INNOVATION IN CURRENT EDUCATIONAL PRACTICE AND ITS MANAGEMENT

VIOLA TAMÁŠOVÁ
et al.

Edition MONOGRAPH

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Reviewed:
Prof. PhDr. Eva Tandlichová, CSc.
Assoc. Prof. Silvia Barnová, PhD., MBA
PhDr. Silvia Matúšová, CSc.

Contributors:

Assoc. Prof. Erika Juhász, Ph.D. (1,25 AS)
Assoc. Prof. Ing. Daniel Lajčin, PhD. (1,21 AS)
Assist. Prof. Igor Marks, PhD. (1,60 AS)
Assist. Prof. Csilla Pesti, Ph.D. (1,36 AS)
Assoc. Prof. PhDr. Viola Tamášová, CSc. (4,47 AS)
Assoc. Prof. Roman Tandlich, PhD. (2,18 AS)

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INTRODUCTION

This scientific monograph was created as an output of the IGA 007VŠDTI/2020 project *Managerial competences and innovations in current educational practice*. It is a collective work prepared by an international research team. The aim of the work was to address the current issues of educational department management, competencies of the manager/lecturer, ethical relations in the work of the manager and his/her ability to withstand the workload and demands in the present (including pandemic) situation, meaning forming resilience within the framework of the educational institution or business. The authors also focused on how issues of innovation in the education and training of youth and adults are addressed, viewed also in an international comparison. At the centre of attention is the topic "University - industry collaboration is a drive for innovation in Europe," alongside a formative evaluation of the learner as a current, pedagogical-psychological requirement of positive pedagogy, the issue of teaching practice, and also the specifics of lifelong and vocational education of adults, in accordance with the new requirements of the EU labour market. The international comparison includes innovations in educational practice in the Czech Republic, Slovakia, and Hungary, and points to the results of education and management in some EU countries, especially in the context of universities and industry, from the aspect of educational management, pedagogy, psychodidactics, ethics and andragogy. The monograph is structured into three coherent chapters, concerning the areas of: *Innovation in the management of higher education, Innovation in the management of adult education, and Innovation processes in the education system and school practice*.

Finding ways and methods to increase the efficiency of managerial work, which is closely connected with the efficiency of the whole organisation (including the educational institution) and ultimately also with the efficiency of the whole of society, is a current issue presented by the authors of the first chapter. This area attracts the attention of experts from various scientific fields, though it is also associated with improving the position of the organisation in a competitive environment, with more efficient use of its tangible and intangible potential, including human capital, social cohesion, active citizenship, strategic partnerships, and ultimately links to the EU's concept of sustainable development and development strategy. Human capital occupies an important and indispensable place in the framework of development thus defined.

The first chapter shows how managerial work is subject to multi-factor conditions. It is related to education, life, and work experience, competencies, personality traits, the appropriate choice of the right person for a specific managerial position, and specific factors influencing the quality of managerial work, whether this concerns business or education. The field of management is one of the typical environments where the occurrence of difficult situations is not uncommon. The complexity relates not just to the current perception of the situation (e.g. the pandemic situation, desasters), but also to situations, especially in education system, which are basically not so demanding, being only slightly burdening, but over the long term they are not stressful through their intensity, but rather through their duration. Challenging situations are a part of real existence, and addressing them was a motive for the authors, also for finding ethical contexts with managerial work and with resilience ability in an education manager's work.

The authors of the monograph also emphasise the need for innovation in the professional work of the teacher – educator – manager and his/her concretising and integrating role in the educational programmes of the school, outside of it, as well as at other educational institutions, e.g. for adults. The importance of this need consists in developing the abilities of cognition, self-cognition, and self-awareness, self-regulation, mental hygiene, and creativity. The teacher – educator – manager focus is on getting to know people, interpersonal relationships, communication, cooperation, and competition, including values, attitudes, practical ethics (responsibility, openness, …). and skills such as decision-making and problem-solving. Readiness for everyday life means not just a set of knowledge from general education subjects that open for young people a path to further study, but the authors consider help in the field of ethics, professional orientation, transversal competences, and effective response to various life situations to be also important. Acquiring certain life competencies compared to knowledge competencies within school systems frequently miss their mark, something which the authors also highlight. The importance of adult education in today's world is constantly growing. Its need in the EU has been intensified in the context of demographic and climate changes, automation, new technologies, as well as digital transformation. Although the importance of adult and lifelong learning resonates, progress in achieving participation rates in education towards the EU target is insufficient. The current covid situation has further emphasised the importance of informal adult education, and especially the problem of limited digital literacy.

The authors in the third part of this monograph focused on the current method in the work of the teacher - manager, namely the formative assessment, as a process that is gradually being implemented in several areas, whether this is the assessment of those in education, or the assessment of learners in the process of their self-assessment, or evaluation of projects, teamwork, and individual work. The main aim of the formative assessment is to improve, develop, and acquire new professional competences needed for managing and evaluating the teaching process through innovative forms and methods

1. Innovations in university education management

The chapter is focused on the quality management education. It provides the framework of educational management in teaching, and current trends in teaching methods in university education. Educational management is presented as a self-regulatory process, including basic managerial functions, that ensures effective teaching by teachers and supports learners to study in terms of effective professional and didactic procedures. Effective teaching methods are presented and defined in the context of a constructivist approach and a heuristic teaching model, focusing on the discovery and construction of knowledge. They are interlinked with innovative approaches to plan, organize, lead, control and assess educational processes at universities.

1.1. Education quality management at the university

Viola Tamášová

The current changes in Slovak education system affect most areas of activities of all types of schools, including universities. They are related to changes in school management and teacher management that are basic factors in educational processes at every level of education. Pedagogical development can be defined as the improvement of the most important educational process in school (Uhereková, 2009a). The degree of its development represents the achieved quality of teaching.

We can agree with Průcha (2009) who understands the concept of quality in the pedagogical field from two aspects. On the one hand, as a general term for a positive or negative indication of the level of a particular condition, for example as a low (or high) quality teaching of a subject at school. On the other hand, as a term to mark the optimal, desirable, ideal state, for example, the need to emphasize the quality of teaching. In education, the term quality is used in the second sense - as the quality of the educational process, educational institution, educational system which associates with the desired and optimal level of functioning or products, processes or institutions set by certain requirements (educational standards, criteria, etc.) and can be objectively measured and assessed. This corresponds to another opinion on the understanding of quality as a measure of meeting the requirements and expectations and the achievement of satisfaction of expected needs of customers or partners (Blaško, 2012).

The quality of education is important to maintain and upkeep the competitiveness and existence in today's world. The future depends on continuous innovation and quality assurance as decisive goals of all kinds and types of schools at all levels and areas of education (Turek, 2008). Related to this, it is the quality of a school at the level of optimal functioning of processes, especially a teaching process which should be satisfactory to school partners and which can be objectively measured and assessed. When considering the quality of a school, a distinction must be made between the concept of level, focused on results, and the concept of quality, oriented to the processes leading to results. School efficiency is understood in terms of testing and assessment of the results of school work, while quality is related to all processes implemented in the school.

The quality of teaching is interpreted differently. It is most often confused with the level of teaching, i.e the results of teaching that students have achieved (in written exams of oral exams). The quality of teaching does not only mean the intellectual and academic ability of students, but also their attitudes towards the subject, their interest in the subject, their will, emotional, social and moral aspects. Another interpretation is the added value, which indicates the quantity of knowledge and information that teaching has added to students. Teaching is good when it results into positive motivation of the student to learn, when it is good and successful because good things are done right (Blaško, 2011).

1.1.1. *The current trends in European education*

The current trends in European education show the tendency to improve the quality of the procedural aspect of teaching compared to the previous focus on the content aspect. School changes have imposed a challenge for professional growth of teachers, especially in the new approach to management – the educational subject management. It is logical, as outdated approaches of teachers to teaching cannot bring better results (Uhereková, 2009b).

In the effort of teachers to achieve and implement quality teaching, the educational subject management appears to be a necessary component of teacher's work at every level of teaching, representing both sides, the teachers who teach and the students who learn. The new trend requires the motivation of teachers and students (Schunk, D. H & DiBenedetto, M K., 2020). A one-sided concept of teaching must be considered obsolete, unproductive and ineffective. Teachers´ activities without consideration of needs, expectations and activation of the student, who is a partner or a consumer of educational services, are currently regarded as a determining factor of the quality of teaching.

This theoretical chapter is focused on the quality management (Kollár, & Matúšová, 2020) in further education (Schunk, D. H & DiBenedetto, M K., 2020). The aim of the chapter is to provide the framework of educational management in teaching as well as current trends in teaching methods in university education. Educational management is presented as a self-regulatory process, including basic managerial functions, that ensures effective teaching by teachers and supports learners to study in terms of effective professional and didactic procedures. Effective teaching methods are presented and defined in the context of a constructivist approach and a heuristic teaching model, focusing on the discovery and construction of knowledge (Sirotová, 2006). They are interlinked with innovative approaches to plan, organize, guide, control and assess educational processes at universities. The chapter was based on the analysis of selected theories supplemented by the assessment of teaching practice of the authors in undergraduate study and in-service training of teachers.

The management of teaching represents a set of meaningful activities of the teacher, including the management of cognitive activity, the development of students' abilities and the process of their learning, in which the students acquire knowledge, develop skills and attitudes to life, reality and to themselves. The management of teaching is a complex process requiring knowledge and implementation of basic principles of human resources management (Průcha, J. 1997, Albert, A., 2002). The quality of the teaching process at the university, in addition to the mutual relations between the teacher and the student, among students and their attitudes to instruction, is influenced by the teacher's approach to the management (Stensaker, B. & Harvey, L., 2006). At present, teachers prefer a more comprehensive point of view.

When the principles of education are significantly interlinked with the goals of education and the development of key competencies, the term education, including the intersection of education and training also at the university level, obtains a clearer meaning. Education is understood as an educational reality in which the educational process takes place.

1.1.2. *University teaching culture*

The educational process at the university is affected by educational constructs, such as study programs, their information sheets, syllabi, publication sources. All of them are created by internal, and external partners. The creation of educational environment is promoted by the management of a school and the teacher in cooperation with various partners. It is necessary to change the culture of education at the university in direction to socio-constructivist, participatory, interactive, and experiential learning of students, based on their experience and life practice. This approach would require a transition from the acquisition of large amounts of knowledge to the development of key competences in students. This principle is applicable to the in-service training of teachers. The purpose of tertiary education and further education (in-service training) is the guidance of students / teachers / adults to creativity and innovative thinking, which makes the issue of education and learning more complex and challenging.

Current trends in tertiary education are gradually moving from the former instructivism approach to the constructivism approach (Rohlíková, L. & Vejvodová, J., 2012). The instructivism was based on the principle of linear development of knowledge in relation to previous ones, usually by means of a lecture where teachers expect that students would acquire the content of a lecture. The constructivism approach considers the principle that the student constructs and interprets reality based on personal experience.

In the constructivist approach, the student arrives at one´s own knowledge structure based on the cognition of several theories, opinions and the critical reassessment of original views. The methodological basis is the active approach to the teaching process, experiential learning in real contexts and self-reflection. This constructivist approach is applied in the formation of one's own opinions, in confrontation with the opinions of other individuals, emphasizing social dimensions of education, namely the dialogue between the teacher and the student facilitated by various educational forms and methods.

The quality of teaching at university (Clarke, M., 2002) is also affected by personnel, material, technical and other conditions, and especially by the application of teaching methods and forms, either outdated and inefficient or progressive and innovative.

1.1.3. *Management of the teaching process and its methods*

From this point of view, we consider it important to mention and list some suitable and possible innovative and activisation methods and forms, which can significantly shape and improve the quality of teaching. In this part of the study, we are going to present some of educational methods and forms which do not represent an easier way, on the contrary, they require meaningful management of the teaching process by the teacher. The management of the teaching process incorporates the planning, organizing and guiding students and controlling the results achieved by teachers and students. The lack of information on the effectiveness of these activities can lead to a routine, but not to the quality teaching process. The teaching process at the university has its specific organizational forms and methods, which currently aim at innovative trends in higher education.

The lecture as a common form, however, it also embodies some advantages, especially the systematic presentation and interpretation of theoretical problems and facts, their integrity and structure. At present, the lecture tends to innovative approaches, for example by using various means of presentation techniques. The lecture can be realized as a problem interpretation consisting of the introduction of the problem by a teacher and its gradual solution in cooperation with students. Activation methods can be used during the lecture, in the interaction between the teacher and the students, and among the students themselves. For example, the method of buzzing groups can be applied to a large number of students, when after a certain time of the classical lecture, the teacher distributes students in 2 or 4-member groups, assigns a problem to each group with the request to discuss the problem, formulate questions for discussion, suggest next steps and phase of the lecture, etc.

Voting can be used, for example, to obtain attitudes and feedback, to control the solution of partial tasks. The lecture may include a discussion related to the topic. The lecture can be enriched by multimedia, such as audio recordings, video recordings, simulations, video conferencing, the Internet, while the teacher has to take care not to slip into a soulless media show.

The COVID-19 pandemic as reported by Tamášová, V., Marks, I. & Pesti, Cs. (2021) has disrupted the formal and informal provision of initial education, continuing education and training and related services. It was shown that the pandemic has had a particularly adverse effect on disadvantaged persons, learners with special educational needs and persons

geographically isolated. The pandemic also revealed the need to develop and secure capacity of infrastructure and relevant skills to make proper use of communication technologies.

A well-conducted seminar supports in student the development of creative activities, critical thinking, relevant discussion, interpretation, presentation skills, application of analysis and synthesis, comparison, generalization, induction, deduction, etc. A suitable goal of the seminar may be the creation of various variants of papers and their presentation, with the focus on the analysis of occurring errors and forms of assessment and assessors.

Discussions with justifiable goals can create space for students to form their own opinion and critical thinking, especially when their opinions and attitudes may differ. It requires the ability to master the questions that create the so-called cognitive conflict. A special type is the chain and panel discussion. A good opportunity for students is to moderate a discussion where they can develop their communication, management and social skills.

Group teaching as the activity of students in groups constructed in terms of interest, coincidence, social relations, and performance can be realized by means of the snowball method, the method of mind mapping, etc. A specific type of group cooperative teaching is partner teaching in pairs, larger groups and team teaching.

Project education is based on the solution of theoretical and practical projects by active participation of students. It can provide the possibility of mutual and interdisciplinary cooperation in project teams consisting of students from different departments and faculties.

Heuristic methods, characteristic by their essential feature such as discovery, finding, inventing, creating prerequisites of scientific work and creative practical activity, should be included in the basic repertoire of teaching methods in higher education. These include such methods as problem solving, confrontation method, paradox method and other creative methods as brainstorming, brainwriting, brainpool, CNB (collective notebook) method. Research and research methods have also their place in education, including case studies, action research, experiments.

Experiential simulation methods tend to the acquisition and the development of knowledge, skills and professional behaviour. The student conference tends to develop professional and organizational skills in students, enabling them the presentation of papers, discussions, exchanges of views and experience at the end of the semester. Micro-teaching as a simulation of the role of teachers and students is suitable for students of teacher training faculties.

Situational methods, based on the solution of a problem case or a real specific situation, can include the conflict solution method or the incident solution method.

The method of drama has a creative dramatic character, representing social learning in model situations, and also including creative drama.

Constructivist teaching is one of the innovative approaches (Tóthová, R., Kostrub, D. & Ferková, Š., 2017). It is characterized by the mediation and acquisition of the curriculum from various perspectives, the active work of the student with goals formulated independently in cooperation with the teacher, the work of the teacher in the role of a guide, coach, tutor or facilitator. The main actor in the mediation of the curriculum and the control of the learning outcomes is the student. The teacher guides the student to an active construction of knowledge (not only reproduction), which is based on personal experience, group discussion, research and other activities, taking into account the student's previous knowledge, assumptions, ideas and attitudes. Emphasis is placed on problem solving, cognitive processes of higher order, such as understanding, analysis, synthesis, deduction and induction. The work with error is important, as it provides an opportunity to confront and correct previous knowledge and attitudes. In particular, research, discovery and experiential learning methods are applied. The construction of knowledge is supported by cooperative and collaborative learning, comparative reading and writing, allowing the student to get to know different opinions and views. A constructivist approach to teaching in higher education is represented by an activity model based on reading literacy, especially the ability to perceive, understand and compare different cognitive outputs of other people, the ability to create knowledge independently in accordance with clearly defined goals, using multiple resources, research and development activities and the ability of independent productive creative work.

The assessment of student performance at the level of authentic assessment is closely interlinked with these procedures. It focuses rather on the student's learning process than on the learning outcome. The subject of assessment is the student's approach to assignments, the application of acquired procedures, search for ways to problem solution, meaning the way of authentic cognition and independent construction of knowledge. The sophisticated assessment criteria are the substance of assessment. They should be well thought by the teacher and as objective as to motivate the student to resume further independent study.

1.1.3.1. The educational subject management

The components of education represent a complex process that currently requires the management on the level of university officials and the management on the level of the teacher, with the focus on the perspective and operation. The management of the teaching process in a certain subject (in each type of school) can be called the educational subject management. It can be defined as the management of the educational process in a given subject, from the aspect of teaching of the teacher and the aspect of learning of learners, with the application of basic management procedures, such as effective planning, organization, management, control and assessment of the educational process. On the part of the teacher, educational management has the character of a self-regulatory process with the application of basic managerial functions. This approach ensures effective teaching by teachers on the one hand, and learning by learners on the other hand, and effective professional and didactic procedures.

From the aspect of the management of a school, the educational management includes the strategy and tactics of management and implementation of the educational process. As a essential process, the university must therefore organize, control, assess and evaluate the education and actively lead teachers as primary determinants of education to achieve the quality in teaching. process. This approach is supported by the opinion of the expert who understands the management of the quality of teaching as part of a broader framework of quality management, enforced by the school, fulfilling here its decisive role (Blaško, M., 2012).

When managing the teaching process, it is appropriate to create a system of elements aimed at:

- goals focused on needs, expectations and satisfaction of requirements of partners (teachers and students);
- optimization of teaching by a teacher and of learning by a learner, and didactic interactions between teachers and students in the process of achieving educational goals;
- self-efficacy of a teacher (Gavora, P., Mareš, J. Svatoš, T., & Wiegerová, A., 2020);

- areas of quality in teaching, namely the determination of teaching quality criteria, which significantly determine quality of teaching;
- indicators for discrimination of the scope and characters of optimal teaching quality;
- operationalized quality requirements, such as activities, situations, phenomena, and signs which determine the degree of achievement, due to indicators;
- quality measurement tools, such as questionnaires, surveys, observations, analysis of pedagogical documentation and real records (as portfolio) of teachers 'and students' work.

Many of university teachers have mastered progressive methods, forms and instruments of teaching and have identified with them. The question is, whether they are ready and able to manage their work so that it is purposely and in the long-term also effectively reflected in learning activities of learners and their learning results. Many teachers do invest a lot of energy, sincere effort and ambition to teach their students as much as possible, and they are often disappointed and surprised that students know much less than they think from what the teachers have taught them. The teachers mostly justify this fact by the lack of interest and inability of students, internal conditions of the school, etc.

Experience has shown that many teachers rather "mechanically take over or retell" the content of the curriculum than actually teach and lead students to what they really need to know, taking up time and effort for themselves and students. With great effort they achieve minimal effect. Teachers are often rooted in the common and traditional approach, without deeper considerations related to the need to plan and prepare advanced learning situations (corresponding to learners´ needs), control meaningfully the effectiveness and correct actively their own teaching procedures. These questions lead to the reflection whether and to what extent university teachers and university managers should deal with issues of management, namely the management of the teaching process. A meaningful approach, respecting for and understanding basic management functions, can significantly affect the quality of teaching.

The results of the research, which took place in 2018 in 254 primary schools and 8-year grammar schools. It focused on teaching management from the aspect of planning goals and activities, introducing innovations, organizing students' activities, guiding them to active learning, control and assessment of educational outcomes in terms of general principles of education and development of key competencies of students.

Overall, the results showed that teachers did not pay enough attention to:

- planning and organization of the achievement of educational goals;
- planning and organization of activities to develop students' key competencies;
- active guidance of students to the independent acquisition of knowledge by obtaining and using information;
- planning and implementation of effective and correct control and assessment.

They mostly use obsolete approaches to teaching management.

This was reflected in the assessment of pupils 'learning performance by teachers in response to teachers' activities, which in several areas proved to be weak and even alarming. The assumption was confirmed that weak learning outcomes of pupils are related to the teacher's approach to the management of the teaching process. Do these phenomena occur also at the university level?

The application of educational management means a diversion from the traditional, often mechanical application of didactic methods, forms and tools. The educational management takes into account the learning needs and expectations of students in terms of developing their personality in the subject by meaningful planning and organization of the teacher's own activities and students' activities, guiding students to learning activities, correct control and assessment of their educational results.

Educational subject management has an interdisciplinary character. It is at the interface between management theory, general didactics and subject didactics. The implementation of optimal and effective educational management of the teaching process in the subject should significantly increase the focus on the quality of the teacher's management activities, especially in the following areas (Uhereková, M., 2010):

- Planning should be viewed as a strategic conceptual design of the teacher's own activities and students 'learning activities, specific goals and teaching procedures in terms of students' needs. As for example, the planning of the educational content and forms of learning activities, ways of making the curriculum accessible, assignments for students (short-term, long-term, individual, group), planning of project design, ways of control and assessment of the quality of learning the curriculum by students, followed by operational planning of specific learning units.
- Organization of individual teaching units means the preparation and organization of the teacher's own activities and students' activities in the subject in the academic year, for example organization of ways to make the curriculum accessible, use of teaching

materials, application of motivational stimuli, model and problem tasks and situations, practical activities, project proposals, differentiated tasks (for individuals, groups) of varying difficulty, ways of continuous feedback in order to verify students' understanding of the curriculum, correct control and assessment of students' level of knowledge.

- Guidance of students can be in this context defined as setting, determining the direction of students' activities, long-term and operational strategies to achieve goals, creating conditions for their mutual cooperation, motivating, empowerment and inspiring students to learn, search, sort, process and use information from various sources, independent acquisition of appropriate knowledge, identification, design and solution of problems and promotion of their creative independent activity.

- Monitoring and assessment is understood as the feedback, the provision of information about learning outcomes to teachers (whether students understood what they should know) and about students' learning outcomes (at what level they acquired knowledge in terms of the given criteria). It is a matter of the operation of a control system, including the set of correct control methods, forms and tools for detection, comparison and assessment of the achieved level of education in accordance with the set standards (criteria) in specified areas and indicators. Furthermore, it also includes the acquisition of information from students about the effectiveness of the teaching process, if the teaching was meeting their expectations.

1.1.4. *Internal quality standards of the teaching process*

criteria and indicators of the teaching process quality in terms of teaching by teachers and learning by students could contribute to define an internal standard of the university education. The application of internal standards would contribute to the development of university lecturers and the implementation of quality of educational subject management at the university teacher level.

We assume, that without the internal quality standard related to the teaching process, it would not be possible to effectively plan, implement and objectively assess the achievement of the educational development at the school and teacher level. If there is no internal quality standard regarding the expected state, then objective control at the level of feedback is not possible. In this case it is difficult to compare the actual situation with the expected state, because there is nothing to be compared with. If there is no relevant and reliable information about the real situation, it is not possible to recognize the strengths that need to be maintained and to identify the weaknesses that should be corrected.

Guidance of teachers provided by the university management can play an important role in the management of educational development, in connection with the application of educational management. It would be appropriate for the managements of schools to be able and willing to:

- determine, in cooperation with teachers, the framework quality criteria related to expected inputs for the implementation of teaching, the teaching process itself and the outputs;
- monitor and assess systematically and objectively the quality (strengths and weaknesses) of educational management and, based on the results, draw conclusions and take measures for improvement;
- guide teachers to active strategic and operational preparation for the teaching process.

The academic field has its specificities compared to other types of schools, it is characterized by freedom of thought and action, high scientific knowledge and the wisdom of university teachers working in an academic environ. We assume that this is why the understanding of necessary changes in the improvement of the quality of teaching management can have a positive impact in the academic community.

Based on our own experience, we state that a meaningful managerial approach based on strategic and operational aspects, in terms of planning, organization, guidance and assessment of students is a crucial determinant for the advancement and the improvement of the teaching quality of teaching with a significant impact on cognitive and personal development of students.

Guiding teachers through school management to meaningful educational subject management - planning, organizing the activities of teachers and students, guiding students to acquire knowledge, and to provide correct and objective control, could lead to increased teaching quality, pedagogical development and management improvement at the university.

The educational subject management represents a challenge to initial teacher training and in-service training of teachers in the field of didactics. It also deserves the attention of researchers and practitioners.

Guidance of teachers in undergraduate training and in further education of teachers in the field of educational subject management would support creative-humanistic trends in education in all types of schools, in accordance with the goals of education on all levels, including the higher education at universities.

1.2. Managerial approaches and attitudes to solving complex situations in education

Daniel Lajčin

Difficult situations are part of the real existence of any person, and they affect all areas of life: family, school, sports, health, the environment and, naturally, work and working life. It is the field of work where the importance of the management of coping with difficult situations comes to the fore, as this coping is often associated with the effectiveness of managerial activities and the success of the educational organisation as a whole, thus affecting also other people. However, what are difficult situations, what determines that they are perceived as difficult, how they differ from "normal, not difficult" situations, where everywhere can we encounter such situations, what specifics do they have in the management of an educational organisation, how can they be handled, what all influences the coping with such situations, are the questions treated in a professional study.

The field of school management is one of the typical environments where the occurrence of difficult situations is not uncommon. Difficult situations can be perceived by school or educational institution managers as either problematic, crisis, conflict, complex, unpleasant, critical, stressful, or as an opportunity to demonstrate and apply own skills, as a challenge and starting point for career growth (Frankovský, Ištvániková, & Štefko, 2009, Frankovský, & Lajčin, 2012). Some managers may avoid difficult situations, some may take them as a normal part of their work, or some may even deliberately seek them out. The difficulty of situations in managerial work needs therefore be interpreted in the context of the situational characteristics of performing this work and the dispositional traits of a particular manager. Choosing how to behave in these situations can have various consequences. Depending on how the individual handles these situations may mean self-empowering or self-threatening human behaviour (Fedáková, 2002).

Difficult situations in managerial work are represented not only by significant general and social phenomena, such as state interventions in the economy (Reinert, 1999), alliance building requirements (Kaulio, & Uppvall, 2009), but also by decisive milestones in the life of a manager (job loss, revocation from or appointment to a new position) or by the organisation's existence (bankruptcy, unexpected prospering), and ultimately are related to the problems and difficulties that managers face much more frequently, sometimes even on a daily basis (disagreements with co-workers, tense relations with superiors or subordinates, dismissal of employees, resolution of conflicts between subordinates, division of work tasks, remuneration of employees, etc.).

Research (Frankovský, & Ištvániková, 2008) dealing with the issue of coping with difficult situations in managerial work focused mainly on finding answers in at least three basic research contexts:

- Identifying, characterising and classifying situations perceived by managers as problematic, difficult, conflicting, complex, stressful, unpleasant, etc..
- Analysis of managers' behaviour in addressing and coping with these situations, in order that using inductive taxonomy there could be created a general classification of managers' behaviour in addressing difficult situations.
- The third context includes analyses of the relations between the way of coping with difficult situations in managerial work and the dispositional features of the manager, or the situational conditions of the occurrence of a specific problem. In this focus, attention is mostly given to the dispositional traits of managers and the conditions of operation of the organisation.

The area of management is one of the typical environments in which the occurrence of difficult situations is not uncommon. The interest in researching the ways of managers' behaviour coping with difficult situations in their work is conditioned by the efforts to explain the general factors which, according to Výrost et al. (1995), relate to:

- Understanding life plans, personal perspective, career development.
- Information about the current state of motivational and emotional components of an individual's personality.
- Characterisation of ways and procedures of addressing and coping with problems.

In terms of practical use of knowledge acquired about coping with difficult situations in managerial work, according to Lajčin and Frankovský (2011) it is possible to assign to these general factors underlying the interest in these issues also specific applications in managerial practice related to:

- Recruitment for managerial positions, where these people inevitably encounter difficult situations.
- Training of managers holding these positions to effectively cope with difficult situations in the organisation's management (Pitt and Sims, 1998; Talbot, 1997).
- Processing of procedures for addressing these situations within the organisation and their training at individual levels of management, e.g. for high-risk situations (Slaven and Flin, 1994).

