. Not all students learning at universities could be condensed into a certain number of learning outcomes. Being adopted from the VET system, the concern is related to transforming education into a target-led culture focused on ticking boxes and a crass instrumentalist approach (Adam, 2004).

The application of the learning outcomes is a long-term process, based on collecting a lot of information from different sources (teachers, students, employers, studies/reports), reflecting together, and improving continuously. Simply adopting the learning outcomes does not automatically lead to quality in higher education institutions. The design of the learning outcomes is recommended to be a flexible team process (Maher, 2004; Coxal et al., 2001), adapted to different variables, such as the specificity of the disciplines and specializations.

Learning outcomes have an important impact on the way we see curriculum and instruction at the mezzo and micro levels.

II.4. HOW DO WE FORMULATE THE LEARNING OUTCOMES?

One of the most well-known landmarks in the formulation of learning outcomes is Bloom's taxonomy (Armstrong, 2010) (Figure 1). The six stages, developed for the cognitive level, are organized from simple to complex.

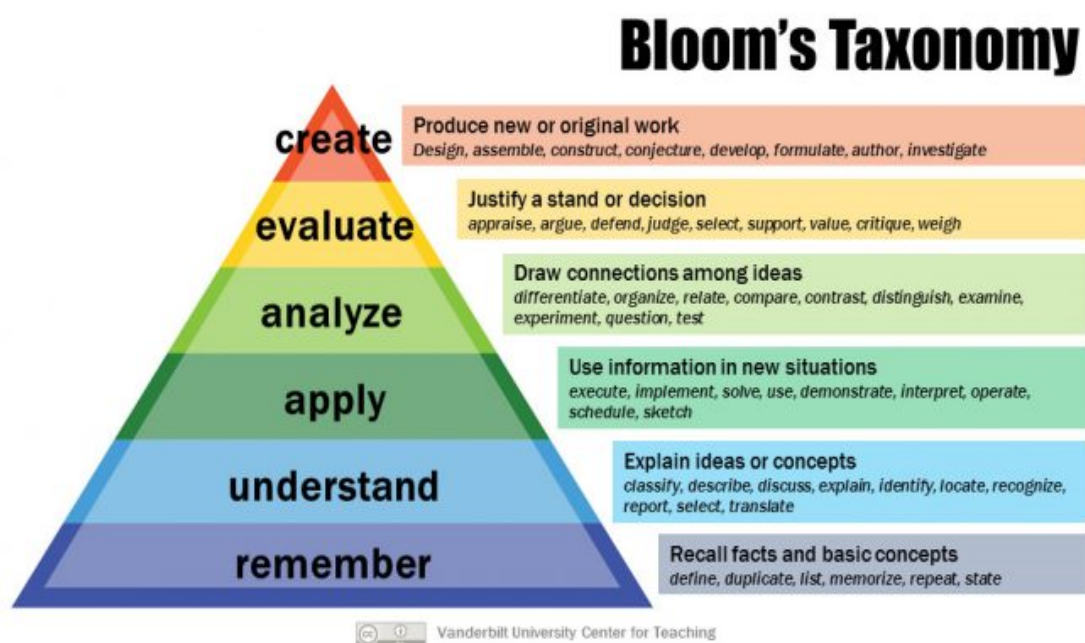


Figure 1. Bloom's Taxonomy-cognitive domain (Armstrong, 2010, Bloom's Taxonomy. Vanderbilt University Center for Teaching)

Bloom and his collaborators developed the first taxonomy in 1956; it was composed of the following categories: knowledge, comprehension, application, analysis, synthesis, and evaluation. 45 years later, in 2001, a revised version of Bloom's taxonomy appears under the

name *A Taxonomy for Teaching, Learning, and Assessment: a revision of Bloom's taxonomy of educational objectives* (editors Anderson & Krathwohl, 2001). Knowledge level was renamed as remembering, comprehension was renamed as understanding, the evaluation is the fifth element instead of synthesizing and appears as a new stage, create.

Each level includes a list of action verbs that describe cognitive processes and can be used as a useful benchmark in formulating learning outcomes. We will try to give examples of learning outcomes for each level of Bloom's taxonomy, trying to operationalize the set of transversal competencies.

Examples for the *Remember* level:

- describe the elements of the communication process;
- identify the consequences of lack of communication inside of a team;
- list the criteria that must be taken into account when leading a group;
- describe the main stages of a conflict;
- recall curriculum terminology: competencies, objectives, learning materials, study program.

Examples for the *Understand* level:

- classify different types of communication by taking into account different criteria;
- explain the importance of involvement in a group activity of each member of the group;
- predict the causes of different types of conflict;
- identify solutions for overcoming conflicts;
- recognize the structure of a good oral presentation.

Examples for *Apply* level:

- apply knowledge of assertive communication in managing group conflict;
- select the most appropriate communication tools in different situations/contexts;
- modify the structure of a given written paper to respect the structure of an essay;
- solve different group conflicts, identifying the causes and proposing feasible solutions.

Examples for *Analyze* level:

- organize different types of decisions and their consequences;
- compare and contrast different decision-making models;
- examine the advantages of teamwork;
- compare the communication skills of different individuals;
- analyze why messages could provoke different reactions from different people.

Examples for *Evaluate* level:

- assess the importance and relevance of different elements for good communication in an intercultural context;
- summarize the main contribution of each participant in a group discussion;
- predict the effect of some variables in a group dynamic;
- evaluate own performance and others' performance in a group.

Examples for *Create* level:

- formulate a feasible solution in order to stimulate teamwork;
- investigate the causes of a conflict situation;
- design a communication plan for a certain organization.

Bloom's taxonomy for the cognitive domain is the most known and most used by practitioners. Also, the affective and psychomotor components of learning are organized in specific levels (see Figure 2 and Figure 3).

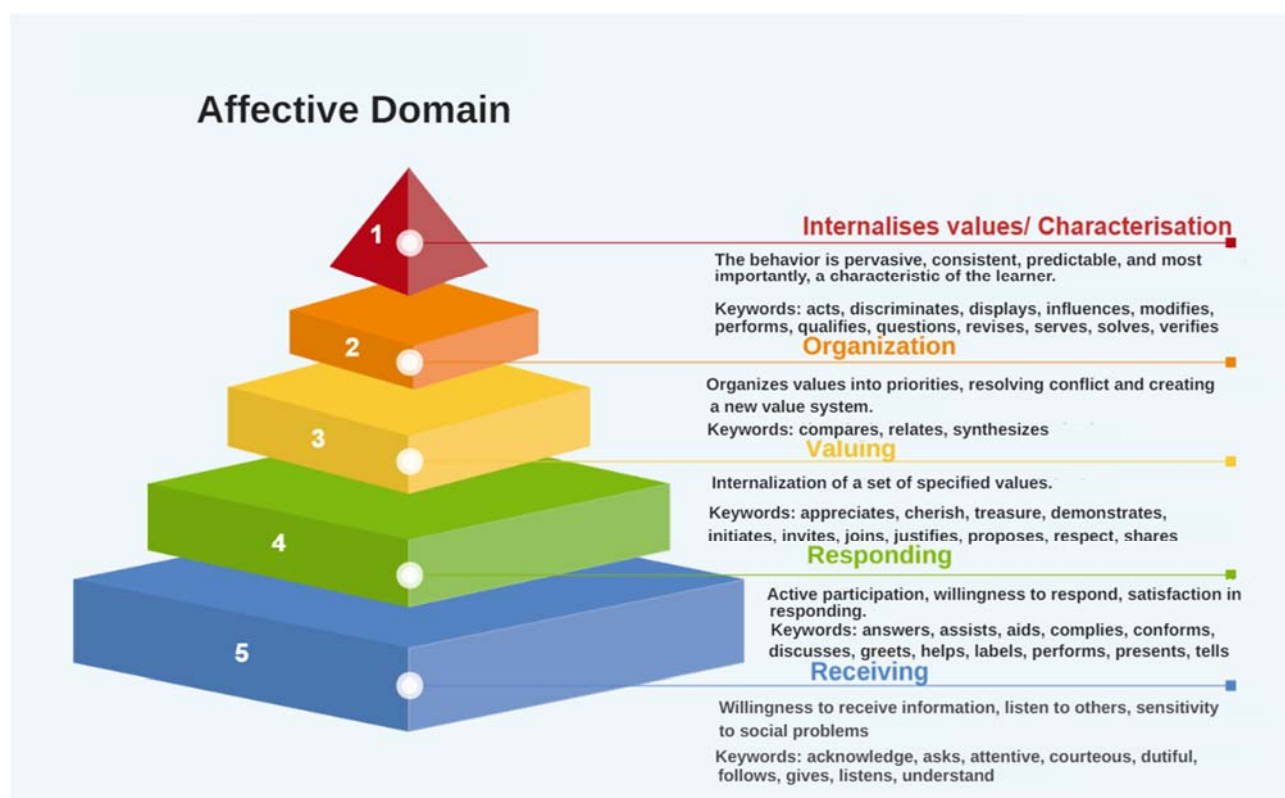


Figure 2. Affective domain and examples of the action verbs

Examples of learning outcomes for the affective domain:

- listen actively to the other's opinion;
- relate well with all members of a group;
- display a willingness to interact and communicate well with other members of a group;
- respect others' opinions;

- compare different decisions from the ethical point of view;
- involve in a group discussion;
- solve different problems based on future professional life;
- perform as an active member of a group.

The psychomotor domain (Figure 3) is the third and less used domain in establishing objectives or learning outcomes. This domain underlines the role of physical skills. Only a few disciplines or subjects are directly connected with the development of physical skills, for example, arts, physical education, drama, science, and music.

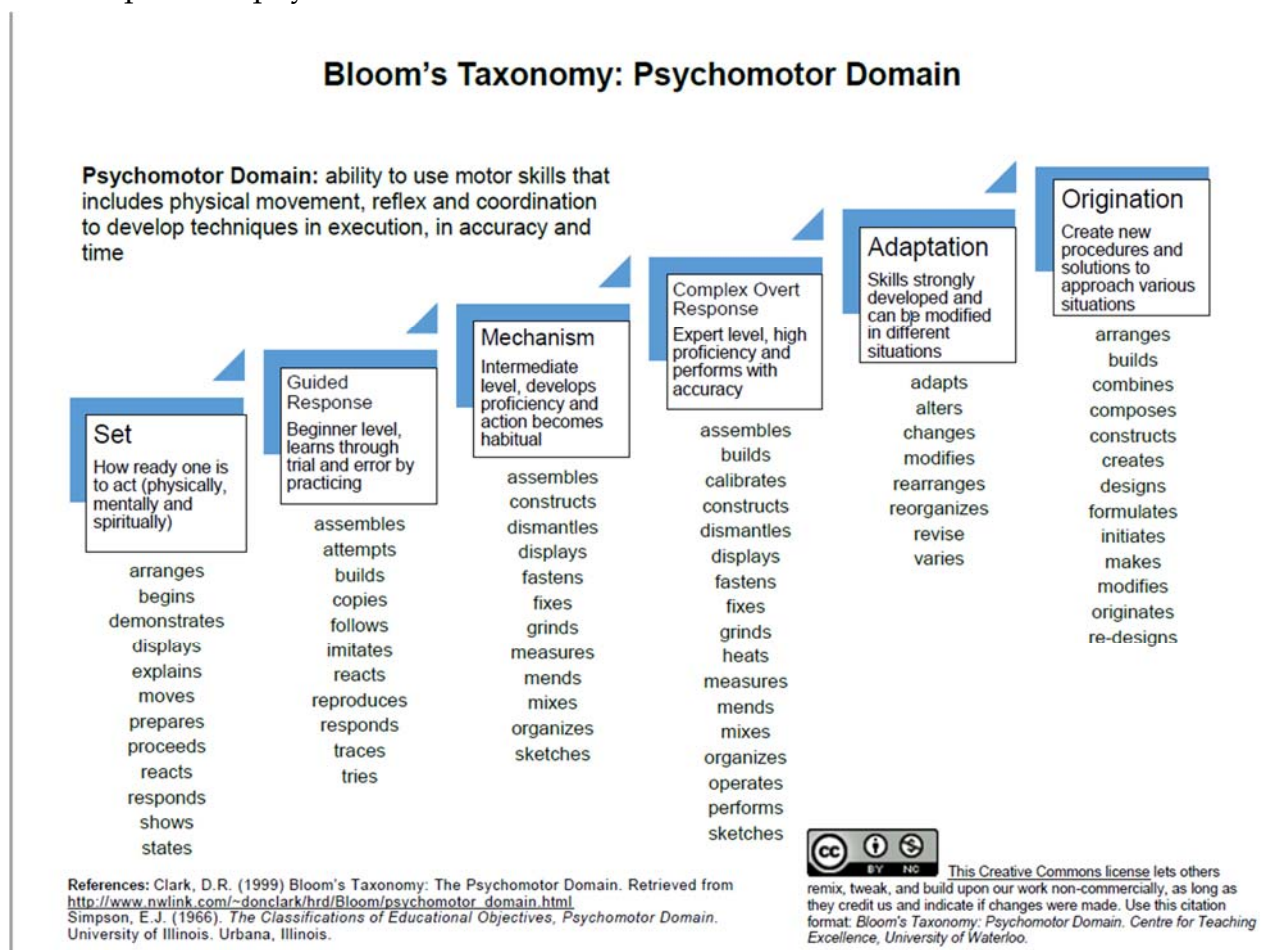


Figure 3. Bloom Psychomotor Domain (Clark, 1999)

Examples of learning outcomes for the Psychomotor domain:

- present the results of a project in an oral report;
- perform a meeting using the communication principle;
- use efficiently different digital tools;
- integrate the technology in distance communication;
- revise a written report based on the feedback or certain criteria;

Having well-formulated learning outcomes for study programs or for a certain discipline is not a sufficient condition to have a quality instructional process or to have a quality curriculum in our universities. The learning outcomes must be correlated both with the teaching/learning activities and with the assessment tasks. This is, in short, the essence

of the constructive alignment (Biggs & Tang, 2011). The word constructive belongs to constructivism and refers to the way in which the learner builds new knowledge based on previous schemes and knowledge. The word alignment belongs to curriculum theory and refers to the concordance or alignment between the results we pursue and the way we evaluate them.

In designing and writing the learning outcomes, Biggs and Tang (2011), recommend the following steps: decide what kind of knowledge is to be involved (declarative or functioning knowledge); select the topics you teach and the level of understanding intended. A concept almost automatically linked to the idea of constructive alignment is the SOLO taxonomy, as we can see in the Figure 4 (Biggs & Tang, 2011). John Biggs and Kevin Collis in 1982 used the SOLO taxonomy to describe levels of increasing complexity in student's understanding (Biggs & Collins, 1982). This could be used in students' self-assessment of their own learning as a reflection tool.

Unistructural	Memorize, identify, recognize, count, define, draw, find, label, match, name, quote, recall, recite, order, tell, write, imitate
Multistructural	Classify, describe, list, report, discuss, illustrate, select, narrate, compute, sequence, outline, separate
Relational	Apply, integrate, analyse, explain, predict, conclude, summarize (précis), review, argue, transfer, make a plan, characterize, compare, contrast, differentiate, organize, debate, make a case, construct, review and rewrite, examine, translate, paraphrase, solve a problem
Extended abstract	Theorize, hypothesize, generalize, reflect, generate, create, compose, invent, originate, prove from first principles, make an original case, solve from first principles

Figure 4. *Some verbs for ILOs from the SOLO taxonomy (Biggs & Tang, 2011, p. 123)*

CONCLUSIONS

In the educational field, we use sometimes different terms to name educational intentions or achievements. What is most important, besides the words we use, is the connection with the product of learning. Those learning outcomes should be formulated in a user-friendly manner in order to be understood and accepted, both by teachers and students.

Regardless of the advantages and possible ambiguities or challenges related to learning outcomes, in the didactic activity we must have established milestones that will help us design, implement and effectively evaluate the student's learning activities and our own teaching activities.

Even if there are different opinions regarding the importance or relevance of learning outcomes, it is relevant that, when we use them, we should not do it for bureaucratic

purposes, to formulate them because it is necessary or required of us (Brook et al, 2014), but to keep their educational role.

REFERENCES:

- Adam, S., *Using Learning Outcomes: A consideration of the nature, role, application, and implications for European education of employing learning outcomes at the local, national, and international levels*. Report on the United Kingdom, Bologna Seminar, July 2004, Herriot-Watt University.
- Anderson, L. & Krathwohl, D. (Eds.), *A taxonomy for learning, teaching, and assessing: a revision of Bloom's taxonomy of educational objectives*, New York: Longman, 2001.
- Armstrong, P., *Bloom's Taxonomy*. Vanderbilt University Center for Teaching. 2010. Retrieved from <https://cft.vanderbilt.edu/guides-sub-pages/blooms-taxonomy/>
- Biggs, J. & Collis, K., *Evaluating the quality of learning: The SOLO taxonomy*. New York: Academic Press. 1982.
- Biggs, J. & Tang, C., *Teaching for Quality Learning at University. What the Student Does*, Fourth edition, Society for Research into Higher Education, Open University Press, McGraw Hill, 2011.
- Bloom, B.S., Masia, B.B. and Krathwohl, D. R., *Taxonomy of Educational Objectives Volume II: The Affective Domain*. New York: McKay, 1964.
- Bloom, B.S., *Taxonomy of Educational Objectives, Book 1 Cognitive Domain*. Longman Publishing, 1975.
- Brooks, S., Dobbins, K., Scott, J.J.A., Rawlinson, M., Norman, R., "Learning about learning outcomes: the student perspective", *Teaching in Higher Education*, 19(6), 2014, pp. 721-733, <https://doi.org/10.1080/13562517.2014.901964>
- Clark, D.R., *Bloom's Taxonomy: The Psychomotor Domain*, 1999, www.nwlink.com
- Coxall, M., Gledhill, M., Smith, P., *The Learning Outcomes Game*. Aldershot: Gower, 2001.
- Gosling, D. and Moon, J., *How to use Learning Outcomes and Assessment Criteria*. London: SEEC Office, 2001.
- Hansen, J. B., Gallavara, G., Nordblad, M., Persson, V., Salado-Rasmussen, J., Weigelt, K., *Learning outcomes in external quality assurance approaches: Investigating and discussing Nordic practices and developments: Nordic quality assurance network in higher education*, 2013.
- Kennedy, D., *Writing and using learning outcomes: a practical guide*, Cork, University College Cork, 2007.
- Maher, A., "Learning Outcomes in Higher Education: Implications for Curriculum Design and Student Learning", *Journal of Hospitality, Leisure, Sport and Tourism Education*, 3(2), 2004, <http://doi.org/10.3794/johlste.32.78>
- Melton, R., "Learning Outcomes for Higher Education", *British Journal of Educational Studies*, 44(4), 1996.
- Nusche, D., "Assessment of Learning Outcomes in Higher Education: a comparative review of selected practices", *OECD Education Working Papers*, 15, 2008, <https://dx.doi.org/10.1787/244257272573>
- Otter, S., *Learning Outcomes in Higher Education, A Development Project Report*, Unit for the Development of Adult Continuing Education (UDACE), 1992.
- Prideaux, D., "The emperor's new clothes: from objectives to outcomes", *Medical Education*, 34, 2000, pp. 168-169.
- Randahn, S., & Niedermeier, F., "Quality Assurance of Teaching and Learning in Higher Education Institutions. Module 3". In Randahn, S., & Niedermeier, F. (Eds.), *Training on Internal Quality Assurance Series*. Duisburg/Essen: DuEPublico, 2017.
- Spady, W. G., "Organizing for Results: The Basis of Authentic Restructuring and Reform", *Educational Leadership*, 46(2), 1988.
- Svanstrom, M., Lozano-Garcia, F., Rowe, D., "Learning outcomes for sustainable development in higher education", *International Journal of Sustainability in Higher Education*, 9(3), 2008, pp. 339-359, <https://doi.org/10.1108/14676370810885925>

Tam, M., "Outcomes-based approach to quality assessment and curriculum improvement in higher education", *Quality Assurance in Education*, 22(2), 2014, pp. 158-168. <https://doi.org/10.1108/QAE-09-2011-0059>.

Watson, P., "The role and integration of learning outcomes into the educational process". *Active Learning in Higher Education* 3(3), 2002 pp. 205-219.

Chapter III. INSTRUCTIONAL MODELS

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ABSTRACT: The instructional model is the reference frame of the entire instructional design. Each teacher can choose to design his teaching activity according to a certain paradigm. From this choice of an instructional model naturally derives the other methodological choices - of instructional strategies and methods. In this chapter, the four major instructional models are presented (Joyce & Weil, 1986): information processing, behavioral, social interaction and personal, each corresponding to a learning theory. For each model, the most important strategies are presented, with practical references to how they can develop transversal competencies and can be applied online. For each model and instructional strategy, web platforms are suggested that can be included in the teaching process.

Instructional design is a systematic process of planning the educational approach. The teacher, based on an educational philosophy and scientific research, designs an instructional approach that gives effective, sustainable, and reliable learning results. The instructional model is the basis of the instructional design because it provides the broad framework, the scientific reference paradigm of the entire approach. Each teacher, through his scientific training, adopts an educational paradigm that guides his educational approach. This model organizes the teaching and learning activity, directs towards certain methodological choices, proposes certain didactic strategies, which derive from the respective educational theory.

The instructional model includes the structure of teaching strategies, methods and activities that are put into practice to achieve the educational objectives and obtain the expected learning results. The instructional model is the element that provides the main direction for achieving the educational objectives.

Figure 5 shows the levels of instructional approach, from the most general, the instructional model, to the most specific and pragmatic, the instructional skills. These levels are represented in concentric circles, the broader and more generalized layer being the instructional model. The adopted model orients and directs the choice of instructional strategies, therefore implicitly of the methods and instructional skills:

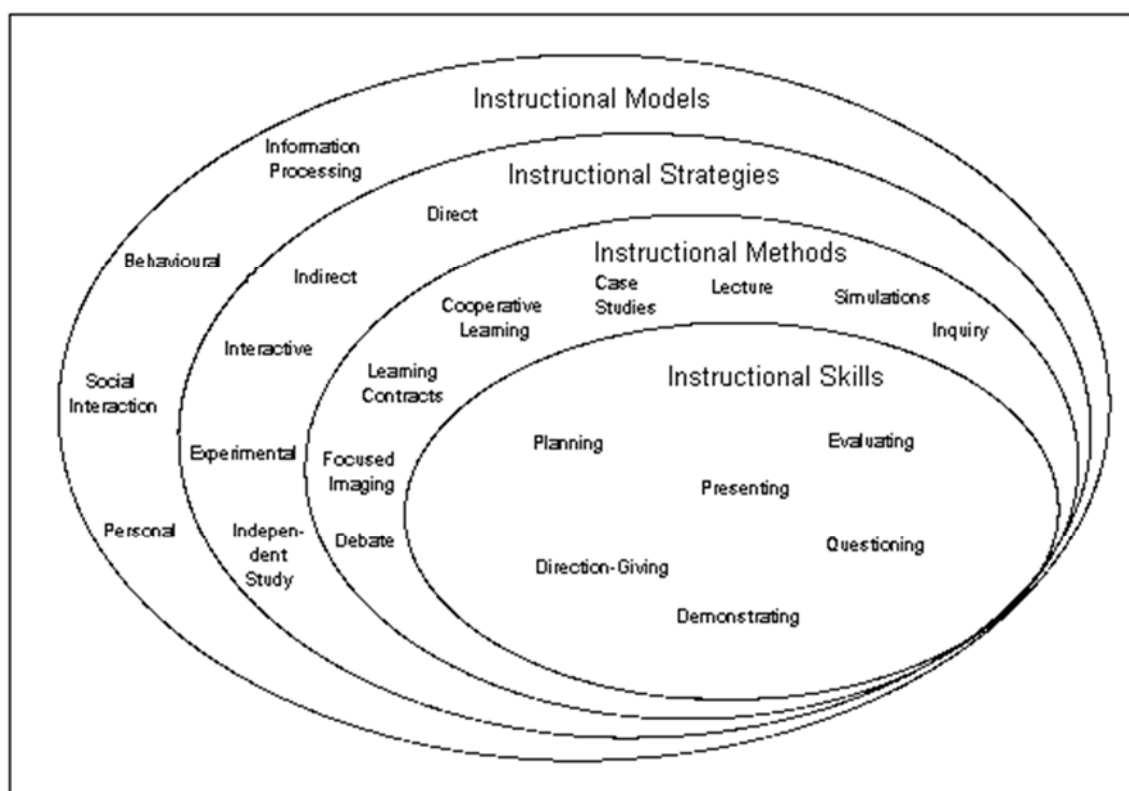


Figure 5. Levels of approaching in instruction

(<https://www.webpages.uidaho.edu/cte492/Modules/M3/Methods-Strategies.html>)

There are several models of instruction. We will present the taxonomy of models proposed by Joyce and Weil (1986) which includes four models: information processing, behavioral, social interaction and personal, each corresponding to a learning theory.

The model of information processing (IPT) (Figure 6) belongs to the theory of cognitive psychology and emerged in the 1950s as an alternative to the previous behavioral approaches. It explains and describes the functioning of mental processes by analogy with the functioning of computers. Just like a computer, the human mind receives external information, organizes it, and stores it in memory to be able to use it later. By analogy with a computer, we can talk about an input unit, a storage and processing unit, and an output device.

The input unit of our mind is represented by the Sensory Register, which consists of all the sense organs through which we receive information from the external environment. As the information is received by the sense organs and sent to our brain, they are processed by the Central Processing Unit, in fact our Working Memory or short-term memory. This is where the information is located temporarily so that it can be used or transferred to Long-term memory. LTM is a long-term storage space, similar to a computer's hard disk drive. When the information is processed and needs to be used, it is displayed through output devices, in our case through actions, behavior, language.

Information Processing Theory - Computer Analogy

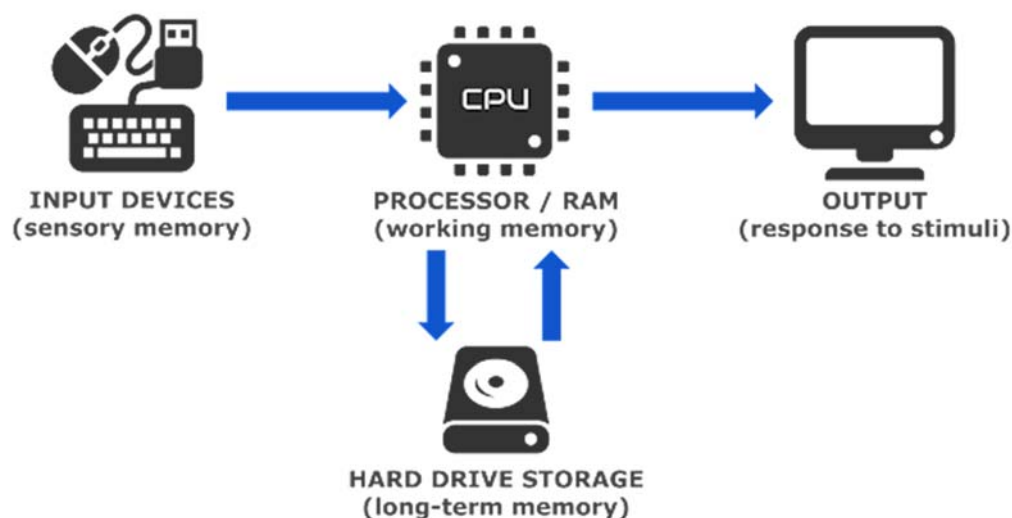


Figure 6. *Information Processing Theory – computer analogy* (Turple, 2016)

Most of the instructional design and lesson planning in Romania are based on the Information Process Theory.