1.2.1. *Managerially difficult situations*

The growing interest among the professional and lay public in the issue of coping with difficult situations can be dated back to the early 1980s (Folkman & Lazarus, 1980; Folkman et al., 1986; Lazarus, 1981, Lazarus & Folkman S., 1987; Carver et al., 1989; Amirkhan, 1990; Nurmi, Toivonen, Salmela-Aro, & Eronen, 1996; Folkman & Moskowitz, 2004), and today this field of knowledge still enjoys attention (Mcnaughton-Cassill, 2015, Mccarthy, Erdogan, & Bauer, 2019, Modranský, Bočková, & Hanák, 2020, Barlette, Jaouen, & Baillette, et al 2021). The presented interest is a reflection of the general rapid dynamics in people's lives (need for mechanisms of democratic resolution of social issues, increasing number of difficult situations in life, e.g. Covid -19, where a manager must analyse, compare and evaluate assumptions, strengths and weaknesses, opportunities and risks of online education at schools in terms of managerial competencies of schools' management or educational management, ensuring the quality of online education, educational needs of students and further education of teachers of different types of schools as a prerequisite for creating innovations in the virtual environment of the new educational reality, including the rising interest in questions as to how effectively address these situations, what is their impact on the mental health, health and well-being of a person, addressing the issues of quality of life, etc.), as well as of specific requirements of social practice (new approach and development of managerial activities, effective functioning of an organisation, the need to adopt unpopular measures, time stress in decision making, conflicts in the workplace, team building, etc.).

If a person gets into a difficult situation, the focus of that person's attention is on solving the situation, considering possible procedures, obtaining the necessary information, seeking help, finding escape options, etc. Perhaps this is the reason why answering the question and explaining what a difficult situation is, how to identify it, which situations people evaluate as stressful, problematic, conflicting, complex, unpleasant, recedes into the background, is not prioritised, while, paradoxically, the definition of difficult situation receives less attention than the questions concentrating on how one handles such situations, what forms of behaviour one chooses, how one resolves them.

In terms of the needs of an organisation, e.g. school, but also a specific manager, this is logical. For the representatives of all these positions, the decisive fact remains as to how the manager addresses the given situation, how he/she behaves in it, how he/she handles it, what is the efficiency of his/her conduct. This fact consequently guides the attention of most researchers in the direction towards behaviour analysis and its predictors related to the manager's traits or the characteristics of the difficult situation. All this happens while the question of what a difficult situation is, or what kind of situation a person perceives as difficult is crucial, both in terms of its identification and in terms of its solution (Frankovský, 2001, Madsen, & Petermans, 2020). The answer to this question is also crucial in terms of the managers' training to deal with different types of difficult situations, as well as in terms of developing specific procedures within an organisation to address certain difficult situations.

The perception of the degree of difficulty of the situation is different on the individual level. It is obvious that, for instance, changes in the national or school curriculum or the transition to online education is simply ordinary work for some managers – something that they do not perceive as stress, a burden, or an unpleasant situation. On the other hand, other managers may perceive the same situation as difficult, stressful, unpleasant. Coping with this situation requires from them maximum commitment, self-control and personal coping with this situation. Nonetheless, the situation's difficulty as such can be viewed as a threat, fear of failure, on the one hand, but can also be perceived as a challenge, an incentive to embark on something new, to prove one's own qualities, to assert oneself, on the other hand. It is clear from these examples that the very effect of the level of difficulty and its subjective assessment must be interpreted both in the context of situational characteristics in which situation coping takes place, and in the context of dispositional traits of a particular manager who is an actor in such coping (Krásna, Geršicová, & Tamášová, 2016, Yip, Goldman, & Martin, 2021).

1.2.2. Classification of difficult situations

The classification of difficult situations does not take into account either the individual specifics of managers, nor the specifics of individual organisations, nor the specifics of individual management activities and, ultimately, neither does it take into consideration the specifics of a particular difficult situation. This approach does not allow to effectively define predictors of behaviour in a difficult situation. From a practical point of view, the one-dimensional approach is not optimal at the level of diagnosing difficult situations, or the management of their coping, and therefore little attention is paid to this aspect, both in research and practice. From a theoretical and methodological point of view, regarding the concept of one-dimensional understanding of the difficulty of situation it would be possible to consider a two-dimensional approach, in which difficulty and non-difficulty would be defined as separate dimensions. In this context, it is possible to think about the types of situations that are evaluated in the dimension of their difficulty (from the least difficult to the most difficult) and about the types of situations that are evaluated in the dimension of their non-difficulty (from the least non-complex to the most non-complex). Using this approach should make distinction between the levels of minimum and maximum non-difficulty and minimum and maximum difficulty. The mentioned specification would make it possible, for example, to analyse the ties between these two independent dimensions and the dispositional traits and situational characteristics entering into coping with a difficult situation.

In contrast to one-dimensional thinking about the classification of difficult situations, Reese and Smyer (1983) propose, in the focusing on multidimensional categorisation of situations, two essential dimensions of taxonomy and classification of difficult situations as life events:

- Type of life event
- Context of life event

Based on the first dimension – type of life event, the authors propose to distinguish the following four levels of this dimension, which allow to specify the following types of life events:

1. type biological, 2. individual – psychological, 3. cultural - sociological, 4. physical.

The second dimension makes it possible to distinguish the following fourteen contexts of life events, which specify the contents of the specified types of life events, as defined within the first dimension: Family, Love and marriage, Parenting, Housing, Health, I, Public, Friends, Social relations, Money, School, Work, Law, Other ....

In relation to the above classification, we can cite an example of a difficult situation – promotion to a higher managerial position or job loss. It can be classified as an event of individual-psychological type and as the context of work. In a similar system – context framework, we would probably characterise most of the difficult situations associated with the management of an organisation. Problems with a superior would thus be represented by an event of an individual-psychological type and the context of work. When evaluating the proposed classification of life events, it is not always possible to clearly assign a specific situation to a specific type and context of events. Baumgartner and Hadušovská (1997) write that the study of situations and the attention paid to this area has had a long tradition and research has been carried out mainly in the field of psychology and sociology. In this focus, we encounter a number of older research concepts. According to Krahé (1990) and Pujol-Cols, & Lazzaro-Salazar (2020), approaches to the study of subjective construction of the meaning of situations can be classified into three concepts:

- Social episodes – research oriented at revealing the dimensions of cognitive representations of situations that specify the process of recognising these situations.
- Situational prototypes – research oriented at the categorisation of social stimuli in relation to situational characteristics.
- Cognitive scenarios – research oriented at the relationship between information about situations and their cognitive processing.

Výrost (1997) proposed a classification of difficult situations associated with the attempt to conceptually clarify the essential categories related to the issue of coping on the basis of an analysis of several researches in this area of knowledge. The specification of situation types is based on the distinction of conditions (antecedents) and responses (consequences) to these conditions. In terms of situations that are perceived as difficult, the author described three larger groupings that can be characterised as stressful situations, life events and difficult life situations. Likewise, three groupings were characterised in terms of consequences, i.e. responses to these situations. In this case, we consider *coping, life skills and behaviour strategies*. Based on these

groupings on the antecedents and consequences side, the links between the types of situations and the responses to these situations were defined (Figure 1).

Figure 1 Mutual relations between selected antecedents and consequences   (Výrost, 1997)

STRESSFUL SITUATIONS	⇒⇒⇒⇒	**COPING**
LIFE EVENTS	⇒⇒⇒⇒	**LIFE SKILLS**
DIFFICULT LIVING SITUATIONS	⇒⇒⇒⇒	**BEHAVIOUR STRATEGIES**
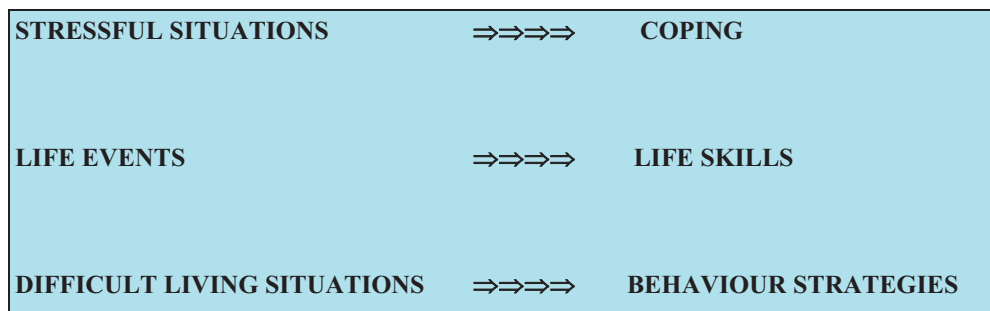
From the above scheme it is possible to specify that research in stress situation aligns with analyses – coping, life events align with the research of life skills, and difficult life situations align with the research of behaviour strategies. In contrast to the presented scheme of cause-and-effect relationships, instead of the designation 'difficult life situations', in this study we use managerially difficult situations due to a more significant distinction of difficult situations and life events, or of stressful situations in terms of common, everyday occurrence. At the same time, where consequences are concerned, we use the term coping mainly due to a broader scope of possible reactions to the emerging difficult situations.

Of these three types of difficult situations, research at the level of stressful situations, as extraordinary events of a general threat to a person, often associated with a threat to life, has enjoyed the longest tradition.

The concept 'stress' keeps appearing and has received increased attention since the 1940s in connection with the period of World War II and the addressing of the issue of war neuroses. World War II was a great tragedy and a disaster for humanity. However, it was also a period when attention began to be paid to the impact of surviving tragedies, life-threatening situations on the human mental state. According to Bratská (2001), the first monograph devoted to the issue of stress by Gringer and Spiegel – Men under Stress – was published in this period, specifically in 1945.

Selye (1956, 1966), as perhaps the best-known author in relation to the study of stress, focused on the research into the influence of stressors on the course of physiological processes and their impact on human mental health. In this case, the cause (antecedent) was a stressful situation, which causes a complex of reactions called GAS (General Adaptation Syndrome). In the original concept, stressful situations were characterised as extreme, critical, frequently, as has already been mentioned, on the verge of life-threatening. However, the stress antecedents have been expanded in the current understanding of stress to a much broader complex of situations that affect the body. In this focus, which, in addition to the physiological context, also drew attention to the psychological context, it is necessary to mention the contribution of Lazarus and Folkman (1984), who emphasised the subjectivity of assessing the degree of threat caused by a given situation.

In relation to the specification of the concept 'stress', Daniel (1997) proposes a distinction between the concept 'burden' and 'stress'. In this context, 'burden' is associated with common situations, or less difficult, and 'stress' with highly difficult, critical situations. The degree of difficulty though must be interpreted not only from the aspect of its amount in the short term, but also from the aspect of its long-term effect. Already Lazarus (1993) pointed out that in everyday life many conditions (marriage, love, illness, job, school exam, investment decision, type of production, choice of suppliers, insolvency, conflicts in the workplace) can produce effects comparable to those examined in combat conditions, especially if they act for a long time and repeatedly. Birkner (2010), Herrero, Egbu, & Fong (2018) also point out the fact that the stress level is related not only to extremely difficult life situations, but also to situations that are basically not so demanding, but are mildly burdensome and last a long period of time, i.e. situations that are not stressful in intensity but in duration.

At present, a much broader discussion, in terms of topics, on the dispositional, situational and interactive processes of learning of psychological phenomena, on the influence of cognitive, motivational and emotional factors on these processes is reflected in the individual approaches to the definition of stress and the proposals for its research (Frankovský, 2003).

In relation to the above ideas, it is possible to divide the encounter with a managerially difficult situation in the managerial work and the reaction to such encounter into the following stages:

- Primary evaluation of the situation. Does this situation threaten me, what is its level of difficulty?
- Secondary evaluation of the situation. I will cope to solve this, what should I do, what procedure to choose (Baštecká, Goldman, 2001).

An important characteristic of the primary and secondary evaluation of the situation, as mentioned by Baštecká and Goldman (2001), is the aspect of the subjectivity of this process. When assessing the degree of threat, difficulty, but also when assessing the likelihood of coping with the situation, as well as the choice of procedure, a subjective comparison with own schemes of threat, difficulty, and solution procedures comes to the fore.

The importance of subjective assessment of a difficult situation is also emphasised in the characterisation of stressful situations by Atkinson et al. (1995). The author states that stressful events are most often individually evaluated as uncontrollable, unpredictable, at the limit of human abilities. The degree of difficulty of the situation is therefore the result of subjective perception and evaluation of several criteria of the situation faced by the person. These criteria can be specified as follows:

- inability to influence the situation;
- inability to predict the emergence of a stressful situation;
- excessive and disproportionate claims;
- life change that requires significant adaptation;
- subjectively unsolvable internal conflicts.

1.2.3. Taxonomy, context and categorisation of situations

The taxonomy of situations based on the degree of difficulty, which, unlike previous taxonomies, is derived from the results of the effect of these situations on people, was developed by Mikšík (1991). The degree of burden that results from the difficulty of the situation in this concept ranges across the full scale of continuum – from the optimal burden stimulating mental development through to the extreme burden causing mental breakdown and leading to disintegration of personality. Difficult situations are then classified in this taxonomy as:

- Performance-intensive situations – in an extreme form they lead to the exhaustion of physical or mental strength, it is impossible to cope with them indefinitely.
- Problematic situations – they require a new solution, heuristic procedures, a new way of working, they can lead to an inability to solve the problem, to a loss of self-confidence.
- Situations of frustration – an insurmountable obstacle appears between the individual and the goal of his activity, they can cause syndromes of frustration or deprivation.
- Conflict situations – they lead to disintegration of decision-making processes, they are caused by the presence of several equivalent solution alternatives, or interpersonal conflicts.
- Stressogenic situations – they lead to the disintegration of mental structures, they are associated with situations threatening the existence of an individual.

A multidimensional classification of difficult situations was described by Výrost et al. (1995), Bolfíková (1997), Baumgartner, & Hadušovká (1997). The above classification of difficult situations was performed on the basis of an inductive approach, which took place in several consecutive stages.

The mentioned procedure (Bolfíková, 1997) produced, with the aid of an open-ended question, a description of 5 life situations, which the respondents experienced as the most demanding in their lives. At the same time, respondents ranked these situations according to their level of difficulty. The performed content analysis of descriptions of difficult situations made it possible to define 5 criteria of the specification and classification of these situations:

- Socio-cultural level,
- Level of problem,
- Level of time,
- Level of social closeness,

- Level of fact and survival.

The criteria that proved to be the most effective for the final form of the taxonomy of difficult situations: socio-cultural level and level of social closeness. The processing of the obtained empirical material in terms of the first criterion (socio-cultural level) made it possible to specify eight contexts of situations, which where represented by the following areas: Health; Partnerships; Family; Self-reflection; Study and school; Job and workplace; Money, material values; Morality, existential issues, social norms. The analysis in the social closeness level made it possible to categorise the situations into four types, the common denominator of which was social closeness: I; Closest person to me; My acquaintances; Society, state, world.

The results of this research provided a basic insight into the possible categorisation of situations and thus prepared material for further analysis. At the same time, though, they provided information on the frequency of emergence of individual types of difficult situations.

The above procedure of classification of difficult situations was continued in the works by Výrost et al., (1995), Baumgartner and Hadušovská (1997), who, on the basis of subjective perception of affinity and evaluation of difficulty of specific situation defined, by combination of 8 contexts of situations and 4 possible subjects – actors of situations, 64 model difficult situations (each combination was represented by two situations). By applying mathematical-statistical procedures (factor analysis, multidimensional scaling and Q-sort) they were classified using two decisive factors – the actor in the difficult situation (the subject of the situation – the one to whom it happened) and the context of this situation (what happened, what is the content of the situation), the following challenging situations:

- In the area of the closest interpersonal relationships of the individual (partner, friend and family relationships).
- In the area of broader interpersonal relationships of the individual (work, education and material security).
- Associated with immediate danger to life (illness, injury, death).
- In the area of existential and moral problems (meaning of life).

The difficult situations that can occur in the organisation's management are characterised by Copper and Marshall (1978) on the basis of six areas of stress in the work context as:

- Internal work environment – in this area it is mainly the conditions and manifestations directly related to the performance of work activities such as mental or physical overload, work environment, work rhythm, level of risk factors, flexibility, etc.
- Organisation's environment – these are the factors of work organisation such as precise definition of work activity, degree of responsibility, etc.
- Social environment – attention is focused mainly on social relations with co-workers, superiors and subordinates. These relationships are considered to be an important mediator of the effect of stress factors, which can correct the mentioned effect in both a positive or negative direction.
- Career prospect – here can be included questions related to professional and career growth and advancement (reassignment to a higher, lower position, clear conditions for career growth, opportunities for advancement, etc.).
- Organisational culture – these are factors related to the overall culture of life of the organisation, the level of communication, the form of employee management, problem solving, employee care.
- Work and family life – here can be included activities related to the harmonisation of the requirements that employment and the family place on a person. In particular, addressing conflict situations in which it is necessary to meet the work requirements at the expense of the family.

According to Oravcová (2004), and Ronginska, & Doliński (2020) difficult situations in managerial work can be specified not only on the basis of stressful conditions, but also in contexts that are not uncommon in everyday life and are based on:

- Time pressure – mostly associated with the performance of precisely timed tasks.
- Excessive quantity of tasks.
- Excessive variety of tasks.
- Chaotic organisation of work.
- Stereotypical and boring nature of work.

The relatively separate and specific area of managerially difficult situations in the management of an organisation is defined by the issue of organisational change and the related management of coping with this change and its consequences. In this context, Judge, Thoresen, & Pucik (1999) examined managerial coping with organisational change in terms of the seven dispositional traits of managers (locus of control, generalised self-efficacy, self-esteem, positive

affectivity, openness to experience, tolerance for ambiguity, and risk aversion). Based on these characteristics, they extracted two factors: positive self-concept and risk tolerance, which are significantly related to the management of coping with organisational change. At the same time, these authors pointed out the importance of the context in which the organisational change takes place (job position, salary conditions, job satisfaction, management of the organisation, career growth, etc.). The analyses of these authors confirmed the position of mediators of the contextual conditions through which the extracted factors act on the coping process.

Beech & Caims (2001) and Herrero, Egbu, & Fong (2018) also highlighted the importance of coping processes as active procedures aimed at success in implementing organisational change. At the same time, they also highlighted cases in which coping was understood more as a passive, defensive reaction to change. Another possible approach to the specification and typology of difficult situations in the organisation's management is to differentiate them into individual and collectively difficult situations (Muhonen & Torkelson, 2008).

1.2.3.1. Another view of the occurrence of difficult situations in the work of a manager

Another view of the occurrence of difficult situations in the work of a manager, in terms of rather qualitative characteristics, is presented by Urban (2008). The author works from the assumption that an essential part of managerial work is not so much the creation of long-term visions and strategies, but rather the solution of minor human problems, issues of motivation, improving employees' skills. Based on the above, the author suggested 10 areas of difficult situations that managers must cope with. In this way he distinguishes the following areas of difficult situations:

- Self-management.
- Transition from a performance function to a managerial function.
- Managing motivation and persuasion.
- Control management and delivery of adverse messages.
- Management of difficult-to-cope-with co-workers (subordinates and superiors).
- Overcoming conflicts and stress.
- Change management.
- Transition from management to leadership and coaching.
- Creating and managing an effective team.
- Management in an international environment.

Naturally, it is also possible to discuss other areas of occurrence of difficult situations in managerial work. However, as the author notes, the number of situations defined in this way is not decisive. The aim of the specification of the presented structure of difficult situations was to cover the essential areas of self-management, through people management to the international, cultural context of management.

A specific view of the definition of managerially difficult situations in management is represented by the currently very frequent approach to the study of work-family conflict as a clash of two responsibilities in relation to the family and in relation to employment. Multiple studies (Aluko, 2009, Lorincová, & Birknerová, 2019) describe this type of difficult situation as highly stressful.

Work-life balance is one of the main topics on the European Union's social policy agenda (Sklenár a Frankovský a kol., 2007, Ika, Couillard, & Garon 2021). In the real life of organisations, this topic is reflected in the implementation of a family-friendly strategy to cope with this difficult situation in the management of organisations.

The mentioned procedures for finding the structure of managerially difficult situations, generally also directly in management, represent typical approaches to this issue that can be found in the literature. They are characterised by a multidimensional approach to defining the structure of these situations and an empirical-inductive process of identifying individual elements of the structure of difficult situations. The theoretical-deductive procedure of defining the structure of difficult situations can be found more rarely. From the opinions of individual authors presented above, we could assign to this approach the classification of the 10 areas of situations proposed by Urban (2008).

The presented taxonomies of difficult situations in general, as well as in managerial work, testify to the fact that there are many such approaches, proposals, and concepts. In addition to the above-listed characteristics, in the varied mosaic of these approaches we can generalise taxonomies oriented more procedurally (Urban, 2008) or contextually (Střelka, 2008, Rost, Sonnenmoser, & Renzel, 2019). We want to draw attention to and emphasise the importance of the factor of subjective evaluation of a difficult situation, which is related to both the dispositional attributes of the manager and the conditions of a specific situation.

Encounters with difficult situations, the way they are addressed and the residuals of these processes can significantly affect the quality of manager's life, existence, mental and physical health. As a result, at present more and more attention is focused on the issues of

perception, experience and effective solution of difficult situations in the management of an educational institution (or company), though neither do the conditions causing these situations and underlying their solution escape attention. The search for effective ways of coping with difficult situations in managerial work is a process that must therefore be based on an interdisciplinary view of the issue.

In terms of the specific application of the mentioned knowledge in managerial work, we can assume a positive impact on increasing the effectiveness of managerial work, in the context of which this can be used to increase the quality of selection of suitable people for managerial positions, education and training of managers, as well as prediction of possible risk factors in coping with difficult situations in managerial work.

1.3.Strategic partnerships and innovation

Csilla Pesti

Partnerships and new forms of collaborations in higher education have been gaining more scientific attention in recent years since these can be the drivers of economic and social innovation. There is a vast body of knowledge on university-industry collaboration, but we were professionally intrigued to explore the characteristics of partnerships of any kind in higher education.

As the role of higher education is in a constant interplay with the contextual change processes, the universities are expected not only to reflect on societal and economic challenges, but to be active agents in tackling the emerging issues by co-creating knowledge with relevant stakeholders (Perkmann et al., 2013). This notion has strengthened the importance of partnerships between higher education institutions (HEIs)[1] and external (non- and for-profit) organizations. A plethora of studies interpret universities' collaboration endeavours as a driving factor for innovation (Ankrah & AL-Tabbaa, 2015), and although there is a growing body of valuable research contribution to the topic, mostly collaboration between universities and industry stakeholders (UIC) stands in the focus of scientific attention; therefore, there is a knowledge gap regarding HEIs' partnerships with other, non-profit-oriented bodies.

1.3.1. *Innovative aspects of partnerships in higher education – a literature review with a systematic approach*

Reinforcing the attention on university-industry collaboration, systematic literature reviews from recent years provide valuable, comprehensive overview of the previously scattered knowledge (e.g. Ankrah, & AL-Tabbaa, 2015; Rybnicek, & Königsgruber, 2018; European Commission, 2018). Although there are few publications focusing on other, non-industry-university-oriented collaborations (e.g. Halász, 2016; Pesti et al., 2020), these contributions are either too discipline-specific or mostly of a case study nature, thus their generalizability is possible only in a narrower context.

Based on these cornerstones, the aim of our study is to systematically review existing literature from the past five years on partnerships of any kind in higher education, with a special emphasis on their relation to innovation. We conducted the literature review with a systematic approach along an overarching question: What are the most recent developments concerning

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[1] The terms HEIs and universities are used interchangeably.

partnerships in higher education? To grasp the essence of the reviewed literature, four research questions were formulated:

1. What patterns emerge from existing literature on partnerships in higher education?
2. How can the innovative aspects of partnerships in higher education be characterized?
3. What are the general and disciplinary specificities of partnerships in higher education?
4. How do research papers from the past five years contribute to the knowledge on partnerships in higher education?

First, we discuss partnerships in higher education, then, we introduce the methodology for our literature review with a systematic approach. The next chapter presents the results where we used the modules of the coding table as an organizing principle. Following this, we answer the research questions in the Analysis and discussion chapter. Finally, our work is summarized in the last chapter that incorporates the conclusions.

1.3.2. Research methodology

Methodological approach

The aim of our study was to systematically review existing literature from the past five years (from 2016 to 2020) on partnerships of any kind in higher education, with a special emphasis on their relation to innovation. The study was guided by an overarching question of what the most recent developments concerning partnerships in higher education could be identified in literature. In order to meaningfully answer this question, four specific research questions were formulated:

1. What patterns emerge from existing literature on partnerships in higher education?
2. How can the innovative aspects of partnerships in higher education be characterized?
3. What are the general and disciplinary specificities of partnerships in higher education?
4. How do research papers from the past five years contribute to the knowledge on partnerships in higher education?

In the literature review we adhered to a rigorous systematic approach along the PRISMA (Preferred Reporting Items for Systematic Reviews) (Moher et al., 2015) guidelines to ensure the transparency and replicability of the review process. Based on preliminary screening of literature, a review protocol was developed, which detailed various aspects of literature identification (such as eligibility criteria, information sources, search strategies), as well as

considerations for recording literature (data management, selection process, data collection process) (a brief summary of the review protocol is presented in Appendix 1).

We sought peer-reviewed research papers on English language that were published between 2016 and 2020 and that were available through ProQuest database[2]. Other eligibility criteria included some aspects of the population (publications must involve university/university staff OR higher education/higher education institution staff), and geographical considerations (we narrowed our review to literature focusing on European countries). Studies that were identified during the database search but were of a literature review type or non-empirical publications were recorded but excluded from further analysis.

A set of key descriptors were used during database search, including synonyms for the higher education pillar (such as university, higher education, higher education institution, college), for the collaboration pillar (such as partnership, collaboration, cooperation, network). In order to ensure that studies focusing on the innovative aspect of the partnership were identified, the search string was amended with the *innov** term.

1.3.2.1. Study identification process

Having the review protocol developed and accepted, the next step was to identify studies through database search, which happened in four phases (Figure 1):

1. The search string described above returned 10.281 records, from which 10.033 were eliminated before screening by the use of various automation tools (especially checking eligibility for peer-reviewed studies, language, and geographical scope).
2. 248 studies were selected for screening, which included the reading of the title and the abstracts by one researcher. As a result, 66 records were excluded from further reviewing due to either being a review, not relying on empirical data, not focusing on partnerships in higher education or not being accessible.
3. 182 reports were assessed for eligibility. Firstly, a set of 40 studies (approximately 22% of all the selected studies) were assessed independently by two researchers, and in case of discrepancies in their assessment (this occurred in case of two studies), they discussed the reasons, came to a joint conclusion, and clarified the review protocol for further assessment with the aim to ensure consistency. Following this, the remaining studies were assessed by one researcher.

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[2] https://www.proquest.com/

Identification of studies via ProQuest database

Identification

Records identified from:
Database (n = 10.281)

Records removed *before screening*:
Records marked as ineligible by
automation tools (n = 10.033)

Screening

Records screened
(n = 248)

Records excluded
    Reason 1 (n = 45): Not accessible
    Reason 2 (n = 23): Focus/topic of the
    report

Reports assessed for eligibility
(n = 180)

Reports excluded:
    Reason 1 (n = 79): Geographical scope
    Reason 2 (n = 4): Language
    Reason 3 (n = 68): Focus of the report

Included

Studies included in review
(n = 29)

Figure 1. PRISMA flow diagram for systematic reviews (adapted from Page et al. (2020))

We used a reference management system (Mendeley) throughout the identification, screening, and inclusion phases. Studies included in the review are listed in Appendix 2.

Data collection

Parallel with the screening process, we developed a code system for extracting data from the included studies (n = 29) for further analysis. The code system included seven modules with several categories:

1. General information (descriptive data): authors, year, title, relevant discipline, geographical scope;
2. Keywords defined by the authors of the studies;
3. Methodology: research design, aims
4. Characteristics of the collaboration: participators, level of formality, leader of the collaboration, special focus, activities;
5. Innovative aspects: linkage to innovation;
6. Main findings;
7. Coder's description and impressions.

After the code system development, we conducted double coding with five studies (two researchers coded the same five studies individually). The level of consistency of the double coding was high, therefore the remaining studies were coded by one researcher.

Data analysis

The coded data was suitable for further, quantitative, and qualitative analysis. Concerning some categories (e.g. keywords), we quantified the data, and used IBM SPSS® Statistics 25 for quantitative analysis; while in the case of some other categories, a thematic analysis proved to be a suitable step forward in order to identify common themes in data (e.g. aims, main findings) – MAXQDA, a software aiding qualitative analysis was used. Appendix 3 illustrates a more specific summary of the code system, data analysis and their relation to research questions.

1.3.2.2. Methodological considerations and methods

As conducting a rigorous systematic literature review is a resource-intensive endeavour, we had to make some decisions that implies limitations to our study. These limitations include:

- identifying studies only in one database that the researchers had access to;
- narrowing down the population to English language studies, although there is a vast body of studies published in other languages;
- we covered a short period (from 2016 to 2020) in our literature review;
- although we made efforts to ensure consistency in study identification and data collection by double coding some of the records, most of them were assessed and coded by one researcher.

1.3.3. Results and general information (descriptive data)

In our literature review we included studies presenting empirical research from a European country, published between 2016-2020: there are two studies from 2016, six studies from 2017, nine studies from 2018, five studies from 2019, and seven studies from 2020. Regarding the geographical distribution of selected studies, only Italy stands out with six publications, while the other countries are represented in our sample with one, two or three studies (Figure 2 summarizes the descriptive frequencies of country-related data).
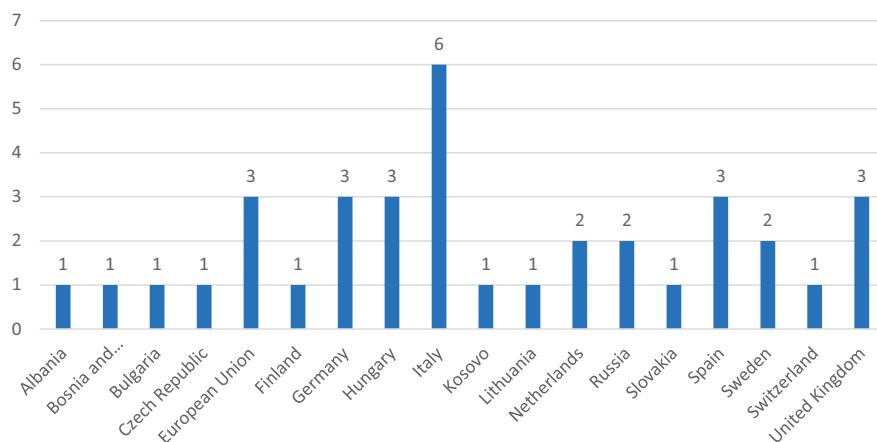
Figure 2. Frequemcoes pf selected studies per country, count (n = 29)

Concerning the geographical scope that the studies cover, we coded for four categories (international, national, regional, institutional). Dominantly, the two extreme categories (international as the widest scope, and institutional as the narrowest scope) are represented in the selected studies (Figure 3).
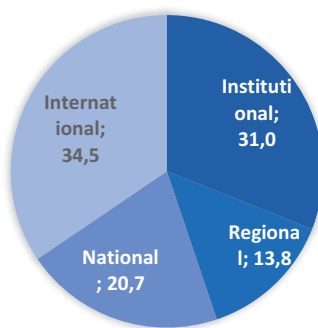
Figure 3. Geographical scope of selected studies, % (n = 29)

Concerning the disciplinary focus, the selected studies are predominantly from the field of Natural Sciences (14 studies dealt with one or more fields of Natural Sciences). The number of studies focusing on partnerships in higher education in a general manner, not related to any specific discipline, is also high compared to other categories. Table 1 summarizes the occurrence of disciplines in the selected studies.

Discipline	Field	Number of studies
Social Sciences	Economics	1
	Education	1
	Public administration	1
	Total:	*3*
Natural Sciences	Agriculture	4
	Biotechnology	3
	Chemistry	1
	Environmental studies	5
	Total:	*14*
Formal Sciences	ICT	5
	Total:	*5*
Applied Sciences	Engineering	4
	Business	3
	Medical Sciences	1
	Total:	*8*
Humanities	*Total:*	*0*
General (not related to any disciplines)	*Total:*	*13*

Table 1. Occurrence of disciplines in the selected studies, count (n = 43)

Keywords

Throughout the 29 selected studies, we recorded 152 keywords defined by the authors, and after carefully reviewing them, 4 main themes, and 13 sub-thematic groups emerged (Figure 4).
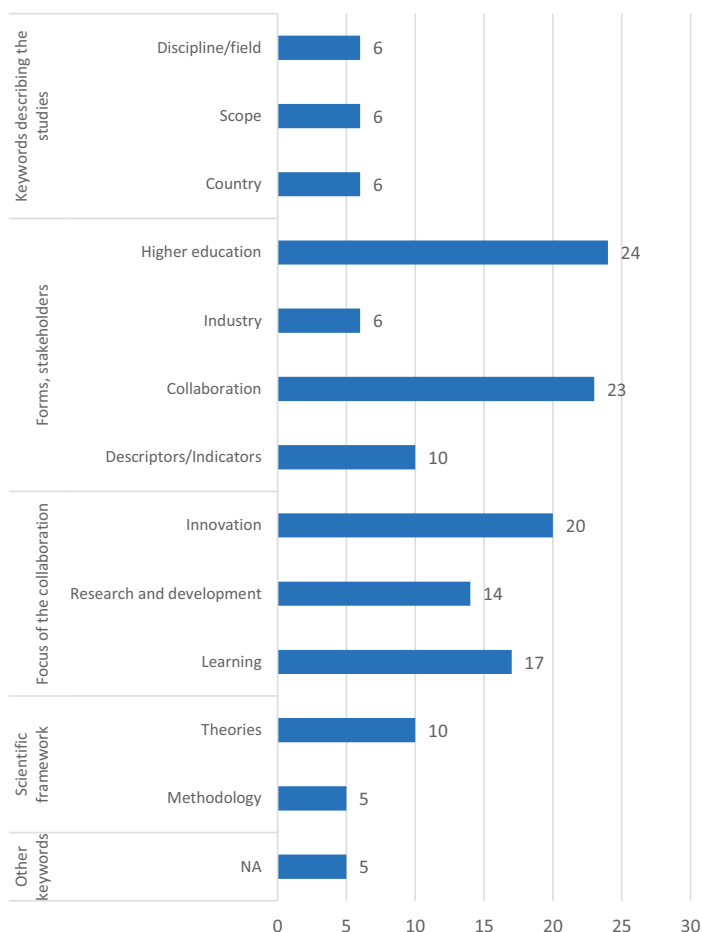
Figure 4. Occurrence of keywords associated with the selected studies by their authors along the identified themes and sub-thematic groups, count (n =152)

The first theme consists of groups of descriptive keywords. Only a small number of studies used specific keywords for indicating the discipline (e.g. industrial biotechnology, digital technologies), and although UIC is a context-specific endeavour, just 6 studies indicated the country of origin clearly with the keywords.

The second theme includes groups of keywords concerning the form of collaboration and its stakeholders. Although the data is not representative, it must be emphasised, that keywords related to the university (or to its associates, students, etc.) as a participant in the collaboration occur 4 times more often, than keywords related to the industry. Keywords referring to the form of collaboration are rather homogeneous (e.g. university-industry

collaboration, cooperation, relationship, network, etc.), merely a few studies indicate differing terms, such as clusters (n = 2), intermediation (n = 1), or joint experience (n = 1).

The third theme consists of keyword-groups that relate to the focus of the collaboration. Keywords in the innovation group are rather diversified and specific (e.g. user innovation, social innovation, innovation competences, etc.); the only keywords that appear in more studies are innovation performance (n = 2), and open innovation (n = 3). Similarly to the previous one, the group of research and development (R&D) is rich in various keywords, however, sustainability emerges to be a major focus of research papers (6 research papers indicated this focus in their list of keywords). At last, but not least, in the group of learning-related keywords one might find terms concerning knowledge (e.g. knowledge transfer), IT (e.g. gamification, serious video games), and competence development (e.g. skills training).

The fourth theme includes two sub-groups, referring to the *theoretical and methodological framework* of the studies. Regarding the theories that the selected studies rely on, the triple helix model of innovation occurs as a keyword in the case of 5 studies.

1.3.4. Methodology

During the coding, methodological data was also extracted from the selected studies (Figure 5). This has revealed that most of the studies are of a quantitative design (34,5%). We found it important to highlight the high occurrence of case studies as well (27,6%) – in these studies the authors have not defined explicitly whether they relied on a quantitative, qualitative, or mixed design. With 13,8, purely qualitative research is the least applied one.

| 34,5 | 13,8 | 17,2 | 27,6 | 6,8 |

0   10   20   30   40   50   60   70   80   90   100

■ Quantitative   ☐ Qualitative   ■ Mixed   ☐ Case study   ■ Other
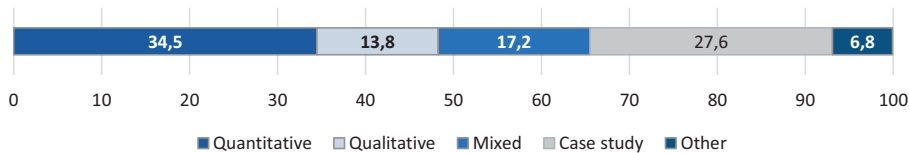
Figure 5. Distribution of types of research in the selected studies, % (n = 29)

Characteristics of the collaboration

First, we observed who are the participants of the collaboration in the selected studies, and besides higher education (it appeared as a participant in every study) we identified four main categories:

1. industry (n = 25, e.g. from small and medium size firms to big corporate organizations),
2. society (n = 6, e.g. civil organizations),
3. research and innovation (n = 4, e.g. research institutions, innovation clusters),
4. authorities (n = 3, e.g. city council, national authorities).

Almost 40% of the studies (n = 11) explicitly indicated that the collaboration they dealt with was of a formal nature (e.g. established partnership contracts), but in most of the studies this characteristic was not that straightforward. This uncertainty remained with the next coded category, concerning the leader of the collaboration: none of the selected studies indicated explicitly whether the university or other participants are the leaders of the collaboration.

We conducted a thematic analysis on the extracted textual data describing the focus of the collaboration (Figure 6), which has revealed that R&D is the most common aim for and of collaboration, followed by innovation, and knowledge exchange.
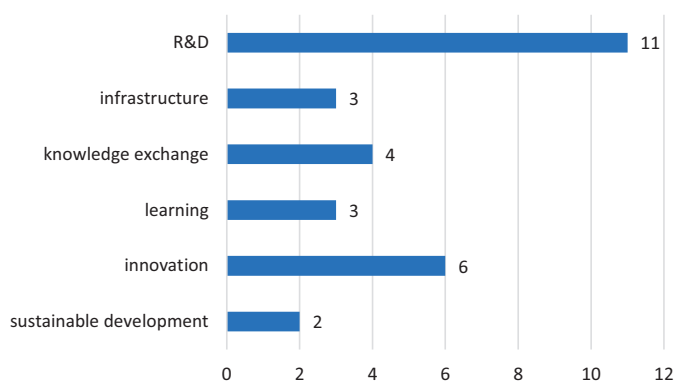
Figure 6. Results of the thematic analysis regarding the focus of collaboration, count (n = 29)

1.3.4.1. Innovative aspects of the collaboration

Without any exception, the selected studies were explicitly linked to innovation by their authors. The thematic analysis of the extracted data from the studies revealed 8 thematic focuses concerning the innovative aspects of the collaboration between HEIs and other participants (Figure 7):

- *Social innovation* appeared in five studies, and was commonly linked to the universities' third mission, focusing on the social development of their narrower region (Aleffi et al., 2020; Birkner et al., 2017; Farré-Perdiguer et al., 2016; Meyer et al., 2018; Mititelu et al., 2017).

- Four studies explicitly mentioned some *innovative forms of collaboration*, such as partnerships between innovation clusters and HEIs, universities acting as business incubators, or the presence of intermediary organisations between universities and other participants (Edmunds et al., 2019; Blix Germundsson et al., 2020; Lysenko et al., 2020; Oplakanskaia et al., 2019).
- The theme of *learning* also appeared among the most frequent once, indicating that the collaborating participants interpret innovation in the context of learning that covers competence development, and professional development (Abelha et al., 2020; Adomavičiūtė, 2018; Rojo et al., 2019; Secundo et al., 2017).
- Two studies reported on the innovative aspects of collaboration through the *joint establishment, development and/or use of infrastructure* (such as commercial laboratories or scientific/technological/innovation parks) (Bergquist et al., 2019).
- Although less stressed, and with more tangible definitions, two-two studies connected the innovative aspects of collaboration to *R&D activities* in general (Capaldo et al., 2016; Yordanova, 2018) and *economic development* (Abelha et al., 2020; Farré-Perdiguer et al., 2016).
- At last, but not least, one-one studies explicitly interpreted the innovative aspects of collaboration in the context of *open innovation* and *environmental innovation* (Lukac & Chatzimichailidou, 2017).
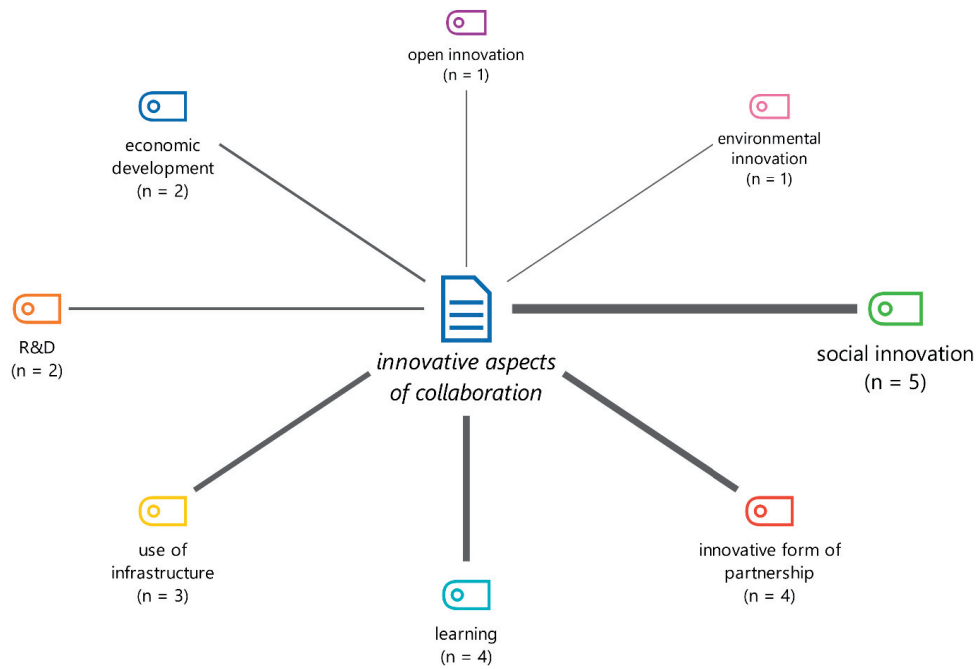
Figure 7. Innovative aspects of collaboration in the selected studies, count (n = 29)

1.3.5. *Main findings focusing on the impact of collaborations*

The thematic analysis of the selected studies' main findings revealed a somewhat more nuanced pattern regarding their focus then the innovative aspects of collaboration presented in the previous chapter (Figure 8).
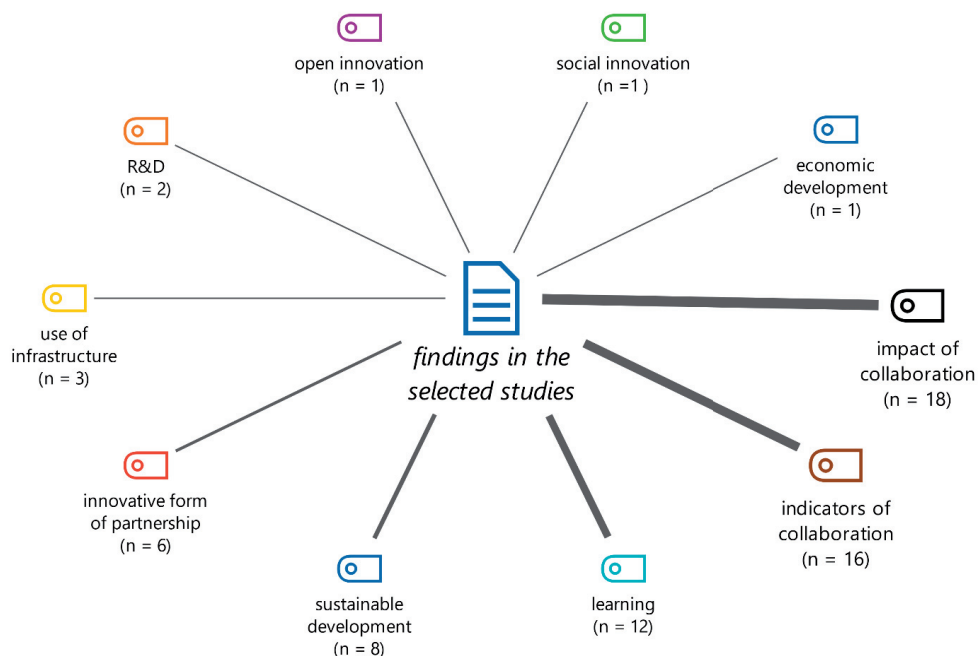
Figure 8. Findings presented in the selected studies, count (n = 29)

Hereby we present the various positive and negative impacts of collaborations (n = 18), since most of the studies referred to them in their findings:

- a positive impact on firms' performance in general and specifically on financial performance (Albats et al., 2018; Di Maria et al., 2019; Guzzini & Iacobucci, 2017);
- a positive impact on the higher education system in general, including the enhancement of students' mobility and graduates' participation in the (global) labour market (Albats et al., 2018; Di Maria et al., 2019; Lysenko et al., 2020), but a negative impact on university-based professors' performance (Di Maria et al., 2019);
- a positive impact of universities as agents of intermediation on knowledge transfer (Farré-Perdiguer et al., 2016; Oplakanskaia et al., 2019);
- a positive impact on the development process regarding new production technologies, further co-patents, innovative infrastructure, education and training (Lysenko et al.,

2020; Murgia, 2018), including attracting investments for further development (Lysenko et al., 2020).

1.3.6. Analysis and discussion

In this chapter we summarize our analysis and findings and present them along the four research questions.

RQ1: What patterns emerge from existing literature on partnerships in higher education?

Although our sample of 29 selected studies for the review is not representative, some patterns have emerged that can be valuable for developing further research directions. Based on our results, most studies are either of an international (e.g. Abelha et al., 2020; Prokop et al., 2018) or an institutional (e.g. Levrouw et al., 2020; Mititelu et al., 2017) geographical scope. Interestingly, although partnerships in higher education influence a wider scope (e.g. settlement, region, state), only a few studies focused on such collaboration on the regional level (e.g. Jahic & Pilav-Velic, 2020; Aleffi et al., 2020). Moreover, since the policy environment is also an influential factor regarding the efficiency and impact of partnerships on economical and societal developments, it is important to highlight the low number of studies dealing with HEIs' partnerships on a national level (e.g. Secundo et al., 2017; Murgia, 2018).

Concerning the participants of partnerships, most studies focused on university-industry collaboration (and this resonates with the findings presented in RQ3). Civil organizations, research institutions or authorities appeared only in a small number of studies, and as a third party in university-industry collaboration (e.g. Birkner et al., Oplakanskaia et al., 2019). Therefore, although we kept our search strategy open for any kind of partnerships in higher education, in the selected database, for the selected time period, only such studies could be identified that had relation to the industry.

RQ2: How can the innovative aspects of partnerships in higher education be characterized?

All the selected studies (n = 29) are linked to innovation, and although in most cases the authors were very explicit about the innovative aspects of the partnership, some studies just established this connection on a superficial level (e.g. stating that collaboration affects innovation). Data has revealed that social innovation and learning are two among the most common themes concerning the innovative aspects of partnerships.

RQ3: What are the general and disciplinary specificities of partnerships in higher education?

We had an intention to compare the findings of partnership characteristics along the various disciplinary fields, but the restricted number of selected studies hindered this endeavour. However, the results have revealed that most of the studies deal with topics/issues belonging to either Natural Sciences (n = 14 (e.g. Aleffi et al., 2020; Di Maria et al., 2019; Runiewicz-Wardyn, 2017)) or Applied Sciences (n = 8 (e.g. Capaldo et al., 2016; Edmunds et al., 2019)), while Formal Sciences (such as ICT) are represented by five studies (e.g. Lukac, 2017) and Social Sciences by three studies (e.g. Adomavičiūtė, 2018; Jahic & Pilav-Velic, 2020). We could not identify any studies from the field of Humanities. This finding resonates with the fact that most partnerships in higher education (at least the ones in researchers' focus) are established between universities and actors of the industry.

RQ4: How do research papers from the past five years contribute to the knowledge on partnerships in higher education?

Around third of the selected studies were of a quantitative nature (e.g. Edmunds et al., 2019; Farré-Perdiguer et al., 2016), and, not so surprisingly, the occurrence of case studies was also high (27,6%, (e.g. Adomavičiūtė, 2018; Albats et al., 2018)) – this resonates with the number of studies with an institutional scope (we presented this finding under RQ1). This finding – although only to an extent due to the limited number of reviewed studies – draws the boundaries of the current research scenario of partnerships in higher education.

Data concerning the focus of collaboration in the selected studies revealed that most partnerships aim to foster *joint research and development* (e.g. Capaldo et al., 2016) or *innovation* (e.g. Edumnds et al., 2019). Although in fewer studies, but for future research might be interesting to draw out, that *knowledge exchange* (e.g. Di Maria et al., 2019) *infrastructure development* (e.g. Jahic & Pilav-Velic, 2020), *learning* (e.g. Meyer et al., 2018) and *sustainable development* (e.g. Mititelu et al., 2017) also emerged as themes concerning the focus collaboration.

Results from the thematic analysis of the research findings reported in the selected studies has revealed a rich map of contributions. *Impact of the collaboration* and *indicators of the collaboration* proved to be dominant themes in the extracted research findings (18 studies reported on it). Further analysis of the *impact of the collaboration* showed, that most studies

identified positive impacts of UICs (e.g. on firms' performance, on the higher education system, on knowledge transfer, on technology production, on education and training etc.).

Conclusions

The changing societal-economical expectations from higher education raises such new challenges that stand in urgent need for collaboration between relevant stakeholders. This collaboration is commonly interpreted as a driver for innovation at micro, macro, and meso levels, and although the widely applied triple helix model of innovation (Etzkowitz & Leydesdorff, 2000) emphasises the interactions between academia, industry and government, literature suggest that university-industry collaboration is (and for years has been) in the centre of scientific attention. Based on these cornerstones, our study aims to systematically review scientific literature published between 2016 and 2020, focusing on partnerships of any kind in higher education. We also devoted a special emphasis on how these studies relate to innovation.

In our literature review with a systematic approach, we adhered to the premises of the PRISMA guidelines for conducting systematic literature review; however, the study has some limitations that one must consider. These limitations include the chosen database (we identified studies in one online database), restrictions on the language (studies published in English were selected), or the short time period (our review covers 5 years). Despite these limitations, the results contribute to the ever-growing body of knowledge on partnerships in higher education through its attempt to reveal the characteristics of not only UIC, but partnerships of any kind, in general.

However, our results have revealed a rather homogeneous pattern of research focusing on partnerships in higher education, since most of the selected studies (1) are of an international or institutional scope, (2) dominantly have university-industry collaboration as a focus, and (3) are of a quantitative or case study design. This can be the starting point of future research aiming to elaborate on partnerships in higher education in more depth.

1.3.7. Appendices

Appendix 1. Review protocol

Review questions

1. What patterns emerge from existing literature on partnerships in higher education?
2. How can the innovative aspects of partnerships in higher education be characterized?

3. What are the general and disciplinary specifities of partnerships in higher education?
4. How do research papers from the past five years contribute to the knowledge on partnerships in higher education?

Key descriptors/key terms

- Synonyms for the higher education part: university, higher education, higher education institution, college
- Synonyms for the collaboration part: partnership, collaboration, cooperation, network
- Innovation

Population

The publication MUST involve:

- university/university staff OR higher education/higher education staff,
- AND other actor/staff from another institution.

Databases - ProQuest

Time period - 2016 - 2020

Language - English

Type of publication - peer-reviewed journals

Geographical focus – Europe - Special focus on the V4 countries

Criteria for exclusion at any point of the process

- population does not meet the criteria
- publication time does not meet the criteria
- language does not meet the criteria
- type of publication does not meet the criteria
- geographical focus does not meet the criteria
- reviews and non-empirical publications will be recorded, but excluded from further analysis

Search strings:

(ti(universit* OR "higher education" OR college) AND ab(partnership* OR collaborat* OR cooperat* OR network*) AND ab(innov*) AND stype.exact("Scholarly Journals") AND la.exact("English") AND at.exact("Article")) AND la.exact("ENG") AND PEER(yes))

Appendix 2. Selected studies for the literature review

Year	Number of selected studies	Selected studies
2016	2	Capaldo et al. (2016), Farré-Perdiguer et al. (2016)
2017	6	Birkner et al. (2017), Guzzini & Iacobucci (2017), Lukac & Chatzimichailidou (2017), Mititelu et al. (2017), Runiewicz-Wardyn (2017), Secundo et al. (2017)
2018	9	Adomavičiūtė (2018), Albats et al. (2018), Kaklauskas et al. (2018), Kobarg et al. (2018), Meyer et al. (2018), Murgia (2018), Pleśniarska (2018), Prokop et al. (2018), Yordanova (2018)
2019	5	Bergquist et al. (2019), Di Maria et al. (2019), Edmunds et al. (2019), Oplakanskaia et al. (2019), Rojo et al. (2019)
2020	7	Abelha et al. (2020), Aleffi et al. (2020), Germundsson et al. (2020), Huggins et al. (2020), Jahic & Pilav-Velic (2020), Levrouw et al. (2020), Lysenko et al. (2020)

Appendix 3. Code system used for data collection, type of data and analysis in relation with the reserach questions

		Category	Data	Research question
1. module: General information		Author	Extracted from the database ID data, not used in analysis	NA
		Title	Extracted from the database ID data, not used in analysis	NA
		Year of publication	Extracted from the database Descriptive statistics	NA
		Discipline	Coded data Descriptive statistics (quantified)	RQ3
		Country	Extracted from the database Descriptive statistics (quantified)	NA
	scope	Geographical	Coded data Descriptive statistics (quantified)	RQ1
2. module: Ke		Keywords	Extracted from the database Thematic analysis, then descriptive statistics (quantified)	RQ4
3. module: Methodology		Research design	Coded data Descriptive statistics (quantified)	RQ4
		Aims	Quotation extracted from the study Thematic analysis, then descriptive statistics (quantified)	NA
4. module: Characte		Participators	Coded data Descriptive statistics (quantified)	RQ1
		Level of formality	Coded data	RQ1

			Descriptive statistics (quantified)	
		Leader of the collaboration	Coded data Descriptive statistics (quantified)	RQ1
		Focus of the collaboration	Quotation extracted from the study Thematic analysis, then descriptive statistics (quantified)	RQ4
5. module:	Innovative aspects	Is the collaboration linked to innovation?	Coded data Descriptive statistics (quantified)	RQ2
		What are the innovative aspects?	Quotation extracted from the study Thematic analysis, then descriptive statistics (quantified)	RQ2
6. module:	Main	What are the main findings of the study?	Quotation extracted from the study Thematic analysis, then descriptive statistics (quantified)	RQ4
7. module:	Coder	What are the general impressions after reading the study?	Comments of the coder Not used in analysis	NA

1.4. Resilience and the comprehension of the COVID-19 space-time: some thoughts on the potential impacts on ethics of education

Roman Tandlich

1.4.1. Definition of a disaster

What is a disaster? Early definitions focused on the "agent and emergent situations", or changes in the social behaviour of the affected population (Perry, 2017, pages 1-4). The early definitions were summarised by Perry (2017) on page 4:

> *"Each characterizes disaster in terms of the impact or threat of an agent and each has a focus on social disruption. One interpretation is that the disruption or interrupted stability was the "disaster" which had an agent as cause and that later required social readjustments."*

It is clear from this definition summary that a disaster is triggered by a hazard or "agent", and that the disaster leads to the changes in the functioning of the human society by creating or giving rise to "emergent situations" (Perry, 2017, pages 1-4). If a disaster is considered a concept, then the focus on agent and emergent situations would be two dimensions of the concept. The trigger is a precipitating event, human action, or a natural hazard, and the 'emergent situation' is the disruption of the social order after the onset of the disaster, or the parameters of the space that the disaster management system needed to deal with (Perry, 2017, pages on the Fritz's definition of a disaster). However, this early definition and the conceptualisation of the disaster was not sufficiently capturing the complexity of various types of disasters, underlying trigger properties, the multi-dimensionality of the hazard and the ecosystem, encompassing humanity and environment, in which disasters unfold.