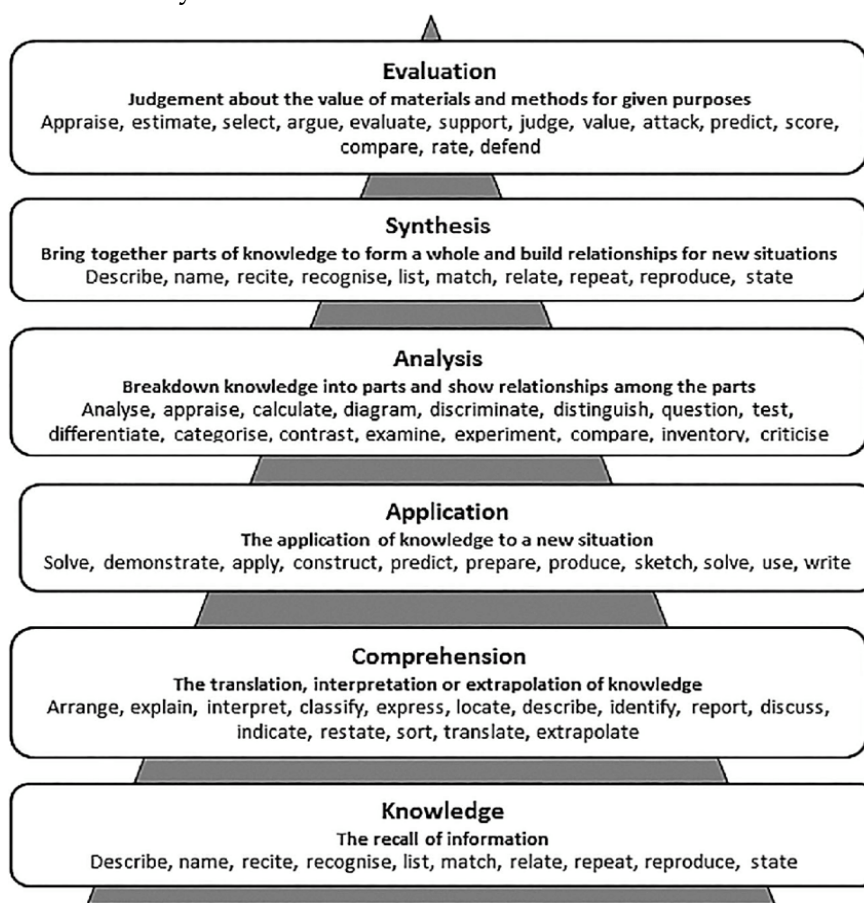


Figure 7. *Bloom's taxonomy of educational objectives: cognitive domain (1956) with associated verbs* (Cullinane & Liston, 2016, 253)

Designing educational goals is most often done with the help of Bloom et al. (1956) model. One of the most important classroom applications in relation with the IPT is Bloom et al. (1965) Taxonomy of the Cognitive Domain. They propose that educational objectives can be classified in six domains, related to each other and more complex (Figure 7). The teacher should plan the educational goals in accordance with the student and task characteristics, from the first level, knowledge (which simply requests the student repetition of what he has seen or heard) to the last, evaluation (which involves making their own judgements in relation to standards).

In instructional design and lesson planning Gagne model (Figure 8) is the one that most teachers in Romania use. Gagne's (2005) model of lesson design is based on the information-processing model of mental events that occur when adults are presented with various stimuli and focuses on learning outcomes and how to arrange specific instructional events to achieve those outcomes. Applying Gagne's nine-step model is an excellent way to ensure an effective and systematic learning program because it provides structure to lesson plans and a holistic view of teaching.



Figure 8. Gagne 9 events of instruction
(<https://www.coursearc.com/gagnes-nine-events-of-instruction/>)

This IPT model is often used in teaching and has numerous implications in the classroom. Slate and Charlesworth (1988) listed the following important aspects of learning and teaching in the classroom that are explained by this theory: attention, active learning,

meaningfulness, organization, advance organizers, memory aids, overlearning and automaticity.

Some basic principles in teaching are derived from this cognitivist model (Slate and Charlesworth, 1988):

- Capturing students' attention must be done permanently - it is important to use sensory signals that capture their attention, such as the tone of voice, the sound of a bell, light signals, or the proximity of the teacher.

- Re-actualization of knowledge. - bring to mind relevant knowledge for the new content. Thus, the information from Long-Term Memory is accessed and brought to Short-Term Memory, thus being easier to use. This updated information are the blocks of knowledge that allow us to understand the new contents.

- Highlighting important and relevant information. Didactic materials such as charts, handouts, and brochures can be used. Highlighting with vivid colors, or color-codes, brings the relevant information to the fore.

- Presentation of information in an organized manner - information must be presented in such a way that one flows from the other, knowledge is built from simple to complex, from concrete to abstract.

- Foster active learning - teacher should propose discussion, group activities, or individual activities to actively involve students in learning. In addition, students must make a sustained cognitive effort for the learning activity to achieve its goal: reading followed by answering questions, problem solving followed by demonstrations, and so on. Feedback on the learning tasks is another method to encourage active learning, alongside with the use of audio-video teaching materials.

- Making the learning material meaningful. It occurs when students can understand new information by making connections with already existing ones, grasp generalizations, rules, relationships between facts, and principles for which they see some use.

- The use of coding systems for memorizing information, using mnemonics. In primary classes, they can take the form of children's songs, accompanied by movement.

- Re-actualization, or repetition of knowledge. For an information to be entered into the Long-Term Memory and not forgotten, it must be constantly updated. This permanent updating can take the form of repetition of essential information, recapitulation, systematization of knowledge, or putting it in new contexts.

- Teach students how to categorize related information. The teacher should nurture inductive reasoning and present the content in a categorical manner.

Universities, to be current and connected to social needs, propose not only the development of specific, but also transversal skills. Transversal skills will help future professionals to rise to the required professional standards but also to achieve personal and professional goals, and will give them the satisfaction of professional fulfillment (Chamorro-Premuzica et al., 2010).

Instructional models can make their mark in defining the goals of education from the macro, university level, to the faculty, department, or discipline level. There are universities or faculties where the entire teaching staff adopts the same instructional model, others where each has the autonomy to adopt his own model. Our university, WUT, defined his own instructional model, which is mainly based on IPT and Gagne's model. In it, transversal competences are found in an important position, each teacher proposes his own transversal competences that he/she aims for the course.

Each model is beneficial in the development of certain transversal skills. IPT fosters especially transversal competencies related to learning and information processing, such as critical thinking, problem solving, learning management, inductive reasoning, or inquiry thinking.

The specific processes in the IPT are coordinated by the executive functioning or metacognition. Therefore, the strategies proposed by the teacher, that are part of the IPT model, will mainly develop skills related to metacognition (Figure 9).

Terms associated with Executive Functions

- | | |
|-------------------------|---------------------------------|
| • Abstract reasoning | • Hypothesis generating |
| • Anticipation | • Inhibition of impulsiveness |
| • Attentional control | • Mental flexibility |
| • Behavioral initiation | • Organization |
| • Behavioral regulation | • Planning problem solving |
| • Common sense | • Rule learning |
| • Concept formation | • Self-control |
| • Creativity | • Self-monitoring |
| • Estimation | • Set formation and maintenance |
| • Fluency | • Set shifting |
| • Goal setting | • Working memory |

Figure 9. *Executive functioning skills* (Baron, 2004, p. 134)

An example of how a university course, namely the Foundations of Special Education, can be approached according to the IPT model, also developing transversal skills, using online tools, is presented below (Table 4).

Table 4. Educational objectives for the course ~Fundamentals of Special Education~

Knowledge	<p>The student will be able to:</p> <ul style="list-style-type: none"> describe and explain the regularities of the mental processes and the psychological characteristics of persons with disabilities, critically analyze the principles and objectives of special education, critically analyze the specifics of educational accessibility for people with disabilities in various educational contexts.
Skills	<p>The student will be able to:</p> <ul style="list-style-type: none"> use in the specialized discourse the main psycho-pedagogical concepts, create the clinical picture of different types and degrees of disabilities, select the most appropriate accessibility in different educational contexts.
Transversal competences	<p>The student will be able to:</p> <ul style="list-style-type: none"> promote non-discrimination and fairness in society. promote respect for the rights of persons with disabilities. promote the social, school and professional integration of persons with disabilities. demonstrate critical thinking in analyzing and discussing special education issues apply problem-solving skills demonstrate problem-solving skills in teaching students with disabilities

Instructional strategies: Synchronous (Direct), Asynchronous (indirect), Interactive and Independent study.

Instructional methods: lecture, debate, case studies, inquiry

Platforms:

Google Classroom (as Learning management System) (<https://edu.google.com/>).

Kialo Edu (<https://www.kialo-edu.com>) for organizing debates.

Devpost (<https://devpost.com/software/case-builder>) for creating case studies

EdApp (<https://www.edapp.com/blog/inquiry-based-learning/>) for inquiry-based learning.

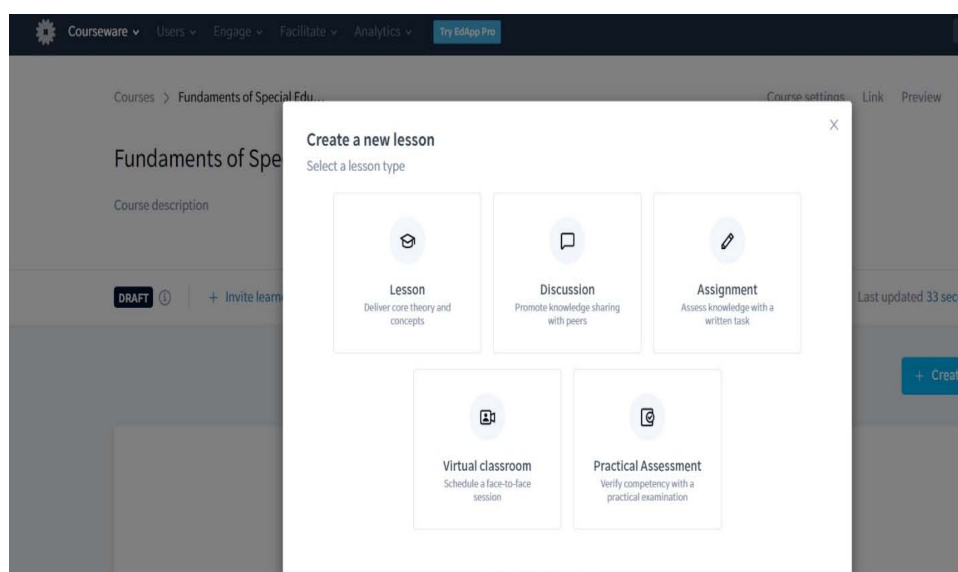


Figure 10. Inquiry learning opportunities using EdsApp

Discussion details

Discussion Title ⓘ

Special Teachers` mental health

89

Discussion Thesis ⓘ

If schools don't prioritize teachers' mental health, the achievement gap will widen dramatically for students with learning and thinking differences.

351



Discussion Language

English ▼

[Skip rest and complete](#)

The screenshot displays the Kialo Edu web application interface. At the top, a dark header bar contains the 'edu' logo, a search bar, and the title 'Special Teachers' mental health'. Below the header, the main interface is divided into a sidebar on the left and a central discussion area. The sidebar, titled 'My Tasks', lists several tasks: 'See all contributors' progress in the Tasks Overview.', 'Write 3 claims: 0/3 Claims', 'Write 2 claims below others' claims: 0/2 Claims', and 'Link to a source in 3 of your claims: 0/3 Claims'. The central discussion area, titled 'PERSPECTIVE All', shows a claim by the user 'ancalustrea' with the text: 'If schools don't prioritize teachers' mental health, the achievement gap will widen dramatically for students with learning and thinking differences.' Below the claim, there are two columns for 'Pros' and 'Cons', each with a green plus sign button. The interface also includes a 'Following' button and a lock icon in the top right corner.

Figure 11. Debate example (Using Kialo Edu)

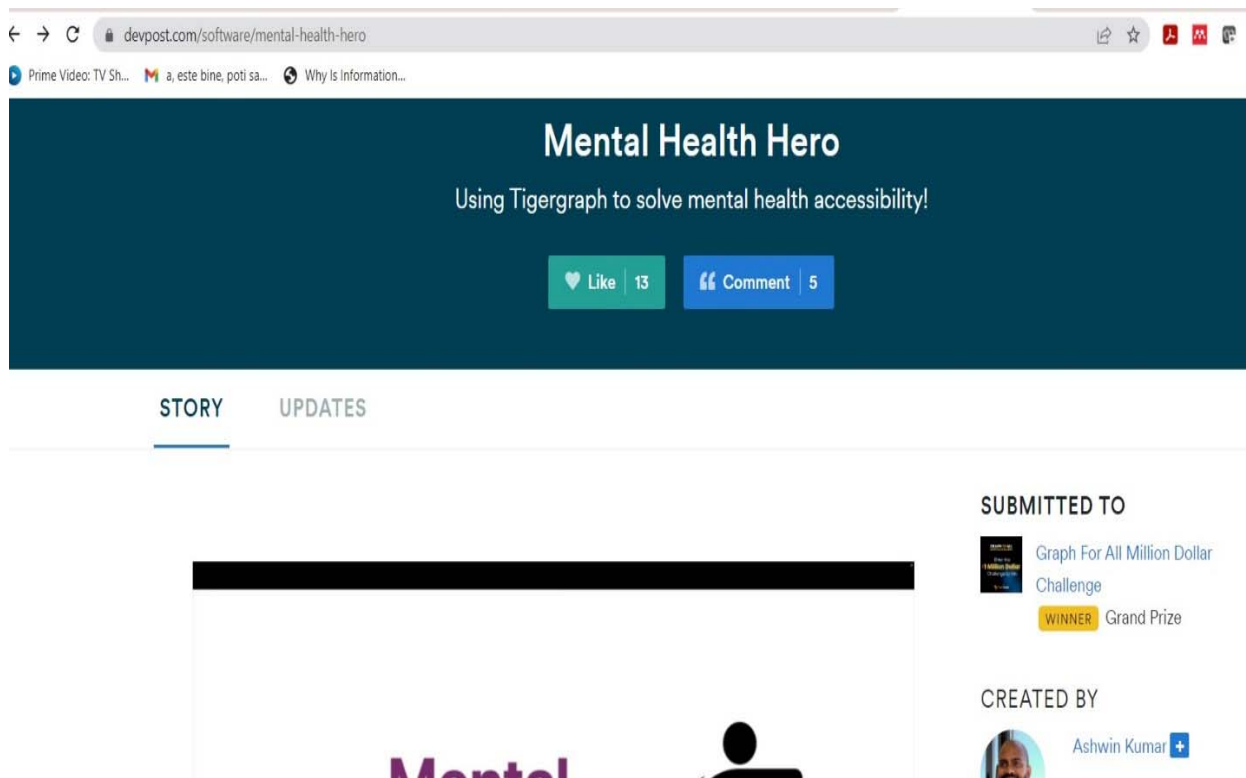


Figure 12. Case study using DevPost

The Behavioral model (BM) has its origin in behavioral psychology and behaviorist learning theories. The group of behaviorist theories on learning focuses on the environment-behavior relationship, especially on its observable aspects. Central to this approach is the idea that the mind is a "black box" in which we cannot see anything. According to most behaviorists, the only way we can figure out what's inside the human mind is to look at overt behavior. The feedback that connects behavior with stimuli that activate analyzers is studied extensively in the behaviorist perspective.

The three most important behaviorist theories of learning are:

1. Classical conditioning was the first type of learning discovered and discussed by the behaviorist current. The main theoretician of classical conditioning is I. Pavlov. Through his theory on conditioned reflexes, as the basis of all behavior, Pavlov made a special contribution to the development of learning theories over time. Conditioned reflexes are seen as behavioral mechanisms that consist of a response reaction of a motor or secretory nature of the body as an effect of the action of an external or internal stimulus. The ability to learn is similar to the ability to form conditioned reflexes, showing individual differences due to the type of nervous system.
2. Contiguity learning, developed by E. Guthrie, shows that any stimuli and responses connected in time or space tend to be associated in the future. According to the author, learning results from the last attempt made in the presence of a combination of stimuli, the whole learning being a consequence of the association between a particular stimulus and the response to it.

- Classical operant conditioning has Thorndike, Watson, and Skinner as prominent representatives. Opposite to classical Pavlovian conditioning, the method of operant conditioning seeks to get closer to reality, not being a provoked response but only spontaneous acts followed by reinforcement.

Behavioral studies in the field of classroom management have established ways of organizing the physical environment of the classroom to facilitate academic and social behaviors. Instruction itself has been the subject of many studies of classical - operant origins, resulting in a variety of teaching models, programmed instruction being perhaps the most relevant example.

The two most important training models of behaviorist origin are Direct Instruction and Mastery Learning.

Direct Instruction (DI) is an instructional model based on systematized and planned teaching on small learning units and clearly defined and prescribed teaching tasks. DI (Figure 13) is most common used in primary settings or in Special education classes.

Direct Instruction

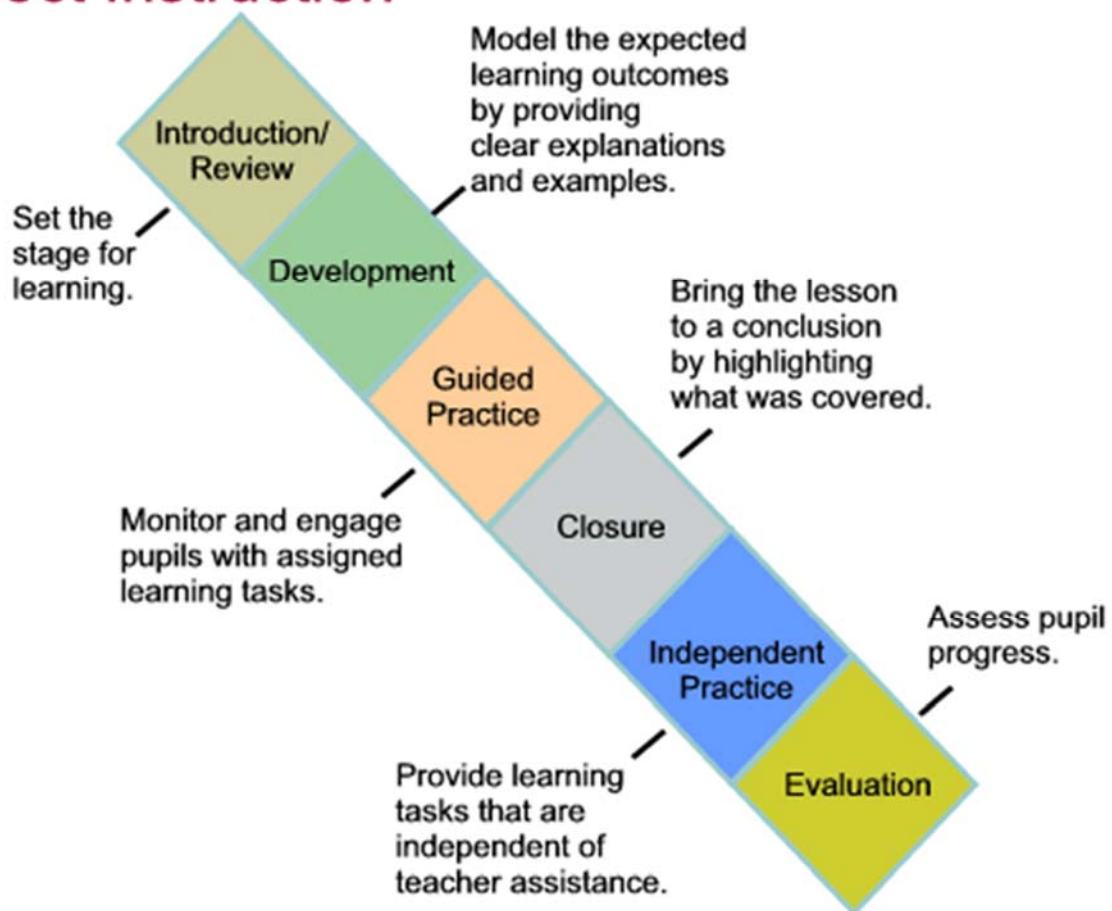


Figure 13. *Stages of DI* (<https://www.worksheetlibrary.com/teachingtips/directinstruction.html>)

The main characteristics of DI are:

- The students are organized in instruction at their skill level, and not necessarily at the age-appropriate level. At the beginning of the learning period, for example at the beginning of the school year, students are evaluated on the main learning skills and a starting level is established for each one. All students who have the same skill level are grouped in the same class, regardless of age.
- The program's structure is designed to ensure mastery of the content. The contents are gradually presented, from simple to complex, it is ensured that it starts from a level mastered by all students. Only 10% of the content of each lesson is new, the rest is repetition and systematization. Thus, it is ensured that all students can learn the contents.
- Instruction is modified to accommodate each student's rate of learning. Learning is done according to the pace of each student, some are offered additional time or support, others are offered accelerated learning, depending on their needs.
- Programs are field tested and revised before publication. All the proposed programs are empirically tested in the classroom before being proposed for implementation to the general public, which ensures their scientific, evidence-based character.

Mastery Learning (ML) is an instructional model first introduced by Bloom (1968) that propose multi-tiered lessons, formative assessment, and teacher feedback as main teaching strategies.

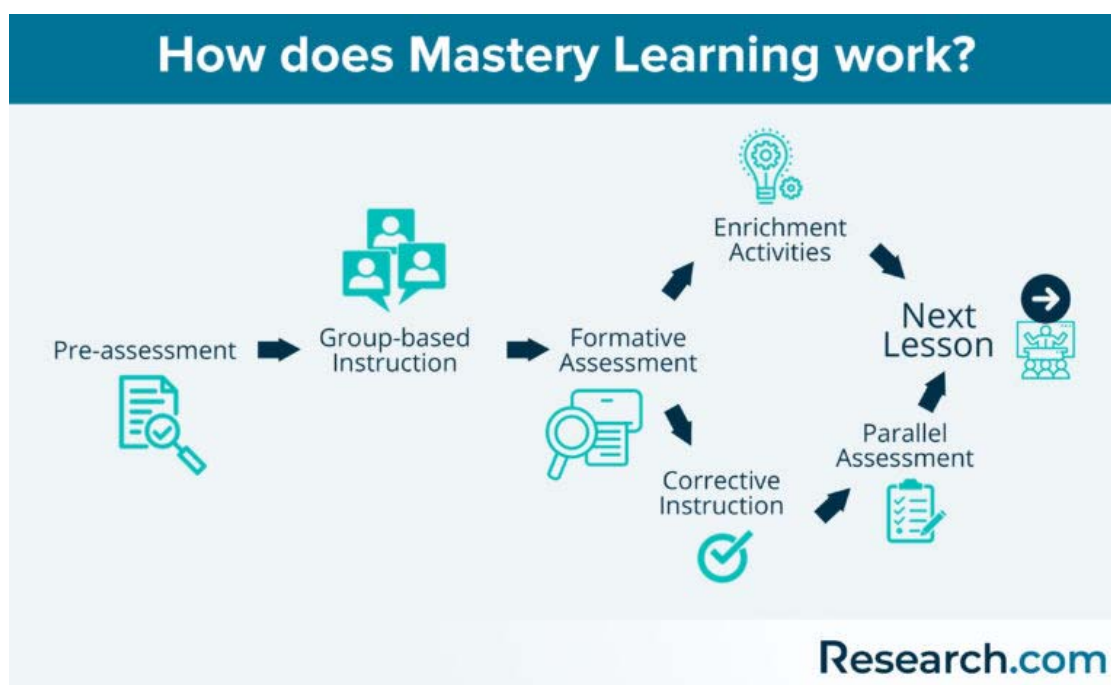


Figure 14. Mastery learning cycle (<https://research.com/education/what-is-mastery-learning>)

ML (Figure 14) was first proposed as a strategy to reduce the imbalance between high performance and struggling students. Main characteristics are:

- Teaching is done in small learning units with precise and clear objectives.

- Frequent use of evaluations: before, during and after the presentation of each content.
- The formative assessment, used throughout the semester, to determine the level of content mastery by all students and to take measures in time. Students can be evaluated several times, until they obtain a content mastery score of 70-90%.
- Corrective exercises and enrichment opportunities.

Tools used in ML:

- Gamification, using game strategies such as competition, rewarding points, grouping in teams to enhance learning. It is an increasingly used method in teaching, especially the online one, for its multiple benefits.



Figure 15. Elements of gamification (<https://elearningfeeds.com/gamification-trends-in-2019-packed-with-tips-and-ideas-you-can-use-2/>)

There are many sites and apps that offer gamification for teaching, such as: Quizlet (<https://quizlet.com/>), a site that offers web and mobile application to study math, languages, sciences, arts via games and flashcards; Khan Academy (<https://www.khanacademy.org/>) provides interactive short video lessons, practice exercises, and learning materials for creative lessons; Duolingo (<https://www.duolingo.com/>) a social app, language-learning game that encourages language learning with friends, by earning points, or own virtual currency; ClassDojo (<https://www.classdojo.com/>) connects students with teachers in virtual communities, help them manage learning via virtual classrooms, sharing media and messaging; Kahoot (<https://kahoot.com/>) allows teachers to create quizzes or learning games, host a live game

with questions from any domain, and permit students to participate in the classroom or remotely in the learning process.

- Group-based instruction or Cooperative Learning proposes an active and structured learning method in small groups. This method offers students the opportunity to interact in learning, to jointly discover contents, to assume individual and group responsibility for learning results.

There are many teaching methods for group-based instruction strategy, such as: Think-Pair-Share, Think-Pair-Square, Turn-To-Your-Neighbor Discussions, Pair-And-Compare, Small-Group Homework Check, Jigsaw, Roundtable, or Send-A-Problem.

20 COLLABORATIVE LEARNING TIPS AND STRATEGIES FOR TEACHERS

teachthought



Figure 16. Collaborative learning tips for teachers
(<https://www.teachthought.com/pedagogy/collaborative-learning-tips/>)

- Performance assessment - a system of learning and assessment that is based on students performing learning-based tasks to demonstrate knowledge and skills. These tasks are student-centered and involve applying information to real-life situations.

Some web platforms and apps for performance assessment: Remark Test Grading (<https://remarksoftware.com/products/test-grading/>) allow teachers to online grade, develop or print standardized tests; Freckle Education (<https://freckle.com/en-us/>) provides sets of exercises and assessment for curriculum-standards skills; Study Island (<https://www.edmentum.com/products/study-island>) offers standard-based practice and assessment tasks; The IXL Real-Time Diagnostic (<https://www.ixl.com/diagnostic>) an online tool for student knowledge diagnostic, assesses students' grade-level proficiency in math and English language.

The social interaction model (SIM) approaches learning based on social relations and socially mediated learning. SIM is a student-centered approach, where the student plays the main role in the learning process. SIM emphasizes the social interaction of the student with other colleagues, adults and society.

Centering on the student proposes the shift of emphasis from the activity of the teacher to that of the student, from the exclusive responsibility of the teaching staff to the empowerment of the student, from content to process and transversal skills, from dependence in learning to independence and self-determination, from individual learning to learning together in the group. In the student-centered approach the learning relationship is based on mutual respect and trust; responsibility for learning is shared.

SIM has its origin in the educational philosophy of John Dewey and the psychological theories of Lev Vygotsky and Albert Bandura. Dewey proposed the less frequent use of competence in learning and the structuring of schools as democratic learning communities. Knowing what the student's qualities and abilities are, he proposes a progressive education in which "experience through experience" is built. The Russian psychologist Lev Vygotsky stated that cognitive development and learning are achieved through social interactions. As the child grows, he is guided in learning by experts such as parents, educators, teachers, or peers with higher competences. Learning is an active process, through which the child is offered experiences by experts in which the child actively participates and builds his own knowledge. The nature of this interaction creates a student-teacher partnership, with them having shared responsibility. Albert Bandura formulates Social Learning Theory, which stipulates that people learn based on observed patterns. He shows the importance of observing, modeling, and imitating the behavior, attitudes and emotional reactions of those around.

In SIM, students are put in situations of interaction with each other, especially in small learning groups, where they collaborate in carrying out a task in a structured manner. Students are the facilitators of learning, helping each other to construct meaning.

Several student-centered instructional methods, of SIM and constructivist origin, have been developed over time (Baeten et al., 2010):

- Problem-based learning (Dochy, Segers, Van den Bossche, & Gijbels, 2003);
- Powerful learning environments (DeCorte, 2004);
- Discovery learning (Mayer, 2004);

- Open-ended learning environments (Hannafin & et al., 1994);
- Collaborative learning (Slavin, 1995);
- Project-based learning (Blumenfeld et al., 1991);
- Case-based learning (Kolonder, 1993).
- Cooperative learning (Johnson & Johnson, 1991)
- Team based learning (Michaelson, Sweet, & Parmalee, 2009)

Cooperative learning is one of the most applied instructional models now. Johnson and Johnson (1998) describe the five basic elements of cooperative learning as follows:

1. Positive interdependence (the perception that group members have of it: they must work together to achieve the intended goal; they need each other for support, explanations, coordination);
2. Individual responsibility (the individual performance of the group members is related to a certain standard and each member is responsible for his own contribution to the achievement of the proposed goal);
3. Direct interaction - students are placed in such a way that they interact directly, face to face at the group level, and not from one corner of the class to another;
4. Analysis of group activity (groups of students reflect on their collaboration and decide on how to improve the efficiency of this type of activity);
5. Development of interpersonal skills in small groups (these are necessary for the effective functioning of the group). These skills, such as the ability to provide constructive feedback, consensual action, the involvement of each member of the group in the activity, must be taught and practiced before the group tackles a task within the didactic process itself.