From the origins, where the focus was on the sudden and rapid onset of a disaster, the focus shifted to the social (order) disruption and the impact on the society, where the pre-disaster status is not re-established, but rather a new steady-state is achieved after the recovery of a society/impacted community from a disaster is complete (see Buckle, 2005; and as summarised by Perry, 2017). The next stage in the development of the disaster definition is summarised in the sub-chapter entitled "THE HAZARDS-DISASTER TRADITION" (see Perry, 2017). The natural hazards are phenomena which can trigger disasters after the hazards interacts with a vulnerable human population. The hazards are later also considered to be

anthropogenic in nature and impacts of disaster situations on the provision of food and other systems (Perry, 2017). Social disruption and impact of the disasters on societal relationships that are of fundamental importance to normal functioning of society, were later placed at the centre of the disaster research (see "DISASTERS AS A SOCIAL PHENOMENON" in Perry, 2017). This, however, does not encompass the complexity of the disasters in the 21st century such as the coronavirus pandemic, which has indicated the inter-relation between the environment and human society, as well as the age of disaster risk management and assessment.

The early definition of the disaster might be seen a reflection of the sociological approach to disasters, in as much as the focus was on the changes a disaster causes in human society, and not much focus was placed on the nature of the disaster hazard/agent. A steady-state is established on the human society after the precipitating event, and this might be similar to or different from the pre-disaster state. Dealing with disaster, which would be aligned with the early definition and the limited focus on the nature of the disaster hazard, could be seen as a manifestation of the human of fatalism in facing disaster risks such as earthquakes (Aksa et al., 2020). In the 21st century, disaster impacts have been characterised as permeating through all the stages of the disaster management cycle, or rather their effects can be felt long after a particular, even if the single disaster event became a thing of the past (Peek, 2016). Public health emergencies are such the long-lasting events and they are multi-dimensional (Peek, 2016). This makes risk management and assessment Hollnagel (2008) stated that the basis for risk assessment is a function of the requisite imagination, which the author defines a three-step process based on literature:

"The first step is to understand what the problem is or

indeed to appreciate that there is a problem at all. The second step is to understand

the "mechanisms" or the ways in which the adverse outcomes can arise, to envisage the

consequences, and to differentiate between large and small risks. The third and final

step is to think of or find the means which can be used either to reduce or eliminate the risk,

or to protect against the consequences."

Perrow (1984; as summarised by Hollnagel, 2008) proposed two dimensions to characterise different types of accidents: interactiveness and coupling. With regard to the interactiveness, a complex system – in contrast to a linear system – was characterised by the following:

"● Indirect or inferential information sources.

● Limited isolation of failed components.

● Limited substitution of supplies and materials.

● Limited understanding of some processes (associated with transformation processes).

● Many control parameters with potential interaction.

● Many common-mode connections of components not in production sequence.

● Personnel specialization limits awareness of interdependencies.

● Proximate production steps.

● Tight spacing of equipment.

● Unfamiliar or unintended feedback loops."

Systems can also be described with respect to their coupling, which can vary between being loose or tight. The meaning of coupling is that subsystems and/or components are connected or depend upon each other in a functional sense. Thus, tightly coupled systems are characterised by the following (Perrow, 1984; as summarised by Hollnagel, 2008):

"● Buffers and redundancies are part of the design, hence deliberate.

● Delays in processing not possible.

● Sequences are invariant.

● Substitutions of supplies, equipment, personnel is limited and anticipated in the design.

● There is little slack possible in supplies, equipment, and personnel.

● There is only one method to reach the goal.

● Tightly coupled systems are difficult to control because an event in one part of the system quickly will spread to other parts".

The complexity of the socio-ecological systems in the 21st century can be looked at in terms of coupling, in other words one human action is coupled with impacts on the ecological components of the socio-ecological systems. There will also be feedback loop from the environment onto the human society and the socio-ecological systems, as indirectly also disaster risk management, will be tightly coupled. One of the main actions to consider here is the onset of the 'Age of Anthropocene", which has been a period in geological time that is marked by the major impact of the human action on the fate of the entire Earth as a planet (Steffen et al., 2007). The 'Age of Anthropocene' goes towards the human action, which directly or indirectly, creates qualitative and quantitative changes in the socio-ecological

systems. Such changes are often irreversible in time and space, as well as in the nature of their impacts, e.g. the decrease in biodiversity. This is linked to disaster risk management, as the human action will trigger many complex disasters, which unfold in the socio-ecological systems. The current coronavirus pandemic and its impact on socio-ecological systems, is an example of tightly-coupled systems, in the authors'. The scale, scope, and duration of the impact of some of these complex disasters can be captured on the ten-disaster-type scale of Fischer (2003). The scale proposes a continuum in the scale (severity of damage), scope (severity of impact on the human society…size of the impacted area) and the duration of the impact of the disaster in question, on the functioning of the socio-ecological systems (Fischer, 2003). The scale goes from emergencies to catastrophe and society-annihilation style events (Fischer, 2003). One of the categories is the following disasters, namely (Fischer, 2003):

"Disaster Category 9: Catastrophic and/or Simultaneous Massive Disruption & Adjustment in Several Communities (C)"

It is a sub-catastrophe event, and the scale, scope and duration are likely to reach all of humanity and the global socio-ecological system, as the "Disaster Category 9" is more closely defined, as:

"DC-9 is applied when the social structure adjustments are necessitated in response to an actual or potential disruption that is major or massive in scale, duration and scope across several population centers simultaneously-impacting dramatically on the larger society as well."

COVID-19 has been characterized by the limitations on human mobility locally, regionally, within a particular country and globally. This has led to changes in the functioning of human society and the socio-ecological systems, as the animal reservoirs of the predecessor viruses are animal in origin (Frutos et al., 2021). The feedback loop is suspected to be demonstrated by the fact that the SARS-CoV-2 virus is likely the result of the anthropisation of the Earth surface (Frutos et al., 2021). Fischer (2003) and other authors have been looking at the disasters from a sociological point of view, i.e. the precipitation event or disaster hazard is not the focus of their examination of a disaster. It is the impact that a disaster, or the hazard in question, would have or does have on human society, community, and its functioning. The permeation of the focus, through scale, scope, and duration, must be placed on the entire socio-ecological systems. The COVID19 pandemic is a disaster, which in the authors' mind, can be deemed to be a 'Disaster Category 9'. Extending the scope of the consideration beyond the society only, provides an opportunity to define the concept of a 'Disaster Category 9' with

COVID19 as an example. Besides the health aspects of the COVID19 pandemic as disaster, the current situation globally, regionally and locally indicates that the disaster has had a profound and multi-dimensional impact on the socio-ecological system and human society. These are unpacked in the next section of this chapter.

1.4.2. Knowledge management and education in the COVID-19 space-time

The COVID19 pandemic shifted the reality and the nature of teaching and learning in higher education. Okeke-Uzodike and Gamede (2021) reported on the results of research on the challenges faced by female academics at a South African University during the coronavirus pandemic. The results indicated that managing the commitments of online teaching and learning and balancing this with the research activities, was difficult (Okeke-Uzodike and Gamede, 2021). Chimbunde (2021) conducted similar research with lecturers from three universities in Zimbabwe and the results indicated that lecturer training in the use of online resources was a major problem for the interviewed academics. The learning management systems, such as Moodle, have been part of the higher education ecosystems globally for at least two decades. However, many times and prior to COVID19 the usage was limited to making learning materials available, and one-way contact with students, through the flipped classroom or the recorded lecture courses, rather than the face-to-face contact between the students and the lecturers. The in-person lectures/classroom contact had always been at the core of the higher education in teaching and learning. The online platforms were mostly perceived as playing a supportive function. Facing a situation where the social media is flooded with constantly increasing amount of information, an educator must navigate an ontological realm which is fluid and in a state of non-equilibrium. Routine tasks, e.g. uploading of lectures with commentary onto the learning-management systems, such as Moodle, have been done before the coronavirus pandemic. However, the coronavirus pandemic led to the shift in as much as Moodle became a tool to deliver majority and all subject matter content, it was a way to ensure the completion of the academic year 2020 (Ajani, 2021). The shift to the online learning management systems was only one dimension of the concept of education in the COVID19 space-time. The conditions, under which the execution and uploading of course material and conditions in which education delivery have taken place, have not been the same as before the pandemic. It is safe to say that the nature of teaching, learning and educational reality has shifted. So, what is the truth of education in the 'updated' ontological realm of the COVID19 space-time and beyond? The principle of alethic relativism can be applied here.

Alethic relativism is the relativism about truth. That is a deep question, and one could argue an expression of relativism itself and this will be specifically the case in the fluid situation of the COVID19 pandemic. Truth is related to a subject that articulates it and the object/subject matter which is discussed. Truth about a scientific statement can be based on the data collected using the method of an academic discipline, e.g., sociology, chemistry, or the efficacy of Moodle in delivering of academic content during the teaching schedule. As the particular academic field develops, the methods might change and the data, already collected, might be re-interpreted, or become replaced with new data. The example above about the repurposing of data will be the case in the context of the COVID19 pandemic and the education; and its carrying on during the COVID19 space-time. Both data collected and the methods of collection/interpretation, or only one of these elements in an academic field, can develop over time. Consensus about the method in a particular academic discipline continuously develops and the only standard about method validity and the validity/relevance of data is based on the (pragmatic) consensus of the academics and invested stakeholders in that academic field, at the time of a decision being made. From this perspective, the alethic relativism can be seen as the accepted nature of data collection, methods of it and interpretation about the lifetime of an academic discipline. What was true and accepted as valid method for sociological data collection might become outdated tomorrow. Alethic relativism will manifest in the interpretation of the data in a specific time period in a specific way. In the context of a single academic or educator, this will be difficult to standardise during the COVID19 space-time. Knowledge, identity, and execution of professional mandate of the educator will be in a state of fluidity and relativity during the COVID19 space-time, as well as multiplicity of the categorical imperative. This will pose ethical challenges onto the educator. The COVID19 pandemic has been presenting challenges, not the first time but it is global in nature…which has not really happened for a while. The example below is used to demonstrate on an example from the world of biology, which is relevant here as it demonstrates the need to shift the way of thinking about a biological entity under what could become a disaster.

For over 100 years, it was known that infectious disease did have causative agents, such as bacteria, viruses, and fungi to name a few. These are either cellular organisms or protein-coated nucleic acids, which are protected from outside influences. Throughout the 20th century, cases of atypical neurodegenerative disorders, namely Creutzfeldt-Jakob disease were documented in biomedical literature and linked to some unusual traditions (Liberski, 2013). In the 1990's, new variant occurred in people across the United Kingdom from the consumption

of beef, which had been extracted from cattle infected with the bovine version of Creutzfeldt-Jakob disease, or mad-cow disease. Scientific investigations resulted in the discovery that a protein, namely a prion, was the causative agent of a disease, not a virus or a cellular pathogen (Liberski, 2013). That discovery about prions posed a problem which would violate various dogmas and well-established principles in biomedical science such as the unifying principles of disease causation (Evans, 1976). Firstly, the prion would need to reproduce as there was more than one case of the Creutzfeldt-Jakob disease and the neurodegenerative damage to the tissue was progressive, as the disease progressed (Liberski, 2013).

Firstly, a prion disease could result from the own body's protein, i.e. protein from the body's host misfolds in 3D space and this can lead to neurodegenerative changes in the brain (NINDS, 2021). Secondly, the protein or prion seems to multiply over time, i.e. its propagation seems to violate the central dogma of molecular biology which states that DNA encodes m-RNA and t-RNAs, which in turn encode the proteins (Koonin, 2012). There seem to be something to this in yeast, but not in higher organisms such as mammals and humans (Biology Libretexts, 2020). The protein could be acquired by consuming a source which contains the prion, e.g. consumption of the meat from cows which died of Creutzfeldt-Jakob disease. The disease is rare but does behave as an infectious disease by adhering to Koch's postulates, but finally in humans the prion was found to be the body's own defective protein (Biology Libretexts, 2020). The prion story proves relativism of truth in various ways. On one side, the discovery of prions proves that chemical molecules can, to a certain extent, transfer information and cause infectious diseases. They are not enveloped virions or cells, but infectious according to the Koch's postulates. They seem to violate the central dogma of molecular biology, but only in yeast. The prion principles redefined, and made relative the definition of the causative agent of infectious disease, it makes it relative between the course of the 20th century and the onset of the mad-cow disease outbreak in the United Kingdom in the 1990's. It turned out that a defective protein from the own body was the origin of the prion (Biology Libretexts, 2020). Relative truth about the statement: "prions cause infectious diseases" could have undone the basic understanding of the nature of biological reality. It did in a limited fashion and discovery of the prion properties in yeast. However, it re-affirmed that methods of the biological sciences continued to provide reliable data, which might be re-interpreted in the course of the development of the biological and biomedical sciences, i.e. the scientific truth in these academic fields was fluid and relative as a function of time.

The knowledge about prions changed in the time line of the 20th century and the threat and uncertainty that the Creutzfeldt-Jakob disease changed people's behaviour and led to the development of new knowledge about infectious diseases. The methods of the molecular biology and biomedical science were not changed by the prion disease discovery. Rather they were re-applied to a different context to further the scope of human knowledge. The methods were repurposed and the knowledge about infectious diseases updated. Further expression of the relativism of the knowledge will be seen in the acceptance of the knowledge, based on the societal acceptance of the science as facts of life, facts describing reality. Scientists would be convinced about the veracity of the prion story based on the validity and use of acceptable method to gain the insight about this phenomenon by the investigators in questions, i.e. the publication of the results in scientific forums where scrutiny by peers is possible. These could include the presentation at scientific conferences or publication of the findings in peer-reviewed journals. On the other hand, the relative acceptance of the prion theory, or explanation by the wider public would likely be made in a relative term by the decreased consumption of the United Kingdom produced beef meat, which was suspected to the source of transmission of the prion into human sufferers from the Creutzfeldt-Jakob disease. Some consumers might have even ignored the consumption warning for British beef and truth about the prion and its transmission would have been relative and irrelevant to these consumers, as the rate of the disease was rather low at about 1 in a million. This change in the science and behaviour of the population was triggered by a disaster event, one which was relatively limited in the number of causalities, but significant in the size of the hazard (Andrews et al., 2003).

The example of the prion knowledge development can be put in another way. The development of the prion causative agent knowledge is an example of the application of critical thinking, which can be defined in this context as suggested by Wisegeek and as summarised by Murawski (2014):

"Critical thinking is the ability to apply reasoning and logic to new or unfamiliar ideas, opinions, and situations."

The fluid nature of the COVID19 space-time, and the world in the 21st century, will require the processing of a large volume of information, and thus unfamiliar ideas and situations can arise, e.g. from the consideration and analysis of the Tweets by unfamiliar people. In addition, the complexity of the socio-ecological systems that humans live in will require that critical thinking be applied according to the definition by Facione and as summarised by Murawski (2014):

"Critical thinking is purposeful, self-regulatory, the judgment which results in interpretation, analysis, evaluation, and inference, as well as an explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgment is based".

Critical thinking is interpreted here as a social construct, and it is based on the mental frames as a starting point. The society and the education system stipulate the norms that the individual citizens use as starting point in the development of understanding of the concepts, particular aspects of everyday life (based on my interpretation of van der Meer, 2018). The understanding of the frames in the context of processing of all this data will take place in the classroom and beyond it. It will overlap with the generation of policies, functioning of society, the instruments of power/biopower and tools of power. Public pedagogy will play a critical role here (Bengtsson and van Poeck, 2021). Knowledge and concepts will be the result of the societal approach to solve problems currently facing humanity. Critical thinking will be applied here in the conceptualization of the challenges facing humanity and the response to it, the aim being to reach extensive bounded rationality and if possible unbounded rationality (Gilboa and Samet, 1989). The public pedagogy will be interpreted here as follow. The COVID-19 lockdowns have been imposed on the entire population of the world and thus limitations on mobility will impact all human beings.

Based on the previous section, disasters such as COVID19 have a lasting impact on the way that human society functions (Fischer, 2003). The actual way those changes will unfold will vary slightly throughout the world, but there will be some commonalities. Each teacher, each lecturer and educator will be experiencing these challenges of online teaching and the maintenance of the continuity of education as sort of normalcy for students and educators. Local specifics of the educator's surroundings will be important in this context. Working from home for the educator and the efficiency of the content delivery and interaction with the students/pupils will depend on the microgeography of the educators as a single human. Microgeography is to be seen here as a unit of space, the local environment in which the educator will exist and interact with their class, it will be the unit of community space (based on the definition of microgeography by Dubcová et al., 2017). Most educators had to work from home during the COVID19 lockdowns. They existed in a single household under the impact of the limited mobility that has been imposed in the local conditions after the onset of COVID19. In this context, the educator's microgeography will have several dimensions, e.g. the

psychological and the ability of an individual in the productive age to work and function constructively from home, the carbon footprint of the work activities that such as individual has to produce or produces to sustain their work and personal life (which is unavoidable), the nutritional choices that a human being makes as a result of the limitations on survival and leisure mobility. Let's next analyse this in the next section.

1.4.3. Mobility limitations during the COVID-19 pandemic and impact on the education

The scale of the coronavirus impact has been the entire geography of Earth, scope has been all of humanity and duration is open-ended at the moment. The impacts have been unfolding for an unknown period of time and the complexity of the impacts will only become known in time. The COVID19 pandemic has been permeating throughout all the stages of the disaster management cycle. The early lack of management tools for COVID19 has resulted from the imposition of lockdowns or cordon sanitaires (Boyle, & Rahman, 2020). Cordon sanitaires form the harshest version of quarantine in public health, and it means that a whole geographical region is isolated to prevent the movement of people in and out of the area where the infectious disease has been detected (Kaplan Hoffman, & Hoffman, 2015). The notion and use of cordon sanitaire has been around for a long time. Dictionary definition of the term indicates that cordon sanitaire constitutes a sealing off a dangerous area or country, generally with armed guards at the entry points, and the movement of people in and out of the area is limited and completely prevented (Cambridge University Press, 2022). In a broader sense, cordon sanitaire is a crude public health tool to impose strict mobility restrictions on the population in a given geographical area if an outbreak of an infectious disease, which poses a significant risk to public health, is suspected or has been confirmed in that area (Salas-Vives, & Pujadas-Mora, 2018). In other words, cordon sanitaire is deployed with the ultimate aim to contain such as an outbreak and its spread outside of the possible first cluster area by limiting human mobility in and out of that area (WHO, 2020). Cordon sanitaire is a measure that is designed to buy time for biomedical science to gain understanding about the natural history and progression of the particular infectious disease or to allow for the deployment of the necessary public health measures to deal with the relevant epidemic, outbreak, or pandemic.

The crude character of the cordon sanitaire is based on the use of force or government power to contain an infectious disease by imposing mobility limitations on the population inside the affected area (Haider et al., 2020). The nature of the disease, the healthcare system capacity, in the immediate vicinity/governmental jurisdiction responsible for the public health in the

cordoned area, to deal with infectious disease and the overall preparedness to deal with a specific or unknown infectious disease will determine the length and severity of the particular cordon sanitaire (Lin, 2021). However, the mental perception and the micro-geographical nature of the mobility, from the viewpoint of the population inside the area under cordon sanitaire, are redefined in physical and mental terms once this type of public health quarantine is imposed (Schäfer et al.,2020; Brooks et al., 2020). Therefore it is necessary to not just look at the final/overall size of the infectious disease being contained but to take nuanced decisions, which carefully consider the impact of the cordon sanitaire on trade and population mobility, which might sometimes be preferable (Espinoza et al., 2020). Management of the road network, checkpoint deployment and the feedback loop on the strategy's success can facilitate the improvement of mobility in the affected area (Lin and Zhang, 2021). However, the resource availability and socio-economic status of the population inside the cordoned area will play a major role in the cascading impacts of this type of quarantine (Kaplan Hoffman, & Hoffman, 2015).

Cordon sanitaire was only the first adjustment for the human populations globally that took place in the context of the COVID-19 pandemic and the related space-time. Before the coronavirus pandemic, one's mobility could be defined as the ability of a human being to move from point A to point B at will, in most instances. International treaties and national legislation then define what mobility means or meant in practical terms. At the same time, human nature and survival define the concept of mobility in micro-geographical terms. One such type of mobility could be called survival mobility. Survival mobility can be seen as a combination of the mobility towards resources such as food, water, and shelter or movement to a place of employment to earn a living. This movement is combined in survival mobility with the return or mobility of people and essential resources towards human's place of residence or resources consumption. Survival mobility could also be interpreted as the movement away from danger, e.g. movement away from COVID-19 and potential sources of infection. In addition to survival mobility, humans experience leisure mobility, a movement towards and back from self-actualization. This would be mobility towards a fitness centre or getting exercise, travelling for holidays or business nationally or internationally to name but a few examples. Leisure mobility is optional and beneficial to human wellbeing, but this type of mobility will not be essential for human survival.

Both types of mobility were redefined in/under the COVID-19 lockdowns. The routes of travel, the means of transportation and the destinations that humans in a location could visit have been redefined in a fundamental fashion. The nature of transport remains fluid in the COVID19 space-time; for example, the types of stores that can be shopped keep changing during various lockdown stages. The basic public goods people in a geographical area can access keep changing. The COVID-19 pandemic has led to the prioritization of health resources towards fighting SARS-CoV-2, and this led to the decrease in the number of surgeries performed, decreased TB testing and also decreased primary care attendance as the people might have been afraid of contracting COVID-19 (Núňez et al., 2021). In the end, the survival mobility of one group of citizens is indirectly linked to the mobility of leisure of other members of the same society (Abedi et al., 2021; Azar et al., 2020). The leisure mobility of some members of a society is related to the work or employment of the staff in the leisure facilities (Abedi et al., 2020; Azar et al., 2020). If the leisure mobility of some members of society is limited or completely suppressed, then the survival mobility of staff of leisure facilities will be limited and these limitations might cascade beyond the lockdown level, i.e. the loss of employment by leisure facilities staff might lead to the limitations of survival mobility. This will result from the depletion of the resources available to that leisure facilities staff, and thus the limitations on their future choice of transport routes to take to the shops, etc. Thus it can be stated that the imposition of lockdowns increased pain and decreased pleasure for individual humans, as well for populations of whole countries.

Limitations on mobility, both survival and leisure, were needed to protect the human lives at the global, more regional/country-level and local level during the COVID19 pandemic, i.e. the cordon sanitaires have been aimed at preventing death and suffering by humans. The imposition of limitations on movement and the seclusions of many people in their residence was a movement away from the danger of the infection by COVID-19 and away from the spread of the disease to other humans. In other words, cordon sanitaires aimed to minimize pain caused to humanity by COVID-19 in immediate and medium terms. An example about the survival and leisure mobility extent and the changes during the harshest phase of the lockdown in the Eastern Cape Province of South Africa is shown in Figure 1. Data on the cell phone mobility was recorded in the Google Mobility Reports (2020-2022). Survival mobility was expressed by proxy variables, i.e. the decrease in the cell phone mobility to grocery stores and pharmacies during the COVID19 cordone sanitaire period from 23rd March 2020 until 27th June 2020.

This includes the harshest level five lockdown in South Africa, plus a short period just before and a short period just after this lockdown level. This is to estimate whether a disruption in the functioning of the South African society took place and whether a new steady state, in terms of survival mobility, was established during the adjustment to the cordon sanitaire and in the immediate aftermath of the harshest phase of the coronavirus lockdown. The y-axis in Figure 1a) represents the absolute value of the decrease/drop in the mobility of the Eastern Cape population to the transit points between the lockdown period and the period just prior to lockdown, i.e. it is proxy measure in the limitations in the mobility for everyday activities of the Eastern Cape population.

The y-axis in Figure 1b) represents the absolute value of the decrease/drop in the mobility of the Eastern Cape population to grocery stores and pharmacies between the lockdown period and the period just prior to lockdown, i.e. it is proxy measure in the limitations in the mobility for maintenance of health and nutritional needs of the Eastern Cape population. Both of these measures are adequate to express the survival mobility (limitations) and the impact of the COVID19 cordon sanitaire on it during the harshest phase of the COVID19 lockdown in South Africa in 2020. The term to express the survival mobility (limitations) proxy variables is designated as X (%) in Figure 1. The x-axis in Figure 1 is always the total number of cumulative cases that were detected in the Eastern Cape population, during the harshest phase of the COVID19 lockdown in South Africa in 2020.

The cumulative COVID19 case numbers are a proxy measure for the progression of the coronavirus disease, and it also characterises the primary impact of the COVID19 disaster on the human society, i.e. the number of cases, on the cascading effects or on the characteristics of the emergent social order in the Eastern Cape Province in South Africa. The y-axis in Figure 2 represents the absolute value of the decrease/drop in the mobility of the Eastern Cape population to retail and similar settings, but excluding the grocery stores and pharmacies, between the lockdown period and the period just prior to lockdown. This is proxy measure in the limitations in the leisure mobility which is not essential for the survival of a particular human being or community under the COVID19 pandemic lockdowns in the Eastern Cape Province of South Africa.

a)

b)

Total number of COVID19 cases in the Eastern Cape
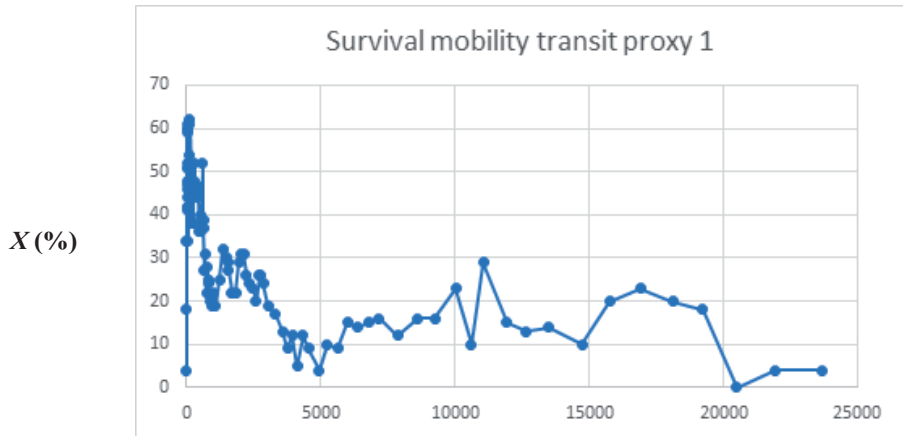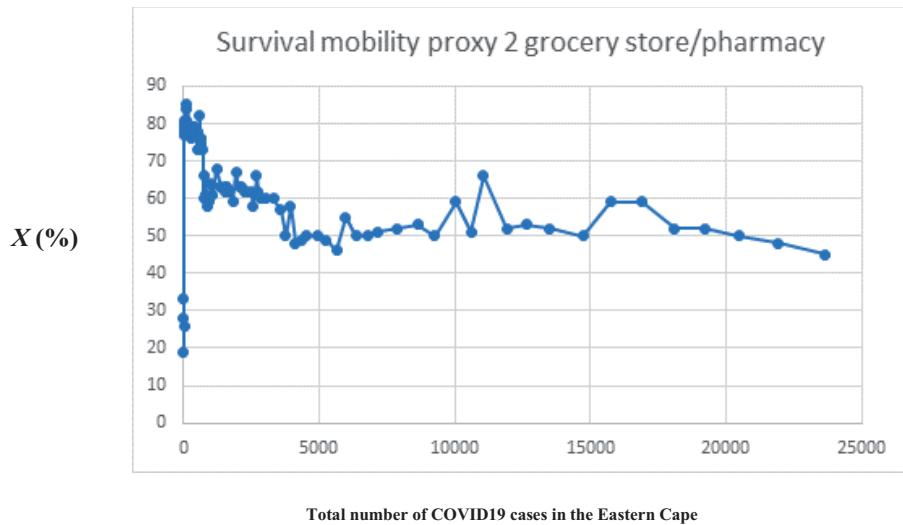
Figure 1. Changes in the survival mobility of the Eastern Cape Province of South Africa between 23rd March 2020 until 27th June 2020. The number of the total cases of COVID19 recorded in the Eastern Cape Province are shown as the measure of the time since the onset of the disaster for COVID19.

This measure is adequate to express the leisure mobility and the impact of the COVID19 cordon sanitaire on it during the harshest phase of the COVID19 lockdown in South Africa in 2020. The term to express the survival mobility proxy variables is designated as Y (%) in Figure 2. The x-axis in Figure 2 is always the total number of cumulative cases that were detected in the Eastern Cape population, during the harshest phase of the COVID19 lockdown in South Africa in 2020. The cumulative case numbers are a proxy measure for the progression of the coronavirus disease, and it also characterises the primary impact of the COVID19 disaster on the human society, i.e. the number of cases, on the cascading effects or on the characteristics of the emergent social order in the Eastern Cape Province in South Africa.

Total number of COVID19 cases in the Eastern Cape

Figure 2. Changes in the leisure mobility of the Eastern Cape Province of South Africa between 23rd March 2020 until 27th June 2020. The number of the total cases of COVID19 recorded in the Eastern Cape Province are shown as the measure of the time since the onset of the disaster for COVID19.

Based on the data in Figure 1, both proxy indicators of survival mobility changed as function of the time and as a function of the increasing number of total cases in the Eastern Cape Province of South Africa. The transit mobility decreased significantly in the Eastern Cape during the first four weeks into the harshest lockdown, but it returned to pre-lockdown level by 27th June 2020. At the same time, the grocery and pharmacy store mobility followed a similar pattern but the maximum decrease in the survival mobility, according to this indicator occurred with a two week delay. The new steady state in the post-disaster/post-harsh lockdown

conditions was not the same as pre-lockdown conditions for the grocery store/pharmacy mobility, but a different steady-state was established. For the leisure mobility, a new steady-state was established between the time periods before, during and after the harshest lockdown phase in the Eastern Cape Province, during the coronavirus pandemic. The new steady-state was again established after about two weeks, similar to the survival mobility. Decreases in the survival mobility, as indicated by the grocery store and pharmacy visits, and the decrease in leisure mobility indicate that the Eastern Cape population was observed in relation to the impact of the harshest phase of the coronavirus cordon sanitaire. This decrease can indicate two conclusions. Firstly, decrease attendance in grocery stores and retail outlets are likely to be related to the decreased resources available to the average household or residents of the Eastern Cape. Secondly, the decrease movement towards and back from retail outlets can indicate the changes in behaviour of the Eastern Cape population, i.e. the self-imposed limitations on the movement to prevent contracting the coronavirus by the residents of the province. The imposition of the COVID19 lockdown clearly impacted the Eastern Cape population and this, in the authors' opinion, demonstrates the tightly coupled nature of the socio-ecological systems during the coronavirus pandemic at the community/regional level

Length of the period of limited survival and leisure mobility would be dependent on the ability and speed of humanity's development of biomedical and other non-lockdown measures to deal with the impact of the coronavirus, e.g. the development and rollout of the vaccines would put this at the end of 2020 onwards. Pfizer/BioNTech Comirnaty vaccine (31/12/2020), SII/COVISHIELD and AstraZeneca/AZD1222 vaccines (16/02/2021), Janssen/Ad26.COV 2.S vaccine (12/03/2021), Moderna COVID-19(mRNA 1273) (04,4/2021), Sinopharm COVID-19 vaccine (07/05/2021), Sinovac-CoronaVac vaccine (01/06/2021), Bharat Biotech BBV152 COVAXIN vaccine (03/11/2021), Covovax (NVX-CoV2373) vaccine (17/12/2021) and Nuvaxovid (NVX-CoV2373) vaccine (20/12/2021) are the vaccines that are currently being used in various countries to fight COVID-19 (http://www.who.int/emergencies/diseases/novel-coronavirus-2019/questions-and-answers-hub/). In the long-term, cordon sanitaires for COVID-19 and their impacts could be seen as being aimed at increasing the chances for humanity's survival, at decreasing morbidities and mortalities from COVID-19. In the same time frame, short, medium and long-term, the pandemic's socio-economic impacts will also create a higher likelihood of humanity experiencing relaxation of the limitations of survival and leisure mobility restrictions.

Work efficiency will be compressed into the short burst of activity, i.e. majority of the work will be done in a short space of time and majority of the mundane tasks will be urgent and needed to be completed immediatety. Thus the performance of the educator's job will require the strong adherence to Pareto's rule in the temporal sense, i.e. activity during 20 % of time will result in the 80 % of the resulting and necessary work to be performed (as defined by Pisoňová et al., 2021, page 90-91). At the same time, majority of the tasks will be urgent and time-sensitive, i.e. they will belong to category A of managerial tasks according to the Eisenhower principle (as defined by Pisoňová et al., 2021, page 90-91). This shows that the application of tools of an educator, such as Moodle, will take place in a changed settings. Education during COVID19 does therefore take place at the level of one educator, who then mobilises new or repurposes existing tools to deliver the content. Self-discipline and organisation are going to be critical for the educator to navigate the multi-dimensional space-time of the COVID19 pandemic. The ethical multiplicity will require that moral resilience and using of each challenge as an opportunity, i.e. moral resilience on behalf of the educator will be required (Hylton Rushton, 2017). The truth and knowledge application will be relative to the context, thus education and the nature of resilience in the COVID19 space-time will be relative…alethic relativism will apply, but the conditions under which a single educator works will also play a role. This is analysed in the next section.

1.4.4. Impact of the COVID-19 lockdown in a single educator's household

In a way, the analysis up to this point and in this section demonstrates the microgeographical impact of the COVID19. The concept of microgeography has various dimensions and these can be expected to manifest as specific challenges in everyday life and the readjustments imposed by the cordon sanitaire at the level of a single household or individual. This can be demonstrated using the microgeographical proxy-data on the ambient temperature of a work-at-home space of an individual. The potential impact will be examined by re-interpretation of some of the data of Tandlich (2020). The original aim of the study by Tandlich (2020) was to assess the microbial water quality in Makana Local Municipality, specifically in a single household of the author, during the hardest level 5 lockdown in South Africa (Tandlich, 2020). In the process, the ambient temperature in the author's house had to be measured in order to ensure that the correct incubation temperature during the microbial water quality measurements (see Table 2 in Tandlich, 2020). Some of the data are shown below in Table 1. For clarity, the data is renamed in the following way: the particular sampling day from the study by Tandlich (2020) is renamed to "The number of the sampling day when

temperature was measured" (designated as *Day number*) and the T_{Real} is renamed to "Real ambient temperature of the working environment" (designated as $T_{actual\ work}$). The assessment of the ambient temperature in the author's house will be used to assess the optimum temperature conditions in their household and any potential deviations from the optimum. Hagström et al. (2000) reported that optimum ambient temperature is one of the most improtant environmental conditions that determines the work perfomance in a work environment. Those authors defined K_H as the "sum of degree-hour, when indoor air temperature diverges from the optimum temperature" (Hagström et al., 2000). The K_H definition is shown in Equation (1).

$$K_H = h \times \Sigma \left| T_{actual\ work}^i - T_{actual\ work}^{optimum} \right| \qquad (1)$$

In Equation (1), the number of hours that the h value was set to 4.25 hours, as the household or home workplace temperature was not outside of the 21-26 °C interval for the entire duration of the particular work day. It is assumed that when the temperature conditions inside the household were equal to the real-feel temperature (Pule et al., 2021). Finally, the day numbers were reset for the numbers of 1 to 12…as representing day on which the ambient temperature was recorded for the study of Tandlich (2020).

Table 1 Day number and the real ambient temperature in a single household in Makana Local Municipality, South Africa during the hardest COVID19 cordon sanitaire (data was adapted from Tandlich, 2020).

Day number	Interval of $T_{actual\ work}$ (°C)	Inside optimum temperature interval	Average $T_{actual\ work}$ (°C)
1	20-22	Partially	21
2	21-24	Yes	22.5
3	25-29	Partially	27
4	22	Yes	22
5	22-23	Yes	22.5
6	23	Yes	23
7	22-23	Yes	22.5

8	17-21	Partially	19
9	21	Yes	21
10	17-22	Partially	19
11	23-27	Partially	25
12	17-21	Partially	19

Pule et al. (2021) reported that humidity and ambient temperature influence the performance and attendance of the pupils in schools across the Eastern Cape Province of South Africa. The authors reported that ambient temperature would cause fatigue and lack of concentration above 26 °C, or more broadly it is possible to encountered non-ideal work performance outside of the temperature interval of 21-26 °C (Pule et al., 2021). Pule et al. (2021) indicate that the sub-intervals of ambient workplace temperature are subdivided based on the season, i.e. summer or winter time. From the viewpoint of climate change and the partially unpredictable weather pattern, as well as El-Niño in South Africa, the interval from 21 to 26 °C can be considered as applying to all conditions inside the workplace during the COVID19 pandemic, and as the climate change has been erasing the differences between the seasons. Equation (1) and the ambient temperature data in Table 1 can be used to calculate the K_H values for the working from home for the first author of the current study. This estimation, based on proxy-data, is a snapshot of the microgeography of conditions of working at home under the coronavirus lockdowns. In the K_H calculations, the $T_{\text{actual work}}^{optimum}$ inside the optimum the 21-26 °C interval was represented with the artithmetic average of 23.5 °C.

Divergence outside of the optimum interval will be observed on days when the average $T_{\text{actual work}}$ is outside of the 21-26 °C interval, i.e. days 3, 8, 10 and 12. Based on these assumptions, K_H was calculated to be equal to 17 °C×hours. In other words, the temperature conditions were outside of the optimum range for the equivalent of two working days. Thus the temperature conditions were not always for working at the author's home during the hardest phase of the COVID19 lockdown in South Africa (see Table 1 and Tandlich, 2020. Yet, the author produced data on microbial water quality and the potential impact on hygiene at a time when the maintenance of personal hygiene was one of the most fundamental elements of the containment of the spread of COVID19. Thus publication of the paper could be seen as an expression of the resilience of the first author as a university academic. Resilience here will be

a multi-dimensional concept and will reflect the author's role in South African society, as an educator, a researcher and the a person impacted by COVID19. Resilience here will be re-defined based on the particular nature of the microgeography of the educator of the academic in questions. Let's unpack the resilience at the microgeographical scale.

Tandlich (2020) is a paper which follows in a long-line of papers on the research interests, of the team led by th second author of this study, in water quality in their municipality, or at their microgeographical location (e.g. similar and previous research includes Malema et al., 2019). Therefore the collection of the microbial and temperature data at their place of residence was probably driven by the personal self-realisation as a water-quality reseacher, the need to ascertain whether drinking water provided at the Makana Local Municipality household was microbially safe, which has historically been a problem (Tandlich, 2020). At the same time, there is a need to publish such data, as the microbial water quality will be critical to maintenance of the personal hygiene of the citizens of the microgeographical area and the space in which an educator exists. The next dimension of the significance of the measurements by Tandlich (2020) is that they contribute to the knowledge generation about the COVID19 space-time and the functioning of an educator, as a citizen on the microgeographical scale while fulfilling their professional mandate. Finally, the case study of Tandlich (2020), like many other case studies globally, show that tools from before the coronavirus pandemic can be used to navigate the COVID19 space-time and they characterise the dimensions of the COVID19 space-time as a concept related to education. They face environmental challenges which are given by the changed settings of the workplace, i.e. working from home. The changed settings in the COVID19 space-time also require the use of existing tools and application of new knowledge application under different settings. The use of the H_2S test kit to measure microbial water quality preceeds the COVID19 space-time, but remains useful in it, as it can provide data about the coronavirus space-time and the tools to tackle challenges in this space-time.

Therefore cordon sanitaires would have been an outcome of human endeavours aimed at decreasing pain and increasing chances of survival, or pleasures that humans can enjoy in their lives. Thus the limitations of survival and leisure mobility could be seen as placing humanity's mobility, and indirectly humanity itself, in the state of *utilitarian duality* due to cordon sanitaires. In other words, *the utilitarian duality* is defined here by the author's using the following reasoning, i.e. cordon sanitaires were necessary to protect human life against the direct or primary health outcomes of the COVID-19 pandemic but did also caused harm to humanity indirectly through indirect impacts in terms of limiting mobility and access to

resources, as well as of pursuing of activities that can be linked to the maintenance and improvement of human wellbeing. The duality originates from the need to impose the lockdown to protect human life, i.e. there is good in the ethical driver of the cordon sanitaire imposition. At the same time, however there is pain, when the mobility of the human under lockdown is limited (see Figure 1 and 2). How does one human being start to understand the realm of limited mobility and life under the conditions of *utilitarian duality of human mobility*, in both the micro- and macro-geographical sense?

Performance of the study by Tandlich (2020) showed the reuse of existing tools and their application to new settings. It is an example of the self-management (as defined by Pisoňová et al., page 82) by the author in managing the lockdown limitations on personal mobility. The self-realisation of their ability to continue their work and produce data that can help society in managing the pandemic, at the local or microgeographical scale. This adaptation will be multi-dimensional and some of the dimensions will pose challenges more than others. Self-management and self-realisation as an academic will be important, but it will have to be balanced with the compression of microgeography of one's life, i.e. the constant overlap of personal life and the professional/work life during the work from home. Spatial these two would have been separated partially in time and space during a work day. In the COVID19 space-time, the two lives of an educator will collapse into one. At the same time, the educator or lecturer will have to manage the use of online learning management systems and to continue the education of their students. Challenges in the policy and technical standardisation of the approach to teaching and learning might arise (Mohammadi et al., 2021).

Under such fluid and unpredictable conditions, it is important to recognise that the adaptation to the confinement of one's movement will pose changes to the productivity of an educator or lecturer, i.e. working-in, adaptation and peak performance periods (as defined by Pisoňová et al., page 84) will like mix together and become indistinguishable. At the microgeographical level, an educator will have to split their responsibility of the educator towards their pupils and students and towards their own children and family members. The educator is a manager in the microgeographical space and will need to manage in disruptive nature of the integration bewteen family and professional/work life. The role of the educator and the role of the parent, as well as other roles that might arise, leads to the multiplicity of actions in terms of the categorical imperative, i.e. the need to do the right thing in terms of the multiplicity of the mandates. Therefore at the macro-geographical level, the educator needs to deals with *utilitarian duality of human mobility*, but at the micro-geographic level, it is a

utititarian multiplicity of existence. The utilitarian multiplicity of existence of an educator will originate from the fact they undertake multiple tasks during the lockdown and limitations on their personal movement, they execute multiple mandates and each one of these is mixture of the pain and pleasure, of the aspects of utilitarianism. Under these conditions and to maintain moral resilience and prevent moral residue development, or moral distress lingering (Hylton Rushton, 2017), the educator must navigate a complicated ontological realm. The educator's ability to navigate this realm will be based on the proritisation of the dimensions the *utilitarian multiplicity of existence*. One of the most challenging will be the information dimension, which is dealt with in the next section of this chapter.

1.4.5. *Information surrounding humanity in the COVID-19 space-time and educator resilience*

Understanding of the COVID-19 space-time and the proposed *utilitarian duality of human mobility*, as well as *the utilitarian multiplicity of existence*, requires critical engagement with the facts and data that characterize said space-time, i.e. the COVID-19 space-time must be subjected to critical geographical examination from the single human's perspective, as well as from a multi-human perspective. Critical thinking, as well as re-purposing of the existing knowledge, will form a fundamental part of the education of *Homo sapiens*, and has been suggested to be applied to the workplace (Murawski, 2014). This would apply to humanity in the COVID-19 space-time as many people have been educated and worked from home or a micro-geographical space. The significance of critical thinking in the 21st century is based on the complexity of human society and the socio-ecological systems that humanity is part of. Socio-ecological systems have been made complex in several ways. Firstly, the interconnectedness of the many-to-many people networks in terms of information exchange influence humanity, e.g. appearance of the digital journalists in disaster zones (Chernobrov, 2018). This increases the amount of information that an average human being is exposed to and must deal with daily, the inputs of information that a human must process to understand the COVID-19 space-time. The types of information sources include the 24/7 hour news cycle (Murawski, 2014), innovation in the data collection and processing such as the use of compression algorithms to allow for more efficient storage and email sharing of genetic information (Christley et al., 2009) and the use of social media for the communicating of biomedical information (Wong et al., 2020). Social media have been full of billions of people sharing the details of their lives globally in real-time. Thus the COVID-19 space-time is only more complex than the previous space-time that humans had existed in before 2019. The

volume of available information that a single human being might need to process can be demonstrated using the following calculation.

The amount of information produced by humanity daily can be estimated in the social media space using the definition of the unit of information (one Shannon) produced by humanity as the source and the total number of the information units produced. In this context, the probability of a certain piece of information, e.g. the exact conditions of imposition of COVID-19 lockdowns in a specific area, being read needs to be considered. Let us use a one-dimensional example of Twitter. The daily number of posts on Twitter has been reported to reach 543000000 today, on 10th January 2022 (Internet Live Stats, 2022). If all the tweets are likely to be read with equal probability, the likelihood that one tweet will be read is equal to $1/543000000$ or 1.84162×10^{-9}. The amount of information that a single human being is exposed to daily from Twitter alone (I_{tsi}) is equal to (based on Equation 1 in Lombardi et al., 2016):

$$I_{tsi} = -\log_2(1.84162 \times 10^{-9}) = 29 \; Shannons \; of \; information \tag{2}$$

If an average person has their mobility limited, then they will spend more time at home, and social media has been used to gather information about the COVID-19 space-time. Let us, therefore, assume that an average person under cordon sanitaire read 500 tweets a day. Based on the interests of the particular person, these tweets will be targeting a set of topics of interest for the specific human being. Thus the probability of reading those specific tweets will be $500/543000000$ or 9.2081×10^{-7}, and so the updated amount of information that an average person under limited mobility will be exposed to and consume will be equal to (based on Equation 1 in Lombardi et al., 2016):

$$I_{tsi} = -\log_2(9.2081 \times 10^{-7}) = 20.0 \; Shannons \; of \; information \tag{3}$$

Verbal communication includes typically interacting with people in person. If an average human being interacts with three family members daily and about ten co-workers, then let's assume that there are ten interactions with each one of the human's co-workers under conditions of normal survival and leisure mobility. Let's further assume that each interaction is equivalent to 1 tweet. If all such interactions are equally probable to be communicated, then there are 80 interactions or tweet-equivalents. The likelihood that one tweet-equivalent will be read equals $1/80$ or 1.25×10^{-2}. The amount of information which a single human being is

exposed to daily from interactions with other human beings under conditions of unlimited survival and leisure mobility (I_{ssi}) is equal to (based on Equation 1 in Lombardi et al., 2016):

$$I_{ssi} = -\log_2(0.0125) = 6.3 \; Shannons \; of \; information \qquad (4)$$

This simple calculation indicates that in the one-dimension of social media communication, the amount of information that a single human being needs to process daily, or could potentially be influenced by, is significantly higher than the amount of information processed through verbal communication between humans in a micro-geographical space. The significance of the verbal communication would have decreased during limitations on survival and leisure mobility. As a result, there will likely be increased information pressure on a single human being and humanity as a whole species during the limitation of survival and leisure mobility. In other words, the total Shannons of information that a single human will have to process daily will likely be much higher as the COVID-19 space-time is multi-dimensional in terms of human existence in it (based on the authors' interpretation of the work of Marr, 2018). Sorting through information will have to be done by a single human being and humanity using the principles of critical thinking and critical evaluation of the relevance and validity of the various data sources in the multi-dimensional COVID-19 space-time with limited survival and leisure mobility. As a result, the significance of critical thinking in the COVID-19 space-time will increase so that a semi-normal functioning of human society can be maintained.

The information complexity of the COVID19 space-time will require the educator to use their previous knowledge from before the COVID19 pandemic started, their knowledge about teaching methods, about the Based on the local nature of the learning management systems, and the new knowledge which they would have accumulated by self-management during the coronavirus lockdown. Application of the principles of critical thinking, an educator will have to navigate the complex ontological realm of the utilitarian multiplicity of their microgeographical existence. The theoretical grounding of the execution of their educator mandate will be based on the principles of wisdom and the work of Ryan (2012). This wisdom will be based on the combination of the hybrid theory of wisdom and the deep rationality theory (Ryan, 2012, pages 104 and 108). The hybrid theory of wisdom states that an educator is considered wise, if they "have extensive factual and theoretical knowledge (academic knowledge)", if said educator "knows how to live well", if that educator is "successful at living well" and finally if that the educator holds "very few unjustified beliefs" (Ryan, 2012, page 104). In the same context, the deep rationality theory would also apply here and it that an

educator is wise if they "have a wide variety of epistemically justified beliefs on a wide variety of valuable academic subjects and on how to live rationally (epistemically, morally and practically)", if the educator in question has "very few unjustified beliefs and they are sensitive to his or her limitations" (Ryan, 2012, page 108). In addition, said individual is wise if they are "deeply committed to both: acquiring wider, deeper, and more rational beliefs about reality"; and if they are "living rationally (practically, emotionally and morally)" (Ryan, 2012, page 108). The hybrid theory of wisdom and the deep rationality theory, as outlined and/or developed by Ryan (2012), have been critiqued, e.g. the term rationality not being sufficiently defined by Ryan (Fileva and Tresan, 2013). However, the combination of these two theories provides a good theoretical grounding in the explanation for the uncertainty of disaster landscape and the educator's resilience to carry out their mandate in the ontological realm of the COVID19 space-time.

To sum up resilience, the definitions by Todman et al. (2016) are useful, namely disturbance and perturbation. The definitions are as follows (Todman et al., 2016):

…"disturbance as a sudden shock imposed on the system by a change in conditions external to the system (e.g. a sudden increase in ambient temperature) and perturbation as the change in the level of function of a system due to such a disturbance."

The educator must be able to maintain a balance between their roles in the *utilitarian multiplicity of existence* and the need to move forward to deal with disruptions and perturbations, based on previous knowledge and wisdom, as interpreted based on the hybrid theory of wisdom and the deep rationality theory of wisdom. The educator must exhibit moral resilience, as seeing each situation as a challenge and opportunity for improvement and the application of the principles of critical thinking.

2. Innovations in the management of adult education

2.1. Theoretical background of adult education

Erika Juhász

As the system of concepts of adult training - andragogy - adult education - is extremely complex in the languages and terminology of different countries (Juhász, 2016), let us examine the conceptual differences for a start.

2.1.1. *Conceptual differences in the European interpretation of adult education*

While "in Germany, this field is now called further education (Weiterbildung) after using several notions ranging from national education through the concepts of folk education to adult education" (Knoll, & Künzel, 1980), France has created a number of competing and complementary concepts. (éducation populaire, éducation continue, éducation des adultes, éducation extra-scolaire, anragogie, reciclage, promotion culturelle, promotion individuelle et collective, animation, activités socio-éducatives, organisation des loisir." (Trichaud, 1968, p.10). This diversity of concepts, the various terms, which can often be understood only in the light of country-specific traditions, make the researcher's task extremely difficult (Jütte, 1992). Since the 1990s, training institutions have focused on the theoretical and practical training of adults, and they tended to forget that during this type of education and training, adults can also develop their personality, in this way education can also takes place (Zrinszky, 2005).

Other possible division and categorization of the fields of adult education also appear in the literature, the most standard categories are formal and non-formal adult education types. Accordingly, formal adult education "More generally, formal education, includes adult education within the public school system or the system of higher education institutions. From a different aspect, any training also other than the above mentioned types, which is providing qualifications within an institutional framework." (Csoma, 2002b, p. 218). According to broader interpretations (e.g. Engler, & Márkus, 2016), higher education can also be part of formal adult education, for instanc part-time training programmes in higher education. Non-formal adult education „More generally, non-formal education, which includes the education and training of young people and adults outside the school system and higher education. …Thus, non-formal adult education is a non-graduate program implemented in or outside an institutional organization, that is outside public education and higher education." (Csoma,

2002c, p. 395). By now the concept has been reinterpreted, which means that general adult education and vocational training are also included in it (see Györgyi et. al., 2015).

The third important area of adult education is informal learning, which is a natural part of everyday life. It does not necessarily mean deliberate learning and the individuals themselves may not recognize the development of their knowledge and skills. (European Commission, 2000) We consider informal adult learning to be a voluntary, extracurricular and non-school-based learning process in any location, linked to any life activity. When categorizing these, we distinguish on the one hand unconscious and involuntary, unorganized, mostly random, so-called spontaneous learning processes and, on the other hand, conscious, voluntary and organized learning processes - these are called automonous learning (comp. Herczegh, Tornyi, & Tátrai, 2012; Simándi, & Oszlánczi, 2012), or in some literature personal learning (comp. Szabó, & Kenyeres, 2014). Thus, we consider autonomous learning when learning is initiated by the learners, they implement an independent, guided learning program, they search for information that they do not remember well, check their present knowledge, refresh the previously acquired knowledge by their own decision. This autonomous learning can be related to the job or learning activity of the adult as well as to their hobby and everyday life activity, or even to the activity of renewing their wardrobe or trying out a new recipe. This type of autonomous learning can be a process with goals set by the student, but in many cases it can also be an effective complement to formal and/or non-formal learning. The spread of the notion in Hungary dates back to the 1960s with the concept of self-education and self-instruction by Mátyás Durkó (1998), and it was also integrated in the concept of integrative andragogy (Szabó, & Durkó, 2006).

Our idea about the relationship between the different forms of learning is presented in the following figure (Juhász, 2016).

The place of autonomous learning in the adult learning system
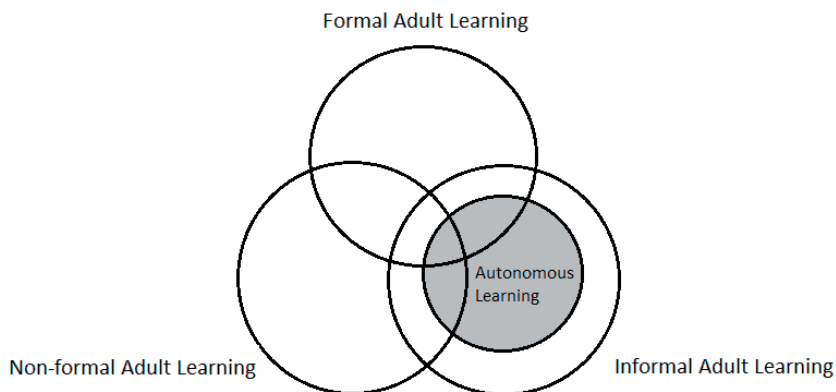
Autonomous learning is clearly a part of informal learning and - as we tried to indicate - it is the smaller part (the bigger part is the spontaneous, random learning process). However, we would like to highlight that no form of learning can take place without independent, voluntary and organized autonomous learning, so autonomous learning is as part of formal and non-formal adult learning as well - to a different extent in different courses, as shown by the intersecting sets in the figure.We believe that these skills, competencies, and knowledge, which the individual acquires in the above mentioned way, complement the learning, knowledge and competencies attained in or out of the school system.

Obviously, they not replace each other, and it is also questionable whether it is possible or necessary to channel it into formal training licenses or certificates. Yet, we consider it important for the individual to be aware that their learning is lifelong, even if it is not done in official-formal but self-organized ways. Raising awareness of this makes autonomous forms of learning a commitment and contributes to improving the quality of life of the individual and the society as a whole.

However, in addition to recognizing broadly interpreted learning frameworks, it is also an important factor that as we age, instead of the knowledge acquired in the formal education system, non-formal educational opportunities and informal learning dominate more and more, as shown by research on learning characteristics in Hungary (Radó et. al., 2009).

The scheme of the complex learning activity
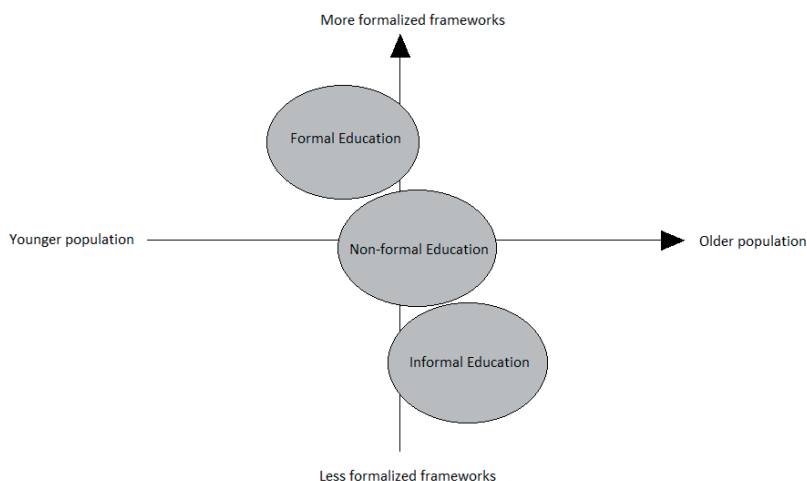
Source: Radó et. al., 2009

2.1.2. *Functions of adult education and their transformation*

The functions of adult education have also changed since the 1990s, its importance has increased as novel tasks are to be solved. It does not only cover the replacement of knowledge failed to be acquired in childhood or does nor only focus on the training of the under-educated and the unemployed, as it has been the case during history. It has become part of the real market, as an indispensable factor in economic life, it plays a crucial role in developing the adaptability and renewing skills of the workforce (Zrinszky, 1992, p. 109). On the other hand, not only the unemployed but also the workers need to train themselves more frequently so that they can effectively integrate the acquired up-to-date knowledge of their field into their daily practice. (Zachár, 2008) Based on all this, the main functions of adult education are the following:

1. Institutional adult education has long been considered an extension of the school system of the emerging generation, partly to allow a 'second way' to education, and partly to close or reduce the gap between emerging social needs and mainstream schooling, thus, only a supplementary function was attributed to adult education. (Zrinszky, 1992, p. 105; Csoma, 2002a, p. 173-174).