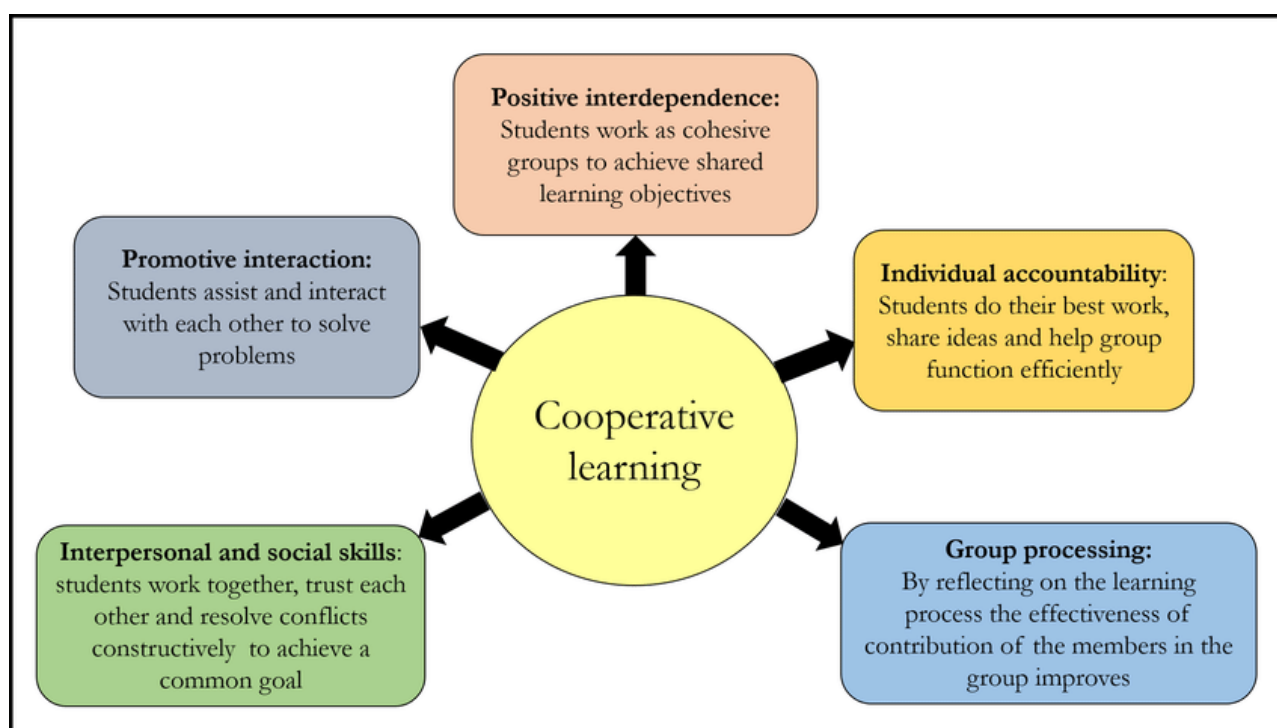


Figure 17. Characteristics of cooperative learning (Available via license: CC BY-SA)

The size of the learning group can vary, depending on several factors such as time pressure, students' experience working in groups, their age or available material resources. There is no set group size, but groups of 2-4 members are considered most effective for beginning activities.

There are several possible ways of assigning students to groups:

- The random distribution is the simplest method; it involves the association of each student with a number, and there are as many numbers as groups will be formed; those with identical numbers form the same group.
- Stratified randomization occurs when the entire class is ranked according to the results on a test, and then the high, middle, and low performance classes are established, each group being made up of students from each of the performance groups.
- The selection of groups by the teacher, in the way he thinks is profitable for the students.
- The students' selection of the composition of the groups, a method that is sometimes not preferable, because they will be homogeneous in terms of abilities, competences or status characteristics.

Learning within the group determines the development of personal competences/skills. To coordinate the efforts made in order to achieve the goals, students must know and trust each other, communicate precisely and without ambiguity, support each other, resolve conflicts constructively.

The transversal competencies developed through cooperation (Johnson & Johnson, 1999) are:

- Formative skills are the basic skills that ensure the functioning of a cooperative learning group. They provide students with the knowledge to work effectively in group situations and include knowing the essential notions of cooperation, internalizing a common learning goal and assuming individual responsibility.
- Functional skills are necessary for coordinating the group's activity. They refer to the fulfillment of work tasks and the maintenance of a cooperative working atmosphere.
- Verbal skills are the skills necessary to understand the study material at a higher level in order to stimulate the use of strategies and higher mental operations, to obtain the maximum performance in memorization and to master the subject.
- Catalytic skills are necessary for reformulating the study material, for solving cognitive conflicts, for creating motivations and for boosting the collection of additional information on a given subject.

Cooperative learning is successfully applied online, with very positive results (Baretto et al., 2022). Below in Figure 18 a procedure for online learning activities can be found.

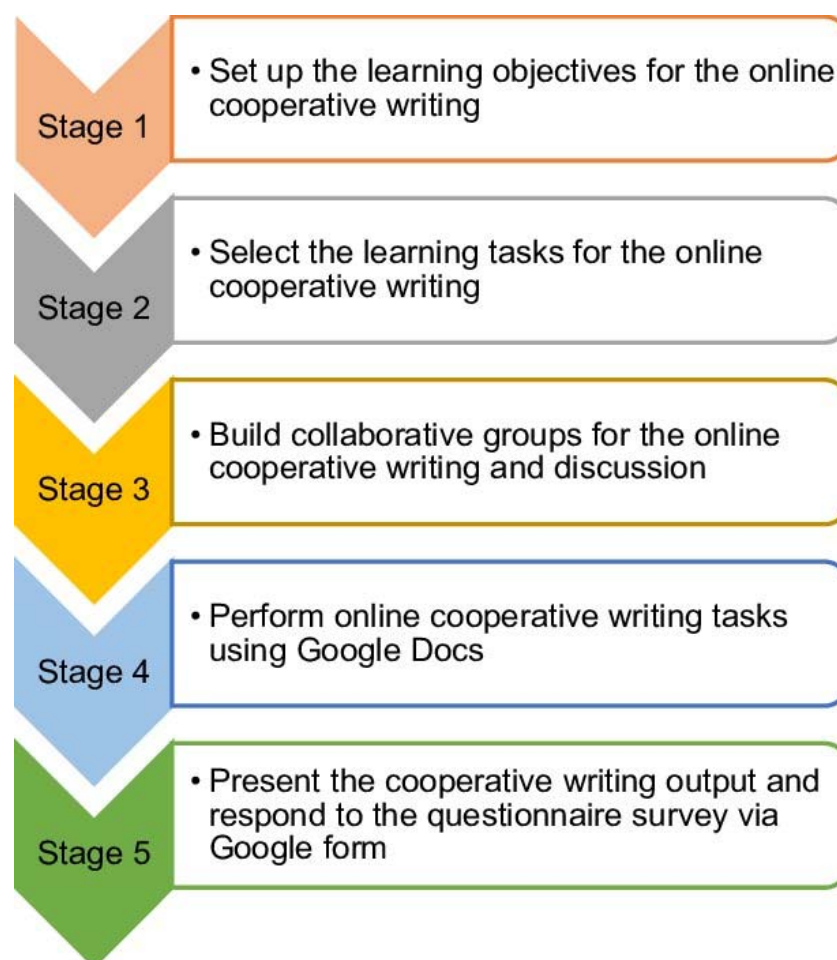


Figure 18. *The Procedure of the Online Cooperative Activities* (Kim & Jeong, 2018, p. 1380)

There are many online platforms that focus on collaborative online learning and offer great possibilities for it. For example: Google Docs (<https://docs.google.com/>), EdApp (<https://www.edapp.com/>), Spiral Community (<https://spiralcommunity.org/web/>), Discovery Education (<https://www.discoveryeducation.com/>), Mural (<https://www.mural.co/>), Padlet (<https://padlet.com/>) or Popplet (<https://www.popplet.com/>).

Project-based learning is another instructional method of SIM origins. PBL is a method of teaching in which students acquire knowledge and skills by working over an extended period to research and answer a question, problem, or challenge. In this method, the teacher is a guide in knowledge, the students being the ones who work in small learning groups to propose and complete a project. The role of the teacher is to ensure that the objectives and contents are met and to mentor the students to reach the desired result on their own. Critical thinking is the basic element of this method. Students are stimulated to think critically, ask questions, look for answers, overcome obstacles encountered to solve the problem. Project-based learning presents real-world context, tools and tasks, so students are constantly connected to reality and better understand that everything they learn has real-life applicability. PBL teaches students to give and receive feedback to improve their process as well as the final product. They learn to organize their time and priorities so that

the project is delivered completely and well done on the originally set deadline. The method involves work, involvement, collaboration, and responsibility.

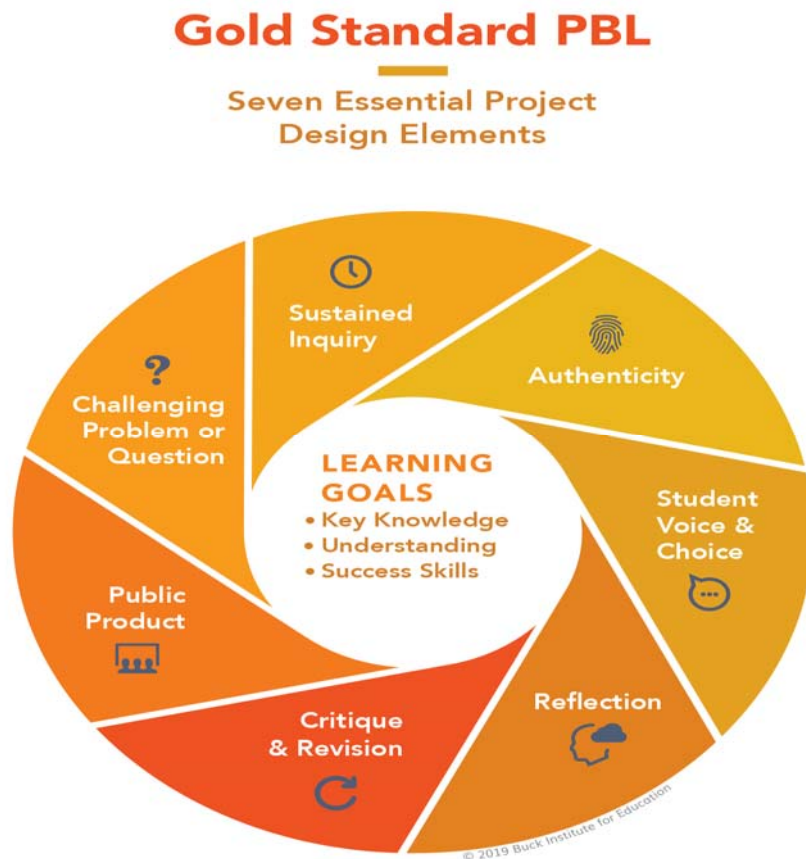


Figure 19. *PBL Gold standards elements*
(<https://www.pblworks.org/what-is-pbl/gold-standard-project-design>)

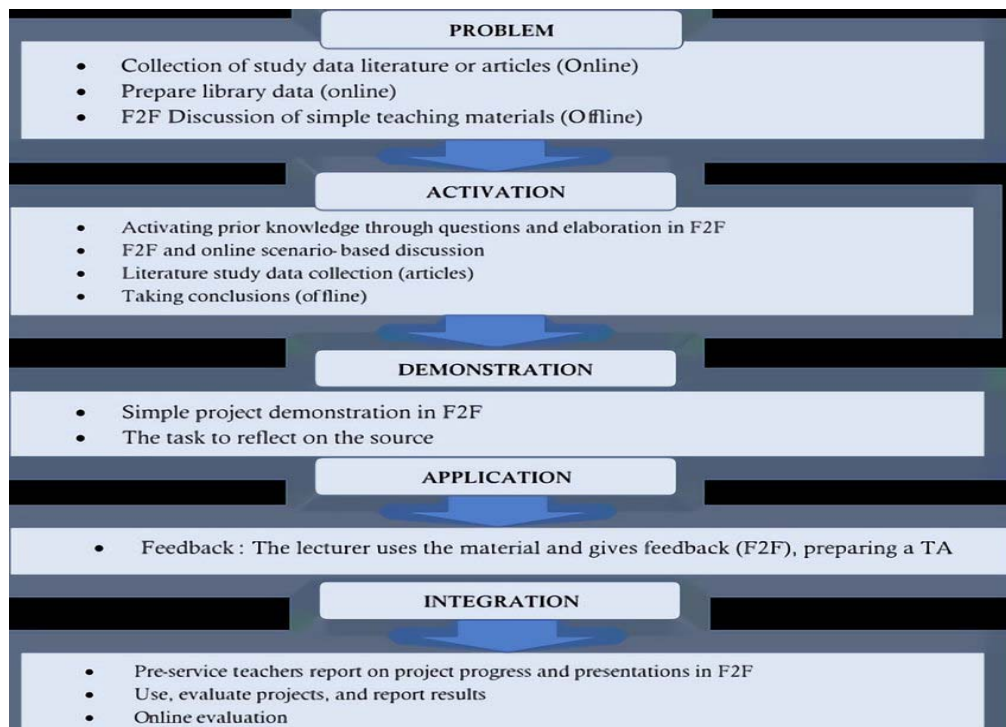


Figure 20. *Steps for Blended Learning and Project-Based Learning*
(Yustina, Syafii , Vebrianto, 2020, p. 412)

There are online platforms that focus on PBL online learning and offer great possibilities for it. Some useful web platforms: ProjectPals (<https://www.projectpals.com/>), and CURA (<https://www.curaeducation.com/platform>). There are a lot of WEB resources for PBL, such as: Pixton (<https://www.pixton.com/>) allows students to convert content into comics; Glogster (<https://edu.glogster.com/?ref=com>) creates digital posters; Animoto (<https://animoto.com/k/homepage>) is a creative storytelling tool; Piper (<https://www.playpiper.in/>), SeeSaw (<https://web.seesaw.me/>) - for digital portfolios, Flipgrid (<https://info.flip.com/>) - for keeping video diaries.

Personalized learning is an instructional model that focuses on the personal characteristics of the learner. The whole learning is adapted to the learners' needs, so that the efficiency of the learning process is maximum. The personalized model is a type of Mastery Learning because it proposes a structured system and a well-defined learning algorithm, designed according to individual needs. This systematization ensures that anyone using the principles of personalization will design quality instruction that will include such essential elements as: clear instructional objectives, active and frequent student responses, careful sequencing of materials, and immediate feedback.

There are two main instructional strategies that derive from this model: Differentiated instruction and Personalized learning.

Differentiated instruction is an instructional model, a general approach to the didactic process, based on the premise that students learn best when the teacher adapts learning to the students' initial level, interests and learning profiles (Tomlinson, 2005). At the most basic level, differentiated instruction is changing what happens in the classroom, so that students have multiple opportunities to choose how to perceive information, understand content, and express what they have learned. In other words, a differentiated classroom offers different ways of learning content, processing and understanding ideas, and developing learning products so that each student learns effectively (Tomlinson, 2001).

Brimijoin (2005) identifies 7 principles of differentiated instruction:

1. Clarity of the learning objectives - they must be defined and well clarified from the beginning of the design process, being the first step that must be taken into account by teachers;
2. Permanent evaluation - for a good correlation between the needs of the students and the curriculum, there is a permanent need to carry out a constant evaluation of the level of understanding of knowledge and automation and use of skills;
3. Making an informed design and implementation of the didactic process - in this sense it is necessary to know the current level of knowledge and skills, the learning profile, the abilities and interests of the students;
4. Providing adapted, interesting, relevant and important tasks for all students;

5. Adoption of appropriate strategies - teachers offer students different ways of perceiving, understanding, internalizing and using the contents, from which they can choose the most suitable ones for their particular ways of learning;
6. Flexible grouping of students - teachers constantly offer students different ways to group themselves in learning, in relation to the type of lesson, the topic, the learning style, the level of knowledge and skills;
7. Creating a classroom community - differentiated classrooms are learning communities in which there is a partnership between teachers and students, based on respect and acceptance of diversity, and in which feelings of belonging, independence and high expectations for all students prevail.

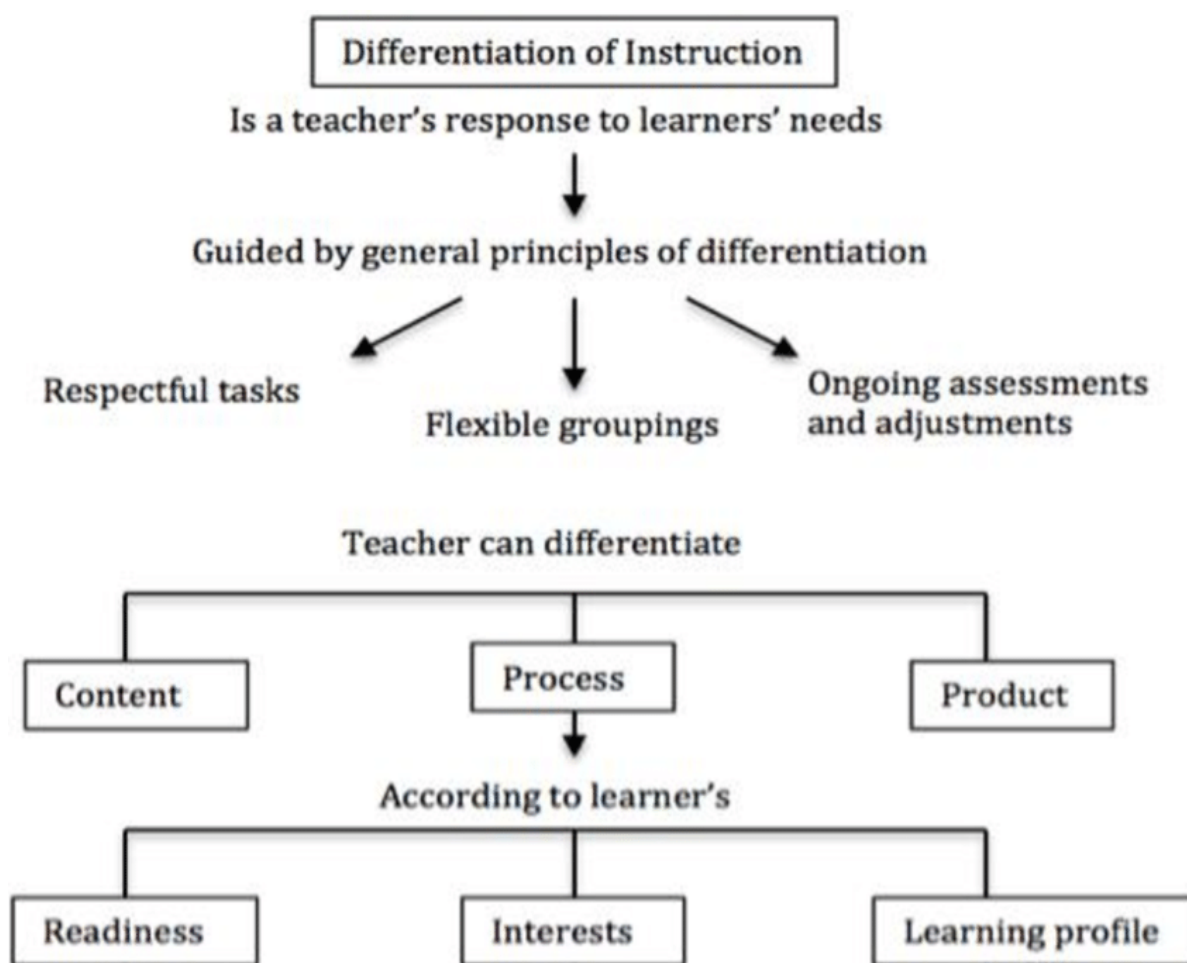


Figure 21. Model of Differentiated instruction (Thomlison, 1999)

The figure 22 shows 50 instructional methods that can be used to differentiate instruction.



Figure 22: 50 Strategies for Differentiated instruction
(<https://www.teachthought.com/pedagogy/strategies-differentiated/>)

Some web platforms that support differentiated instruction are: Actively Learn (<https://www.activelylearn.com/>), Arcademics (<https://www.arcademics.com/>), Badaboom (<http://palms.polyu.edu.hk/playbadaboom/>), Chronicle Cloud (<https://www.chroniclecloud.com/>), Edji (<https://edji.it/#/home>), Edulastic (<https://edulastic.com/>), Otus (https://otus.com/?utm_source=tech_tidbits&utm_medium=banner&utm_campaign=Ti dbits_Ads), Parlay (<https://parlayideas.com/>).

Personalized learning is an instructional strategy in which training is adapted to the needs of each individual student. This makes the training as efficient as possible for the student, who has a completely personalized instructional design.

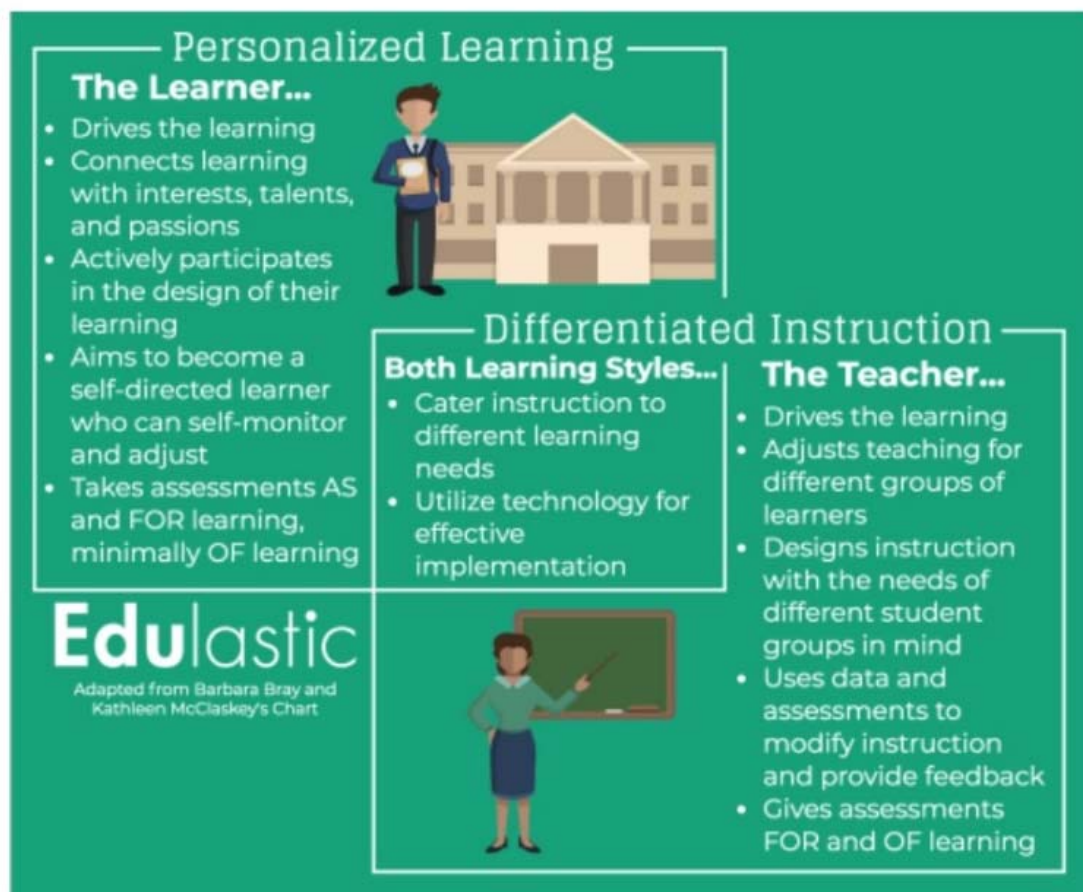


Figure 23. *Differentiated vs. Personalized instruction*
(<https://edulastic.com/blog/personalized-learning-differentiated-instruction/>)

There are many ways in which personalization can be put into practice:

- Reorganize the school/course structure, that students are put in smaller groups and supervised by a team of teachers.
- Universities offer a variety of learning pathways, such as internships, dual enrolment, or independent study projects.
- Develop personalized learning plans, with individualized goals and methods to achieve them.
- Offer advisors or tutors.
- Offer alternative educational approaches such as online learning, blended learning, community-based learning or project-based-learning.



Figure 24. *Characteristics of personalized learning* (<https://www.lcps.org/domain/21412>)

Some web platforms that support personalized learning are: Walk Me (<https://www.walkme.com/>), What Fix (<https://whatfix.com/>), Explain Everything (<https://explaineverything.com/>), Mobymax (<https://www.mobymax.com/>) or Eduguide (<https://www.eduguide.org/content/>).

CONCLUSIONS

- Each of the four instructional models presented develops certain transversal skills. Each university, faculty or teaching staff that does instructional design can choose a predominant instructional model depending on the mission or the proposed instructional objectives.
- All instructional models can be applied online, there are numerous web platforms with very good applications for any of the chosen instructional models or strategies.
- Regardless of the instructional model chosen, it is important that our instructional design approach be systematic and structured, aim at clear objectives and propose a useful and efficient learning experience for students.

REFERENCES:

Barreto D, Oyarzun B, Conklin S., "Integration of cooperative learning strategies in online settings". *E-Learning and Digital Media*. May 2022. doi:10.1177/20427530221104187

- Baron, I.S., *Neuropsychological evaluation of the child*, New York: Oxford University Press, 2004.
- Brimijoin, K., "Differentiation and high-stakes testing: An oxymoron?" *Theory into Practice*, 44(3), 2005, pp. 254-261.
- Bloom, B., M. Englehart, E. Furst, W. Hill, and D. Krathwohl, *Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain*. New York, Toronto: Longmans, Green, 1956.
- Blumenfeld, P.C., Soloway, E., Marx, R.W., Krajcik, J.S., Guzdial, M., & Palincsar, A., "Motivating Project-Based Learning: Sustaining the Doing, Supporting the Learning". *Educational Psychologist*, 26(3&4) 1991, pp. 369-398.
- Chamorro-Premuzica, T., Artecheb, A., Bremnera, A.J., Greven, C. & Furnhamd. A., "Soft skills in higher education: importance and improvement ratings as a function of individual differences and academic performance". *Educational Psychology*, 30(2), 2010, pp. 221-241. <https://doi.org/10.1080/01443410903560278>
- Cullinane, A. & Liston, M., "Review of the Leaving Certificate biology examination papers (1999-2008) using Bloom's taxonomy – an investigation of the cognitive demands of the examination", *Irish Educational Studies*, 35(3), 2016, pp. 249-267, DOI: 10.1080/03323315.2016.1192480
- De Corte, E., Verschaffel, L. & Masui, C., "The CLIA-model: A framework for designing powerful learning environments for thinking and problem solving". *Eur J Psychol Educ* 19, 2004, pp. 365-384 <https://doi.org/10.1007/BF03173216>
- Dochy, F., Segers, M., Van den Bossche, P., & Gijbels, D., "Effects of problem-based learning: A meta-analysis". *Learning and Instruction*, 13(5), 2003, pp. 533-568. [https://doi.org/10.1016/S0959-4752\(02\)00025-7](https://doi.org/10.1016/S0959-4752(02)00025-7)
- Gagne, RM, Wager WW, Golas KG, Keller J.M., *Principles of Instructional Design*. 5th ed. Mason, OH: South-Western; 2005.
- Hannafin, M.J., Hall, C., Land, S.M., & Hill, J.R., "Learning in open-ended environments: Assumptions, methods, and implications". *Educational Technology*, 34(8), 1994, pp. 48-55.
- Johnson, D. W., Johnson, R. T., & Smith, K. A., *Active learning: cooperation in the college classroom*. Edina, MN: Interaction Book Company, 1991.
- Johnson, D., Johnson, R., Holubec, E., *Cooperation in the classroom*. Boston: Allyn and Bacon, 1998.
- Johnson, D. W. & Johnson R. T., *Learning Together and Alone: Cooperative Competitive, and Individualistic Learning* (5th Ed.). Boston: Allyn and Bacon, 1999.
- Kim, H.S., & Jeong, K.O., "Developing problem-solving and critical thinking ability with the use of crowdsourcing in university writing instruction". *Journal of Theoretical and Applied Information Technology* 96(5), 2018, pp. 1377-1386.
- Kolodner, J. L. (Ed.), *Case-based learning*. Boston: Kluwer Academic Publishers, 1993.
- Lutz, S., & Huitt, W. *Information processing and memory: Theory and applications*. *Educational Psychology Interactive*. Valdosta, GA: Valdosta State University, 2003. Retrieved from <http://www.edpsycinteractive.org/papers/infoproc.pdf>
- Mayer, R. E., "Should There Be a Three-Strikes Rule Against Pure Discovery Learning?" *American Psychologist*, 59(1), 2004, pp. 14-19. <https://doi.org/10.1037/0003-066X.59.1.14>
- Michaelsen, L., Sweet, M. & Parmalee, D., "Team-Based Learning: Small Group Learning's Next Big Step. New Directions". *Teaching and Learning*, 2009, pp. 7-27.
- Slate, J.R., & Charlesworth, J.R., "Information Processing Theory: Classroom Applications". *ERIC*, ED293792, 1988. <https://eric.ed.gov/?id=ED293792>
- Slavin, R. E., *Cooperative learning: Theory, research, and practice*. Boston: Allyn & Bacon, 1995.
- Tomlinson, C. A., *The Differentiated Classroom: Responding to the Needs of All Learners*. Alexandria, VA: Association for Supervision and Curriculum Development, 1999.
- Tomlinson, C.A., *How to differentiate instruction in mixed-ability classrooms*. Alexandria, VA: Association for Supervision and Curriculum Development, 2001.