2. In addition to the supplementary function of school-based adult education, there is the further training function, which means helping to obtain continuous vocational training and a higher level of vocational qualification (Csoma, 2002, p. 173-174). In

developed market economies, this developing training meets the needs of the employers, who organize finance and provide other support to the trainings. (Singer, 2003, p. 8).

3. The third main function of adult education is to help the employee to acquire marketable professional knowledge and/or qualifications during the period of unemployment, namely by the so-called employment-support training (Zachár, 2005).

4. The purpose of the fourth, so-called complementary function is to help the effectiveness of vocational training with the help of additional courses. (Csoma, 2002a, p. 173-174). The topics of these trainings are on an extremely wide scale aiming at providing, for instance, career orientation skills, language and IT skills (Singer, 2003, p. 9).

According to the *content of adult education* there are also a number of categories, based on which the main contents of adult education can be the following (Durkó, 1999, p. 58-59):

i. General: supplementary development of fundamental and general knowledge. Levels: primary and secondary, document: certificate with national validity.

ii. Specialized: education in different specializations based on fundamental and general knowledge. It consists of remedial courses for the unemployed preparing them for new professions, as well as leadership and management trainings.

iii. Public-community, civic: helps individuals to integrate into the community and adapt.

iv. Social: training and education of social workers working in the field of social care, health care and hygiene.

v. Criminal: aims to re-socialize those sentenced to imprisonment.

vi. Military: the training and further training of contracted and professional military personnel (formerly also conscripts).

Religious, devotional: Trainings organized by different churches and denominations

2.2. Lifelong learning competencies of adults

Erika Juhász

When reaching adulthood, more and more competencies are required, which need to be developed continuously lifelong. The concept of adulthood is changing and the key competences associated with it are in transition across Europe (Juhász, 2016).

2.2.1. Adulthood and its competencies

When interpreting the concept of adulthood, it is the stage of life after the upbringing, that is, the physical and mental maturity that an individual has reached at a certain age as a result of internal development and external influences. Taking into account a number of determinants (e.g.: gender, culture, social time, financial situation) which modulate the notion, the definition of adulthood appears in the literature in diffent ways (see Juhász, 2001 among others for details). To put it simply, currently we consider *adults* over the age of 18 by their chronological calendar age. In addition, by legal terms, the definition also focuses on adults who are capable of acting and independent decision-making. It is also worth highlighting that from the point of view of adult education, as a result of reducing the compulsory education to the age of 16, the 16-18 age group may also appear in adult education, e.g.: 16-17-year-old students are transferred to an adult education grammar schools.

There has never been a greater need for access to up-to-date information and knowledge in order to move towards a knowledge-based society and economy, strengthen the competitiveness of Europe and improve the employability and adaptability of the workforce (Tamášova, & Juhász, 2019). Thus, a change in the economy also means a change in the demands towards the labor market. Today, expertise alone is not enough, one needs to have certain competencies (comp. Farkas, 2006a) which influence the development of the economy and also have a strong impact on the life of the individual: both on their personal and job relationships and on the job itself. According to the summary of Zs. Vajda, competence, originating from the Latin competo (aptitude, skillfulness) is "basically an intellectual (cognitive) trait, but motivational elements, abilities, and other emotional factors also play an important role" (Vajda, 2002, p. 301).

When categorizing competencies, we can talk about specialized (e.g.: performing a specific workflow), methodological (e.g.: thinking and decision-making ability, innovation skills) or social (e.g.: language and communication skills, teamwork) competencies (Farkas,

2006b). Social, lifestyle and environmental competencies, as well as career building competencies, (the latter are also key to bridging the most disadvantaged) are key objectives of the EU support policy (see Gönczöl, & Vass, 2004 for details).

Five basic characteristics of competencies can be highlighted (Bellier, 1998; Hrmo, & Turek, 2003):

- Competence is a set of skills considered informal, which is fundamentally different from traditional skills required in vocational training.
- Competence is always linked to an action, it can be precisely defined and facilitates the performance of tasks.
- Competence is always related to a specific context, to a specific situation, and mainly raises the theoretical problem of transferability.
- Competencies cover three groups of skills. Knowledge, i.e. learning material, the experience and skills, as well as the ability to socialize and/or the forms of antisocial behavior.
- These capabilities are integrated, structured, and built on each other. They form sources of capital that, when combined together, enable the activity itself and by this the performance itself.

2.2.2. Competences for lifelong learning

Education even from kindergarten age can undertake the formation and most of the development of these skills (Fichnová, & Szobiová, 2007). Contrary to factual information, at all the levels, the modern education system aims to demonstrate the competencies, the general cognitive behavioral or social skills that we need all the time to work and integrate into the society. The most important of these are the following (comp. Halász, 2001; OECD, 2012; Tamášová, V. et al, 2013):

i.   flexibility and adaptability: the ability to react quickly to change;
ii. ability to learn independently and socially: one of the basic conditions for flexibility is the ability to absorb, understand and apply new knowledge;
iii. problem solving ability, creativity: independent decision making;
iv. ability to manage insecurity: the ability to take individual and social action when handling information and communication between people (with a focus on conflict management) determines adaptability;

v.   reliability and predictability: accurate compliance with control;

vi.   ability to cooperate and communicate directly: the basis and condition of teamwork is the ability to communicate;

vii.   ability to apply written communication: ability to process written information not only at the level of reading but also at the level of conveying information;

viii.   communication in a foreign language and across different cultures: not solely language translation, but understanding and tolerating, concepts, values, etc.

ix.   ability to use information and communication technology (ICT): the use of modern technology (computer) and the ability to handle the changed norms influenced by it.

By now this important task of education can mean that the basic development of these competencies is important at all levels of the education system and the system has a key role to play in preparing students for independent, non-formal and informal learning throughout their lives. They can also develop these basic skills depending on the situation (adjusting to the specific private or labour market situation) (Juhász, & Pete, 2013).

According to Wilkens - Keller - Schmette, the types of competencies include:

- network competence (network formation, management, etc.)
- organizational competence (cooperation, self - organization, bonding skills, etc.)
- group competence (ability to act based on interaction, professional, methodological, social and self-competences of the group)
- individual competence (ability to act regardless of the situation: self-efficacy, professional, methodological, social and self-competence, qualification) (Wilkens, Keller, & Schmette, 2006, p. 124).

The division described by Vass (2008):

- Communication competence: "The ability of an individual to exchange information in an interaction between two or more people using a common signal system: to receive and transmit information regardless of the signals or systems in which it is presented. Ability for the individual to actively participate in direct human interactions" (Vass, 2008:12).

- Collaborative competence: "a set of skills based on the cooperation between the participants, formed to achieve different goals, and it also plays a key developing role in the field of self-assessment and problem solving." (Vass, 2008, p. 12).

- Problem-solving competence: the ability to solve complex problems, the ability to apply cognitive procedures in real situations. Such competences are: troubleshooting, which is the discovery of cause and effect between variables, working out proposals for sorting out problems, which is an innate competence (Csapó, 2005).

According to Nagy (2000), there are 4 types of competencies :

- ✓ private, personal competence: serves the survival of the individual
- ✓ social competence: servres the survival of the species
- ✓ cognitive competence: means the processing of information as the individual cannot function without processing the received information. This is also the condition for the operation of the previous two functions of existance.
- ✓ special competence: the competences required for the acquisition of certain professions developed during the social division of labor.

2.2.3. *Core competencies in adulthood*

The European Parliament and the Council of Europe declared the development of core competences in their recommendation of December 2006. They put a special emphasis on the acquisition of the so-called key competences needed for personal fulfillment and development, active civic life, social inclusion and employment. The key competencies are the following (European Parliament, 2006):

1. communication in the mother tongue,
2. communication in a foreign language [3],
3. mathematical competence and core competences in science and technology,
4. digital competence,
5. acquisition of learning [4],
6. social and civic competences;
7. initiative and entrepreneurial competence (Hlaďo, Lazarová, & Hloušková, 2019);
8. cultural awareness and expression.

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[3] The White Paper on Education and Training, in its fourth objective, considers it important for as many people as possible to speak three Community languages (European Commission, 1995).

[4] The report of the International Commission to UNESCO, chaired by *Jacques Delors*, on 21st century education issues considers the principle of learning (Learning to Know) as one of the cornerstones of education, which is related to acquiring skill to gain knowledge, study and learn individually (Delors, 1995).

The European Training Foundation has examined (among other things) which elements of training are related to the key skills for employability and orientation in life (European Training Foundation, 1998). Within this framework, eight areas of competence were distinguished and the elements of each of them in the training were named.

Areas of competence

Core competencies

Comprehensive competencies

Life management competencies

Management competencies

Areas of competencies

Key competencies

Entrepreneurial compatencies

Employment competencies

Social and civic competencies
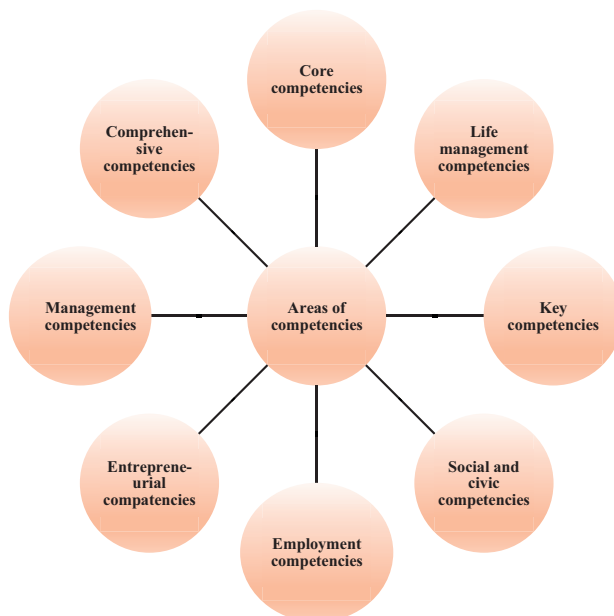
Source: European Training Foundation, 1998.

The first area of this kind is the range of core competencies. In many cases, it is also called the "gateway" to skills. These skills enable people to write, read, speak and use numbers at a specific level that is necessary for them to function at work and in the society. This is followed by life management competencies, which jointly enable people to contribute to full social and community life. The next area is the range of the above mentioned key competencies.

These skills enable people to improve their performance effectively in a variety of forms either in the field of work, society or communities. They develop learning skills as well as language competence (Harťanská, & Muchálová, 2018). The fourth area is the group of social and civic competences. This establishes the foundations of orientation in life, participation in the comunity and democracy. The fifth area is the employment competencies, these are the skills that employers deal with the most. They facilitate the achievement of employability and

help people improve their career (Krásna, Geršicová, & Tamášová, 2016). We are gradually moving towards the higher levels of competencies, thus, the sixth area is the entrepreneurial competencies, which already include self-management related to the world of work, but even self-employment skills. The seventh area includes management competencies, which cover the representation, management and administration of others in addition to managing one's own life (Gabrhelová, & Pasternáková, 2016; Fortis, 2018). The highest level of our skills is the comprehensive competencies which enable us to understand and interpret the widest range of contexts. People with a high level of comprehensive competencies will make excellent advisors, strategists and coaches (Frankovský, & Lajčin, 2012). There are also a number of overlapping skill areas: the same skills appear and can be used in several competencies. For instance, communication also arises in the areas of key competencies, employment competencies, entrepreneurial competencies, and management competencies. Or, for another instance, problem-solving skills appear in each of these four areas.

When planning trainings, both vocational training and adult education use the divisions of the European Qualifications Framework (European Commission, 2008), which is also used by other fields of training (e.g.: adult education licensing process, planning professional trainings, etc.). The basis of this is the output regulation: we describe what (1) elements of knowledge, (2) abilities, (3) attitudes and (4) responsibilities, autonomy the learners acquire during the training. These areas of competence are necessary to acquire a profession, intensify the knowledge or move to the next level of training.

Based on the examples of adult learning in Hungary, Slovakia, Romania and The Ukraine, a number of examples of adult learning are presented in English in the following volumes: Learning in Adulthood. Cases of lifelong learning (Márkus, Máté-Szabó, Takács, & Miklósi, 2019), and Best Practises in Cultural Learning (Juhász, & Kállay, 2019).

2.3. The institutional system of adult education and vocational training

Erika Juhász

Although adult learning contains a number of non-formal and informal learning elements, and these come to the front as one ages, the most significant forms of learning take place within an institutionalized framework, the system of which is very different throughout Europe, however, we can identify some schemes that can be observed in all the countries.

2.3.1. The division of adult education and vocational training institutions

Several *divisions* of the institutional system of adult and vocational education are known. The main ones are:

- Formal and informal
- Organized by different maintainers
  - State, public (e.g.: a secondary school or university offering adult education)
  - Business, profit-oriented (e.g.: adult training enterprises, corporate adult training)
  - Civic (e.g.: associations, foundations, folk high schools for adult education)
- School-based and out-of-school
  - in the school system: for obtaining primary, secondary and higher education and/or vocational qualifications
  - out of the school system - four-pole institutional system
    - public institutions: public education, higher education, other state and public institutions
    - adult education enterprises
    - NGOs: foundations, associations, folk high schools
    - internal education units of business organizations (corporate adult education).

If we look at the division according to the types of adult education institutions, we can distinguish *school-based* and *out-of-school education* categories (Zrinszky, 2005). Mátyás Durkó contributes to this classification by setting up an intermediate category, which is, in his opinion, a transitional system of course-based adult education between the compulsory school system and the non-compulsory, out-of-school system (Durkó, 1999, p. 60). Thus we can see that it is difficult to draw the lines between formal and non-formal, as well as in-school and out-of-school trainings and institutions. For example, a large number of non-formal trainings, such as trainings, camps and courses, also take place in school-based settings.

By comparing the main characteristics of these types of institutions, we get closer to understanding their distinction. Due to the abundance of characteristics, we compare the main aspects in tables.

Comparison of in-school and out-of-school adult education through some characteristic features

	School-based adult education	Out-of-school adult education
Main goal	Providing supplementary training for adults	Helping job seeking (employment) and job retention
Tasks	Increasing opportunities for further education and employment	Increasing job opportunities and job retention, developing job hunting and work-related competencies
Orientation	General or vocational training	General or vocational training
Training schedule	Evening, correspondence training	Dominantly course based
Scenes	○ Grade 1-4. (Acquisition of Basic Skills) - "Schools for a second chance" ○ 5-8. Grade 5-8 (supplementing incomplete primary education) - "Schools for a second chance ", the aim is to join secondary education ○ Secondary education (gives a high school certificate, unified concept of concept) - since the 1990s there has been a mass demand for high school certificates, thus primaily it opened a gateway to higher education, and to positions in the labor market	○ Institutions in the public sector adult education in public education and higher education institutions ○ Adult education enterprises ○ Non-governmental institutions: mainly foundations, associations, and folk high schools and other organizations operating in the same form ○ Internal training scenes of employers/companies internal training and further training system of the organisations

Spatial location	Predominantly urban institutions (due to funding problems), their proportion is low, accessibility is a problem for the rural population	Mainly urban institutions (due to funding problems), some appear in small settlements (e.g.: folk high schools) but again, accessibility is a problem for the rural population
Maintainers	Primarily the state or local governments, foundations, in some cases the private sector (mainly in the field of school-based vocational training)	Mainly enterprises from the private sector, but also anyone: from the public sector, employers, the civil sector, etc.

(Comp. Csoma, 2002a; Juhász, 2007; Koltai, 2002; Mayer, 2004; OFI, 2008; Zachár, 2008)

Main **differences in school-based and out-of-school courses** along some key aspects:

Aspect	School-based training	Out-of-school traning
Personal atmosphere	More impersonal (more formal)	More personal (familiarity)
Role in the process	Pupil/student	Participant
Content	Curriculum, knowledge based	Competency based
Motivation	Qualification	Knowledge
Schedule	Rigid, regulated	More flexible
Evaluation	Grade	Text evaluation / impressions

Of course, these differences do not appear in an extreme way between in-school and out-of-school training, these traits are only more typical. For instance, school-based training is more formal and impersonal, they exist regardless of the will of the group members, while out-of-school training is more informal, more personal, based on the relationship between the teachers and participants.

2.3.2. *Adult and vocational education in the ISCED system*

Adult education can appear at all levels of education, which means that individual institutions can be placed in the *ISCED system* (International Standard Classification of Education) adopted by UNESCO (United Nations Educational, Scientific and Cultural Organization). ISCED divides education levels into levels between 0-8, which correspond to approximately the following levels of education in Hungarian institutions:

Level 0	Pre - school (early childhood) education
Level 1	Primary education, first level/degree of basic education
Level 2	Lower secondary education
Level 3	Upper secondary education
Level 4	Post-secondary, not higher education
Level 5	Short-term higher education studies
Level 6	First level of higher education (BA / BSc)
Level 7	Second level of higher education (MA / MSC)
Level 8	Obtaining a doctoral degree

With this in mind, it can also be seen that the training of adults appears primarily at levels 1-5: partly as a supplement for missing qualifications and to a greater extent in the form of training and further training built on that specific level. The so-called ISCED system differentiates a total of 11 comprehensive fields of education and training, which are the following : Such as: general programs (0), Education (1), Humanities and Arts (2), Social Sciences, Media and Information Sciences (3), Business Sciences, Administration Management and Law (4), Natural Sciences, Mathematics and Statistics (5), Information and Communication Technologies (6), Engineering, Mechanical Engineering and Construction (7), Agriculture, Forestry, Fishery and Veterinary Science (8), Health and Public Welfare (9), Services (10). Within the broad field, ISCED assigns a separate two-digit code number to the narrower groups of profession. In the narrower professional groups, a three-digit code number indicates the

detailed fields of specialization, within which the specific education and training programs are identified (UNESCO, 2012). This division of branches of training is characteristic primarily of the third, but especially the fourth level of training. Of course, various combinations of these are also very common, especially in the case of the so-called multidisciplinary courses and majors that have appeared recently. The standard type of adult education can occur at all levels except for levels 0 and 8. At levels 1-2-3 the so-called "Schools for a second chance" are remarkably common where the missing qualification is supplied in adulthood. However, mass adult education takes place primarily at levels 3-4, and although we can also talk about adult education at levels 5-7, again only with a lower rate of participants, as we label the professional further trainings here that are mostly based on a degree.

2.4. Lifelong learning and innovation in the labour market

   Viola Tamášová

A society's development depends on active individuals and their understanding of the time and current knowledge. Today's society places very high demands on people. If a person wants to enter the labour market and be successful, they must meet requirements that are placed on him, and must develop his knowledge, skills, and ability in order to keep ahead of the ever strengthening competition (Juhász, 2016).

Lifelong learning (LLL) has been increasingly coming to the forefront of people's interest. It receives attention that is related to increasing average life expectancy and, naturally, to the constant technological progress of the 21st century. It is necessary to constantly adapt to the current time, i.e. to constantly learn. Veteška J. et al. (2019, 2020) note that investments must be made in people, not just in the ordinary schooling system, but also in lifelong learning. The Lisbon European Council of March 2000, which set the new direction for current education policy, was a decisive moment. Lifelong learning has become a main principle of education policy in the countries of the European Union. In 2000, the European Commission drew up a basic document *Memorandum on Lifelong Learning*, which was presented for European public debate in 2001 with the aim of: conducting the debate as close as possible to the citizens. The document contains the proposed strategy for education in the EU, and specifically sets out the future of lifelong learning. The document was prepared on the basis of surveys of education systems and the concept of lifelong learning in all EU member states (Memorandum on Lifelong Learning, 2001).

2.4.1. Lifelong learning in the framework of the overall education system of the Slovak Republic

Lifelong learning according to Act. 568/2009 Coll. means continuous education in all stages of a person's life. This comprises all activities pursued during a lifetime in order to improve knowledge, skills, and abilities. Lifelong learning as a basic principle of education applied in the education system of the Slovak Republic consists of: *school education* and *further education* linking to the level of education attained in school education.

❖ *School education* – is education conducted in kindergartens, primary schools, grammar schools, secondary vocational colleges, conservatories, schools for pupils with special educational needs established according to special regulations, study in accredited study

programmes at universities, conducted according to a special regulation.

❖ *Further education* – is education at educational institutions of further education linking to school education or other education that links to school education. Further education makes it possible to obtain a partial qualification or full qualification, or to supplement, renew, extend, or deepen a qualification attained in the school environment, or satisfy interests and acquire the capacity to participate in the life of civil society. Further education is conducted in the state language (Act no. 568/2009 Coll. , page 1).

The types of further education are:

- ≈ *continuing vocational training* in an accredited training programme leading to the addition, renewal, extension or deepening of qualification necessary for performing a professional activity (Marks, 2015),

- ≈ *retraining* in an accredited educational programme that leads to acquiring a partial qualification or to acquiring a full qualification – professional competence for one or more work activities in a profession other than that for which the natural person attained a qualification by means of school education,

- ≈ *continual education* by which the participant deepens or renews his qualification,

- ≈ *hobby education*, civic education, education of seniors and other education by which the participant satisfies his interests and is involved in the life of civil society.

2.4.2. *Concept of lifelong learning in the EU and Slovak Republic*

With the development of new technologies, the globalization of the economy, the advent of information societies, and the transformation of the labour market, there arises a need for lifelong learning (Barnová, & Krásna, 2019). To fulfil this need, it is important to create conditions and provide opportunities for every citizen of the Slovak Republic to participate in it. By raising their qualifications, a citizen has a better chance of finding work on the labour market, raising their personal development, and has a better chance of participating in society's development.

The European Commission in the European Commission's White Paper: *"Teaching and learning - towards a learning society"* (1995) presented proposals for the main goals leading toward building a learning society, such as: promoting interest in acquiring new knowledge, closer cooperation between schools and businesses, combating exclusion on the grounds of disability or a socially disadvantaged environment, mastering the three languages of the

European Community and equal access to investment in training (https://alkp.sk/wp-content/uploads/2016/05/2005koncepciacelozivotnehovzdelavaniaSR.pdf).

According to the Lifelong Learning Strategy, developed by the Institute for Work & Family Research in 2007, the main objective was to complete the lifelong learning system and the lifelong guidance system so that the system would make it easier for citizens to access information databases for guidance services, financing lifelong guidance, and raising the professionalisation of lifelong guidance services necessary for the repeated and flexible attainment of new qualifications by means of quality education acquired outside of the formal and in an informal system of education, and in a system of informal learning.

A problem area of the Strategy in 2011 was: "System and structure of guidance services for adults." Available guidance services are one of the priorities of the Strategy Action Plan 2011, drawn up by the Ministry of Education, Science, Research and Sport of the Slovak Republic (https://www.minedu.sk/data/files/2606_akcny-plan-strategie-czv-2011_final.pdf).

The Strategy Action Plan 2011 elaborated visions in the following priorities: 1. Attractive lifelong learning, 2. Education relevant to the labour market and employment, 3. Available guidance services, 4. Access to lifelong learning.

According to the expert group, it was necessary to focus on the overall situation, and on those who had influence on this overall situation. These included *schools, further education institutions, citizens, employers, and guidance centres.*

- *Citizen* is a key element in lifelong learning. He attains qualification at an educational institution on the basis of employers' needs so that he can find employment in the labour market.
- *Employer* provides information on what skills a trainee of the education should gain in order to perform work activities. Further education of the employees is performed at educational institutions. - *Guidance centre* provides guidance services for anyone interested in their personal (civic) or professional (vocational) development. It provides guidance services individually and two groups in the form of consultations, has available up-to-date information on labour market requirements and education opportunities. - *Educational institution* is in close contact with the employer and the guidance centre in order to exchange knowledge. It provides education based on labour market needs and on citizens' requirements. - *State* creates the conditions for everyone to have access to lifelong learning. It also puts in place the legislative and economic conditions for the purpose of developing lifelong learning.

The role of measurable indicators (https://www.minedu.sk/data/files/1899.pdf) was to monitor the development in the given area of interest on the chosen timeline, enabling evaluation of the strategy's added value for individuals and other actors, but also the contribution of system tools for achieving the strategy's objectives. The indicator also made it possible to monitor trends in selected areas of interest, provide statistically verifiable data, and enable comparison with development in other countries.

2.4.2.1. Development of the concept of lifelong learning

Important documents relating to lifelong learning, according to the SR Ministry of Education, are: Lifelong Learning for All (OECD 1996), Hamburg Declaration (CONFINTEA V) – Report on the Future of Adult Learning (1997), Bologna Charter – Objectives and Efforts for Lifelong Learning – Summit G 8 (1999), Lisbon European Council Conclusions (2000), Council Resolution on LLL of 27. 6. 2002, Copenhagen Declaration on Enhanced European Cooperation in Vocational Education and Training (2002), Education and Training 2010 – European Commission document of 11. 11. 2003. The Memorandum on Lifelong Learning (Brussels, November 2000) became an important material in the European area for lifelong learning, and in 2002 a Report on the implementation of lifelong learning in the European area was prepared. Both materials emphasize the importance of lifelong learning for EU countries. (https://alkp.sk/wpcontent/uploads/2016/05/2005_koncepcia_celozivotneho_vzdelavania_SR. pdf)

How was the development of lifelong learning reflected in EU documents? Decision No 1720/2006 of the European Parliament and of the Council of the EU of 15 November 2006 established an action program in the field of lifelong learning. The Lifelong Learning Programme focused on the following specific objectives:

∗ to contribute to the development of quality lifelong learning and to promote high performance, innovation and a European dimension in systems and practices in this field,

∗ support the implementation of the European LLL process,

∗ to help increase the quality, attractiveness, and accessibility of the lifelong learning opportunities available in Member States,

∗ strengthen the contribution of lifelong learning to social cohesion, active citizenship, intercultural dialogue, gender equality and personal satisfaction,

∗ to help promote creativity, competitiveness, employment, and the development of entrepreneurial spirit,

∗ contribute to increasing participation in lifelong learning of people of all ages, including people with special needs and disadvantaged groups, regardless of their socio-economic background,

∗ to promote language learning and linguistic diversity,

∗ to support the development of ICT-supported innovations in content, services, pedagogies, and practice for lifelong learning,

∗ to strengthen the role of LLL in creating an awareness of European citizenship based on understanding and respect for human rights and democracy, and to promote tolerance and respect for other peoples and cultures,

∗ to promote cooperation in ensuring quality in all sectors of education and training in Europe,

∗ to encourage the best possible use of results, innovative outputs and practices and ensure the exchange of best practices in the areas covered by the LLL programme in order to improve the quality of education and training.

(https://eur-lex.europa.eu/legal-content/SK/TXT/PDF/?uri=CELEX:32006D1720&from=EN)

According to D. Drapáková and R. Geist (euractiv.sk), Slovakia lags behind the European trend in lifelong learning. In 2013, the participation of adults in education in the Slovak Republic was 3.1%, and in 2018 it rose to only 4%. Neighbouring countries (including V4) are doing better.

The 21st century is a period of rapid changes, a large increase in information, innovation, especially in the field of information technology, and this trend is persistently advancing. Technological developments and changes in the labour market require lifelong learning. Education systems are fully involved in the development of society and are used by people of all ages with a view to acquiring new education for personal and societal needs.

However, education systems and training are not the only factors in the field of lifelong learning. The joint effort has resulted in various initiatives aimed at involvement in the world of work, the engagement in economic interests and the acquisition of social partners.

Due to the increased pressure of the new way of living in the 21st century, each individual is forced to change their lifestyle. People are forced to improve their personal competences, professional skills, and knowledge in order to cope with the labour market demands and to keep their jobs and be successful (Albert, 2018). At present, people change their job or specialisation multiple times in their life time. As a result, they are forced to undertake reskilling, something which is reflected in a large increase in further adult education. The key to life success and the best investment for the future is education, which is also an effective prevention against unemployment (Tamášová, 2020, p. 165, Veteška, 2018, p. 104). Nonetheless, Slovakia still lags behind the European trend in education for the age group of 25-64 year olds. In the Košice region, using a sample of 100 respondents (aged 25-64), we conducted in 2021 a minor pre-survey with a questionnaire with the following results, which confirm the negative trend in adult education in Slovakia:

Table 1 Attending some sort of education at present

Are you currently attending any education?	
a) Yes	22
b) No	78
Number of answers	100

Source: Bálintová, A. – Tamášová, V., 2021

Table 2 Education for the last 5 years

Have you completed any education in the last 5 years?	
a) Yes	32
b) No	68
Number of answers	100

Source: Bálintová, A. – Tamášová, V., 2021

The European Parliament and the Council of the EU recommended in 2006 to monitor in education *8 key competences for lifelong learning,* namely: 1. development of cultural awareness and expression; 2. social and civic competences; 3. communication in the mother tongue; 4. multilingual communication; 5. initiative and entrepreneurship; 6. digital competence and learning to learn; 7. mathematical competence; and 8. basic competences in science and technology.

2.4.2.2. Reflection of the development of lifelong learning in the documents of the Slovak Republic

The right to education for every citizen of the Slovak Republic is guaranteed in *the Constitution of the Slovak Republic* (Article 46). The issue of lifelong learning is covered in *Section 2 of Act no. 568/2009 Coll. on lifelong learning* and on the amendment of certain acts of 1. 12. 2009; the Act is effective until 1 September 2015. This Act governs lifelong learning, under which the further education follows the level of education achieved in school education (Act no. 568/2009 Coll.).

Other documents in the area of lifelong learning and lifelong guidance include: Decree of the SR Ministry of Education no. 97/2010 Coll., laying down details of the documentation for an accredited further education programme, the content of the applications for accreditation of a further education programme, the certificate confirming completion of a further education programme, the particulars of a certificate on partial qualification and a certificate on full qualification (https://www.minedu.sk/863-sk/celozivotne-vzdelavanie/) Brings the following documents:

- The concept of lifelong guidance in the Slovak Republic
- National Programme for Learning Regions
- Strategy for Lifelong Learning and Lifelong Guidance and Counselling
- Policy Document for Lifelong Learning in the Slovak Republic
- National Report on Implementation of the Consultation Process in respect of the Memorandum on Lifelong Learning
- Lifelong Learning Today.

The need for adult education has been driven by the action of three social forces: *the speed of ongoing social change, the obsolescence of a whole range of traditional jobs, and the transformation of value systems* (https://eacea.ec.europa.eu/national-policies/eurydice/content/lifelong-learining-strategy-72sk). More and more people are realising that living a rich life is possible only if they manage to maximise their individual potentials. Nowadays lifelong learning is no longer just one aspect of education and training, it has become a guiding principle for providing opportunities and participation in education in its most diverse forms. The prospect of a sharply ageing population means that the need for up-to-date knowledge and skills cannot be met by relying mainly on new entrants to the labour market, as happened in the past, as there will be too few young people and the pace of technological change

will be too fast, particularly due to the accelerated shift to the digital economy (Memorandum on Lifelong Learning – Bratislava, 2001)

2.4.3. *Lifelong education vs lifelong learning*

In professional studies and formal documents, the concept 'education' is replaced by the concept *learning* as a more flexible form of concept. Lifelong learning is ideally considered a continuous process. *In fact, it is more about a person's constant readiness to learn rather than about constant study.* Here, we talk about lifelong learning, not education, in order to emphasise the importance of such human activities that are not organised, i.e. learning itself when working, for instance, or walking in the country, during cultural events, etc. The change in the concept takes place in the sense of building a positive attitude towards learning also by using other methods than just learning in the framework of the school system. Beneš (2018, p. 92) expresses a similar idea. The future of lifelong learning and the direction of education policy of the Slovak Republic were determined by the 2000 Memorandum on Lifelong Learning. The Memorandum contains six ideas to promote employment and active citizenship: 1. New basic skills for everyone. 2. More investment in human resources. 3. Innovation in education and learning. 4. Recognition of learning results. 5. A new approach to professional counselling and guidance. 6. Bringing education as close as possible to learners (Memorandum, 2000. p. 12). The document underlines the importance of education and learning in building a knowledge-based society and economy.

The 2011 Strategy for Lifelong Learning was created by the SR Government on the basis of the programme statement for 2010 - 2014 and the National Reform Programme of the Slovak Republic for 2011 - 2018, which considered easy access for citizens to flexibly expand and deepen their qualifications with a view to increasing their application on the labour market and to developing their personality and raising the quality of life, and thus enabling an effective system of further education. The core problem areas - the priorities of the 2011 Strategy included:

- Attitude and motivation of an individual to lifelong learning.
- Bringing the education output closer to employers' needs.
- System and structure of guidance services with emphasis on the adult population.
- The level of competences of an individual for their professional and personal development: financial literacy, business competences, multilingual communication, digital literacy, and active citizenship.

- Financing of further education.

Cross-cutting priorities of the strategy were measurement of attained education results, and verification of the level of attained education by means of the verification of professional competence. In 2011, Slovakia set for itself the priorities described above, though has not yet proposed a functioning system of motivation. We see the system of financing of further education as a basic shortcoming, as the state could and should motivate not only unemployed persons, but also the employed citizens towards further education in this way. The state endeavours to alleviate the sphere of employers' needs by dual education of future employees and bringing further education closer to labour market needs.

The European Commission, in the framework of the ET 2020 working group – Vocational Education and Training 2020, constantly repeats the main lifelong learning strategies from 2000. There is no universal guideline to support and develop adult learning. Such education is the subject of various types of policies with different objectives. Each national context is different: there is a different division of responsibilities between education providers, employers, and employees, or who finances adult learning in the workplace. The basic vision of the document is that the employer should encourage employees toward lifelong learning and co-finance this system of education (Strategic framework for European cooperation in *vocational education and training - ET 2020)*. However, this vision has not yet been fulfilled in Slovakia.

2.4.3.1. Lifelong learning strategies and the position of the teacher

The follow-up to the legislative framework is EUROPE 2020 - A Strategy for Smart, Sustainable and Inclusive Growth. The Europe 2020 Strategy, which is currently the basic international framework defining education objectives for EU Member States, contains the following six indicators linked to the field of education:

i. the share of early school leavers among young people;
ii. the share of the university-educated population aged 30-34;
iii. the share of 15-year-olds with low skills;
iv. employment rate of recent graduates;
v. participation of children in pre-primary education;
vi. participation of adults in lifelong learning.

As a document, the Lisbon Strategy has determined important goals in the field of education. The basic goal is *attractiveness and investment in education*. Support for science and research is a basic requirement for developing the level of knowledge among the population.

Note should also be taken of the issue of the National Programme for the Development of Education for 2018 - 2027, which agrees with the resolution of the European Parliament regarding modernising education in the EU of 12. 6. 2018. The document lists the *position of the teacher* as a central element in development of the education system. Its task is to shape the young generation as a future factor in Slovakia's development. Both the Act on Pedagogical Employees and Professional Employees no. 138/2019 and Decree no. 1/2020 on the qualification prerequisites for pedagogical and vocational employees set out new priorities and trends in the reform of the training and career advancement of pedagogical and professional employees in education.

Teachers should instil in students knowledge, but also value orientation, attitudes, competences, and habits that will enable them to prosper in the rapidly changing conditions of today's world and in an environment that requires complex decision-making (Kosová, et al., 2016, Pavlov, 2018, Tamášová , 2015, Tureckiová, 2019, Veteška 2019, 2020). The teacher should be valued by society as a fundamental factor in the development of that society. The aim of the reform is not only to achieve a decent evaluation of the teacher's work, but also to improve the overall conditions for the teaching profession, increase its prestige and increase the credit of teachers and respect for the teaching profession across the entire society, as stated by Chrappán, M., Kopp, E., & Pesti, Cs. (2020). Achieving these goals will be a long-term process, which must include a number of measures, such as raising the standards for training and education of future teachers, improving the system of their lifelong learning and career growth (Bartošovič, 2020), increasing teachers' pay, increasing the teachers' autonomy in the education process, campaigns to support changes in the thinking of Slovak society and the established practice of student-teacher-parent relations.

The document Reskilling and Upskilling as a Basis for Increasing Sustainability and Employability, in the Context of Supporting Economic Recovery and Social Cohesion (2020) states that the EU economy, industry and social model were being affected by climate change, globalisation, demographic challenges and digital transformation (Veteška - Kursch, 2019) even before the outbreak of COVID-19. All of these factors were shaping skills demands through the creation and destruction of jobs as well as by changing the nature of existing occupations.

Europe will need to ensure that education, training, and lifelong learning systems create ways to keep pace and equip all generations of workers with the appropriate skills, knowledge and competences, both transferable and specific, according to Veteška and Tureckiová (2020). Member States will also need to ensure that all regions benefit from this effort and that no one is left behind, by ensuring that special attention is paid to vocational education and training, especially in the field of learning in the workplace, devoted to the least developed territories and regions, as well as vulnerable groups (Matúšová, 2018, Márkus, & Juhász, 2018, Prusáková, & Matúšová, 2019).

The outbreak of COVID-19 has also disrupted, among other things, the formal and non-formal provision of initial and continuing education and training and related services, affecting those with a disadvantaged background, special needs, and who are geographically isolated especially hard; it has often also highlighted the need to develop and ensure capacity - in terms of infrastructure and skills – to make proper advantage of communications technology.

The Strategy 2020 (2010) sets out 3 key priorities:

- *Smart growth*: creating a knowledge- and innovation-based economy.
- *Sustainable growth*: promoting a greener and more competitive, resource-efficient economy.
- *Inclusive growth*: supporting a high-employment economy that will ensure social and territorial cohesion.

The document further mentions the following initiatives: The New Skills and New Jobs Agenda, the Digital Agenda for Europe, and Innovation Union. **The Lifelong Learning Strategy for 2019-2024 is currently being worked on intensively and round table discussions are being prepared with social partners, after which the document will be completed and submitted to the Government of the Slovak Republic.** (https://eacea.ec.europa.eu/national-policies/eurydice/content/lifelong-learning-strategy-72_sk)

When talking about lifelong learning, motivation is an important aspect. Motives supply energy and strength for people to act, on the one hand, and determine the direction of action, on the other hand. Machalová, & Prusáková (2004) state that adult education should be take place on a *voluntary* and *self-motivated* basis, and under the conditions where the *learner stands in centre of the process* and not the education provider. As long as this is ignored, there is a lower chance that people will get educated. Motivating people toward lifelong learning also means guaranteeing that employers will also recognize the knowledge, skills, and competences they have acquired in further education or practice. Schools or educational institutions will also

provide their educational programmes in parts (modules) and will regularly update them in relation to the needs of employers.

One of the main priorities of the European Union as well as the main goal of adult education is *to increase and maintain employment.* Another reason is to help people contribute to their personal happiness and help them plan their own lives. According to experts working the in the field of lifelong learning, student desks are occupied by adults with rich life and work experience, therefore the teaching process should be based on a partnership. To maintain their own employment they do not need more schools or more school desks, but strong motivation and an acquired value system as a motivating factor, says Matúšová (2019). At the same time, the positives of learning adults are their life experience, greater stamina, higher interest, discipline, mature personality, greater responsibility, real vision, real self-assessment, and better orientation in society. Modern times require one to include further vocational and professional education in the plan of one's personal development (Hlaďo, Lazarová, & Hloušková, 2019, Fortis, 2018, Tamášová, 2020), making continuing vocational education a part of one's lifestyle and of the concept of lifelong learning.

3. Innovations and innovation processes in the educational system and in practice

3.1. Formative education in secondary schools as a requirement of positive education

Viola Tamášová

The goal of every modern pedagogical concept is to improve education and make it more effective. The significant impact of innovations within the educational process have been created by the elements of modern and alternative concepts. Pedagogical practice is currently largely focused on the application of elements of positive psychology to the educational process and on a positive approach to education, supporting and developing positive aspects and traits of students' personalities, and supporting formative education. Positive psychology and pedagogy are based on the requirement that schools must prepare students for life, making them a key starting point for current education. Their application to a school initiates the creation of a positive model of such school, promoting the strengths and potentials of individuals. Attention is focused on solving and correcting negative phenomena in schools, and towards supporting and developing the best qualities in teachers, students, all actors in school life, but also schools as institutions.

3.1.1. *Source of positive education – positive psychology*

Positive psychology is a science dealing with the study of positive emotions such as joy, happiness, love, hope, positive life events and experiences (it concerns optimal experience - flow). In terms of research, it focuses on the study of positive individual qualities and personality traits (optimism, curiosity, sense of humour). Although its beginnings date back to the second half of the 20th century, the rise of scientific research and interest in the positive aspects of a human and society come at the beginning of the 21st century, when the Positive Psychology Center was established. The International Positive Psychology Association (IPPA) was established abroad. Its main mission is to support determinants and factors that enable individuals, communities, societies to flourish (Seligman, 2002, Peterson, 2006, Csikszentmihalyi, 2014). Research into positive psychology, human happiness, preparation of a person for experiencing a better life in future was the topic of studies by Seligman 2002, 2005, Csikszentmihalyi, 2014, Slezáčková, 2014, Trčková, 2016, Gajdošová, & Bisaki, 2015, and others.

Positive emotions play an important role, serving as indicators of flourishing or optimal well-being, a happy life and objective human happiness. Since 1991, the trio of scientists, Diener, Sandvik, and Pavot, has been carrying out scientific work concerning the balancing of positive and negative emotions (Diener, 2000).

Positive emotions over the long run need to be cultivated not only as the ultimate state of a human, but also as a means to achieving growth and improving the quality of a person's life during their life. Positive psychology and positive education put preferential emphasis on the positive aspects of the personality, its possibilities, potentialities, and focus on the study of positive areas of human life. In the school environment, this concerns the positive aspects of a student's personality, cultivating the positive possibilities of a student, improving his/her motivational potential. Research into positive individual characteristics and personality traits, such as optimism, curiosity, resilience, coping, sense of humour, came to the fore (Hanuliaková, & Porubčanová, 2019).

Seligman et al. (2005) emphasise that positive psychology uses the same set of tools as traditional psychology, so positive psychology did not require the creation and building of a new construct. All that was necessary was to change the object of interest - i.e., to move away from "repairing" the bad, negative in life, and turn to creating, developing the best in life. It is about promoting the optimal functioning of the human being, as well as the belief and hope that they will succeed.

According to Trčková (2016, p. 2 - 3), "positive psychology's endeavour is to move towards positive values (sense of positive experience, life satisfaction) .... through what is healthy and functional in a person's life, and perhaps to strengthen the ability to cope with difficult and conflict situations." Positive psychology looks in its research, as well as its practice, into the quality of life, personal well-being and issues of positive emotions, emotional intelligence, mental health under the influence of school and family education (Tamášová, & Kušnieriková, 2018, Szobiová, 2018, Furlong, 2018, Petrulyté, 2018, Sanchez, Núñez, García, & Rubio, et al. 2020) and optimal experience - flourishing (Huppert, & So, 2011).

Why is it necessary to apply the elements of positive psychology to educational practice? The authors, Smitha Ruckmani & Balachandra, (2015), Zelina (2016), Vendel (2018), Gajdošová (2018), Roľková (2018), Furlong (2018), draw particular attention to building resistance to crises, burdens, conflicts, manipulations, to the importance of providing advice and procedures on how to overcome negative news and stimuli from the world, but also personal

crises and stress. Positive psychology directs its focus on salutogenesis, the psychic forces in a person helping them to reach happiness and self-realisation. A school should be a place that promotes a healthy lifestyle and the development of physical as well as the mental health of students.

Ďuriš (2014) writes, e.g., that the current state of evaluation of learning results is linked to several problems that can cause stress in students:

- ✓ the assessment focuses on the shortcomings and ignorance of the student, much less on his/her strengths,
- ✓ the assessment frequently disregards the differences in students' personalities,
- ✓ the assessment often times compares students' performance, thus demotivating weaker but still able students,
- ✓ requirements for students are often shaped by the content and not the activity to be demonstrated by students at the end of learning.

If the assessment is to be improved, students should know in advance what is expected of them and what will be the subject of assessment, otherwise the student is not sufficiently motivated for the lack of idea about the requirements. The level of logical thinking, creative and evaluative thinking, and not only memory knowledge, should also be evaluated in students. Assessment should be rich in information so that the student clearly understands in which area he/she needs to improve. An important part that can subsequently strongly motivate the student is when the teacher praises him/her in the assessment, encourages, expresses confidence and suggests that it is possible to work on the student's weaknesses and make progress in them.

A school that uses the model of positive education and formative education works from the PERMA model of a happy life by Seligman (2002, 2005, 2011), determined by the following determinants:

P - positive emotions: the school develops, cultivates and focuses on experiencing as many positive emotions as possible like joy, pride, gratitude, astonishment, interest, curiosity, love, hope, serenity – inner peace. Especially in the current covid-19 pandemic, when stress has become an everyday part of family and school life, the inner peace students experience is very important.

E - engagement: the school supports and seeks the interests of children, supports their deep and sincere interest in activities that can grow into a professional focus, a profession. The school works with children's strengths, encourages their curiosity, interest in the curriculum,

and school life. There must be a transformation from students' lack of interest in the curriculum towards their engagement in school activities and school life.

R - positive relationships: school is an institution where interactions happen on many levels every day. Their quality is a necessary condition for a safe emotional and social climate and atmosphere, which is intensely perceived and evaluated by students, teachers and other school staff. The school supports and emphasises good and valuable relationships at school. It leans on values that are defined and observed by the school. These values are based on mutual relations at all levels of communication (teachers, students, leadership, parents) and also serve as a moral compass of coexistence. The school focuses on a formative and supportive approach in the education and training of students.

M - meaning: school, environment, relationships, life, the future must make sense to all concerned, it must show meaning, and it teaches students that what they do should make sense. Students must perceive and understand the validity and meaningfulness of the activities performed.

A - accomplishment: students, teachers, parents must experience greater or lesser accomplishment, which promotes their further growth and development. Every student in the class wants and must experience success in the framework of educational activities. Satisfying the needs of students at school is focused primarily on achieving positive results in testing the acquired knowledge. In the context of a happy life of a student, the school must appeal to meet the needs such as security, belonging somewhere, self-realisation, self-confidence, self-esteem, which are important not only for the school-attendance period, but also for their following life.

Seligman's theorems of positive psychology are the basis of the Social Emotional Health model by Furlong et al. (2014), as well as Furlong (2016), stating that it is necessary to look at the strengths of personality and at that what truly makes the meaning of human life. It is on these postulates that the Furlong's concept of covitality is based, and it is the result of systematic work in this area with the intention of finding a link between the personality's strengths and human well-being (Boman et al, 2017). Furlong et al. (2014), in creating the concept, deliberately focused on the school population in order to diagnose the level of social emotional health in childhood and adolescence. The results of their work create opportunities for effective intervention in the field of social and psychological prevention as well as personal development.

3.1.2. *Positive education supporting students' potentiality vs formative education*

The subject of positive psychology encompasses the following issues: happiness, well-being, love, friendship, joy, positive thinking, cooperation, trust, optimism, humility, enthusiasm, interest, creativity, resilience, altruism, empathy, forgiveness, spirituality, meaning of life, etc. These concepts though are rarely included in the daily educational activities of a teacher and learning activities of a student. Within the teaching activities, teachers are often oriented primarily to mediating the largest possible content of the curriculum, its revision and evaluation of students' mastery of it. They create less room for supporting and developing emotions that will accompanying the students throughout their lives and which they must learn to work with. One of the reasons why teachers pay minimal or no attention to emotions in teaching is probably their unpreparedness, or possibly their inability to design a teaching unit so that the teacher can work with a student's emotions, the emotions of the classroom as a team and also with the social dimension of the classroom environment, as report Hanuliaková, & Porubčanová (2019).

Positive education within formative education has its potentialities, the main idea of which is the well-being of students, which supports their education and develops them as good people and citizens. A good school is not purely oriented on achieving academic potential for students, but also aims to develop students' personalities as caring, responsible, and ultimately as productive and valid members of society and in life.

According to Vendel (2018), the way of treating the student as an individual at school is also important. It is correct if students have ample opportunities to take over responsibility and take part in school activities. Students also gain a lot from the opportunities in which teachers and students participate in joint activities so that they can get to know each other better and learn to appreciate each other's positive qualities.

In the context of positive psychology, it is possible to define positive and formative education as education for traditional life skills and education towards a happy person. Positive education is based on the best teaching strategies in order to facilitate the achievement of the best educational outcomes that support the security and well-being of students. Teachers' teams often discuss whether schools should strive for a high level of student performance or to be a pleasant place for students. This can be viewed as an unnecessary contradiction. Students tend to work better and learn more when they enjoy and have fun during school events. The same is true the other way around, if they are "doing well" at school, it is likely that they will feel

satisfied in it. Nonetheless, one important aspect must be respected, and that is that students differ in their school potential and performance.

Especially students with good skills, who are socially mature, conscientious and attractive, do well at school. Those students who lack these qualities experience fewer successes at school. Therefore, it is important that students be evaluated and rewarded for what they know and not be punished for other students achieving a higher level of knowledge than them. It is also important to ask the question of how good education affects a child individually? How can it perform a protective function? Research of children with certain psychological risks emphasises that two types of experience are important in eliminating the effects of stress and unhappiness, according to Vendel (2018). On the one hand, these are harmonious, warm personal relationships, and on the other hand, an experience of success leading to a feeling of self-confidence and personal performance of the student.

The school provides opportunities to establish friendships between students, but it also facilitates quite different relationships, particularly those that students form with adults (other than parents) whom they love and respect. The child needs to be respected and to experience success, which is a strong motive for him/her. The child can cope better with stress, gain self-confidence, but to do so he/she also needs social support, where the school is an important helper. Positive psychological interventions include decision-making, problem-solving skills, relaxation, and creative brainstorming. The use of this knowledge in positive and formative education and assessment improves mental health and well-being, reduces depression and anxiety, and improves academic success and creative thinking, eliminating student's stress. Positive psychology is beneficial for teaching activities mainly in approaches and strategies that give credit to humanistic teaching, which will be the content of further subchapters below.

3.1.3. Approaches and strategies

Zelina (2016) divided the ideas and starting points of a positive approach to school, upbringing and education into the following areas:

● *Student's cognitive development* - the student should enjoy thinking, discovering new knowledge from learning and problem solving. Based on the principles of positive psychology, the student should appreciate the importance of knowledge, appreciate education and the learning process. Leading students to a love of knowledge and leadership is possible through problem tasks, heuristic methods, project teaching, the application of metacognition strategies

and self-regulated learning. The school focuses on the student's wisdom, desire for knowledge, self-efficacy, goal setting, hope, optimistic way of understanding life, optimism and well-being.

● *Potentialities for life* - a positive attitude towards education is a necessary condition for lifelong learning, attitude towards retraining within job opportunities - EU Council Conclusions of 8 June 2020 **-** Reskilling and Upskilling, raising one's qualifications through self-study, supplementary study, but also in the context of informal and non-formal education.

● *Positive emotions* - the student likes school, learning, likes going to school and has good feelings about what he/she learns, feels good among classmates, must feel that the teacher cares about him/her, comprehensively perceives the climate at school and in classroom as positive, even despite the occurrence of a failure, disappointment, fear and tension. The student can apply positive self-esteem and at school can experience the ultimate emotional and life experiences, emotional creativity, subjective emotional well-being. Emotional education is carried out by strategies of staging, situational methods, creative drama, art and therapeutic procedures. Positive emotions in the classroom are not associated with fun; a pleasant school experience should be associated with learning demands.

● *Potentialities for life* - be able to verbalise one's own feelings and emotions in family ties, in relationships with partners, in various roles, e.g., parent, partner, colleague. Honest and open verbalisation of emotions can represent a prevention against the occurrence of socio-pathological phenomena, but also against aggressive behaviour.

● *Positive motivation* - the student is guided towards the meaning of life, universal human values, positive goals, the acquisition of the values of the relationship, school values. The opposite is burnout, reluctance to learn, resignation, indifference, disinterest, aggression, lack of faith and belief in values.

● *Potentialities for life* - the creation of attitudes and the internalisation of values in relation to one's own person, values in relation to moral aspects, to the rules of life, to society.

● *Positive socialisation* - in students, the aspects of the personality are strengthened that create productive interpersonal relationships, solidarity, cooperation, tolerance, help, charity, so that there is a positive atmosphere and climate in the classroom and at school, which is achieved by promoting empathy, quality relationships. A positive school and classroom climate leads to crime prevention, reduces reluctance to cooperate, reduces bullying, discrimination, hatred, selfishness, promotes the ability to tolerate and leads to humility.

● *Potentialities for life* - ability to work within the framework of social skills in coping with and solving challenging situations and tasks, developing one's own knowledge and skills within mental hygiene. Ability to reflect on job opportunities, adaptation to the workmarket, active citizenship, active participation in voluntary activities, participation in charity and developing one's own prosocial behaviour.

● *Autoregulation* - students learn independence, self-management, discipline, responsibility to have a desire to learn, to lead students to be independent in what they can do on their own, they learn to control their thinking (concentration, attention, perseverance, control over their emotions, fear, anger, bad mood), control their behaviour (psychomotor control).

● *Potentialities for life* - students are able to determine the order of life and work goals,daily routine, distribution of activities over time, - to lead a person towards life self-discipline.

3.1.4. *Application of positive psychology in educational practice*

In order to apply positive psychology in pedagogical practice, it is necessary to look at the matter through the satisfaction of students' needs. According to Zelina (2018), the application of the elements and effects of positive psychology in pedagogical practice shows that:

- self-discipline, intrinsic motivation, which is particularly emphasized by positive psychology, is twice as good a predictor of performance, application and success in life as IQ and EQ;
- happy young people in adolescence, as shown by longitudinal research, have higher incomes in adulthood;
- engagement and meaningfulness of activities, accepted by positive psychology, are the best prevention of depression;
- positive experience and meaningfulness of being supports life satisfaction and has a positive effect on the learning process, especially on creative learning.

Based on positive psychology, it is necessary in the educational process to respect the principles that have a positive effect on the educational reality and transform them into everyday life. The basic didactic principle is the combination of theory and practice, and therefore it is necessary to emphasise the principles of positive education, along with formative education and assessment, which can be transformed into the daily life of students and teachers (Huppert, F., & So, T., 2011, Geršicová & Barnová, 2018).

3.1.4.1. Principles of positive education

The principles of positive education are mainly:

- provision of a positive school climate and school culture, where these include also a positive family climate, living climate (Greškovičová & Maršičová, 2018, Tamášová & Kušnieriková, 2018; Ikhart & Szobiová, 2018);
- respect for positive values;
- positive application of knowledge in life with an emphasis on quality education;
- application of strategies to support critical, evaluative thinking and self-assessment; creation of productive interactions, teacher-student relationships based on empathy, acceptance of each individual;
- motivation to learn, in addition to classical methods, also through interesting tasks, using the method of relational frameworks and causal attributions;
- emphasis on self-reflection, self-evaluation, self-control, self-management of the student with the use of self-regulation learning programmes, self-knowledge programmes, programmes in social psychology, character cultivation programmes;
- emotional experience of the climate in the classroom, at school, its detection and change positively, evaluation of students' experience of learning and educational activities, teaching students to express emotions, feelings and control them, especially in stressful situations, communicate openly, creatively, and focus on rational communication as well as communication of feelings, emotions and experience (Zelina, 2016).

In the family, it is also necessary to create a positive attitude of parents towards children, because they shape their social-emotional health. The family influences the child with its cohesion, cultivates their self-confidence, self-efficiency, optimism, life engagement (optimism, enthusiasm and gratitude). According to the researchers, Smitha Ruckmani & Balachander (2015), family harmony and satisfaction are key factors that positively condition the mental health of adolescents. Emotional well-being is a significant protective factor against the development of mental problems, or mental health problems.

Science and research in positive psychology, which lay the grounds for positive education, clearly show that identifying one's strengths and focusing on developing the ability to cultivate and exploit these strengths (rather than "correcting" mistakes) leads to greater well-being and better academic and social results. A positive approach in education helps students

to build confidence in education, in developing students' intellectual abilities and character, in developing the affective side of personality. Investing in positive education and formative education at the level of the whole school community in both in-school and out-of-school environment results in helping students to become a better version of themselves as individuals and as part of the community.

The results of research and scientific literature suggest that the positive psychological interventions support students' intensive relationship with the school or school facility. In order for the application of elements of positive psychology in educational practice to be accessible and practically feasible, the school management must at a broader level, or in a broader school context, adopt and develop the theory of positive education. When applying the given elements to the educational process, the school principal can first start doing so in cooperation with pedagogical and professional staff, especially school psychologists, as suggested by Gajdošová (2018).