- Tomlinson, C. A., "Grading and differentiation: Paradox or good practice?" *Theory into Practice*, 44(3), 2005, pp. 262-269.
- Turple, C., *Information Processing Theory - Computer Analogy* [diagram]. 2016.
- Yustina, Syafii, W., & Vebrianto, R., " The effects of blended learning and project-based learning on pre-service biology teachers' creative thinking skills through online learning in the COVID-19 pandemic". *Jurnal Pendidikan IPA Indonesia*, 9(3), 2020, pp. 408-420. <https://doi.org/10.15294/jpii.v9i3.24706>.

Chapter IV. TEACHING STRATEGIES

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ABSTRACT: The present chapters presents some strategies and methods used or that may be used in virtual classrooms for teaching transversal competencies, with the help of technology. For achieving this goal, teachers should choose teaching strategies and methods that stimulate collaboration, autonomous learning of students, and divergent thinking; that promote reflection, stimulate students ask questions; that integrate technology. Activities should be authentic and happen in realistic, meaningful contexts for students. The teacher's role should be that of mediator of students' learning. Among the most useful teaching methods, we will present problem-based learning, flipped classroom, gamification or brainstorming.

IV.1. TEACHING SOFT SKILLS ONLINE

Teaching online, in virtual classes, can be as challenging as it is difficult to achieve, especially in the absence of previous experience, as happened during the Covid-19 pandemic. Teachers had to quickly adapt to the demands of digital teaching, identify teaching methods and strategies that would involve and motivate learners, arouse their interest and curiosity. To create contexts of learning and interaction for students, to give learning an aspect of normality. Sarode (2018, p. 61) believes that for effective and quality teaching the teacher must:

- | | |
|-------------------------------------|--|
| • Use positive competition | • Make things fun |
| • Track progress | • Know your students |
| • Provide opportunities for success | • Identify and try to solve personal queries |
| • Organize various games | • Help students find intrinsic motivation |
| • Organize Teamwork event | • Harness students interest |
| • Offer varied experiences | • Give praise when earned |
| • Give students responsibility | • Encourage self-reflection |
| • Give students a sense of control | • Create a threat free environment |
| • Define the objectives | • Be excited |
| • Change classroom environment | • Allow students to work together |

Figure 25. *Requirements for a valuable education* (Sarode, 2018)

Another challenge for teachers using online teaching is to use the technology in a way that is integrated with the learning outcomes. As Spector (2020) also shows, the goal of a teacher is to teach students to think, to learn, technology being only a means to achieve this goal, not an end in itself.

The teaching of transversal skills in virtual classes must take into account several conditions:

- To develop active, interactive, multidisciplinary learning contexts that stimulate collaboration, but also self-directed, autonomous learning of students, through discovery (problem-based learning, project-based learning);
- To stimulate students' divergent thinking (there are two types of thinking, the convergent one - used in concrete, clearly defined situations, such as mathematical problems that have only one correct solution, and the divergent one, used in abstract, complex situations that have multiple solutions, imposing a creative attitude and an investigative spirit);
- To integrate technology in teaching activities;
- To design authentic activities, in realistic learning contexts, meaningful for students (Terzieva, Luppi & Traina, 2015, pp. 30-31);
- To stimulate students to ask questions, formulate and test hypotheses;
- To capitalize on students' errors as starting points in learning;
- To promote dialogue and reflection (Tsankov, 2017, p. 140).

Along with these conditions, teaching of transversal skills must take into account the following principles (adapted from Tsankov, 2017, p. 139, Table 1):

- Dynamism and activation (eliminating passive learning and promoting autonomous, independent learning);
- Durability and continuity (refreshing and constant appeal to previous knowledge; transferring knowledge by applying it in realistic contexts ensures better fixation and consolidation);
- Comprehensiveness and complexity (creating a framework that helps students develop a personal vision of the world, by combining complex methods);
- Psychological and pedagogical comfort (avoiding stressful situations and promoting cooperation; the teacher must take into account the personality traits of the students, stimulate their confidence and ensure constant communication and interaction of all, avoiding the isolation or marginalization of some students; promoting a positive attitude, to stimulate students' motivation for learning);
- Visualization and modeling (the use of support and visual models facilitates understanding and learning, consolidates knowledge; to solve a realistic problem in an autonomous and creative way, students need to move from the abstract of theoretical knowledge to the concrete of the real situation, and this fact can be achieved with the help of visual support and models);

- Creativity and variation (encouraging the development of students' problem-solving skills, identifying multiple solutions, from which they are able to select the most suitable one; stimulating creativity and knowledge transfer in various contexts);
- The situational principle (updating and using previous knowledge in new learning situations, in order to create new knowledge).

Saiyad et al. (2020) brought together the principles of quality teaching in the online environment in a diagram that we reproduce below (Figure 26):

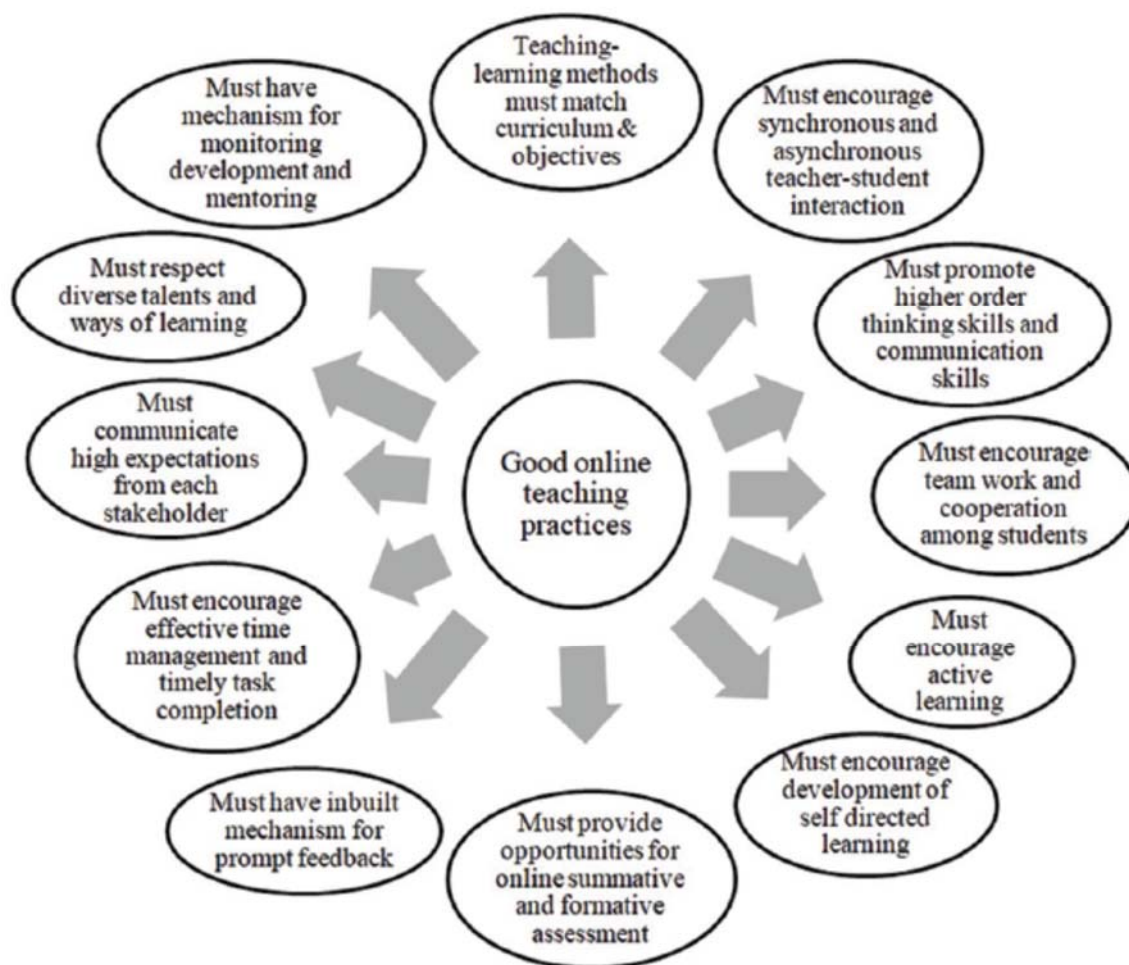


Figure 26. Online teaching principles (Saiyad et al., 2020, p. 152)

In teaching transversal skills, the teacher's role is primarily that of a mediator, a "director" of learning, who must put the students in new situations, even different from what they have experienced before, encourage them to take the initiative, discuss, argue, investigate the causes and effects of various situations, analyze and argue; it is the teacher who must support students in consolidating the knowledge and skills acquired in the classroom, through activities carried out in the real world (Tsankov, 2017, p. 140).

In 2017, four European countries (Poland, Slovenia, Slovakia, Finland) initiated an ERASMUS+ project aimed at developing transversal skills among students (four of them being pursued, namely entrepreneurship, creativity, communication and teamwork),

through the use of practical activities (*"The acceleration method of development of transversal competences in the students' practical training process"*). The teaching methods used to teach transversal skills were grouped into five broad categories (Butryn et al., 2017, p. 81; Chomiak-Orsa & Golusińska, 2018, pp. 144-145):

- problem solving methods (brainstorming, PBL, case study, panel discussion, observation);
- activation methods (case study; games);
- demonstrative methods (psychodrama, situational games);
- programmed methods (with the help of the computer);
- practical methods (project, simulation)

In the same year, the report on transversal skills of Lamb, Doecke and Maire, professors at the University of Victoria in Melbourne (Australia), appears, analyzing the situation in university centers in Canada, Australia, New Zealand and Finland. In Canada, for example, the teaching of transversal skills (critical thinking, problem solving, communication, collaboration, global citizenship, creativity, entrepreneurship) was carried out using didactic strategies such as flipped classroom, problem-based learning, simulations, interdisciplinary projects or the use of digital platforms learning (Lamb, Doecke & Maire, 2017, p. 32).

At Bifröst University in Iceland the teaching of transversal skills is achieved through authentic projects and team tasks, real-world connected, flipped classroom and the use of ICT resources. Another method is peer to peer teaching, where students are organized into groups, usually of 3 people, who present and teach each other certain topics. In all these situations, methods such as brainstorming, role playing, debates are used. The learning contents (lectures, instructions) are posted on the educational platform of the university and are permanently available to students, so that the interaction between the teacher and students does not aim at the delivery of theoretical notions, but at the completion of tasks with application potential (Johannsson, 2015).

IV.2. TEACHING STRATEGIES

Also known as instructional strategy, a teaching strategy refers to the way in which the teacher plans his activity, the structure he intends to follow and the set of methods, techniques, procedures that the teacher plans to use within the didactic activity in order to achieve the learning outcomes. An effective teaching strategy considers the learning context, the needs and characteristics of the students.

Gibbons (2020, p. 2800) claims that a teaching strategy must consider a sequence of actions well defined in time, and spatially located (whether we are talking about a face-to-face or online teaching context), structured according to a certain framework, a certain social context, roles well assigned for students, learning objectives, teaching methods that stimulate interaction, activities, contents and assessment (Figure 27).

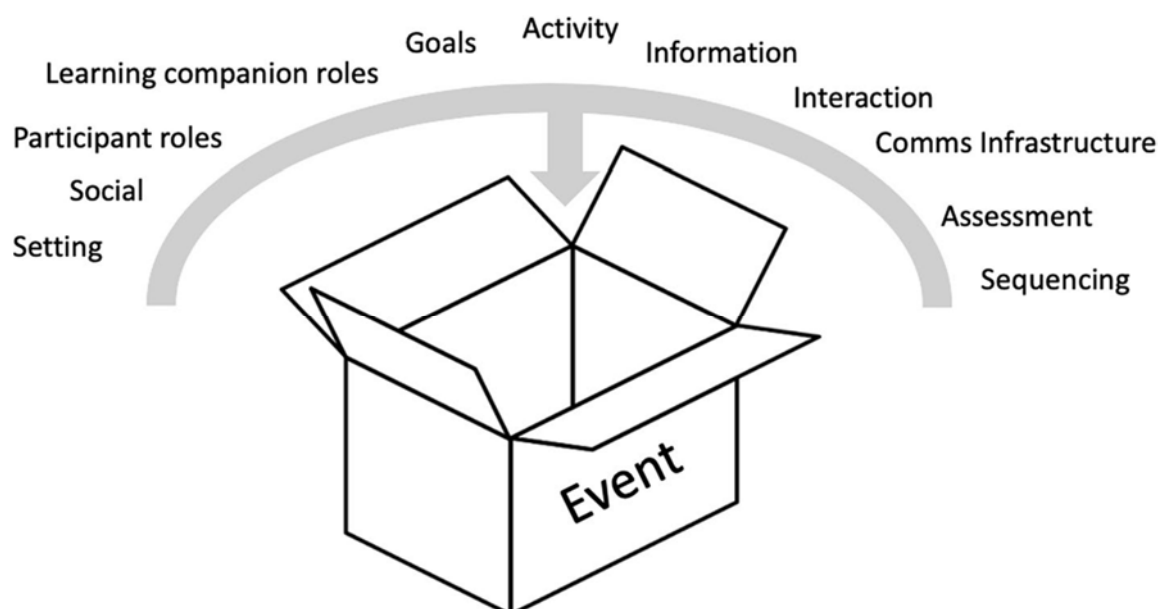


Figure 27. Elements of a teaching strategy (Gibbons, 2020)

Strategy	Teaching and Learning Strategy Definition and Examples
Direct Instruction	<p>The Direct instruction strategy is highly teacher-directed and is among the most commonly used. This strategy is effective for providing information or developing step-by-step skills. It also works well for introducing other teaching methods, or actively involving students in knowledge construction.</p> <p>Possibilities Include: Lecture, Slide Presentation, Explicit Teaching, Drill and Practice, Didactic Questions, Demonstrations, Guided and Shared – reading, listening, viewing thinking, Guest Lecture, Video, Multimedia Presentation</p>
Interactive Instruction	<p>Interactive instruction relies heavily on discussion and sharing among participants. Students can learn from peers and teachers to develop social skills and abilities, to organize their thoughts, and to develop rational arguments. The interactive instruction strategy allows for a range of groupings and interactive methods. It is important for the teacher to outline the topic, the amount of discussion time, the composition and size of the groups, and reporting or sharing techniques. Interactive instruction requires the refinement of observation, listening, interpersonal, and intervention skills and abilities by both teacher and students.</p> <p>Possibilities Include: Debates, Role Playing, Panels, Brainstorming, Peer Partner Learning, Peer Assessment, Discussion, Laboratory Groups, Labs, Think/Pair/Share, Co-operative Learning, Jigsaw, Problem Solving, Tutorials, Interviewing, Conferencing, Team-Based Learning, Seminars</p>
Indirect Instruction	<p>In contrast to the direct instruction strategy, indirect instruction is mainly student-centered, although the two strategies can complement each other. Indirect instruction seeks a high level of student involvement in observing, investigating, drawing inferences from data, or forming hypotheses. It takes advantage of students' interest and curiosity, often encouraging them to generate alternatives or solve problems. In indirect instruction, the role of the teacher shifts from lecturer/director to that of facilitator, supporter, and resource person.</p> <p>Possibilities Include: Problem Solving, Case Studies, Reading, Inquiry, Reflective Discussion, Writing, Concept Formation, Concept Mapping, Tutorials</p>
Independent Study	<p>Independent study refers to the range of instructional methods which are purposefully provided to foster the development of individual student initiative, self-reliance, and self-improvement. While independent study may be initiated by student or teacher, the focus here will be on planned independent study by students under the guidance or supervision of a classroom teacher. In addition, independent study can include learning in partnership with another individual or as part of a small group.</p> <p>Possibilities Include: Essays, Computer Aided Instruction, Journals, Learning Logs, Reports, Learning Contracts, Homework, Research Projects, Assigned Questions, Learning Centres, Independent Project/Course, Self-Assessment</p>
Experiential Learning	<p>Experiential learning is inductive, learner centered, and activity oriented. Personalized reflection about an experience and the formulation of plans to apply learning to other contexts are critical factors in effective experiential learning. The emphasis in experiential learning is on the process of learning and not on the product.</p> <p>Possibilities Include: Field Trips, Narratives, Conducting Experiments, Simulations, Games, Storytelling, Field Observations, Role-Playing, Model Building, Surveys, Studio Labs, Community Engaged Learning, Study Abroad, Community Service Learning, Undergraduate Research, Internships, Practicum, Co-op Placement, Apprenticeship, Field Courses</p>

Figure 28. Teaching strategies

(https://ciel.viu.ca/sites/default/files/chapter7_teaching_strategies_viu_tl_handbook.pdf)

Teaching strategies are multidimensional and depend on the context in which they are used (Le Donné, Fraser & Bousquet, 2016). Resources on teaching strategies that can be used in various areas can be found at <https://www.facinghistory.org/resource-library/teaching-strategies>

Examples of teaching strategies can be found at Le Donné, Fraser & Bousquet (2016) (Figure 29):

Active learning	Cognitive activation	Teacher-directed instruction
<ul style="list-style-type: none"> • Consists of promoting the engagement of students in their own learning. • Under this strategy, students' discussions, group work, co-operation, reflection and the necessary support to foster these activities play a central role. • Furthermore, the inclusion and use of information and communication technologies (ICT) in the classroom can help to foster an interactive and individual learning environment. 	<ul style="list-style-type: none"> • Refers to the use of practices capable of challenging students in order to motivate them and stimulate higher-order skills, such as critical thinking, problem solving and decision making. • This strategy not only encourages students to find creative and alternative ways to solve problems, but enables them to communicate their thinking processes and results with their peers and teachers. 	<ul style="list-style-type: none"> • Refers to teaching practices that rely, to a great extent, on a teacher's ability to deliver orderly and clear lessons. • Making explicit the learning goals, providing a summary of previous lessons or asking short, fact-based questions are examples of practices that help to structure lessons.

Figure 29. Examples of teaching strategies (Le Donné, Fraser & Bousquet, 2016)

At the same authors we find valuable suggestions for the practical application of these teaching strategies:

<p>The active learning strategy</p> <ul style="list-style-type: none"> • Students work on projects that require at least one week to complete. • Students use ICT (information and communication technology) for projects or class work. • I require students to work on mathematics projects that take more than a single class period to complete. • I let students evaluate their own progress. • Students work in small groups to come up with a joint solution to a problem or task. 	<ul style="list-style-type: none"> • I connect mathematics concepts I teach to uses of those concepts outside of school. • I go over homework problems that students were not able to solve.
<p>The cognitive activation strategy</p> <ul style="list-style-type: none"> • I expect students to explain their thinking on complex problems. • I encourage students to solve problems in more than one way. • I require students to provide written explanations of how they solve problems. • I encourage students to work together to solve problems. 	<p>The teacher-directed instruction strategy</p> <ul style="list-style-type: none"> • I explicitly state learning goals. • I let students practice similar tasks until I know that every student has understood the subject matter. • I observe students when working on particular tasks and provide immediate feedback. • I ask short, fact-based questions. • I present a summary of recently learned content. • I give different work to the students who have difficulties learning and/or to those who can advance faster. • I refer to a problem from everyday life or work to demonstrate why new knowledge is useful.

Figure 30. Teaching strategies suggestions (Le Donné, Fraser & Bousquet, 2016)

In teaching transversal skills in the online environment, the use of teaching strategies that involve active learning is desirable.

HITS (2017) suggests 10 teaching strategies that have been proven, following empirical studies undertaken among others by J. Hattie or R. Marzano, to have a major impact on student learning:

- setting learning objectives and communicating them to students (it is useful for the teacher, who can thus organize his entire teaching activity - contents, methods, but also for students, who have a clear picture of what they will learn from the beginning and what they will need to know);
- planning and structuring lessons, establishing sequences and presenting them to students; the teacher takes into account the curricular alignment (objectives - contents - evaluation) and allocates time for feedback;
- the explicit teaching of concepts, followed by the application of knowledge in practice to demonstrate understanding of the learning contents; the teacher provides examples and explanations and monitors students' work, providing help and feedback as needed;
- use worked examples (demonstrations, examples, models regarding the steps to be taken to solve a problem or how to solve a task, so that students know how to proceed in similar situations);
- learning through collaboration, in groups of students; the teacher teaches students to work in a team, organizing roles in group activities and stimulating interaction;
- multiple exposures - students have several situations, experiences or contexts in which they practice certain knowledge or skills, for a better fixation of them and the achievement of in-depth learning;
- questioning - can be used as a method to activate the student group, but also as a feedback tool;
- use of feedback, both to evaluate the level of preparation of the students, the extent to which they have achieved the learning outcomes, but also the effectiveness of the teaching activity. For both the professor and the students, feedback should be used as a source of improvement and progress;
- use of metacognitive strategies by which students are more motivated to learn, to be encouraged to reflect on their own learning, to organize their learning in order to achieve learning outcomes;
- differentiated teaching, adapted according to the characteristics and needs of the students.

IV.3. TEACHING MODELS

1. A first suggestion for teaching transversal skills would be to use the triangulated model of Adams (2010), intended for online and blended learning, also called "Soft-Skills Learning Triangle" (SLT) (Rogers, 2021, pp. 25-26). According to Adams, in order to form

transversal skills in blended or online learning, it is necessary to create realistic, authentic learning contexts, in which these skills can be formed experientially, learning by doing. The transversal competence learning triangle is represented figuratively below, describing the interdependent relationship between the learning context, the learning content and the learner:

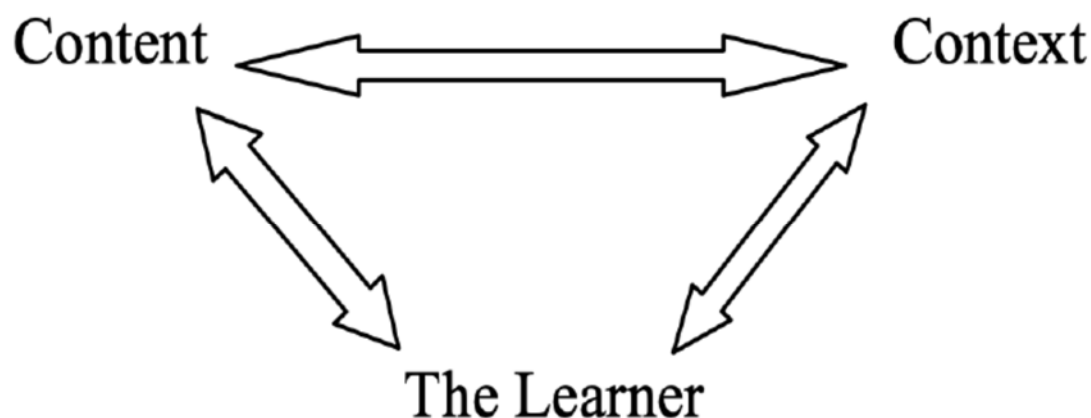


Figure 31. SLT (Rogers, 2021, p. 26)

To explain the practical use of this model, following the triple connection between the learning context - the learning content, the learning content - educable and educable - the learning context, Adams offered a personal example (exposed by Rogers, 2021, p. 28), applied within a university introductory business course designed to develop students' transversal skills:

- to begin with, she asked the students to complete a questionnaire to self-evaluate their transversal skills;
- in class she carried out an activity through which the students had to highlight the strengths and weaknesses of their transversal skills, selecting those skills that they would like to develop or improve (most students focused on communication, teamwork, leadership and emotional intelligence);
- the learning contents were developed in accordance with the students' answers, being identified and offering students resources for autonomous, non-directed learning;
- students were asked to apply what they have learned in realistic contexts;
- the evaluation consisted of a 5-page essay, accompanied by 25 pages in which the students should include evidence regarding the improvement or development of the proposed transversal skills;
- finally, the students completed an evaluation questionnaire (which in most cases showed an improvement in the transversal skills of the students).

2. Bar-On's (2006) model of emotional intelligence can be used in teaching transversal skills (especially those related to stress management, adaptability, communication,

empathy). According to this model, "emotional-social intelligence is a cross-section of interrelated emotional and social competencies, skills and facilitators that determine how effectively we understand and express ourselves, understand others and relate with them, and cope with daily demands" (Bar-On, 2006, p. 14). Bar-On's model comprises 5 key factors and 15 components (Figure 32).

Intrapersonal	Self-awareness and self-expression:
Self-eegard	<i>To accurately perceive, understand and accept oneself</i>
Emotional self-awareness	<i>To be aware of and understand one's emotions</i>
Assertiveness	<i>To effectively and constructively express one's emotions and oneself</i>
Independence	<i>To be self-reliant and free of emotional dependency on others</i>
Self-actualization	<i>To strive to achieve personal goals and actualize one's potential</i>
Interpersonal	Social awareness and interpersonal relationship:
Empathy	<i>To be aware of and understand how others feel</i>
Social responsibility	<i>To identify with one's social group and cooperate with others</i>
Interpersonal relationship	<i>To establish mutually satisfying relationships and relate well with others</i>
Stress management	Emotional management and regulation:
Stress tolerance	<i>To effectively and constructively manage emotions</i>
Impulse control	<i>To effectively and constructively control emotions</i>
Adaptability	Change management:
Reality-testing	<i>To objectively validate one's feelings and thinking with external reality</i>
Flexibility	<i>To adapt and adjust one's feelings and thinking to new situations</i>
Problem-solving	<i>To effectively solve problems of a personal and interpersonal nature</i>
General mood	Self-motivation:
Optimism	<i>To be positive and look at the brighter side of life</i>
Happiness	<i>To feel content with oneself, others and life in general</i>

Figure 32. Bar-On model (Bar-On, 2006)

Starting from this model, Naamati Schneider et al. (2020, pp. 125-126) proposed a teaching model and a Social-Emotional Skill Development tool, structured in three stages: theoretical, reflective and applicative and four steps:

- planning and launching (the theoretical notions regarding the transversal competence that the teacher intends to develop and then the practical way in which the transversal competence will be developed are presented);
- development (a sequence of tasks that students must complete, in a predetermined order; tasks are inter-connected, flowing from each other; students can access a new task only after the previous task has been completed);
- feedback and evaluation (Figure 33)

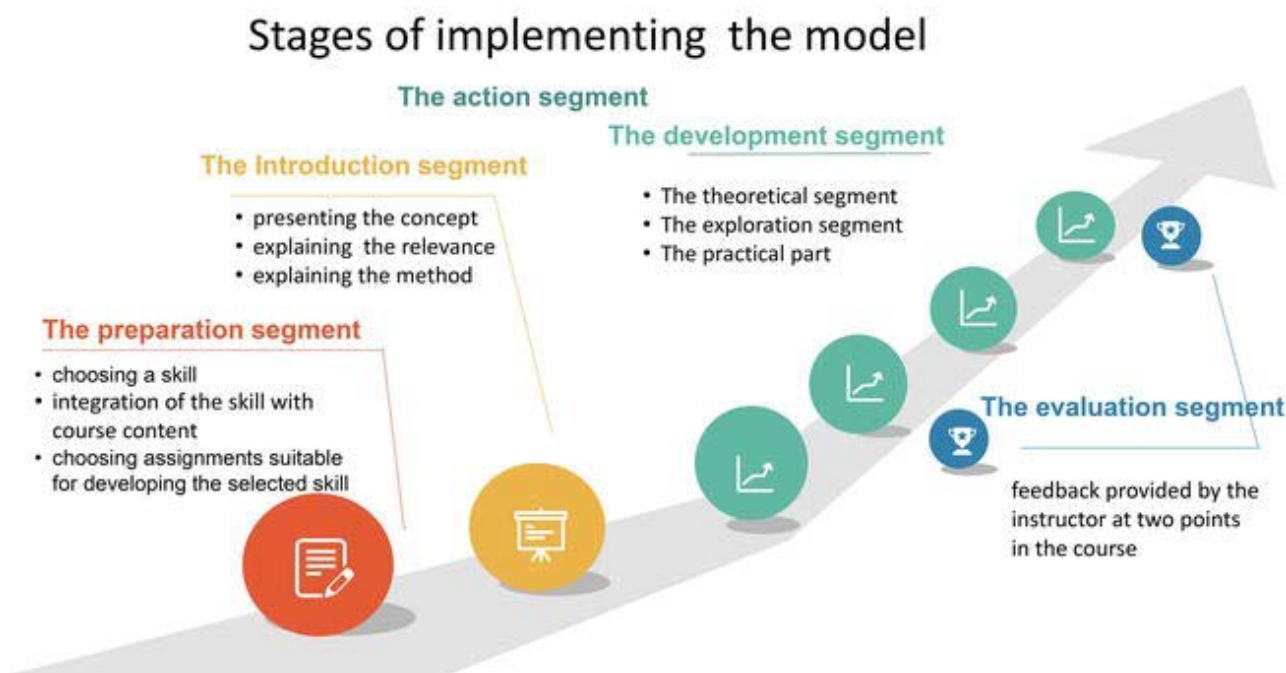


Figure 33. *Soft skills teaching model* (Dolev, Naamati-Schneider & Meirovich, 2021)

3. Chomiak-Orsa (2017) proposed four models for teaching entrepreneurship, communication, creativity and respectively teamwork, models that start from the premise that in the training of transversal skills it is necessary for students to receive both theoretical imputations regarding these skills, but especially to be able to put them into practice (Figures 34-37):

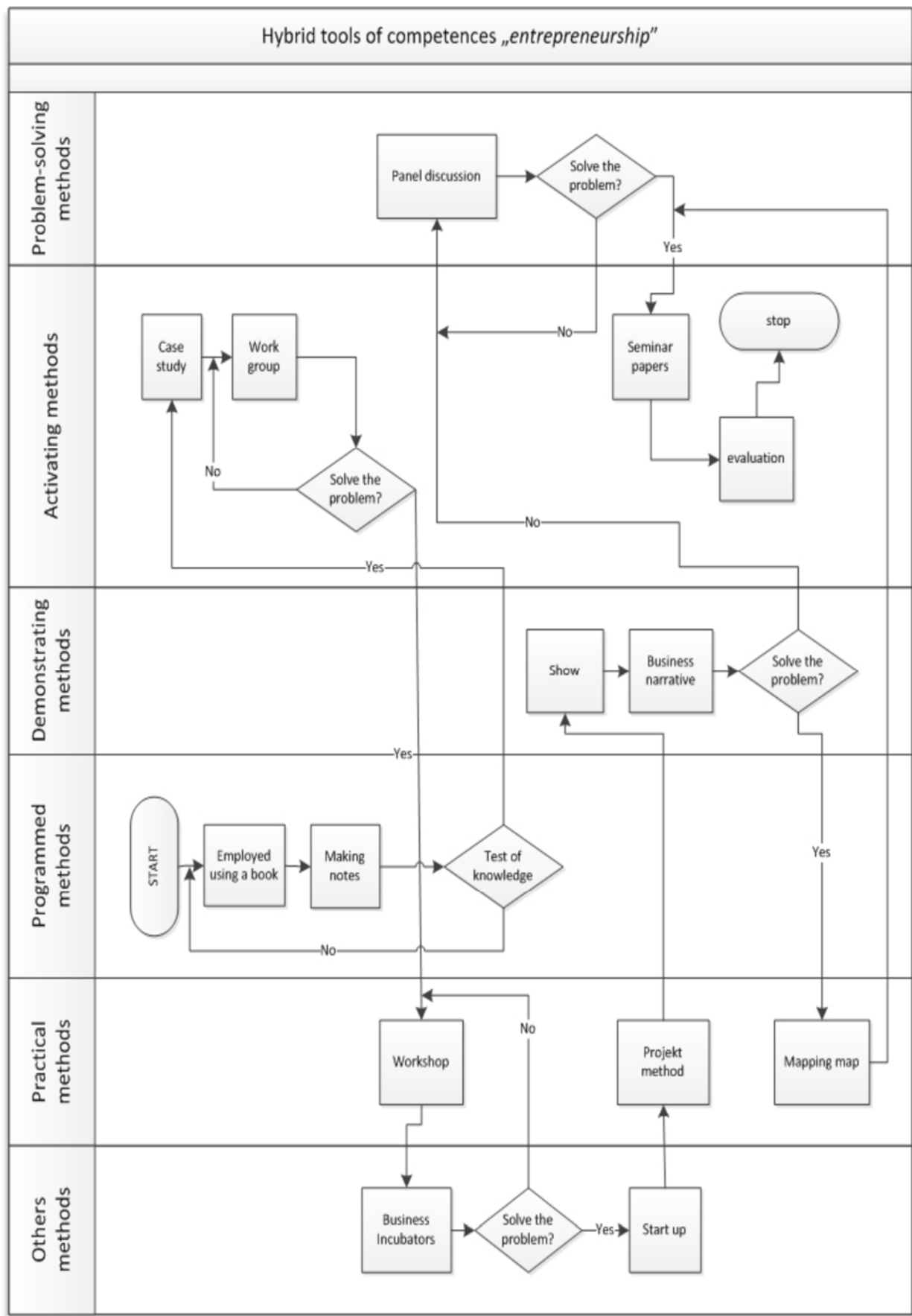


Figure 34. Poznan University model for teaching entrepreneurship (Chomiak-Orsa, 2017, p. 106)

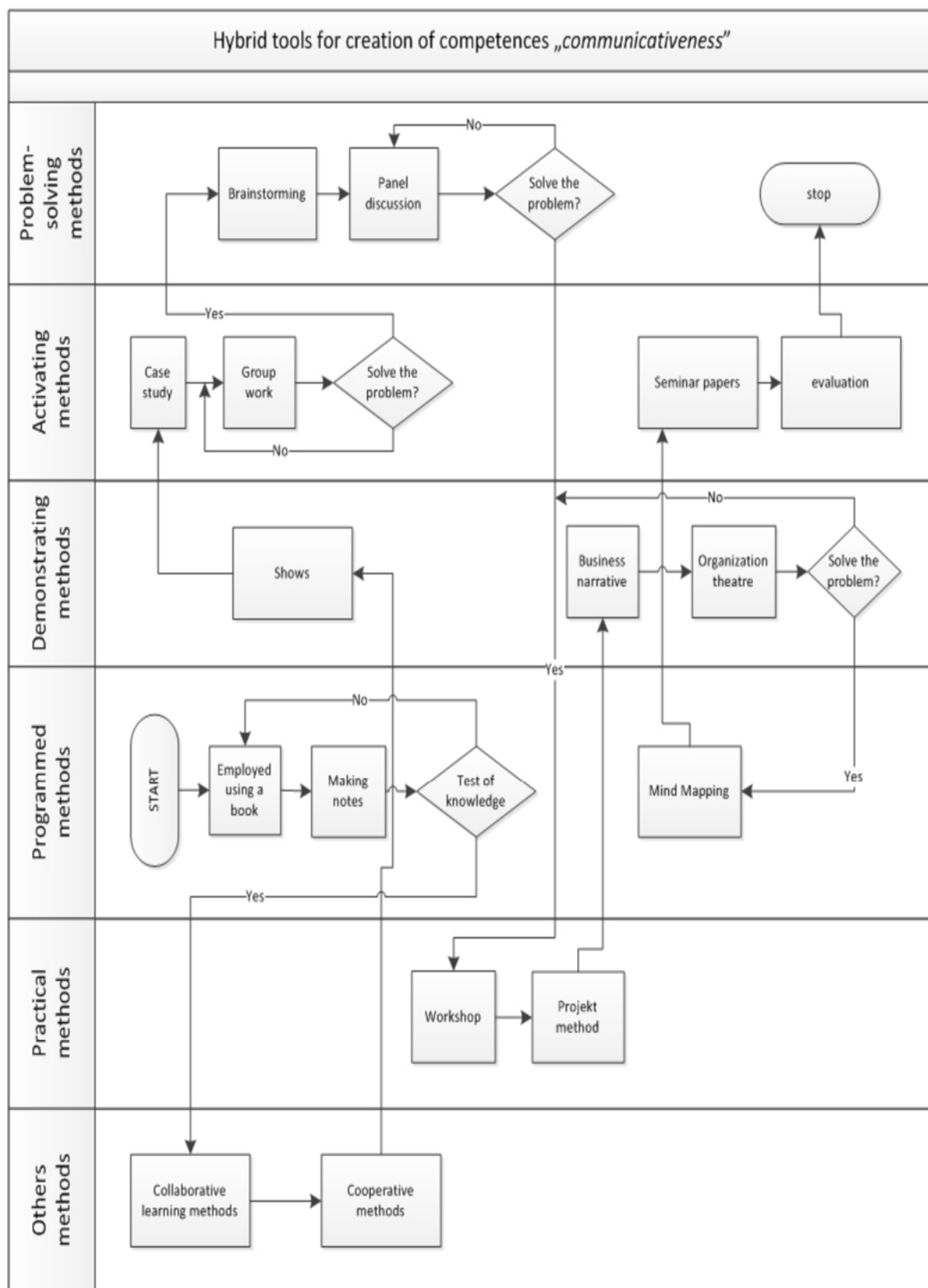


Figure 35. Poznan University model for teaching communicativeness (Chomiak-Orsa, 2017, p. 110)

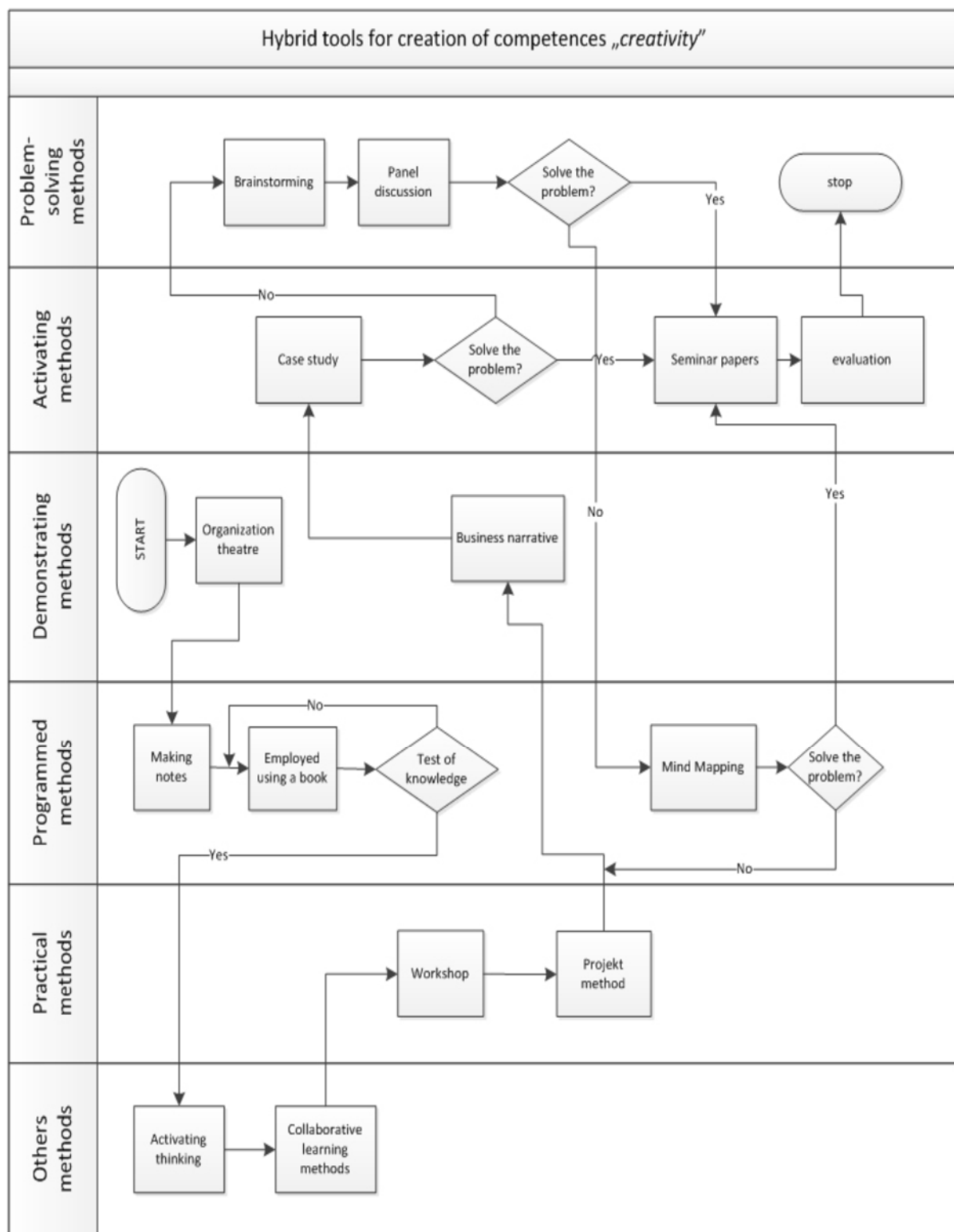


Figure 36. Poznan University model for teaching creativity (Chomiak-Orsa, 2017, p. 113)

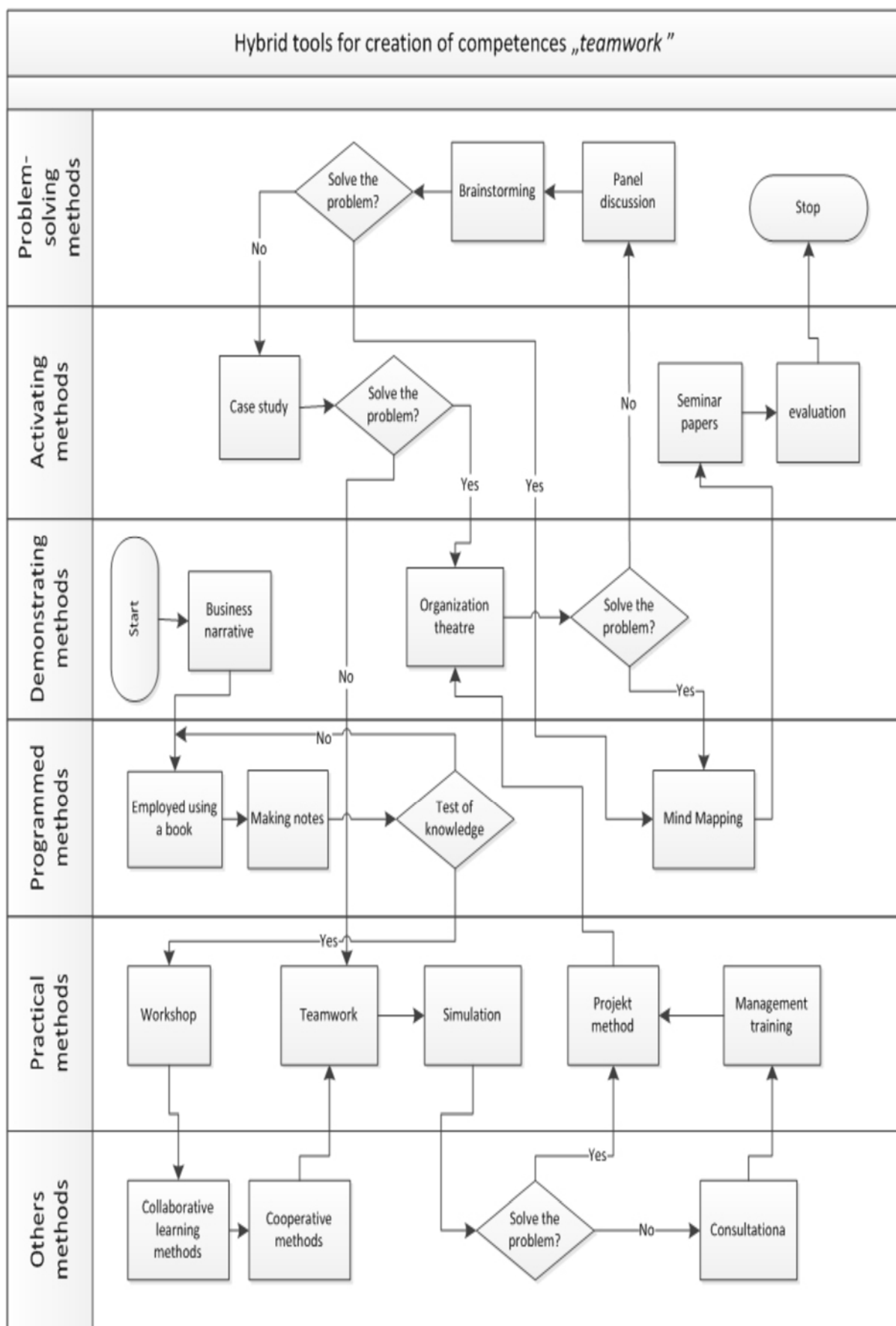


Figure 37. Poznan University model for teaching teamwork (Chomiak-Orsa, 2017, p. 118)

IV.3. TEACHING METHODS

A teaching method represents a set of actions and decisions that the teacher implements in the teaching activity, in order to fulfill the learning objectives and develop skills among students. The teaching method chosen by the teacher must take into account several factors, including the competence the teacher wants to develop, learning outcomes, the subject or contents of the teaching, the characteristics of the students and, in the case of virtual classes, the specifics and requirements of online teaching.

Teaching in the online environment does not necessarily involve the complete reinvention of teaching, but the adaptation of classic teaching methods to the characteristics of teaching in virtual classes, a fact that can be achieved, in large part, with the help of technology. Let's take as an example the lecture, one of the most frequently used face-to-face classroom teaching methods, with a classic, teacher-centered approach. In teaching in virtual classrooms the lecture can be kept for the delivery of theoretical content, but in an interactive form, with constant interruptions, Q&A sessions, requests for feedback from students (such as in the form of "1-minute work" (see more at: [https://www.rochester.edu/college/cetl/faculty/one minute paper.html](https://www.rochester.edu/college/cetl/faculty/one%20minute%20paper.html)), where students are asked to answer a key question) that can be done in a form that is attractive to students, using platforms like Mentimeter (<https://www.mentimeter.com/>).

With the help of digital platforms, other interactive teaching methods can be used, such as think - pare - share (see details at: http://www.queensu.ca/teachingandlearning/modules/active/06_think_pair_share.html).

Suggestions for online teaching of transversal skills can be found in Beck (2010, cited by Rogers, 2021, pp. 36-37). To develop the students' oral communication skills, Beck used podcasts, PPT presentations with images, charts and other visuals, weekly assignments for the students, through which they had to go through mini-readings, having to address, starting from the text read, a question he considers essential, with students' questions forming the basis of class discussions.

PBL (Project-based learning)

One of the most effective methods of teaching transversal skills is PBL (Project-based learning), a method based on a problem or issue; in order to solve it, teams of students create, implement and evaluate a project with applicability in the real world (Moliner et al., 2015, p. 123). The advantage of PBL is its great addressability, both in terms of fields and topics, but also the level of education to which it can be applied (from pre-university to higher education). To these is added the fact that the use of PBL in teaching increases the motivation level of students for learning, through the practical application of theoretical notions in an approach marked by realism and authenticity (José Sá & Serpa, 2018, p. 6).

The stages of this learning approach are (Dincă, 2015, p. 115):

- choosing the subject;
- establishing objectives;

- planning the activity (organizing student groups, possibly by assigning individual tasks and responsibilities; identifying information resources; establishing the calendar; establishing the methods that will be used);
- documentation;
- realization of the project;
- presentation of the project;
- the assessment.

During the development of the project, students develop a multitude of transversal skills (teamwork, communication, decision-making, problem solving, critical thinking), learn experientially, in an autonomous way, organize their own activity, prioritize their activities and manage time (Moliner et al., 2015, p. 124).

PBL has been successfully used since 2020 in the development of transversal skills of students, within the Joint Course Classroom Laboratory, organized by the West University of Timișoara, Romania and NTNU, Norway. Details on the use of PBL in this course can be found in Berge (2020) and on the course page (<https://classroomlab.uvt.ro/pages/Joint.html>).

Project management

Orefice, Melacarne & Guraziu (2021) present a concrete example of the use of project management as a method of teaching transversal skills, following a teaching experience that took place in the academic year 2019-2020 at the Higher Technical Institute (Italy). Initially designed to be held face-to-face, the entire course was reorganized as a result of the Covid-19 pandemic, being entirely conducted online. By using this method in teaching, the teachers had in mind the development of skills regarding project development, from the formulation of objectives to implementation and sustainability, time management, problem solving, communication. Students had full autonomy regarding the organization of project teams, including the option to work individually. The starting point of the projects were problems taken from the real world, from the students' professional field. Before the practical activities, the students benefited from presentations of the theoretical aspects, both in terms of project management and the skills to be developed as a result of this endeavor. The finality of the students' approach was a mind map, in which the students sketched the entire course of their project, benefiting from the teacher's guidance. This mind map was presented in front of the class, but also in the presence of stakeholders from the world of work, the students having to convince about the viability and feasibility of the project idea. In the case of team projects, each member had to present a part of the project.

Following the application of this method, it was possible to observe the development of skills in terms of teamwork (where the projects were carried out in groups of students), autonomy, time management, problem solving, communication.

Brainstorming

It is a creative method of teaching, but also of solving problems, in which students are encouraged to find and state as many ideas as possible regarding a certain topic, their discussion taking place only after the formulation of all opinions. Brainstorming encourages free, non-discriminatory expression of all students and avoidance of criticism (Štrukelj, 2017, p. 149).

An example of the application of the Brainstorming method for the development of transversal skills is the one used at the University of Maribor and presented by Štrukelj (2017, pp. 149-150):

- students are organized in groups of 5-12, they are separated from the rest of their colleagues, they are informed about the problem / topic on which they have to reflect and they are left to think;
- issuing ideas takes 20 minutes, followed by another 20 minutes of reflection on the formulated ideas;
- in the next stage, the ideas are analyzed individually by the students, if necessary reformulated, combined or some are abandoned;
- in the inverted brainstorming stage, the remaining ideas are analyzed in a critical and skeptical manner, so that only the most viable and valuable ones are kept;
- finally, students are encouraged to combine the remaining ideas in a synergistic form.

Along with the classic method of brainstorming, teachers can opt for its variants, namely the 6-3-5 Method or Brainwriting pool (Štrukelj, 2017, p. 152):

The 6-3-5 method involves 6 participants writing 3 ideas in 5 minutes; each participant passes the idea ticket to the participant on the right, resulting in a total of 108 ideas at the end of the 6 rounds of 30 minutes.

Brainwriting pool involves writing down ideas on slips that are placed in the center of the table, in the „pool”. Participants jot down ideas on blank tickets, or those already filled in by other participants. The brainstorming session lasts as long as the participants have ideas. Afterwards, there is the sorting and analysis session of the ideas, which are grouped into useful, useless or possibly usable ideas.

Simulation

It is a teaching method in which students are put in situations similar to those they will encounter in real life, having to show adaptability, flexibility, cooperation and communication skills. Simulation also develops other transversal skills of students, such as: critical thinking, decision-making, time and stress management (Dāvidsone et al., 2021, p. 730).

Flipped Classroom

Also called the inverted classroom, the flipped classroom is a teaching strategy in which students go through the learning content at home, individually, whether it is reading some materials (books, articles), watching some video materials or PPT presentations; later, in class, there are discussions on the material covered, questions or concerns are clarified, and the students receive certain tasks. When ICT is used, the teacher uses digital platforms to provide students with the resources they need. In the classroom, students perform interactive activities (problem solving, collaborative tasks) to internalize and apply the knowledge learned (Cabi, 2018, p. 203). Along with other advantages that the use of this method presents (increasing the level of motivation and performance among students, improving deep learning; allows access to information for all students, even those who for some reason could not attend a certain course; it does not require the teacher to repeat the contents (Enfield, 2013, p. 25) it also includes the development of transversal skills of the students (Lázaro et al., 2016, p. 8229).

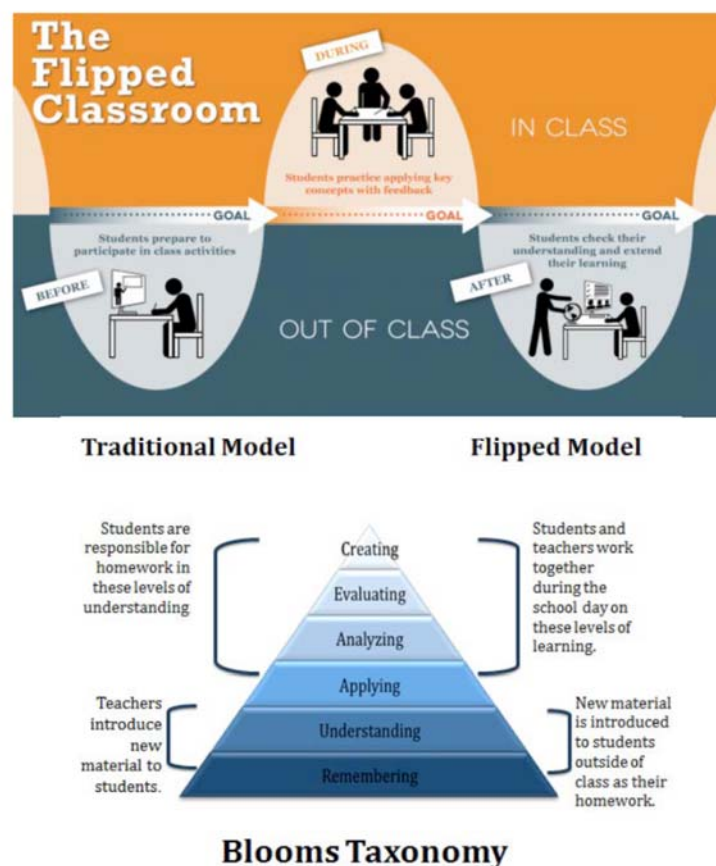


Figure 38. *Flipped classroom vs. Classical classroom* (Lázaro et al., 2016)

In Lázaro et al. (2016, p. 8229) we find the image above, in which the two types of classes, the classic one and the flipped one, are put in relation to Bloom's taxonomy. It can be observed that, if in the classic class the central role in the delivery of content rests with the teacher, and the students are the only ones responsible for completing the tasks, in the

flipped class the students go through the learning content indicated or made available by the teacher autonomously, and the tasks are then completed together – students and teachers, in the classroom:

Flipped classroom has often been mistakenly considered to be synonymous with flipped learning. This represents, according to the Flipped Learning Network (FLN, 2014): *“a pedagogical approach in which direct instruction moves from the group learning space to the individual learning space, and the resulting group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter”*. In order for a flipped classroom to become flipped learning, it is necessary to integrate in teaching the four principles from which FLIP derives, namely:



Figure 39. Four pillars of F-L-I-P (FLN, 2014)

Gamification

Gamification represents the integration of games in contexts other than playful ones. In the educational context, we are not talking about games with the purpose of entertainment, but about "serious" games, with educational value, which can offer learning experiences to students. "A serious game is a digital game created with the intention to entertain and to achieve at least one additional goal" (Ordóñez-Olmedo et al., 2022, p. 360), a goal that can be represented by obtaining some skills, including transversal ones.

The analysis of Reuter et al. (2020), conducted on 56 studies on the use of gamification in teaching in the European university environment, highlighted the main transversal skills that the use of this method develops among students:

<i>Transversal Skills</i>					
<i>Exact sciences (%)</i>		<i>Human Sciences (%)</i>		<i>Biological Sciences (%)</i>	
Autonomy	33,93	Ability to negotiate	35,71	Communication	89,26
Creativity	69,64	Adaptability	48,21	Creativity	69,64
Collaboration	89,29	Anticipate situations	39,29	Decision making	62,50
Efficiency	28,57	Argumentation	53,57	Perform under pressure	30,36
Empathy	17,86	Communication	89,29	Responsibility	26,79
Engagement	80,36	Critical Thinking	75,00	Self-employed learning	16,07
Memory	35,71	Increased confidence	44,64	Take risks	26,79
Problem solving	67,86	Leadership	41,07	Team Work	100,00
Teamwork	100,00	Motivation	71,43	Time optimization	48,21

Figure 40. *Transversal competences developed through the use of gamification in teaching*
(Reuter et al., 2020, p. 6014)

As can be seen, teaching through games develops teamwork, collaboration and creativity skills of science students; communication, critical thinking and argumentation skills of humanities students, respectively teamwork, communication, creativity and decision making for students studying biological sciences.

Along with Kahoot (which was already mentioned in Chapter 3 of this book), the Millionaire Game (<https://www.superteachertools.us/millionaire/>), Knowingo (<https://knowingo.com/>) or Quizizz (<https://quizizz.com/>) can be successfully used in teaching.

Socrative (<https://www.socrative.com/>) allows for both quizzing, questioning, giving and feedback, and can be used regardless of instructional level:

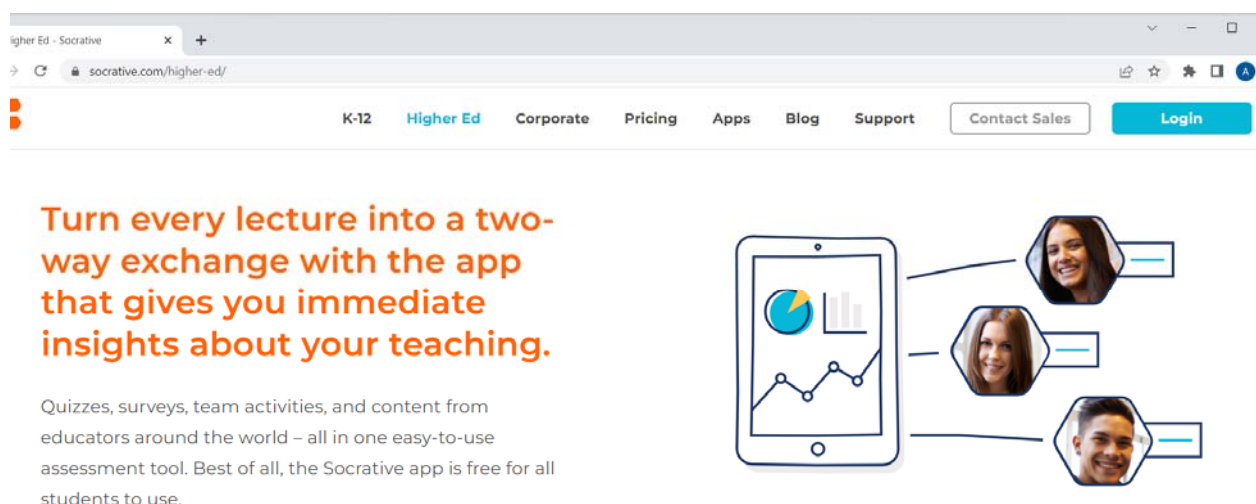


Figure 41. Socrative ((<https://www.socrative.com/>))

Another platform that can be used in teaching is EDPuzzle (<https://edpuzzle.com/>), which allows the creation of video content, but also the subsequent editing, by adding questions.

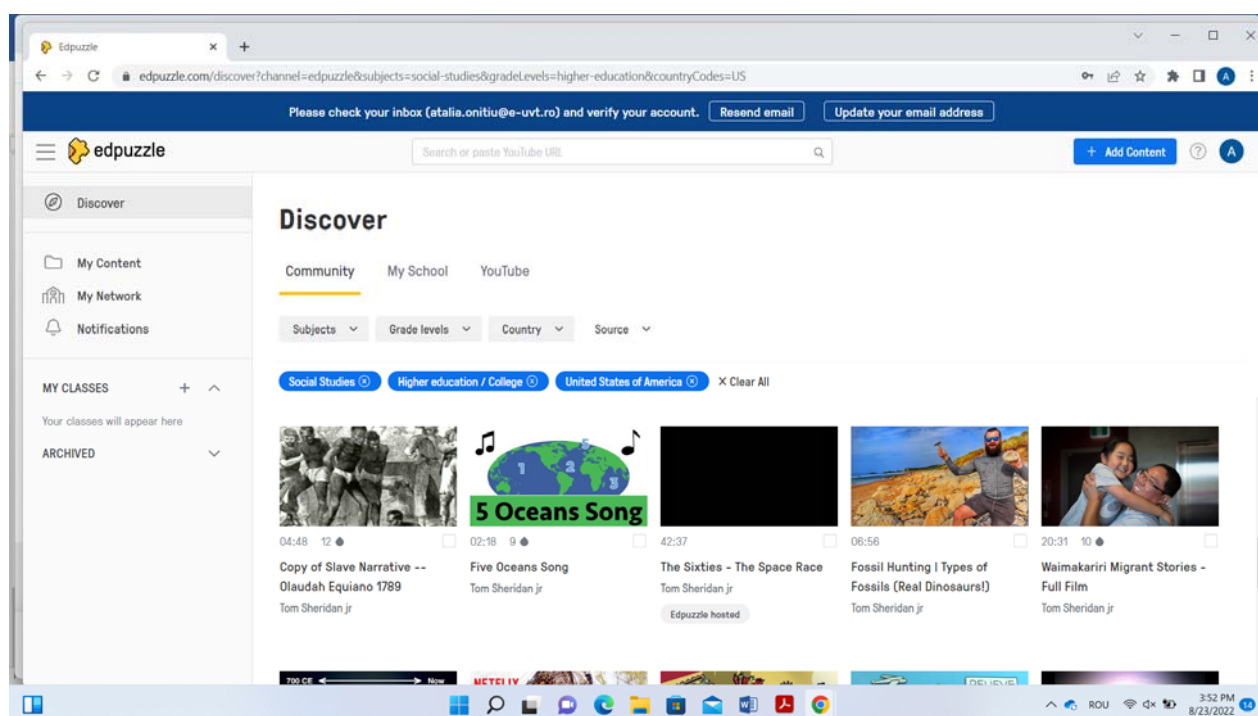


Figure 42. EDPuzzle ((<https://edpuzzle.com/>))

Genially (<https://genial.ly/>) is an interactive platform that allows the teacher to create a wide range of resources, including games.

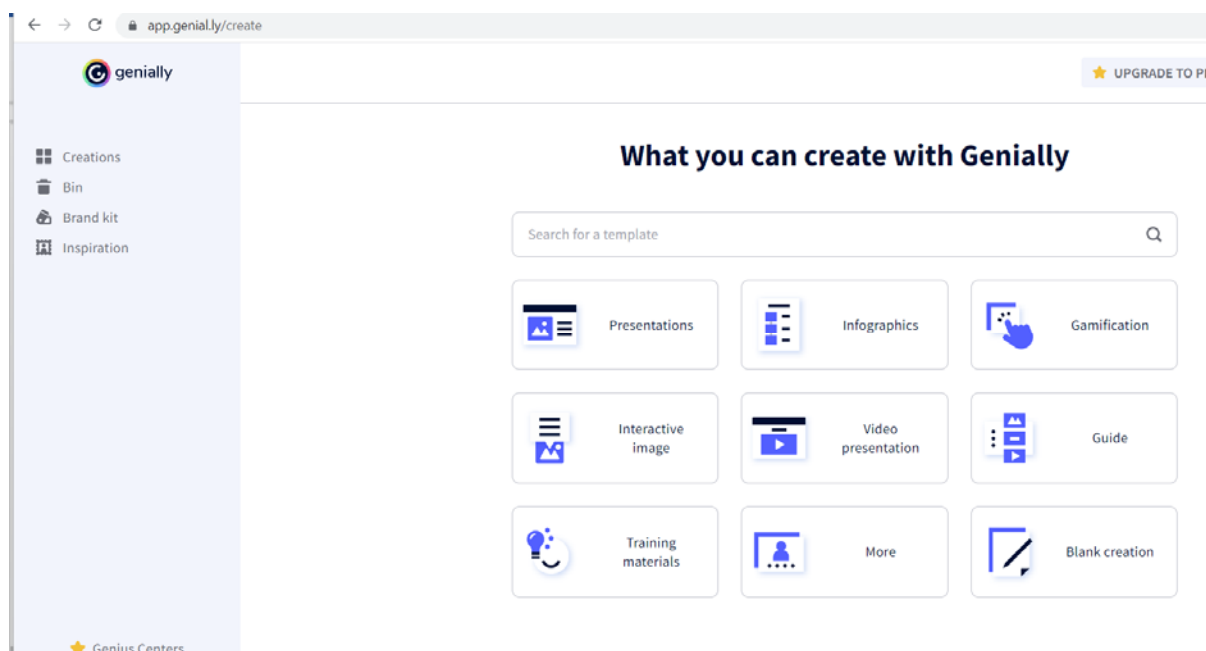


Figure 43. Genially (<https://genial.ly/>)

Games like "escape room" are highly appreciated by students. In escape room like games students are put in a position to use the theoretical knowledge they have acquired in real situations, to make decisions, solve problems, take risks, manage time, communicate and collaborate with colleagues.

IV.4. Examples of teaching methods used for developing particular soft skills

Entrepreneurship

The formation of entrepreneurship skills among students can be achieved by implementing various teaching methods, from games, to case studies, projects, simulations, mind maps, brainstorming. When possible, student internships in relevant organizations or at least visiting such organizations are extremely valuable. The direct interaction of students, either in the classroom or in different contexts (workshops, dialogues, discussions, presentations) with entrepreneurs can be a consistent motivational factor for students, including through the presentation of life stories and personal experiences.

Following the study carried out on the teaching of transversal skills in Polish universities, the authors made a list of the methods used for teaching entrepreneurship skills (Chomiak-Orsa, 2017, p. 102, Table 9.1):

Practical teaching method (alphabetical)	Ranking of the method (Matrix SUM)
Activating thinking	6,19
Brainstorming	7,74
Business incubators	6,45
Business Model Canvas	5,42
Business narrative	6,19
Case study	8,26
Consultations	5,68
Contest	5,42
Cooperative methods	6,19
Educational simulation games	7,48
Exercises/trainings	6,97
Group work/team work	5,16
Internships/practical training/ hands-on work experience, on the job learning/ working life experiences	5,42
Lectures delivered by eminent speakers representing the world of science, business and politics	6,45
Management training	7,48
Practical classes	6,71
Problem solving	5,42
Project method	6,97
Simulation	5,16
Start – up	6,45
Student work	6,97
Work placement study activities	4,90
Workshops	5,42

Figure 44. Methods used for teaching entrepreneurship in Poland universities
(Chomiak-Orsa, 2017, p. 102)

As can be seen, the most used method is the case study, followed by brainstorming and simulation games.

Communicativeness

The most used methods for teaching communication skills at Polish universities are teamwork or group tasks, brainstorming and exercises, as can be seen from Chomiak-Orsa (2017, p. 107, Table 9.2):

Practical teaching method (alphabetical)	Ranking of the method (Matrix SUM)
Brainstorming	7,68
Conferences, symposiums	5,52
Cooperative methods	6,72
Courses	5,28
Employed using a computer	5,04
Exercises/trainings	7,44
Group work/team work	8,16
Internships/practical training/ hands-on work experience, on the job learning/ working life experiences	5,04
Management training	6,48
Panel discussion	6,00
Practical classes	5,28
Problem solving	5,04
Shows	5,28
Student work	6,00
Workshops	6,00

Figure 45. *Methods used for teaching communication skills in Poland universities*
(Chomiak-Orsa, 2017, p. 107)

For teaching communication skills, the model proposed by the University of Poznan includes, as in the case of entrepreneurship, theoretical and practical elements (Chomiak-Orsa, 2017, p. 110, Figure 9.6):

Creativity

In Slovakia, universities use problem solving and practical methods such as case study, brainstorming, project or simulations (Borseková et al., 2017, p. 141).

The most important teaching methods used to develop creativity among students are, according to Polish university teachers, brainstorming, followed by case study, problem solving and simulation games.

Practical teaching method (alphabetical)	Ranking of the method (Matrix SUM)
Activating thinking	6,47
Brainstorming	9,96
Business narrative	5,98
Case study	7,97
Cooperative methods	5,48
Educational simulation games	7,22
Exercises/trainings	6,23
Group work/team work	5,48
Internships/practical training/ hands-on work experience, on the job learning/ working life experiences	5,23
Lectures delivered by eminent speakers representing the world of science, business and politics	5,23
Management training	6,23
Mind mapping	6,97
Practical classes	5,48
Problem lecture	5,23
Problem solving	7,22
Production classes	2,74
Project method	6,72
Science clubs, student organizations	4,23
Shows	5,48
Simulation	5,98
Start - up	6,23
Student work	6,23
Travel	5,48
Workshops	6,72

Figure 46. Methods used for teaching creativity in Poland universities
(Chomiak-Orsa, 2017, p. 111)

Teamwork

In Larraz, Vázquez & Liesa (2017, pp. 86-87) we find the stages we must follow to develop teamwork among students:

- developing cohesion within the group (by stimulating interaction between group members and practicing social skills);
- practicing cooperation in various teaching activities;
- transmission of theoretical contents regarding teamwork (formulation of objectives, organization, distribution of roles in the team).

The most effective method to develop students' teamwork skills is teamwork itself, practically experiential learning, learning by doing. Even if they are not as effective, other methods can be used, such as exercises or brainstorming. A list of these methods can be found in Chomiak-Orsa's report (2017, p. 115, Table 9.4):

Practical teaching method (alphabetical)	Ranking of the method (Matrix SUM)
Activating thinking	6,02
Brainstorming	7,53
Case study	6,53
Collaborative learning methods	5,27
Cooperative methods	7,03
Educational simulation games	6,02
Exercises/trainings	7,78
Group work/team work	10,04
Internships/practical training/ hands-on work experience, on the job learning/ working life experiences	5,27
Management training	6,28
Practical classes	5,52
Problem solving	5,27
Project method	5,02
Science clubs, student organizations	5,77
Student work	5,77
Workshops	6,78

Figure 47. Methods used for teaching teamwork in Poland universities
(Chomiak-Orsa, 2017, p. 115)

CONCLUSIONS

In teaching transversal skills, teachers have at their disposal, as we tried to show in this chapter, a multitude of strategies, models and teaching methods that they can use, both in face-to-face teaching, blended learning or exclusively online. There are examples of good practices in this sense, of approaches that have proven effective. The choice of teaching strategies or methods must take into account the learning context, but especially the characteristics and needs of the students. The teaching of transversal skills in the virtual environment can be achieved with the help of technology and numerous digital platforms and resources, using approaches such as project-based learning, teamwork, collaborative learning, flipped-classroom. Regardless of the approach chosen by the teacher, it must promote interactivity, autonomous learning of the students, their interest and motivation for learning. In order to achieve these goals, it is important to create learning situations and assign authentic, realistic tasks, through which learning and mastering transversal skills become meaningful for students.

REFERENCES:

- Adams, Jean, "The Soft-Skills Learning Triangle: A Learning Model for Supporting Online Management & Leadership Development". *Journal of Interactive Learning Research*, 21(4), 2010, pp. 437-463.
- Bar-On, R., "The Bar-On model of emotional-social intelligence (ESI)". *Psicothema*, 18(Suppl), 2006, pp. 13-25. Available at <https://www.psicothema.com/pdf/3271.pdf>

- Beck, R. J., "Teaching International Law as a Partially Online Course: The Hybrid/Blended Approach to Pedagogy". *International Studies Perspectives*, 11(3), 2010, pp. 273-290. <http://www.jstor.org/stable/44218641>
- Berge Trond (eds.), *Classroom Laboratory Reader*. Craiova. 2020. Available at <https://classroomlab.uvt.ro/pages/Outputs.html>
- Borseková, Kamila, Maráková, Vanda, Vaňová, Anna, Vitálišová, Katarína, "Practical teaching of students in Slovakia and analysis of selected teaching methods of transversal competences". In M. Szafranski, M. Goliński, & H. Simi, M. Szafranski, M. Goliński, & H. Simi (Ed.), *The Acceleration of Development of Transversal Competences*. Centria University of Applied Sciences. 2017, pp. 130-143. Available at <https://www.theseus.fi/bitstream/handle/10024/132425/978-952-7173-26-8.pdf?sequence=1>
- Butryn, B., Sobińska, M., Antczak, Z., & Perechuda, K., "The characteristic of the choosen methods of teaching transversal competences in higher education in Poland". In M. Szafranski, M. Goliński, & H. Simi, M. Szafranski, M. Goliński, & H. Simi (Ed.), *The Acceleration of Development of Transversal Competences*. Centria University of Applied Sciences. 2017, pp. 79-101. Available at <https://www.theseus.fi/bitstream/handle/10024/132425/978-952-7173-26-8.pdf?sequence=1>
- Cabi, E., "The Impact of the Flipped Classroom Model on Students' Academic Achievement". *International Review of Research in Open and Distributed Learning*, 19(3), 2018. <https://doi.org/10.19173/irrodl.v19i3.3482>
- Chomiak-Orsa, Iwona, "Process tools to improve the quality of education in the creation of transversal competence". In M. Szafranski, M. Goliński, & H. Simi, M. Szafranski, M. Goliński, & H. Simi (Ed.), *The Acceleration of Development of Transversal Competences*. Centria University of Applied Sciences. 2017, pp. 102-120. Available at <https://www.theseus.fi/bitstream/handle/10024/132425/978-952-7173-26-8.pdf?sequence=1>
- Chomiak-Orsa, Iwona & Golusińska, Katarzyna, "Modern didactic methods using in educational processes of the training of logistic specialization". In M. Adamczak, R. Domański & P. Cyplik (Ed.). *Modern foreign language learning in logistics area*. Poznan. 2018, pp. 121-138. Available at https://ec.europa.eu/programmes/erasmus-plus/project-result-content/be0f6fc1-314a-4d7a-b2ca-d37895972171/LLOT_Monography.pdf
- Daicoff, Susan Swaim, "Expanding the Lawyer's Toolkit of Skills and Competencies: Synthesizing Leadership, Professionalism, Emotional Intelligence, Conflict Resolution, and Comprehensive Law", 52 *Santa Clara L. Rev.* 795, 2012. Available at: <https://digitalcommons.law.scu.edu/lawreview/vol52/iss3/4>
- Dāvidsone, Agnese, Seppel, Külliki, Telyčēnaitē, Austē, Matkevičienē, Renata, Uibu, Marko, Silkāne, Vineta, Jurāne-Brēmane, Anžela & Allaje, Ōnn, "Exploring students' perceptions on acquisition of transversal skills during an online social simulation". *Human, Technologies and Quality of Education*, 2021, pp. 727-738. <https://doi.org/10.22364/htqe.2021.57>
- Dincă, Daniela, "Transversal Skills Developed through Project-Based Learning (PBL)". In: Monica Tilea, Oana-Adriana Duță, Jón Freyr Johansson, Patrick Murphy (Eds.). *Transversal Skills Development in Modern Teaching Practice. A Good Practice Guide*. București: Pro Universitaria, 2015, pp. 110-126.
- Dolev, N., Naamati-Schneider, L., & Meirovich, A., "Making Soft Skills a Part of the Curriculum of Healthcare Studies". In M. S. Firstenberg, & S. P. Stawicki (Eds.), *Medical Education for the 21st Century*. IntechOpen. 2021. <https://doi.org/10.5772/intechopen.98671>
- Drew, Todd L., *The relationship between emotional intelligence and student teacher performance*. ETD collection for University of Nebraska - Lincoln. AAI3240048. 2007. <https://digitalcommons.unl.edu/dissertations/AAI3240048>

- Enfield, J., "Looking at the Impact of the Flipped Classroom Model of Instruction on Undergraduate Multimedia Students at CSUN". *TECHTRENDS TECH TRENDS* 57, 2013, pp. 14-27. <https://doi.org/10.1007/s11528-013-0698-1>
- Flipped Learning Network (FLN). *The Four Pillars of F-L-I-P™*. 2014. Available at <https://flippedlearning.org/definition-of-flipped-learning/>
- Gibbons, A.S., "What is instructional strategy? Seeking hidden dimensions". *Education Tech Research Dev* 68, 2020, pp. 2799-2815. <https://doi.org/10.1007/s11423-020-09820-2>
- HITS. *High Impact Teaching Strategies. Excellence in Teaching and Learning*. Victoria University. 2017. Available at: <https://www.education.vic.gov.au/Documents/school/teachers/support/Expired/0000highimpa ctteachstrat-expired.pdf>
- Johansson, Jón Freyr, "Transversal Skills and Bifröst University. Practice vs Statements", In: Monica Tilea, Oana-Adriana Duță, Jón Freyr Johansson, Patrick Murphy (Eds.). *Transversal Skills Development in Modern Teaching Practice. A Good Practice Guide*. București: Pro Universitaria, 2015, pp. 36-49.
- Lamb, Stephen, Maire, Quentin & Doecke, Esther, *Key Skills for the 21st Century: An evidence-based review. Project Report*. NSW Department of Education, Sydney. 2017. Available at: <https://vuir.vu.edu.au/35865/>
- Larraz, Natalia, Vázquez, Sandra, Liesa, Marta, "Transversal skills development through cooperative learning. Training teachers for the future". *On the Horizon*, 25(2), 2017, pp. 85-95, <http://dx.doi.org/10.1108/OTH-02-2016-0004>
- Lázaro, M., Ferrer, I., Martín, P., Pérez-Aparicio, J.L., Agüero, A., Hoyas, S., "Experiences to enhance transversal skills in aerospace engineering". *Edulearn16 Proceedings*, 2016, pp. 8227-8233, Available at https://www.researchgate.net/publication/305703855_EXPERIENCES_TO_ENHANCE_TRANSVERSAL_SKILLS_IN_AEROSPACE_ENGINEERING
- Le Donné, N., Fraser, P & Bousquet, G., "Teaching Strategies for Instructional Quality: Insights from the TALIS-PISA Link Data". *OECD Education Working Papers*, 148, OECD Publishing, Paris, 2016, <https://doi.org/10.1787/5jln1hlsr0lr-en>
- Moliner, M.L.; Guraya, T.; Lopez-Crespo, P.; Royo, M.; Gamez-Perez, J.; Segarra, M.; Cabedo, L., "Acquisition of transversal skills through PBL: a study of the perceptions of the students and teachers in materials science courses in engineering". *Multidisciplinary Journal for Education, Social and Technological Sciences* 2(2), 2015, pp. 121-138. <https://doi.org/10.4995/muse.2015.3896>
- Ordóñez-Olmedo, E., Albaladejo-Ortega, S., & Pérez-Escolar, M., "Game-Based Learning for the Acquisition of Transversal Skills: Preventing and Addressing Hate Speech". In O. Bernardes, V. Amorim, & A. Moreira (Ed.), *Handbook of Research on Cross-Disciplinary Uses of Gamification in Organizations*. IGI Global. 2022, pp. 355-380. <https://doi.org/10.4018/978-1-7998-9223-6.ch017>
- Orefice, C., Melacarne, C. & Guraziu, Erina, "Teaching transversal skills through project management learning activities". In: E. Campechano-Escalona & Luz Esperanza Bohórquez Arévalo (Ed.) *Educación, empleabilidad e inserción laboral*. 2021, pp. 145-173. Universidad César Vallejo. DOI: www.doi.org/10.18050/emplea.insercion
- Naamati Schneider, L., Meirovich, A., & Dolev, N., "Soft Skills On-Line Development in Times of Crisis". *Revista Romaneasca pentru Educatie Multidimensionala*, 12, 2020, pp. 122-129. <https://doi.org/10.18662/rrem/12.1sup1/255>
- Pelnēna, Ivita & Medveckis, A., "Development of transversal skills in primary school (classes 1-3): context of lifelong learning". In: *Society. Integration. Education. Proceedings of the International Scientific Conference. Volume II*, May 28th-29th, 2021, pp. 468-480. <https://doi.org/10.17770/sie2021vol2.6419>

- Reuter, J., Ferreira Dias, M., Madaleno, M., Amorim, M., & Vitória, A., "Game based learning on transversal skills development: an applied state of the art". *13th International Conference on Education and New Learning Technologies*, Online Conference, 2020. DOI: 10.21125/edulearn.2020.1575
- Rogers, Justine, "Teaching Soft Skills Including Online: A Review and Framework". *Legal Education Review* 30 (1), 2021, pp. 1-52. <https://doi.org/10.53300/001c.19108>
- Roman, A. F., & Balaş, E., "Transversal competences and interactive Teaching strategies". *Agora Psychologica*, 9(1), 2015, pp. 26-41.
- Rosenberg, Joshua D., "Interpersonal Dynamics: Helping Lawyers Learn the Skills, and the Importance, of Human Relationships in the Practice of Law", *58 U. MIA L. Rev.* 1225, 2004. Available at: <https://repository.law.miami.edu/umlr/vol58/iss4/16>
- Sá, M.J., & Serpa, S., "Transversal Competences: Their Importance and Learning Processes by Higher Education Students". *Education Sciences*, 2018. <https://doi.org/10.3390/educsci8030126>
- Sarode, Ravindra D., "Teaching strategies, styles and qualities of a teacher: a review for valuable higher education". *International Journal of Current Engineering and Scientific Research (IJCESR)* 5(5), 2018, p. 57-62. Available at: <http://troindia.in/journal/ijcesr/vol5iss5part2/57-62.pdf>
- Santamarina-Campos, V., Carabal-Montagud, M.A., Miguel-Molina, M., Miguel-Molina, B., "Online digital tools for the acquisition of transversal skills and the application of the sdgs in the "new normal" Covid-19". *Edulearn21 Proceedings*, 2021, pp. 9130-9138. Available at: https://www.researchgate.net/publication/353237292_Online_Digital_Tools_For_The_Acquisition_Of_Transversal_Skills_And_The_Application_Of_The_Sdgs_In_The_New_Normal_Covid-19
- Saiyad, S., Virk, A., Mahajan, R., & Singh, T., "Online Teaching in Medical Training: Establishing Good Online Teaching Practices from Cumulative Experience". *International journal of applied & basic medical research*, 10(3), 2020, pp. 149-155. https://doi.org/10.4103/ijabmr.IJABMR_358_20
- Spector, J.M., "Remarks on progress in educational technology". *Education Tech Research Dev* 68, 2020, pp. 833-836. <https://doi.org/10.1007/s11423-020-09736-x>
- Štrukelj, Tjaša, "Brainstorming Method for Developing Students' Transversal Skills". In: Nataša Gajšt (Eds.) *Proceedings of the 1ST International Scientific Conference "Teaching Methods for Economics and Business Sciences"*, 8 May 2017, Maribor, Slovenia. <https://doi.org/10.18690/978-961-286-091-2.13>
- Terzieva, Liliya, Luppi, Elena, Traina, I., "Teaching and Assessing Transferable/Transversal Competences. The Case of Socces". *Journal of Science & Research* 8, 2015, pp. 25-56. Available at https://www.academia.edu/15295426/Teaching_and_Assessing_Transferable_Transveral_compences_The_case_of_SOCCES
- Tsankov, N., "Development of transversal competences in school education (a didactic interpretation)". *International Journal of Cognitive Research in Science, Engineering and Education*, 5(2), 2017, pp. 129-144. <https://doi.org/10.5937/ijcrsee1702129T>

Chapter V. SOFT SKILLS ASSESSMENT

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Abstract This chapter starts from the finding that in everyday life and in the world of work, soft skills are gaining ground due to the development of technology, but also as a result of crisis situations and labor mobility. A set of characteristics of the cross-sectional competencies assessment are presented. The assessment of these competencies is significantly different from the conventional measurements and indicators that are used in the traditional assessment of learning in universities. There are presented studies and examples of methods and tools used in the formative, practical and efficient assessment of transversal competencies.

V.1. THE ASSESSMENT OF SOFT SKILLS IN THE WORLD OF WORK

Do you know employers who appreciate the most the employees who are people you can rely on, communicate directly and efficiently, are interested to learn new things, resist to stress and are great teammates, although they have not completed their studies with the maximum grade and they simply are not brilliant, nor the most competent in their field? Employers are looking for the specialists who demonstrate transversal competencies, such as: professional integrity, teamwork, adaptability, flexibility, initiative, complex problem solving, critical thinking, communication skills, digital skills, social and personal skills. These skills are absolutely necessary for the success of any organization and at individual level are predictors of a successful career. When we combine the required hard skills with those soft skills that help to perform the work tasks, the added value is much more than the sum of the parties. Soft skills are like a super jet that amplifies the effect of the result and the quality of each work sequence. And this is gained by no accident (Tulgan, 2015, 58).

Today, especially as a result of the effects of the COVID-19 pandemic on workforce, new educational processes for reskilling and digital upskilling of employees are needed. In some work environments, certain soft-skills have become essential for adapting to the "new normal", and these involve emotional and leadership skills and are seen as the "new hard skills" (Ferreira et al., 2022). If before the pandemic, the economic forums, labor market and universities were focused on developing transversal skills that would allow employees and

graduates entering the labor market to adapt with changes related to automation, high technology and artificial intelligence, the COVID-19 pandemic has added the need to develop competencies related to critical thinking, digital, social and emotional skills that facilitate adaptability and resilience. Thus, the transversal competencies are gaining more and more ground for at least three reasons:

- ***The effect of technology (ET)***. As a result of technological development some of the workloads in various fields are taken over by automation, robotics and artificial intelligence, and specialists who perform them are required to demonstrate transversal competence that are currently required in the competition on the labor market. Also, as a result of the emergence of technology in the world of work and people's daily lives, the development of new professions appeared, related to data analysis, media communication, creative industries and use of social networks from the virtual world, which involve transversal skills such as communication, creativity and innovation, adaptability to a changing environment.
- ***The effect of crisis situations (EC)***. As a result of the economic crises, limited natural resources and the COVID-19 pandemic with their consequences affecting the world of work, increased the need for employees who can adapt to change, who have resistance to stress, and are able to communicate and collaborate effectively, and promote a positive and an open organizational environment. The ability to better manage situations and scenarios of the emergency management is an important part of preparing for the future, when crisis events such as natural disasters will have longer durations and will occur more frequently due to climate change (Hayes et al., 2020, 14).
- ***The effect of mobility (EM)***. As a result of the diversification of specialized professions, of the dynamics of the global labor market and consequently, of the mobility of professionals, employees must show openness to continuous learning, to sense the socio-cultural determinants of working relations, to be able to adapt to different organizational cultures, to demonstrate understanding and promoting diversity, to easily establish effective relations and collaboration in a dynamic and open organizational environment.

In common practice, these skills are defined as being weak, easy to accomplish, "soft", because they involve emotional states rather than cognitive processes, in contrast to "hard" skills that indicate professional competence, expertise, knowledge and knowhow obtained through an academic process. But we will see that things are not that simple. Let's take the example of a specialist who is currently working in health services and has to proceed a diagnosis to a patient. Nowadays a medical diagnosis is no longer based solely on the doctor's technique and art of making a clinical consultation of the patient. To do the anamnesis the doctor has to add the results of para-clinical investigations from blood samples, secretions and fluids, image analysis, radiological, etc., which are carried out accurately and in a very short time with the help of the technology (ET). The decisions that

the doctor makes regarding the needed investigations and the clinical examination of the patient are guided by a medical protocol, involving a set of rules, regulations, and established practices that regulate the functioning of the entire health system. These rules, standardized norms and practices have been developed to streamline the activity of the medical system, especially in crisis situations, when the frequency of calls to medical services increases, in times of war, natural disasters, demographic crisis, epidemics. We have this recent example, where the health system has been over-demanded during the COVID-19 pandemic, the resources have been prioritized to create a treatment protocols in the fight against the new virus and to develop vaccines and effective immunization campaigns to protect the population against infection. At the same time, it has increased the need for medical staff who can cope with stress and anxiety and who demonstrates adaptability to a system of protocols and changing rules (EC). Also, substantial changes in the organization of work, of working space, of mobilization medical personnel from one center to another, have meant rapid integration into another work team and sometimes into different type of organizational culture where doctors, nurses and support staff had to rapidly adapt, effectively use the limited available resources, communicate, collaborate efficiently, respond in time and demonstrate professionalism at every moment (EM).

All corporate organizations have a strong organizational culture and a clear attitude about which soft skills are prioritized for the optimal functioning of the activities and which are assumed open on all occasions. These organizations are not only oriented towards the recruitment of young talents in their field of activity, but also require desirable behaviors for the employees, as well as for the newly employed, and are facing the need to develop transferable skills continuously (Tulgan, 2015, pp. 60-62).

It is enough to think of a global brand that is successful on the free market to know that the organization invests in the development of certain soft skills in employees, which promotes certain values of the organizational culture. We can take the example of the process of building and validating group identity and teamwork values through identity construction and belonging symbols such as the uniform, the company logo, the badge, the mascot, a certain color code, a slogan. But also details about the appearance of the employee and the way of communication in the relationship with colleagues, customers, suppliers, and competing companies: clean clothing, a certain bodily posture when the employee represents the company on the outside, certain forms of address excessively polite and positive. Inculcating these requirements among employees can be achieved only intentionally and through considerable and systematic efforts to develop the human resource and to maintain a satisfying level of the competitive transversal competences, such as: effective written and oral communication, social and personal skills, loyalty and trust, collaboration in teams.

But what would it mean to ignore the transversal competencies? Let's take the example of the kindergarten educator who passed the exams with maximum grades, but cannot communicate effectively with adults, being unable to build an open and trustful relationship

with children's parents or tutors, a situation in which the safety circle for the psycho-socio-cognitive development of children will suffer. Similarly, if the system engineer in a multinational company knows perfectly how to solve a hardware problem, but cannot meet the deadlines, is not attentive to the updating needs of the system, cannot prioritize the problems he has to solve, it could lead to the situation that the entire IT system in the company will collapse. If a software developer is highly trained in its field but does not have the ability to understand the needs of the end-user, the developer will write a fabulous code that no one ever will use. A skilled designer may develop feasible and innovative plans, but if he fails to collaborate efficiently, he may have to take over all the tasks of his teammates to get the work done and may be sabotaged by the other employees because he did not know how to manage distortions in the process of interpersonal communication. In our work and in our daily lives we can observe all these scenarios. These situations are not singular and unimportant. Soft skills differentiate every day between success and failure, between mediocrity and excellence.

An argumentative example for the need for cross-cutting skills training comes from managing the emergency teams and is exposed through the literature review conducted by Hayes et al. (2020) on the need for non-technical skills for emergency incident management teams. In their analysis, the authors show that there are seven categories of such skills needed by the emergency teams: communication, coordination, cooperation, decision-making, situational awareness, leadership and resilience, stress and fatigue management (Hayes et al., 2020, p. 2).

The strategic coordination of the groups during the simulation exercises applied on large areas of a different region of the world or lasting several days was analyzed and the results of the analysis showed that there are significant differences in the decision-making process between different teams that intervene in the case of similar emergency events. Basically, it was shown that the decision-making process is intuitive rather than analytical, and rarely include the consideration of alternative solutions. The literature on non-technical competences comes from areas such as aviation, health services, maritime, railways, nuclear energy, fuels and the military and shows that although there is a clear set of categories of non-technical competences necessary for the fields of activity involving a high degree of risk, behavioral indicators that define and by which these competences are measured, as well as the context of work, differ significantly from one area of activity to another. Flin et al. (2008) observe that non-technical skills can be developed through a three-phase process: (1) *The awareness phase* can be achieved in the classroom by introducing concepts and theories about non-technical competences in order to form common understanding of the language and meanings of these competencies, and it can be implemented through various teaching techniques such as lectures, role-play, case study, videos and discussions on relevant events; (2) *The practice and feedback phase* uses the simulation of actual situations to familiarize students with the practice and development of these transversal competencies in various situations. The role-playing is a suitable technique for this phase; (3) *The*

reinforcement phase through repetition shall use recapitulative techniques, repetitive exercises in combination with organizational practices such as a job audit, standard procedures using learning and development systems. Learning and developing non-technical skills tends to atrophy in the absence of their regular practice (Hayes et al., 2020 after Flin et al., 2008).

The training of non-technical competencies for intervention teams in emergency situations can be harnessed in the context of an organizational culture that makes full use and promotes these competences in all work activities, not only when a work team encounters a crisis situation or when it intervenes in an emergency situation. Hayes et al. (2020) shows that non-technical skills are much more difficult to assess than technical ones and many organizations fail when they want to evaluate the effectiveness of the non-technical competency trainings they use to train their employees and for these reasons, it is desirable that the measurement and development of non-technical competencies be carried out in universities and introduced into the current practice of human resources departments.

In a comparative study of over 200 companies in the creative, digital marketing and advertising industries that have been severely affected by the COVID-19 pandemic, when the budgets allocated to advertising and promotion have decreased substantially, shows that the prevalence of the soft skills trainings increased in 2020 compared to 2019. The study undertaken by Ferreira et al. (2022) show significant differences between the needs of each company for soft skills training and the level of competence in soft skills of the company's employees, which proves that organizations fully understand the need to improve the organizational climate through the development of soft skills of the employees. The trainings requested by the companies for their employees have focused on the organizational culture, the work environment, teamwork and communication skills (communication with clients, negotiation and communication skills), public speaking, effective presentations, emotional support and empathy, and the evaluation of the results learned in these trainings was carried out by measuring the importance of the employees and of the employers given for these trainings, as well as by measuring the degree of satisfaction with the soft skills learning outcomes (Ferreira et al., 2022, p. 6).

From the perspective of employees, in a post-COVID work environment, soft skills will be the determining factors in the success of their professional careers. Employees must develop soft skills training programs, and in the same time have access to the material conditions and continuous support from the employers. For example, in order to develop the digital skills and communication across distance required for implementing the remote work, employers must offer more than a laptop. The employees should be assisted in the work integration process, to reorganize their own home as a suitable work place and to succeed to include the working relations into the dynamics of relationships and behaviors of their family. These changes involve that employees who work from home will need also the space and time to replace the informal interactions with co-workers, which in the "old

normal” took place spontaneously, through random meetings in the hallway, during the lunch break, or in front of the company building. Work relations and interactions between employees formed through informal communication and affective-emotional exchanges, lead to inter-knowledge between employees and increase the level of trust, integration and group cohesion, and thereby support the functional structure of the organization and influence the motivation, satisfaction and performance of the employees. Soft skills are learned also through these kind of interactions between colleagues and the observation of beneficial changes in the work team, that could be obtained in an informal and unstructured interpersonal interactions context that facilitate authentic connectivity.

When an organization assesses its profitability or when it is evaluated in a rank of trusted, successful or customer satisfaction top companies, the soft skills effects make the difference and show us evidence of teamwork, leadership, initiative and calculated risk, adaptability and flexibility, problem solving, recognition and promotion of diversity.

These considerations are among those that motivate and guide decision-makers in higher education institutions to seek new ways of integrating and assessing the training of transversal competencies in educational policies and the curriculum.

V.2. THE ASSESSMENT FOR LEARNING SOFT SKILLS

At the center of the debates about the mission and relevance of higher education at the beginning of the 21st century are those categories of skills that are known as *soft skills*, *transferable*, *cross-sectional*, *key skills*, *employability skills*, which include written and oral communication, teamwork, learning skills, self-regulation, problem-solving, professional integrity, time and task management, adaptability and resilience. Universities find themselves under pressure to include in their curriculum the training of these skills that have the potential to increase the employability of students. In developing education policies and integrating soft skills into the higher education curriculum, universities are making sustained efforts. They must respond to the requirements of employers who claim that university study programmers are not always preparing the students for employment and lifelong learning, in order to be able to solve tasks for which they cannot rely solely on the level of technological development, robotics and artificial intelligence.

In 1997, the Dearing Report identified the need to integrate the development of key competencies into the education programs of universities in order to increase students’ employability competencies (Browne, 2021). Universities have responded in accordance with this Report by including the training of competencies such as communication, data processing, ICT skills and learning competencies in the fundamental courses, or by designing specific modules that develops such skills throughout the academic curriculum. These changes have been beneficial for the development students’ competencies despite some adversity from a part of the universities that argued that the university curriculum should only include academic courses in the field of scientific studies. The development of these skills helped the students first in their learning activities and then benefited them in

terms of employability and preparation for the process of work integration (Browne, 2021; Mello et al., 2021, p. 1524).

The process of integrating the learning activities that form the transversal competencies in universities is a complex one also because *the assessment of these competencies cannot be achieved by conventional measurement and standardized indicators*, such as grid tests, number of years of the study program, cognitive tests, summative exams, and cannot be assessed by evaluating a finished product or a diploma paper. For example, if one reads this book, will be able to evaluate the final product of a team of researchers, but will be to make only few appreciations about each of the four authors in terms of teamwork, communication skills, responsibility in assuming the work tasks, the ability to make decisions, coordinate and organize the documentary study, academic integrity, conflict management and leadership.

The assessment of the skills which are required to increase employability of students requires *a different approach of assessment*. The general curriculum for the training of professional competencies includes deductively based evaluation with a general, universal validity. One such example is evaluating the students' ability to perform mathematical work with exponential powers, a competence that is formed by certain methods and is evaluated in the same way in all countries of the world. However, if we consider the formation of transversal competencies, they are learned and evaluated in an *inductive, socio-culturally contextualized, situational manner*. For example, the training of written and oral communication involves the knowledge of the communication rules, customs of addressing and of initiating communication according to the socio-economic status of the communicators, communication channels, and according to the cultural determinants of the social context in which the communication takes place. There are societies that allow participants interfere in communication without warning, several speakers are allowed to speak at once, which allow youngsters to intervene in a conversation without asking for permission from older participants, which in other socio-cultural areas is considered an offensive behavior. These aspects are significant and determine the dynamics and efficiency of communication.

Similarly, when assessing team collaboration skills, one *must consider the dominant culture* and accordingly, the ability to understand the cultural definition of work relationships. Liñán & Chen (2009) test an entrepreneurial competency questionnaire on a sample of 519 individuals from Spain and Taiwan and explain the role of culture in determining motivation and insights about differences in entrepreneurial skills at subjects from the two countries. In a collectivist organizational culture work relationships have a different dynamics than in individualistic ones, and gaps can be significant on other dimensions of the organizational culture: power distance, short-term vs. long-term orientation, indulgence vs. restraint, masculinity vs. femininity, tolerance of uncertainty (Hofstede & Bond, 1984). For example, teachers from West University of Timisoara and the Norwegian University of Science and Technology have developed a joint course for

students in which they have designed communication and collaboration activities in cross-cultural teams (Classroom Laboratory UVT-NTNU Joint Course, 2022). In this course, students belonging to different cultures are learning and working in teams for the intensive study module of five weeks, learn how to communicate and collaborate effectively and develop team projects through which they develop a practical solution to a real life social problem. In order to start learning and working together in teams, students had to first establish effective communication methods, identify similarities and differences between them, understand the group resources at their disposals in terms of common interests and personal learning objectives and expectations from the course. Students have to initiate an intensive process of sensing and knowing each other in order to successfully overcome the cross-culturally obstacles and actually start co-learning and working as teams. In Figure 48 we can observe significant differences between the characteristics of the dominant organizational culture in the two countries, according to the typology elaborated by Geert Hofstede (2022), showing the premises of the collaboration and co-learning between Norwegian and Romanian students, a set of barriers and obstacles that students had to face in order to be able to study and develop joint projects together.

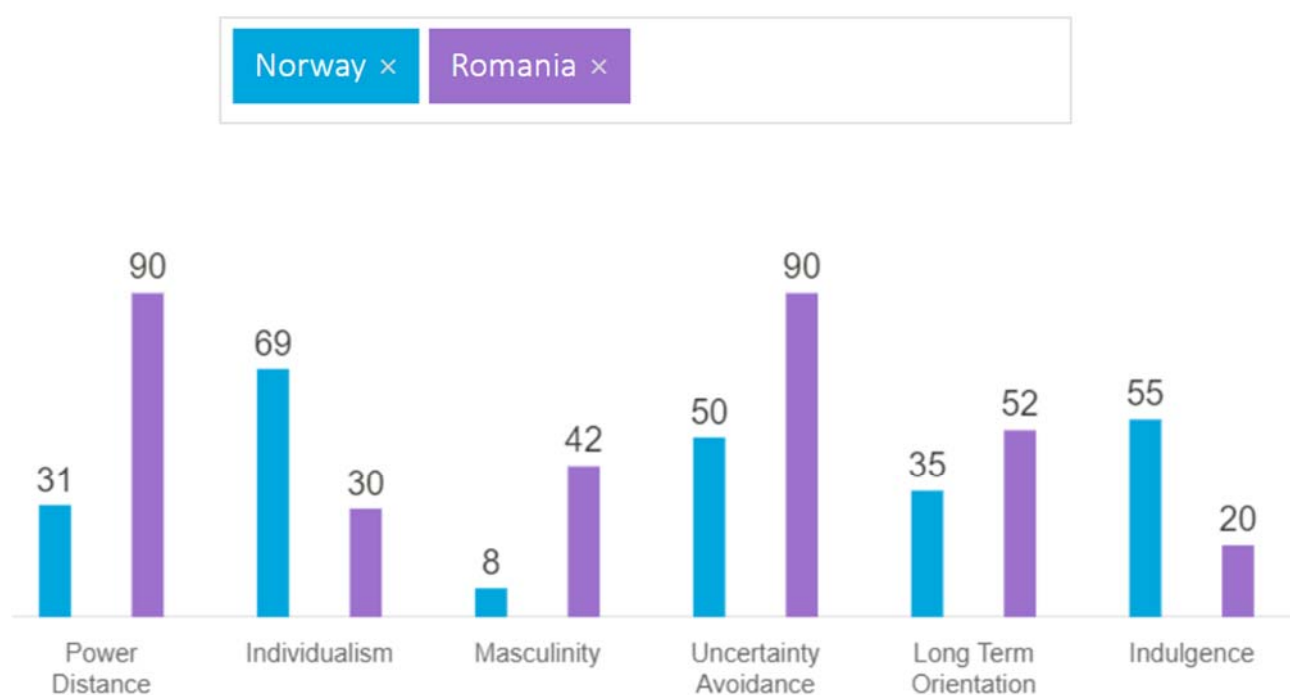


Figure 48. Comparison between Norway and Romania cultural dimensions (Hofstede's culture compass, 2022)

Another characteristic of the transversal competencies is given by the fact that they are formed and developed effectively only through experiential learning, and uses real cases taken directly from the social, cultural and economic context or by simulations created after real cases. This allows experts, employers, civil society representatives and other stakeholders to be involved in the learning and assessment process. Thus, *the teacher loses*

the role of the unique judge who assess and validates the learning outcomes of the students and in return, *gives an active role to the evaluated student* through self-evaluation and feedback, *to other students* through peer-evaluation, and *to the experts from outside the university* who appreciate the viability of the solution identified by the students for the real case studied (Griffin et al., 2012, p. 114).

Finally, when designing objectives, methods and tools to assess transversal competencies of students, teachers have to consider that these competencies are not taken for granted and they will need life-long upskilling depending on the context in which they will be used. The assessment of the transversal competencies usually aims at identifying the stage and evolution in the development of these competencies in a spatially-temporally delimited learning context and can be efficiently achieved if it is centered on its formative and reflective function. Therefore, learning transversal competencies is effective through *formative assessment*. In general, students who learn through a university course are usually evaluated when the learning process is finalized, on the basis of a knowledge test, activity report, a collection of papers and ideas displayed in a presentation. In other words, students are evaluated on the basis of the learning outcomes achieved at the end of the course or of each learning unit. In contrast, in the case of the transversal competencies assessment a major interest is the *reflective learning* throughout the learning process. In order to activate the formative function of the assessment, students must be actively involved in the assessment, as dialogue partners and co-authors of their own assessment. In the formative assessment of the transversal competencies, students self-evaluate their initial level of competence, learn to self-appreciate their strengths and weaknesses so that they can further focus their effort on progress. Thus, the formative evaluation is future-oriented, identifying differences, gaps and areas of vulnerability between the present level of competence and the learning objectives to be achieved by the student. Also, the formative assessment is a dialogue between the teacher and the students, in which the student can ask questions, clarify their weaknesses and what are the competencies they can improve; through this approach, the student becomes the author in her or his own assessment process. Moreover, formative assessment gives the evaluated student the opportunity to develop their autonomy, self-regulation and motivation for learning. The teacher can compare the result of the assessment he has made with the result the student carried out, to consider the student's contribution to the study group activities or to the dynamics of teams processes, and obtaining a more complex, in-depth and more appropriate image of the reality of the learning process, of the learning future needs and of the performance of the students.

In the world of work and in the everyday life, people are facing disruptive changes caused by global crisis (economic, pandemic, conflicts, economic migration) and with complex problems that need to be addressed and confronted through collaborative and interdisciplinary efforts (related to energy consumption, pollution, poverty, social inequalities) and the use of the high level of the technology development that is present in

all economic and social life environments. The study conducted by Griffin et al. (2012) shows that traditional methods of assessment fail to correctly measure high competencies, knowledge, attitudes, self-learning, autonomy and independence, critical thinking, learning in collaborative teams, moral integrity of students or the effectiveness of personal skills in learning. Instructional design and assessment are still addressed by formulating requirements of individual learning, pre-fabricated hypothetical problems or case-studies that do not reflect the issues of the contemporary life; following standard question-answer procedures that are too often based on memorization and mimetic because the evaluated students have no access to the necessary information, and students must rely on what they have memorized from the studied materials; and without being able to consult actual scientific results, open databases, their social and professional network, without access to Internet or other resources which specialists usually use in their professional activities. The learning process is still teacher-oriented and the learning outcomes are appreciated exclusively by the teacher, with rare opportunities for feedback and for improvement for students, and only exceptionally by integrating real-cases and experts from outside the university. The traditional form of assessment in universities is to ask the student to answer to a grid of standard tests, questions or exam topics, with pencil on paper, and then to compare the answers received from the student with a grid of standardized answers and to count the final score (grade, rank, percentage). This type of assessment measures the individual result and less the results of the study group of students. When the level of the students' group or of the entire generation of students is appreciated, the same tests using simple and quantitative scoring are cumulated and the average score or the median score obtained by the individuals' evaluation are counted. The problem is that these cumulated scores obtained for a generation of students do not represent at all the results that the same students could achieve if they would learn together in study groups and would be evaluated based on the results of the learning group. Thus, focusing the competitive process of testing, this way of assessment the learning outcomes can lead to the focus of the entire effort of the students to obtain a high test score, neglecting the actual learning process and the self-preparation for lifelong learning.

As shown by Griffin et al. in their book on "Assessment and Teaching of 21st Century Skills. Methods and Approach" (2012), even if they do not respond to the current requirements and the needs of the world of work, nor to the dynamic of social relations and resources in the contemporary society, the traditional assessment methods are invested with extraordinary power, determining the functionality of the entire educational system:

- Their results can lead to reforms in education and at local level, they can decide to support the development of a university or in the opposite direction, to withdraw the accreditation of a study program, to suspend the activity of the teaching process or even to permanently close the university;
- Teachers build the design of their activities according to the requirement of the traditional assessment methods, sometimes with only one clear objective to prepare

students to pass the exams and to allocate a significant amount of time from teaching to train students on how to work with a certain type of tests which measure the mimetic capacity, memorization and which can be administrated through simple and fast procedures. Teachers develop their own skills in working with standardized tests. For example, when the assessment consists of multiple-choice tests, the teacher tends to use this type of tests more frequently in teaching;

- Students are determined to learn exclusively certain topics which are often organized in „models of tests” in order to perform in evaluation. They are motivated to learn for these tests since these assessments will certify their learning outcomes;
- Curriculum developers identify in this mechanism an economic opportunity, and publish models of tests and learning materials that exclude any information that is not directly related to the evaluated content;
- Assessment guides the educational policies and outlines priorities for the curriculum and instructional design;
- This vicious circle limits innovation in teaching and learning methods that could align them to the contemporary world and lead to increase the relevance of education and consequently the employability for students.

Griffin et al. (2012, pp. 45-47) offer arguments for the integration of real cases from social life and the world of work in the process of learning and assessing transversal competencies:

- When approaching the communication as one of the 21st century skill, we need to think about the evolution and importance of text messages in everyday life, but also in education and in the global economy. Facebook, which was initially agreed as a channel of communication and entertainment among students, has become useful for business applications and groups with common interests, a promotional media channel and the host for social events with thousands of participants. Hundreds of millions of daily users are accessing platforms such as Facebook, Instagram, TikTok, LinkedIn and also communicate using modified forms of contents, syntax and writing of the transmitted messages and succeed to transmit information in an efficient way, and in the same time, manage to increase the migration of the communication from the business environment, to combine social relations from private life with work relationships and cope with the progressive expansion of the social network. These astonishment results that virtual social networks have achieved need to be in the attention of academia more than a topic of interest for social sciences and humanities. Universities should not be limited to using these platforms only to promote their study programs and academic events among students and general public, but also integrate them into the teaching and assessment process.

- In terms of assessing collaboration and teamwork, one of the often encountered dilemma is how to give a grade and transferable credits to each member of the study group or of the collaborative project team and how to differentiate between individual performance in the same group or between multiple study groups studying at the same course. This issue has become even more acute when evaluating groups of students from different countries and cultures. One way is to record the frequency and intensity of participation in group activities: the number of presence out of the total number of group activities, the frequency of each member requests or provide help or advice to others, the frequency of arguments sustained in the group decision activities. Also, when teachers choose to integrate teamwork activities into the learning process, they can simulate the common context encountered in the world of work, namely to evaluate the team activity and allocate the same final grade to all the team members, just like in any work organization where all team members benefit from gratification, while in the case of failure in performing the assigned task, all the team members would risk to be sanctioned.

Continuing the argument for the need to rethink assessment, Green (2018) proposes the concept of "*assessment for learning*" that aims to guide learning, professional development of teachers and change in the management of higher education institution:

- Teachers need to know the students' learning needs, their skills and preferences, the design and implementation of the assessment and how they will actually use the results of the assessment to improve their teaching methods. Moreover, in the *assessment for learning*, the teacher plays the role of a supportive coach, interacting with the students and giving them help, by comparison with the role of the teacher in the *assessment of learning* in which the teacher must be cast and impartial as a judge or as a scientific reviewer;
- Students understand the connections between what they learn in the classroom and what is expected from them in their professional life and they can take responsibility more easily in learning to improve their outcomes. Through the feedback received in assessment for learning, students are given multiple opportunities to improve their performance through exercises and by applying what they have learned;
- The key of the assessment for learning is the feedback that guide the students, direct their attention to the request and clarify the learning objectives, without providing them with more help than needed. Feedback is effective if it is received on time, when the student is not already involved in another learning stage or learning unit. Scores and grades are ineffective in the assessment for learning because students pay less or no attention to tasks that have already been scored (Green, 2018, p. 5).

Finally, it is relevant to mention the study of Hora & Lee (2021), which analyses the relationship between the previous experience of teachers in the economic environment and the way in which they adopt certain methods of teaching and evaluation. The authors started from the idea that in teaching and assessment teachers rely on their previous experience, when they were trained as teachers, but also on the learning experiences they have experienced as students, including non-academic ones, from their private life and from the experiences as employees in the industry. The study describes how transversal competencies – teamwork, oral and written communication, problem-solving and self-regulated learning – are defined and used in STEM fields in four universities from Houston (TX), Raleigh (NC), Denver(CO) and Seattle (WA) (Hora & Lee, 2021, p. 69) and was based on interviews with teachers about their experience in the industry, about the development of their own academic carrier, about their approach of teaching and assessment and about the factors that influenced their current decisions in establishing the strategy and methods in teaching and evaluation they are currently practicing. The resulting data indicate that the relationship between the educational background, previous work experience in industry and the current teaching experience in terms of the five soft skills is not a strong correlation. However, it is not possible to formulate any conclusion regarding the specific teaching methods that are used with efficiency in approaching the five skills. In all cases, the data indicate that there are no simple, linear, causal relationship between work experience in industry and teaching, and the study of Hora & Lee cannot sustain the idea of teachers who have previously worked in industry use this experience in improving teaching and developing the competencies of their students (Hora & Lee, 2021, p. 76).

V.3. METHODS AND TOOLS FOR ASSESSING TRANSVERSAL COMPETENCIES

Transversal competencies of students are difficult to measure and to define measurement tools for this kind of learning assessment. There are efforts and initiatives that have developed methodologies for measuring soft skills, but it is hard to find concrete examples that we can just take and use in any learning and assessment context. Each new assessment introduced in the process of learning must be tested and validated in the actual educational and socio-cultural context where it is intended to be used (Devedzic et al., 2018, p. 295).

In the assessment of transversal competencies, technology can be of real use by developing tests, automatically generating questions and answers, randomizing answers, facilitating the distribution of tests, reviewing and ordering scores, facilitating the development of presentations using dynamic stimuli (audio, 360 degree videos, animation), monitoring the assessment results in real time and automatically creating reports with the assessment results. In the practice of assessing transversal skills, measurement scales are often encountered (Ferris et al., 2005; Phipps & Prieto, 2015; Achcaoucaou et al., 2014; Mello

et al., 2021; Griffin et al., 2012). They are built starting from a variable to be measured, i.e. a characteristic of a certain soft skill, and a linear scale on which the variable in question is ranked or rated, corresponding to predefined performance levels (Devedzic et al., 2018, p. 284). Both the variable and the score must be observable, measurable, concrete, both for the evaluated students and professors, as well as for other potential evaluators.

For example, Griffin et al. (2012) provided a model of an assessment approach that asks students to give a score from 1 to 10 and write a concise explanation for the score they gave. The linear scale is explained in the assessment tool through descriptors of the soft skill, as can be seen in the example described in Table 5. After collecting the scores, they are processed through descriptive statistics and obtain ratings for each soft skill considered (mean, standard deviation, max, min, etc.)

Table 5. Example of assessment tool for creativity and innovation skills, communication and collaboration in teams (after Griffin et al., p. 288)

Creativity and innovation	<p>SCORE FROM 1 (internalize given information; beliefs/actions based on the assumption that someone else has the answer or knows the truth) to 10 (work on unsolved problems; generate theories and models, take risks, etc; pursue promising ideas and plans)</p> <p>SCORE_____</p> <p>RATIONALE FOR YOUR SCORE: (Use as much space as you need)</p> <p>DO YOU SEE A WAY TO IMPROVE YOUR ENVIRONMENT OR ASSESSMENT ALONG THIS DIMENSION? IF SO, PLEASE PROVIDE A BRIEF ACCOUNT OF HOW YOU MIGHT DO THAT, OR HOW THE IDEAS IN THIS WORKING PAPER MIGHT HELP. (Use as much space as you need)</p>
Communication	<p>SCORE FROM 1 (social chitchat; discourse that aims to get everyone to some predetermined point; limited context for peer-to-peer or extended interactions) to 10 (knowledge building/progressive discourse aimed at advancing the state of the field; discourse to achieve a more inclusive, higher-order analysis; open community knowledge spaces encourage peer-to-peer and extended interactions)</p> <p>SCORE_____</p> <p>RATIONALE FOR YOUR SCORE: (Use as much space as you need)</p> <p>DO YOU SEE A WAY TO IMPROVE YOUR ENVIRONMENT OR ASSESSMENT ALONG THIS DIMENSION? IF SO, PLEASE PROVIDE A BRIEF ACCOUNT OF HOW YOU MIGHT DO THAT, OR HOW THE IDEAS IN THIS WORKING PAPER MIGHT HELP. (Use as much space as you need)</p>
Collaboration/ teamwork	<p>SCORE FROM 1 (small group work—divided responsibility to create a finished product; the whole is the sum of its parts, not greater than that sum) to 10 (collective or shared intelligence emerges from collaboration and competition of many individuals and aims to enhance the social pool of existing knowledge. Team members aim to achieve a focus and threshold for productive interaction and work with networked ICT. Advances in community knowledge are prized, over-and-above individual success, while enabling each participant to contribute to that success)</p> <p>SCORE_____</p> <p>RATIONALE FOR YOUR SCORE: (Use as much space as you need)</p> <p>DO YOU SEE A WAY TO IMPROVE YOUR ENVIRONMENT OR ASSESSMENT ALONG THIS DIMENSION? IF SO, PLEASE PROVIDE A BRIEF ACCOUNT OF HOW YOU MIGHT DO THAT, OR HOW THE IDEAS IN THIS WORKING PAPER MIGHT HELP. (Use as much space as you need)</p>

The frequency and duration of ICT use at home, at school, for leisure, learning or social interaction was found to be neutrally or weakly associated with educational performance (Courtney et al., 2022). Availability and quality of ICT use, however, are better predictors of student learning outcomes than quantity and frequency of use. Because the availability and quality of ICT use are predicting more from the perspective of learning, teachers must invest time and resources to develop strategies for students to consciously use educational technologies in the learning process. Courtney et al. (2022, p. 23) recommend creating and maintaining positive attitudes of students regarding ICT and its learning potential, because the conscious use of ICT facilitates and increases performance, autonomy in learning and confidence in one's own strengths during the process of improving learning. Longitudinal learning diagnosis assessment assess the knowledge and skills of students who learn by using ICT tools, identify strengths and weaknesses in a given period of time. Zahn (2021) shows that the data collected online through longitudinal learning diagnosis allow researchers to develop models for tracking student growth over time, as well as to evaluate the effectiveness of feedback.

Achcaocaou et al. (2014) analyze the implementation of a tool for evaluating transversal skills in virtual classrooms. The tool administrated online evaluates the status and evolution of the transversal competencies of students from a master study program at the University of Barcelona. The results of the study show that this evaluation tool offers students the possibility to identify their strengths and weaknesses necessary to develop personal strategies to improve their skills; provides teachers with information about the effects of their actions on the students' progress on certain competencies targeted by the course content; and brings useful information for the management of the quality of the study program because it can detect trends in the training and learning needs of each new generation of students and can align with the needs of the labor market (Achcaocaou et al., 2014). The set of skills analyzed refer to skills grouped under the name of entrepreneurial skills. Such an example can be seen in Figure 49. The evaluation of the master students was carried out in 10 different moments, corresponding to the pre-evaluation, evaluation and post-evaluation phases, and they were confidential. In the pre-evaluation phase, the master students received information and have been involved in assessment activities about the objectives, content and competencies pursued to be developed. In the evaluation and post-evaluation phases, self-assessment tools of some sets of competencies were used. Thus, the students answered a series of questions regarding their perception of the measured set of competencies: the importance they give to each competence, the current level of competence development stage, and the level of competence to be achieved. In this way, the students were left with the impression that they are reporting on their attitudes, perceptions and emotions, rather than their performance being tested. For each item the students choose a current competence level and a desired competence level. Thus, the learning needs of the students were identified and the learning contents could be adapted and oriented to the benefit of the students. These self-assessments were carried out twice, at the beginning of

the teaching period, in October, and at the end of the master program, in July or September. Through the comparative analysis of the obtained data, it was possible to observe the evolution of the students' skills during the study program. (Achcaoucaou et al., 2014).

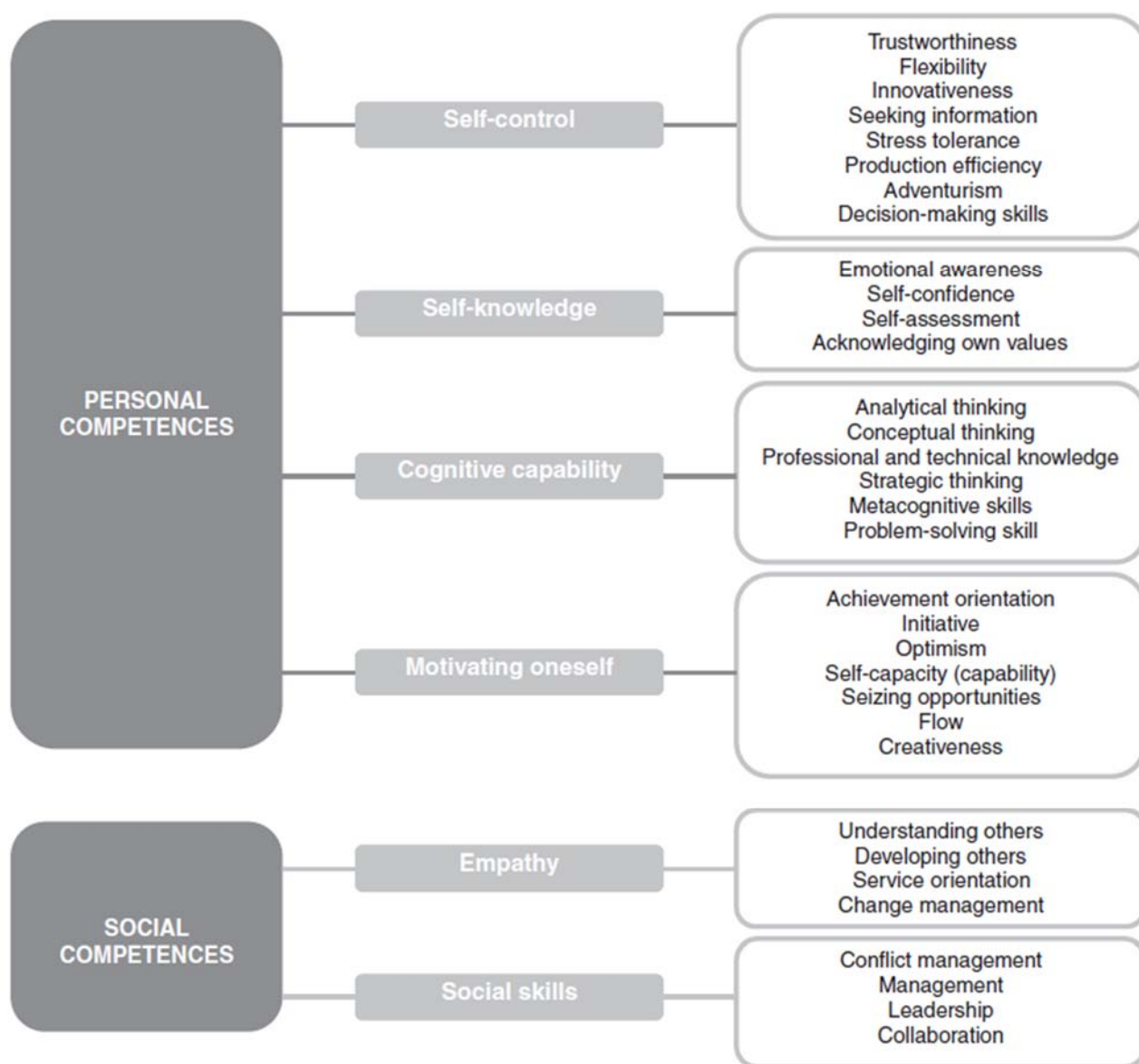


Figure 49. Descriptors of social and personal skills (after Achcaoucaou et al., 2014)

In their study, Achcaoucaou et al. (2014) used *linear scales*, stretched on the minimum – maximum or never – always continuum, as can be seen in the example in Figure 50. In this way, it was possible to identify skills with a high degree of creative tension, for which there is a large difference between the current and the desired level. These are skills that students feel underprepared for and want to improve. In contrast, skills with a low degree of creative tension are those that students believe they possess at an equal or even higher level than the targeted level, and for which they feel prepared. Areas of low creative tension are perceived by the students as their strengths.

Variable (one statement defining a transversal competence attribute)

Importance to me	
Min	Max
Current	
Never	Always
Target	
Never	Always

Figure 50. *Linear scales for measuring the degree of creative tension used in the assessment of transversal skills*

This type of assessment benefits teachers by providing them with information about the level of skills held and the one aimed by the students without costing time and effort, being completely administrated online. At the individual level, this type of scale can be a support for students' personal development, because with its help, students can more easily identify their strengths and weaknesses and develop personal strategies to improve these skills, which has impact on their personal development profile and their academic performance. At the institutional level, the tool offers opportunities for continuous development because it can detect trends in the learning needs of new generations of students and thus, the university can offer study programs tailored on certain skills that are currently required by students and the world of work. This last aspect is essential for the career guidance of students and graduates. By systematically using this method of measuring the development of the students' skills during their training, the creative tension of the different skills included in the analysis will decrease after a learning period and this is an indicator for the success of the study program (Achcaoucaou et al., 2014, p. 14).

Similarly, Phipps & Prieto (2015) conducted a study on a stratified sample of the student population in the south-eastern region of the USA (N=20,115), obtaining responses from 1057 students about their entrepreneurial intentions and their association with political skills. Under the dimension of political skills, the authors used the Political Skill Inventory (Ferris et al., 2005), a set of seven-point scale of transversal competencies such as social skills, interpersonal influence and network ability. Some examples of these variable can be seen in Figure 51.

<i>Competence: Social astuteness --- Variable: I am good at understanding people's motivations</i>	
1 totally disagree	7 total agreement
<i>Competence: Interpersonal influence --- Variable: It is easy for me to establish relationships with others</i>	
1 totally disagree	7 total agreement
<i>Competence: Interpersonal influence --- Variable: I am able to communicate easily and effectively with others</i>	
1 totally disagree	7 total agreement
<i>Competence: Network ability --- Variable: I have developed a network of relationships and associations with my colleagues and I can always call on their help if I need it</i>	
1 totally disagree	7 total agreement
<i>Competence: Network ability --- Variable: I invested time and effort to establish contacts and relationships with others</i>	
1 totally disagree	7 total agreement
<i>Competence: Apparent sincerity --- Variable: When I communicate with others, I am honest and frank in everything I say and do</i>	
1 totally disagree	7 total agreement

**Figure 51. Linear scales used in the assessment of transversal skills
(examples from the Political Skill Inventory developed by Ferris et al., 2005)**

The previously exemplified measurement scales are the most popular and very easy to use in their digital version for the assessment of transversal competencies. The scales are structured by dimensions and variables, and are included in questionnaires and standardized tests measuring perceptions of the level of competence, attitudes towards the importance given to a competence, and motivations for learning. They can be used in the assessment of transversal skills throughout the learning process from multiple perspectives: (a) The students' perspective. Through a reflective process, students self-evaluate and peer-evaluate; (b) The teachers' perspective. Teachers can evaluate the level of competencies of the students at a given moment, as well as at different moments of the learning process; (c) The perspective of other interested parties in the university. Curriculum designers, specialists who establish the development strategy of a study program, researchers in the field of social and behavioral sciences can evaluate the level of competence of students from one generation or longitudinally, comparing students from several successive generations to observe in what way are modifying their learning needs; (d) The perspective of other

stakeholders outside the university. Entrepreneurs, employers, specialists in the development of human resources and recruiters from work mediation agencies may be interested in appreciating the university's contribution to the formation of transversal competencies for students.

Before the start of the learning, during the learning process, and after completing the learning in virtual classrooms, students perform various tasks for learning transversal skills: structured exercises, digital presentations, infographics, posters, online games that stimulate the development of certain transversal skills, mind maps, essays, group activities, team projects etc. To stimulate the learning of transversal skills, some tasks are assigned repeatedly, and their results are repeatedly tested during the learning process, or several tasks can be combined and their results evaluated to obtain a superior effect. Corral et al., (2020) show that students who repeated tests throughout the learning process, obtained higher performance compared to students who only opted for a summative assessment, at the end of the learning process. Thus, they demonstrated the formative usefulness of online tests in understanding and developing students' skills.

Table 6. Methods used to evaluate transversal competencies formed through game-based learning (Garcia et al., 2020)

	Research design/referenced studies	Data collection instruments	Analysis methods	Evaluation methods
Digital	Experimental (13.8%) [15,38,48,73,74,94,98,130,131,133,141]	Questionnaires (~81.8%), pretest and posttest (~72.7%), only posttest (~18.2%), interviews (~9%)	Quantitative (~18.2%) Mixed (~81.8%)	PANAS
Digital	Quasi-experimental (10%) [9,17,42,107,140,148,155,156]	Questionnaires (~75%), pretest and posttest (~87.5%), interviews (~25%), observation (~12.5%), audio recording (~12.5%)	Qualitative (~12.5%) Quantitative (~25%) Mixed (~62.5%)	
Digital	Nonexperimental (23.8%) [5,7,27,34,36,49,51,68,78,80,81,88,93,112,117,147,161-163]	Questionnaires (~89.5%), pretest and posttest (~57.8%), only posttest (~10.5%), interviews (~21%), observation (~10.5%)	Qualitative (~10.5%) Quantitative (~5.3%) Mixed (~84.2%)	FDF, MEEGA
Non-digital	Nonexperimental (31.3%) [47,55,72,132,146]	Questionnaires (100%), pretest and posttest (~40%), interviews (~20%), observation (~20%)	Qualitative (~60%) Mixed (~40%)	MEEGA
Digital	Ad hoc (52.4%) [2,10,14,16,21,23,28,33,41,43,52,56,57,59,64,65,79,82,84,85,87,95,99,101-103,106,110,116,118,120-124,127,129,139,142,154,158,160]	Questionnaires (~92.8%), pretest and posttest (~9.5%), only posttest (~11.9%), interviews (~14.3%), observation (~7.1%)	Qualitative (~61.9%) Quantitative (~4.8%) Mixed (~33.3%)	EGBL, MEEGA, UGALCO,
Non-digital	Ad hoc (68.7%) [8,39,53,91,96,97,126,144,145,149,150]	Questionnaires (~90.9%), interviews (~9.1%)	Qualitative (~100%)	MEEGA, MEEGA+

Abbreviations: EGBL, effective game-based learning; FDF, four-dimensional framework; MEEGA, model for evaluation of educational game; PANAS, positive and negative affect schedule.

Garcia et al. (2020), in their study on the effects of game-based learning in the acquisition of transversal competencies, show that it is recommended to combine online games from different genres for a better result, for example, combining simulation games

with role-play games leads to the development of skills of leadership, teamwork, time management, communication and project management. Systematic literature review carried out by Garcia et al. (2020) on the use of game-based learning from 2001 to 2020 shows that when evaluating transversal competencies at students, researchers and teachers must use a rigorous methodologically design and various data collection methods: questionnaires, tests, interviews, observation, challenge of exercise and other tools, as presented in Table 6.

Garcia et al. (2020) show that in the studies of the last decade, the training of soft skills through game-based learning is assessed by analyzing students' perceptions and informal comments of students and teachers. In non-experimental case studies data are collected through post-game session questionnaires, interviews and observation. In experimental assessments, students are most often randomly assigned to experimental groups that participate in the game session and control groups that do not participate in the game session; pre-game and post-game data are collected and cross-skills test results are compared; descriptive statistical analysis is dominant, it mainly uses central tendencies, including the median, quartiles and standard deviation to measure the variation from the central tendency; other analyses examine the dependence between variables through Cronbach alpha coefficient and the Pearson correlation coefficient; graphical illustrations such as histograms, linear diagrams, frequency diagrams, or maps are used to display the results; for testing the research hypothesis the t-test is mainly used, but also the non-parametric Wilcoxon test and Mann-Whitney test, covariance or multivariate analysis. The use of qualitative methods is predominant when evaluating the role of game in the development of soft skills, but standardized questionnaire, developed through specialized models for assessing the impact of games and models created for this purpose are also beginning to be used. In conclusion, Garcia et al. (2020) show that the majority of research designers that propose to evaluate the impact of digital games collect students' perceptions after one or multiple game sessions and use questionnaire or observation to collect the data.

The study conducted by Mello et al. (2021) - *A structured reflective process supports student awareness of employability skills development in a science placement module* - reports learning outcomes for a course at the University of Liverpool of 30 credits out of a total of 120 credits totalizing the four years of the initial formation. The course was specially designed to develop and increase the employability skills for science students by placing them for 6 weeks in a UK organization or a partner university. The purpose of the course is for students to gain work experience in real context, which cannot be reproduced throughout conventional classroom projects. The main learning objectives of these module are as follows: (a) instructionally guiding students in defining their expectations from this learning experience and its role in the learning process and in terms of personal development; (b) students self-assessment of their perceptions of employability skills before, during and after their placement in the organization, coupled with students' self-reflections on how these skills are developed and demonstrated; (c) awareness of the impact

of their work on the organization and how society can benefit from their work (Mello et al., 2021, p. 1525).

To support and prepare students for the placement in the organization, activities were organized in which the following were discussed: (a) The importance of going through the literature necessary to document the project: the students were presented with the topics that they will address in the organization and were guided to contact their supervisors in the organization to find out more details; (b) The importance of work coordination: the differences between student lifestyle and professional goals, as well as cultural differences, if applicable, were emphasized; (c) The role and expectations of host organization and university supervisors; (d) General view on learning outcomes and assessments.

The soft skills audit consists of 13 skills and attributes that were self-assessed by students using a five-point scale (1 – poor... 5 – excellent). The obtained scores were not analyzed statistically, but were shown to the students to reflect on their own skills and to identify among them, those that can be improved. This reflective exercise was conducted three times, prior to placement of students in organizations and during weeks three and six. In the sixth week, the last of the organization, students were asked to reflect on their competencies and to explain in detail and with arguments, in 250 words, the scores they gave to each competency on the three occasions where they recorded score changes during the assessment period, where they recorded no change when they reflected on their personal competencies.

Also students were asked weekly to briefly describe the activities they participated in the previous week and to answer two open-ended questions: *What did you learned from this week's activities (in terms of professional skills and employability skills)?* and *What is your plan for the next week?* To help students complete these questionnaires and reflective journals, teachers organized preparatory activities on the following topics: (a) How to use the online reflective journal: How the Google for Education package works? What are the deadlines for completing and submitting the reflective journal? How to complete each section of the reflective journal? (b) Employer expectations and employability skills: students receive background material from the literature on skills development and the benefits of reflective work; (c) Reflection: teachers explain the importance of reflective activity in learning and work, but also examples to demonstrate the need for transversal competencies and the effects of the lack of these skills. It is emphasized that students are not assessed on their self-assessments score and that they must be fair and complete this task of writing the reflective journal; (d) The dynamics of the professor-student relationship: students receive feedback from teachers. Students complete the weekly journal between Wednesday and Friday and receive weekly formative feedback between Saturday and Monday and summative feedback at the end of the activity within 72 hours of submitting the project presentation.

Online forms developed by Mello et al. (2021, p. 1533) contain specific items to be completed by students, which are then read and assessed online by the teachers at the University of Liverpool, who provide written online feedback after each completion with

suggestions for improvement. This form also contains a skills audit aimed at training professional and transversal skills that students can develop during their placement in the organizational environment. The targeted competencies are: (1) Personal development plan, keeping it up to date and acting on its implementation; (2) Ability to work with others – collaborative teamwork; (3) Motivation (self-confidence, independence and maturity); (4) Resilience (the determination to achieve success despite challenges and disappointments); (5) The ability to develop competencies and behaviors conducive to the role in the organization (required by the role prescriptions); (6) A high degree of self-reflection and acceptance of criticism (learning from experience and from mistakes and improving performance from them); (7) Ability to form professional and global networks; (8) Adaptability and flexibility (working effectively in a changing environment); (9) Communication skills, both oral and written (adapting communication skills to different contexts and for a diverse audience); (10) Problem solving and initiative (identifies opportunities and is proactive in suggesting solutions); (11) To learn quickly and proactively (take on new tasks and accept new responsibilities); (12) Work ethics, professional integrity (punctuality, time management, appropriate behavior and conduct, assume responsibilities). The students' self-assess their competencies before entering the organization, halfway through the period of work in the organization and at the end of the period. Scores show that placement helped students develop professional and transversal skills, and self-assessment was the way students became aware of their strengths and weaknesses and supported lifelong learning.

Mello et al. (2021, p. 1534) observed that at the beginning of the experiential learning period, students accurately and completely reported the professional activities they have been involved in the placement organization, but focus less on reporting how transferable skills develop. Following the formative feedback provided by the teachers after each report, the students began to internalize their self-reflective process regarding the development of transferable skills, too. This aspect demonstrates that self-reflection on one's own learning and working does not come naturally, but is a process that must be educated, practiced, structured and supported by the teachers. Thus, professors should focus on the ways in which they can help students to understand, reflect and note the evolution of the skills they develop, both professional and transferable (Mello et al. 2021, p. 1534).

Interpreting these results, we can affirm that in the training of the transversal competencies a major role is played by formative assessment, feedback and summative assessment, including students' self-reflections and recording the progress in the development of the considered skills. The students' answers show that it is obvious that different learning and working environments can lead to the development of the same skills, and students can experience identical challenges in organizations from distinct fields of activity, such as cultural obstacles, common priorities for the entire economy in a certain period of time, such as the COVID-19 pandemic.

CONCLUSIONS

The reviewed studies show that students practice and develop transversal competencies in order to make their learning activities more efficient, to increase their employability, to be successful in the work integration process, and to orient their professional career.

The formation of such skills implies to truly integrate the assessment in the learning process and, at the same time, equipping students with reflective skills that will help them in the learning activities, but also after the graduation, in lifelong learning, work adaptation and resilience. Thus, self-regulating of learning, self-reflection and self-assessment should be explicit learning objectives, along with the development of a defined set of transversal competencies.

The most popular tools for assessing transversal competencies are those that include linear scales with the help of which perceptions are gathered about the current level of competence, how the target competencies are affirmed and demonstrated, and the importance given to each competence. These linear scales are part of questionnaires, pre-tests, post-tests, reflective learning journals, evaluation grids, etc. which are the basis of formative feedback, monitoring and assessing the progress during the learning process of the transversal competencies in universities.

The design of teaching-learning process of the transversal competencies requires a different approach of the assessment, namely inductive, formative assessment, socio-culturally contextualized, situational, in which the teacher loses the role of the unique judge that unilaterally determines the student's performance level at the end of a learning process and gives an active role to the evaluated student, to other students and sometimes to experts from inside or outside the university. Considering these aspects, the relevance of the assessment of transversal competencies can only be achieved if the learning objectives and the evaluation methods are fully known from the beginning and if the students are taught to carry out reflective activities with meaningful impact on their own learning.

REFERENCES:

- Achcaocaou, F., Guitart-Tarres, L., Miravittles-Matamoros, P., Nunez-Carballosa, A., Bernardo, M., Bikfalvi, A., Competence Assessment in Higher Education: A Dynamic Approach, *Human Factors in Ergonomics & Manufacturing*, Volume 24, Issue 4, July 2014, pp. 454-467, <https://doi.org/10.1002/hfm.20394>.
- Browne, P., "A Study of Soft Skills Acquisition of High School Students as Perceived by School Counsellor's, A Dissertation Presented in Partial Fulfilment of the Requirements for the Doctor of Education Degree Charleston Southern University, Charleston, SC, 2021, Retrieved from: <https://media.proquest.com/media/hms/PFT/2/g0AhL?s=pILzd6btJjpdZ3ogEdITXi1UOe4%3D>
- Classroom Laboratory UVT-NTNU Joint Course, EEA Grants 2014-2021 *Bringing Real Life into Virtual Classrooms*, Project no. 21-COP-0004, 2022, <https://vrclassrooms.uvt.ro/HTML/jointCourse.html>
- Corral, D., Carpenter, S., K., Perkins, K., Gentile, D., A., "Assessing students' use of optional online lecture reviews." *Appl Cognit Psychol*. Volume 34, 2020, pp. 318-329, <https://doi.org/10.1002/acp.3618>

- Courtney, M., Karakus, M., Ersozlu, Z., Nurumov, K., "The influence of ICT use and related attitudes on students' math and science performance: multilevel analyses of the last decade's PISA surveys, Large-scale Assessment in Education", *Springer Open*, 10(8), 2022, <https://doi.org/10.1186/s40536-022-00128-6>
- Devedzic, V., Tomic, B., Jovanovic, J., Kelly, M., Milikic, N., Dimitrijevic, S., Djuric, D., Sevarac, Z., "Metrics for Students' Soft Skills", *Applied Measurement in Education*, 31(4), 2018, pp. 283-296, <https://doi.org/10.1080/08957347.2018.1495212>
- Ferreira, C., Robertson, J., Pitt, L., "Business (un)usual: Critical skills for the next normal", *Thunderbird International Business Review*, Wiley Online Library, 2022, pp. 1-9, <https://doi.org/10.1002/tie.22276>
- Ferris, G. R., Tredway, D. C., Kolodinski, R., Hochwarter, W. A., Kacmar, C., Douglas, C., Frink, D., "Development and Validation of the Political Skill Inventory", *Journal of Management*, 31(1), 2005, pp. 126-152, <https://doi.org/10.1177/0149206304271386>
- Flin, R., O'Connor, P., Crichton, M., *Safety at the Sharp End. A Guide to Non-Technical Skills*, 2008, Taylor & Francis Group: CRC Press.
- Garcia, I., Pacheco, C., Mendez, F., Calvo-Manzano, J., "The effects of game-based learning in the acquisition of „soft skills” on undergraduate software engineering courses: A systematic literature review", *Computer Applications in Engineering Education*, Volume 28, Issue 5, 2020, pp. 1327-1354, <https://doi.org/10.1002/cae.22304>
- Green, A., "Assessment of Learning and Assessment for Learning, Assessment and Evaluation. Basic Concepts in Testing and Assessment", *The TESOL Encyclopaedia of English Language Teaching*, First Edition, John Wiley & Sons, Inc., 2018, <https://doi.org/10.1002/9781118784235.eelt0352>
- Griffin, P., McGaw, B., Care, E. (Eds.), *Assessment and Teaching of 21st Century Skills. Methods and Approach*, Springer Science + Business Media B.V., 2012, <https://doi.org/10.1007/978-94-017-9395-7>
- Hayes, P., Bearman, C., Butler, P., Owen C., "Non-technical skills for emergency incident management teams: A literature review", *Journal of Contingencies and Crisis Management*, Volume 29, Issue 2, 2020, pp. 185-203, <https://doi.org/10.1111/1468-5973.12341>
- Hofstede's culture compass, 2022, retrieved from: <https://www.hofstede-insights.com/fi/product/compare-countries/>
- Hofstede, G., & Bond, M. H., "Hofstede's Culture Dimensions: An Independent Validation Using Rokeach's Value Survey", *Journal of Cross-Cultural Psychology*, 15(4), 1984, pp. 417-433, <https://doi.org/10.1177/0022002184015004003>
- Hora, M. T. & Lee, C., "Does industry experience increase the teaching of „soft” skills in community college classrooms?" *New Dir for Community Coll.*, 2021, pp. 65-79, Wiley Periodicals LLC., <https://doi.org/10.1002/cc.20467>
- Liñán, F & Chen, Y.-W., "Development and Cross-Cultural Application of a Specific Instrument to Measure Entrepreneurial Intentions", *Entrepreneurship Theory and Practice*, Volume 33, Issue 3, 2009, pp. 593-617, <https://doi.org/10.1111/j.1540-6520.2009.00318.x>
- Mello, L. V., Varga-Atkins, T., Edwards, S. W., "A structured reflective process supports student awareness of employability skills development in a science placement module", *FEBS Open Bio*, Federation of European Biochemical Societies, 2021, pp. 1524-1536, <https://doi.org/10.1002/2211-5463.13158>
- Phipps, S. T., Prieto, L., C., "Politicking and entrepreneurship: Determining the critical political skill dimensions for high entrepreneurial intentions", *Academy of Entrepreneurship Journal*, Volume 21, Number 2, 2015, Retrieved from: <https://www.researchgate.net/publication/298712597>
- Tulgan, B., Chapter 3. "Unlocking the Power of Soft Skills", *Bridging the Soft Skills Gap: How to Teach the Missing Basics to Today's Young Talent*, Wiley, ISBN: 978-1-118-72564-1, 2015, pp. 55 – 65
- Zhan, P., "Refined Learning Tracking with a Longitudinal Probabilistic Diagnostic Model", *Educational Measurement: Issues and Practice*, Volume 40, Issue 1, 2021, pp. 44-58, <https://doi.org/10.1111/emip.12397>

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ISBN: 978-606-37-1605-8