According to Gajdošová & Bisaki (2015), the introduction of positive psychology into school and the building of the "positive school model" supporting the strengths, virtues, potentialities of individuals also initiates a significant change in school psychology and the work of the school psychologist, especially the reorientation from addressing negative phenomena in the school towards developing the best qualities of the school as an institution and the people in it. The application of positive psychology at school means a new way of viewing upbringing, education, oneself, the world and oneself in it.

In line with the goals of education for the future, it is necessary for the person of the future to be not only efficient but also happy. The goals of education must be focused on training a person who will be flexible, able to reflect on new stimuli and challenges, ready to resolve conflicts, speak foreign languages and ready to live outside his/her close community. One of the predictions that can be achieved is the fact that positive and at the same time formative education increases the school success of students and increases the quality of life of students in school and out-of-school environment. Human health, including that of children and youth, have been incorporated in the state school policy and health policy of the Slovak Republic through the document: Strategic Framework for Health to 2030. It is based on the fact that health is a basic human right, it is the key to social development and the full development of health is possible only in a health-promoting environment, family, work or school.

3.2. Motivation as part of formative education and assessment

Viola Tamášova

3.2.1. Motivation of students

The teacher has a strong formative influence on the students. A teacher's communication, attitudes, expectations, aspirations, goals and relationships with the students themselves, can greatly influence their attitudes and the learning outcomes as such. In addition to the pedagogical-didactic, methodological readiness of teachers for their profession, the ever-growing emphasis is placed on their personal and psychosocial qualifications. It is also underlined that the basic precondition for the success of the teacher's pedagogical-didactic work is his/her motivation as well as the ability to encourage students' intrinsic motivation and keep the students continuously interested throughout the educational process. For this reason, it is important that the teacher pays due attention to motivation and constantly improves his/her knowledge in this field (Petlák et al., 2006, 2011, Matúšová, 2019). Motivation is a set of motives that evoke the activity of an organism and determine its focus. It is an internal driving force behind meeting unsatisfied needs. It is said that good motivation is a guarantee of success and in relation to education that "good motivation is half the success of a teacher's work and student's learning", writes E. Petlák in his monograph on motivation (2019).

The issue concerning motivation is very complex, as it is the key to understanding the human psyche and understanding the human. Motivation can be included among the components of human mental regulation, which ensures the functioning of learning, activates cognitive processes and motoric systems to achieve the desired and set goals. The phenomenon of motivation has always been understood and at the same time explained differently, as evidenced by a number of theories about motivation.

Motivation is an internal state of the organism that activates it to respond in a certain way to certain stimuli. This means that a person behaves in a certain way, chooses goals and the means to achieve them (Matúšová, 2019). On the other hand, it is a system of states and processes of self-management that activate a person and guide him/her through the creation of intentions and set goals.

Experts distinguish between the concept of motivation and the concept of motivating. Motivation is a condition whose causes, manifestations and results in a person are studied by general psychology. Motivating is a process demonstrating the use of the laws of motivation in

stimulating or inhibiting personality motives to achieve a certain behaviour in learning (learning activities) and education. Motivating is an activity to promote other person's motivation (e.g., encouraging an appetite for learning). Self-motivation refers to the process of motivating oneself. Demotivation represents activities aimed at weakening someone's motivation (Machalová, 2015).

Motivation is an important part of work in those professions where the core of the work is contact, cooperation and influencing people (e.g., teachers and lecturers, psychologists, career counsellors, social workers, businesspeople, managers, coaches, priests). Demotivational influences and elements manifested in the behaviour of persons can be characterised as intentionally applied or, conversely, as involuntary, unintentionally existing; undesirable manifestations that negatively affect the motivation of persons. They can grow into barriers to learning and education.

In this chapter we will deal with these phenomena, their theoretical basis and the possibilities of their application in the process of classical and formative education. It should be emphasised that motivation cannot be narrowed down merely to the types of motivation that are linked to external stimuli (e.g. teacher's influence on students, lecturer's on participants in education, teaching methods and organisational forms of education relevant to the specificities of the target group, age specifics of participants in education, their expectations, life goals and attitudes), but also to the internal states and processes activating and energising the individual in the process of learning and education.

3.2.1.1. Motivation in education

Knowledge of motivation allows us to better understand the causes of human behaviour, understand the diversity of motives and apply knowledge of motivation theories and other principles in motivating people (students) towards desired behaviour, work and learning performance, or use them to design forms and methods applied in implementing educational programmes for adults, for instance.

Penetration and application of psychological knowledge into education is becoming an integral part of educational theory and practice. Education supports the development of education and upbringing of citizens, the creation of competencies for work and life in a society based on knowledge and information. Priority has also been given to the comprehension of psychological knowledge regarding personality and its development, support of acquisition and development of professional, social and psychological competencies. At the intersection of

psychology and pedagogy, there is the development of the individual potential of the learner. The psychological approach emphasises the differences in the processes of cognition and application of knowledge. Pedagogy focuses more strongly on external manifestations of a person (externalities), psychology focuses on internal processes and states of a person (internality). Knowledge of psychological determinants, aspects and conditions of students' learning and their education is the epicentre of the scientific interest of educational psychology (Ďurič, 1999).

In a psychological approach, changes in the psychological level of individuals are assessed, and changes in the psyche (experience, behaviour, actions) and causal connections in the personality are taken into account. The psychological development of the personality of the participants in the education is evaluated (Machalová, 2015).

Learning and education takes into account several aspects that are related to:

- psychology of personality in a broader sense (student and teacher);
- psychology of personality in the narrow sense (with the personality and specific characteristics of the pupil – student) – particularly with the abilities and motivation to study and its age peculiarities;
- ontogenetic psychology, specifying the characteristics of developmental periods;
- educational psychology, especially the issues of teaching (types and styles of teaching), learning (learning conditions) and education, as a process of mutual interaction between pupil – student and teacher (Krystoň - Kariková, 2015, p. 100).

Motivation of behaviour, in this case teaching/learning, is based mainly on intrinsic motives and needs (*intrinsic motivation*) or from external incentives (*extrinsic motivation*), as writes Matúšová (2019). In case of intrinsic motivation, the motivational state results from the personality, whereas in case of extrinsic motivation, the motivational state is controlled from the outside, by other people.

Both intrinsic and extrinsic motivational factors are manifested in human behaviour. Both types of motivational factors positively or negatively affect a person's effort to act as well as to learn.

➢ *Intrinsic motivation* is understood as the current state that forces an individual to do something for their own satisfaction. It represents a subjective aspect of motivation, the goal of which is the activity itself. A student who acts under the influence of intrinsic

motivation acts spontaneously, out of interest, with pleasure, but also on the basis of his/her life plan.

> *Extrinsic motivation* represents a state where a person acts under the influence of external stimuli, incentives. Incentives are stimuli that externally stimulate the personality to action. These can be external phenomena and events (e.g., proving to a parent or teacher that a student is able to overcome an obstacle, learn the curriculum; in the case of an adult, it may concern a difficulty in finding a job, job loss, outdated knowledge that cannot be used at work) affecting a person from the outside as motivating factors. Extrinsic motivation is caused by an exogenous stimulus.

Both types of motivation, which complement each other, need to be promoted and developed in education. Extrinsic motivation should not be exclusively prioritised over the intrinsic motivation, as extrinsic, forced motivation in the long run forms a person's dependence on external control, such as the lecturer's control tools (e.g., learning only to pass the exam is not the same as when a person learns to apply knowledge and skills in the workplace and in work performance).

Psychology has cultivated a certain concept of motivation, delimiting *three dimensions - arousal, direction* and *persistence of behaviour*. 1. - *Arousal* of behaviour (activity) is caused by needs, especially their deficiency, which leads to an effort to eliminate the feeling of deficiency (deficit). 2. - *Direction* expresses the focus of the activity depending on the values, interests, attitudes, life orientation, beliefs, in accordance with the aspirations and ideals of a person. 3. - *Persistence of behaviour* pursues a certain goal to be achieved, which also depends on the level of aspiration.

The *arousal of activity* means activation of oneself (learning subject), states S. Matúšová (2019), and in terms of learning or education it primarily concerns clarification of educational *needs* of a personality that are related to the needs to ensure the existence and development of the personality (in terms of employment, occupational and personal interests and job prospects), knowledge of the most important *motives*, which are related to participation in education and the use of education results in personal, social and professional life. The basic needs of a person in society include the need to work, the need of self-actualisation, the need of social contact, security and safety, the need for recognition.

Szabó & Kolibová (2014) point out that if the level of arousal is low, the organism does not respond. Arousal can be affected by an intense stimulus, unexpected situation or stimulants (caffeine, drug). People feel comfortable as long as their level of arousal is moderate. Optimal

performance is also provided at a medium level of arousal. At its higher level, disorganised behaviour may occur and at an extremely high level, an individual's activity can be blocked. Students and adults in education, when in a state of exam fever (high level of arousal), are unable to give adequate performance. However, individuals differ significantly in what level of arousal they experience as optimal. At very low levels, they are usually placed in an environment that is poor in stimuli, they are bored. This condition is called *sensory deprivation*. In this situation, the individual engages in an activity that increases the arousal level in order to get rid of sensory deprivation. On the other hand, account must be taken of the fact that the arousal and motivation features of the personality include instincts and impulses. These are innate and ensure the viability of the organism.

Direction means directing the outlaid energy in the appropriate direction, e.g., to pick a specific education programme, or type of education depending on values, interests, attitudes, life orientation and beliefs of a person. These are the motives giving purpose and direction to behaviour and action.

Persistence means targeting activities of the personality at a certain goal and its achievement (e.g., to achieve success or avoid failure).

Motivation therefore means arousing, sustaining and directing human energy and activity. It can be considered as a driving force of a mental nature that sets into motion human behaviour and activity. Motivation is manifested outwardly as a set of processes involved in the intensity, direction and manner of action, but in essence it means an internal force that energises the organism.

A typical sign of motivation is that it is always a present feature. Whatever the driving force is, it always motivates now, in the present. Even though the experience from the past can be manifested in the present behaviour and activities, the motivating force is contained in the present, current needs. However, motivation cannot be understood as an exclusive means or a tool to justify behaviour (Szabó, & Kolibová, 2014).

Direction towards the goal depends not only on the motivation, but also on the human competencies. Even very strong motives are not enough for a person to achieve a goal if such person lacks the necessary abilities and skills. Even the best competencies are not enough for a person to start and persevere in an activity, if that person's motivation is zero. Performance always depends on a person's intellectual preconditions and the level of motivation targeted at the goal.

3.2.2. *Factors and sources of motivation*

Stimuli and motives act on a person at the same time, and this effect and its result are called the process of action motivation. In practice, however, both notions are often used as synonyms or equivalents. This means that stimulation is understood as such an external action on the human psyche, the result of which there arise certain changes in person's activity through a change in mental processes, through a change in his/her motivation.

Motive is considered to be the key intrinsic source of motivation. Extrinsic sources of motivation are also stimuli from the external environment – incentives. Intrinsic motivation, which is manifested in interest, desire, longing and activity, is central to achieving goals and learning results.

According to Říčan (2009), the strength of the motive at a given moment is mainly influenced by the following factors:

● *internal state of the subject* - e.g., the time that has elapsed since the person last consumed something, or when the person was at a favourite cultural or sporting event;

● *presence and nature of the motive* (incentive) - e.g., the proximity of the object of desire, where the obstacle on the way to the goal further increases the strength of the motive, unless it is insurmountable at first sight; the motive can also be negative (e.g., visible danger reinforces the current motive to escape);

● *individual dispositions* - e.g., tendency to spend a lot of time with friends, peers or in shopping centres, gaming rooms, with computer in the virtual world.

A special motive is *exploratory motive* evoking exploratory behaviour that extends to everything and is referred to as curiosity.

Secondary motives are psychological (although they may be derived from biological motives). An example of a secondary motive is the need for money, for which you can buy food, prestige, pleasant company, health, educational course.

Intrinsic sources of motivation include *needs.* Need is a specific state of the organism that can energise behaviour leading to satisfying such need. Needs are linked to deprivation – a deficiency or excess of important substances in the organism. They are manifested by a feeling of internal deficiency or excess, which disrupts the homeostasis of the organism.

The *biological needs*, which include 12 to 15 needs - hunger, thirst, sexual motive, care for offspring, ensuring appropriate body temperature, avoidance of pain, excretion, need for oxygen, need for sleep and rest, need for activity (related to the level of activation), need for safety, aggressive motives (Szabó, & Kolibová, 2014), serve for the organism's survival.

The needs the satisfaction of which ensures the survival of the organism are called the *primary needs*. They are innate and necessary to sustain life (e.g., needs for food, water, air, heat, sleep, activity, pain avoidance). Their satisfaction and motivational strength is similar in all living things. *Negative needs* require for their satisfaction the escape from an unwanted object or condition (e.g., the need for safety, the need for peace, the need to get rid of pain or discomfort).

Primary psychological needs may have a biological basis in human instinctual equipment, but they are strongly shaped by learning. They include the need for knowledge, games and entertainment, however the social needs related to other people predominate:

- the need for social contact (to be with other people, not alone);
- the need for autonomy (to do what I see fit, including the ability to be alone);
- the need to take care of others;
- the need to control someone;
- the need to excel, surrender or be in opposition;
- the need to imitate;
- the need for tenderness.

Satisfaction of primary psychological needs can be characterised, according to Říčan (2009, p. 180), as follows:

i)   their satisfaction is normally less urgent than is the case of the primary biological needs and can be also postponed;
ii) it can take a variety of forms;
iii) it is largely interchangeable in the sense that meeting one need replaces the satisfaction of another needs.

Range of secondary (psychological or social) needs is significantly richer. They are created during the individual's ontogeny and arise in the interaction of primary needs with the environment (e.g., the need for safety, care, affection, aesthetic and sensory needs, the need for self-actualisation, self-creation).

The most important secondary needs include:

- social needs (e.g., the need for prestige, the need for a positive relationship);
- cognitive needs (e.g., the need to acquire new knowledge, the need to seek and solve problems);
- performance needs (need for successful performance and avoidance of failure).

For *social needs*, it is characteristic that they behave in contrast to the biological needs. If a person succeeds in satisfying their social need, then such need grows in intensity. For example, a person's success in social life motivates him/her to gain further success, though failure discourages him/her from such activity. Social needs are variable on the case-by-case basis, depending on each person's experience and life situations.

Interests represent a special category of motives that is of practical importance, especially in terms of education. It characterises a permanent relationship to certain objects and phenomena. They contain *cognitive* and *emotional aspect*. Interests indicate the focus and motivation of the personality and are a specific prerequisite for a strong positive motivation for activity and learning. They are carried out over the course of a certain activity, not in its result, e.g., interest means playing volleyball (but not winning; that's another motive), collecting coins, studying languages, caring for children, constructing aircraft models, etc. Interest is what a person enjoys doing.

Interests are very plastic and can be shaped by upbringing. They can change in different age periods and be completely different. Initially, they have a dynamic (and diverse) structure, later they become more permanent in nature. Knowledge of students' interests is of great importance in the educational process.

Attitudes are opinions on objects, phenomena, persons, situations that are formed during life under the influence of upbringing in the family and school, under the influence of the environment, life experience, public opinion and the mass media. They express an evaluative relationship to social objects in the environment in terms of preferences and liking (what a person prefers or likes). An attitude comprises a cognitive component, emotional and cognitive component – the tendency and readiness to act in the direction of the attitude. Attitudes are shaped by person's experience, so they are highly emotional, individualised and variable.

Attitudes are formed on the basis of spontaneous learning in the family and other social environments. They are related to value systems, and are equally dependent on cultural, ethnic and educational factors (Průcha, Walterová, & Mareš, 2013).

Value is defined as a specific property of all social and natural phenomena manifesting their positive or negative significance for humans (Boroš, 2001, Jablonský, & Matúšová, 2013). The values are not fixed. They are formed during life under the influence of the environment, upbringing and own activity (self-education) of individuals. Values are adopted in the process of interiorisation and, through a certain amount and arrangement of interiorised values, they create a person's value orientation. An important value of an adult is health, happiness, satisfaction, peace, good relationships.

The value of educational attainment has been gaining in importance and been clearly growing. Investment in education is considered to be the most promising and effective. Education is the "instrumental value" enabling the acquisition of competence and qualifications (retraining), application on the labour market, reduction of unemployment and getting a job, development of the ability to navigate today's world and its processes, formation of one's own opinion and attitudes, making a choice from offered alternatives in life and in the workplace, and the strengthening of the stratification of one own's place in society (Veteška & Kursch, 2021). Education promotes personal autonomy, independence and increases one's own defences against manipulation. The level of education achieved affects the way of integration into social, labour and family life. For many people, education as such stands for a meaning and value.

People acquire values through socialisation and enculturalisation. Each cultural community has specific values that govern attitudes, norms of behaviour, motivation, morality. A special role is played by the values relating to education, family upbringing, work and co-determining how individuals are integrated into school and further education, how they cope with the requirements of the labour market, etc. The values given by society are hierarchically arranged as value orientations/value systems and prioritisation of values changes due to the effect of the civilisation changes in youth and adults (Průcha, & Veteška, 2012, p. 119).

Current values can also include moral level and the good (as opposed to the bad), justice, authenticity, truth, freedom, transcendence (transcendence of oneself).

Aspirations are strong arousal-motivational factors, characterised by the efforts to achieve close and distant goals on the basis of self-assessment and past experience. Aspiration is goal-oriented action, efforts, desire for something. It is the level of self-performance that an individual expects based on previous performance in a given situation. Aspiration depends on personality dispositions, value orientation and the current situation, which influences the

strategy of one's activity. Real aspirations are linked to the desire to succeed and to try to avoid failure. If the aspiration and the achieved performance are in concord, the motivation is strengthened, if they are in discord, the motivation is weakened. Success increases the aspiration level, and, *vice versa*, failure decreases it (Průcha, & Veteška, 2012, Matúšová, 2019). In adult education, we may encounter several aspiration levels for the same participant, depending on the type of activity, subject or content of education.

Habit is an individual motivational tendency to repeatedly follow a certain scenario in a certain situation. Certain situational signals trigger the urge to act in the usual way. Habit is actually a learned need, but more specific and individualised. People differ greatly and are unique in their habits. In a certain situation or based on a certain stimulus, it is our tendency to perform a series of activities in a settled form, in an unchanged order (Průcha, Walterová, & Mareš, 2013, p. 170). One of the characteristics of habits is the automation of proceedings, routine actions without thinking, i.e., without conscious control. Useful habits save time and energy, bad habits create unnecessary worries and harm. Habit can have a great motivating power and inertia. In older learners, we may encounter in education reduced adaptability resulting from overly strong habits. Leading students to the right habits (repeating, revision, answering control questions, and solving practice problems) can give them significant benefits - added value to learning results.

3.2.3. Use of motivation theories in education

Motivation theories examine the motivating process by others, as well as the process of forming the intrinsic motivation of individuals. They explain why people behave in a certain way and why they make efforts in a specific direction (e.g., in learning and education, interpersonal interaction, communication in the family and in the workplace).

The needs of learning, education and personal development are based on individual learners' motives, which include the motives of improving and developing one's own performance by acquiring, expanding and deepening knowledge in a certain area, improving skills and forming habits.

Need theory may be named as one of the best-known motivational theories. The need theories examine the essence of motivation and ways of influencing it through the basic forms of human motives – needs. Needs are a signal of shortcomings or surpluses and are a direct initiator of individuals' behaviour. Need theories provide a number of ideas that can be used in

the application of motivational approaches to learning and education, in designing a suitable range of motivational tools, and in creating educational methods and forms.

A. H. Maslow made a significant contribution to the need theory (cited according to Říčan, 2009). His theory of needs is probably the best-known theoretical conception of motivation in human behaviour. He believed that in order to understand motivation in a specific area, one must understand human motivation in general. He assumed that motivation arises on the basis of needs, i.e., everyone is motivated by satisfying unmet needs. He proposed a model of motivation theory that to some extent strikes a balance between biological and social needs. He assumed that the individual needs competed with each other for their own satisfaction. According to Maslow, the *motives are arranged hierarchically according to their urgency.* This means that basic needs must be met first, and only then follow the hierarchically higher needs.

The Maslow hierarchy of needs model distinguishes seven levels of needs:

1. *existential needs* belong to the basic needs of preserving human life, they must be satisfied so that the individual does not feel intolerable suffering (hunger, thirst, sleep, clothing, housing); Maslow placed them at the base of the pyramid and called them physiological;

2. *need for safety* is placed on the first level; it is important for a person to achieve a sense of safety for their standard of living, which may, nevertheless, be devastated by the loss of a job or the loss of a home;

3. *need for belonging and association* represents the need to belong somewhere and be *beloved*;

4. *need for respect and self-esteem* represents the need and desire for constant, firmly established, generally high self-assessment, self-esteem, self-confidence and respect shown by others, a desire for the feeling of self-assurance, self-worth and success;

5. *need for knowledge, beauty and harmony; and*

6. *need for self-actualisation* that focuses on satisfying the potentials available to an individual, namely the realisation of intentions that lead to the well-being of others, enthusiasm for creative work or the struggle for the superpersonal goal in which one can self-actualise;

7. *need for transcendence* means the transcendence of oneself, the deep feeling and experiencing that the individual is part of a larger whole – humanity, nature, the Earth and finally the whole universe.

The process from lower to higher levels is not automatic (Říčan, 2009, p. 190).

In terms of education, it is necessary to also mention other important areas of motivation. These are the areas of *performance motivation, cognitive dissonance, self-determination and self-assessment*.

Performance motivation is characterised as an individual's effort to overcome obstacles, to succeed in performance situations (both in one's own eyes and in the eyes of other people), to persevere in demanding activities, to achieve a goal, to be successful. It is connected with performance needs, such as the need for independence, the need for competence, the need for successful performance, the need to avoid failure and sometimes (paradoxically) the need to avoid success, i.e., not to draw attention to oneself (Průcha, Walterová, & Mareš, 2013, p. 159).

Performance motivation (or motivation to succeed) is based on the need to set challenging goals and make efforts to achieve them. People differ in the level of performance motivation and its specific focus. These differences among people correlate with their commitment and success rate in the given field. It has been shown that companies with a high share of performance-motivated people are more dynamic, more productive and show a higher level of overall prosperity (Matúšová, 2019).

Research on performance motivation yielded the following findings:

i. In solving tasks, people with strong performance motivation are more persistent and more future-oriented (planning activities, strengthening prospects for success).

ii. In solving challenging tasks, these people are predominantly interested in success (or expecting it) over the fear of failure. This finding has led to a distinction between two types of people - those oriented at performance (success) and those oriented at the avoidance of failure.

iii. Where there is the option to decide the task difficulty, the performance-oriented people will usually choose a task of medium difficulty, i.e., a task requiring greater efforts to make a positive result realistic. People who tend to avoid failure usually choose tasks that are either extremely easy, with no difficulty to succeed, or extremely difficult tasks in the case of which everyone will fail, though there is also a chance of accidental success.

iv. People with strong performance motivation attribute their success to their efforts rather than talent or external factors (Helus, 2011, p. 134).

Cognitive dissonance

It is defined as the contradiction experienced by a person when his/her internal attitudes or opinions are inconsistent with his/his external behaviour. As a rule, such dissonance is unpleasant, and people try to establish harmony. Dissonance is felt particularly badly when a person is forced (e.g., by circumstances at school, at work or by a situation in society) to suppress his/her attitudes and adapt his/her behaviour to such circumstances (Průcha, & Veteška, 2012).

Self-determination

In education, the topic of self-regulation, human self-management falls under the issue of motivation. Here arises the eternal dilemma of whether the motivation for better and more responsible performance is associated more with intrinsic motivation (with the support of intrinsic resources) or with stimuli from the environment. The question is clear: *Is the learning performance linked to independent, autonomous human decision-making or is it stimulated through external pressure coming from the person's control and from a sophisticated system of rewards and punishments?* (Kuruc, 2017, p. 30).

The theory of self-determination by E. L. Deci and R. M. Ryan represents a mechanical model of human motivation and self-regulation. The authors perceive people as beings who have a natural tendency to be internally integrated, as beings with a natural tendency to the inner mental growth, endowed with a natural effort to develop their own interests. Everyone naturally seeks optimal challenges, new perspectives, tries to internalise and transform the cultural customs of their environment. It is a natural need to develop one's own capacity and show one's own talent. These natural features are characteristic of people of any age and form the essence of human motivation for life. In their essence, people are oriented towards satisfying their own needs. The needs are more effectively met in a company of other people and in cooperation. Here we can see the first link between intrinsic and extrinsic motivation (Kuruc, 2017, p. 31).

Self-assassment

This ego-related approach leads to a distinction between two kinds of motivation – to defend and evaluate the ego and to avoid ego devaluation. *Defence against ego devaluation* is manifested in the strategy of compensation and elimination of negative self-assessment. Boosting the opinion of oneself is manifested in the preference of *the autovaloralisation motive*

comprising a set of mental processes by which an individual maintains or strengthens an opinion about themselves (also in the sense of the saying "am I worse than the others?").

For this reason, when monitoring the learning and educational motives of children, young people or adults, it is necessary to point out the links between the motive to learn, get educated and strategies to improve self-assessment and improve assessment by personally important people (parents, teachers, trainers, coaches, mentors, partners, superiors, peer community, etc.). In the decision-making stage, *cognitive component of motivation* (a person puts forward factual arguments) is applied, whereas *emotional component of motivation* is applied mainly at the beginning and at the end of the motivational process (at the beginning as an emotional impulse - enthusiasm for new, unknown areas, subjects, topics or educational challenges, at the end as satisfaction from the achieved result and improvement of self-assessment).

3.2.4. *Personality success in education*

The issues of motivation and motivating students for education need to be addressed when seeking for an answer to the question why students with the same (measurable) abilities achieve different levels of performance. This phenomenon is ascribed to the fact that the students are differently motivated. This requires that during the education process effective ways be sought and found of bringing students to the "optimal level of motivation". It is recommended that when teaching students, as well as adults, the activities focus on problem solving, problem solving, personal experience and the need to achieve success. These are also the things forming the cornerstones of formative education.

Learning motivation, for instance, in adults, which is different from a certain aspect than in pupils or students, is characterised by Bontonová (2015, p. 97) as "a dynamic, individually unique characteristic of the participants in education, which forms part of the complex *attitude-motivation-value component,* as well as part of the unique whole of the adult's personality."

A new phenomenon and notion have emerged in the knowledge-oriented personality – *personality success.* Psychological approaches to the success of personality in education take into account the personality determinants of success in conjunction with environmental influences. Personality determinants are components and relationships of the personality system

(personality potential). The social determinants are school education policy, visions, strategies and practical measures in programmes and in the content of education.

A personality (elementary school pupil, secondary school student, but also an adult) can have in relation to learning *positive motivation to learning* or *negative motivation to learning*. A positive motivation is considered to be a state of motivation that evokes an awareness of the positive consequences of learning. Positive motivation is based on the desire to know and curiosity, desire for knowledge, excellence in the classroom, group, love for the subject, etc. In case of negative motivation, learners are aware of the unpleasant consequences that may ensue if they do not learn, or if they do not direct their study efforts where the teacher (lecturer) or the parent want them to be.

The motive for learning is also related to the success motive and the failure avoidance motive. They are linked to the theory of performance motivation. *Performance motivation* is a set of internal dimensions that encourage individuals to the performance-oriented behaviour, i.e., to achieve good performance in various types of activities. Good performance is both a motive and a goal of behaviour. Performance motivation refers to a wide range of activities, good performance in education, later in employment, interpersonal relationships, family and the wider social environment in which the individual has to demonstrate their abilities.

In terms of effective motivation, it is essential for teachers, managers and lecturers in education to get acquainted with and to know the main motivating factors that affect their students, but also adult learners, and to be able to use them to the benefit of education. Sources of individual learning motivation can be divided into several types, as writes Matúšová (2019), such as:

1. extrinsic motivation (requirements placed by a teacher, school, parent, employer);
2. intrinsic motivation (interest, desire, wanting by a student, learner);
3. reputation-based motivation (excellent reputation of the school, organisation, team of teachers, lecturer);
4. performance-based motivation (own achievements, school success, education and demands associated with learning or studies).

Success and failure is a psychological phenomenon that is associated with the level of motivation and aspiration (expectations of success or failure). They can be evaluated objectively, but greater value is placed on their subjective evaluation. It is necessary to compare

the difference between the actual performance and the original level of aspiration. Success and failure participants in education mainly means an experiential state with an (immediate) dynamic motivating and emotional influence on human behaviour. The concept of one's own success is formed in the previous and current process of mental experience of success and failure, their assessment in the context of the difficulty of solving the required tasks, evaluation of success ranking in groups, in class, and in increasing one's own aspirations.

A comparison of personality factors and the influences of the situation revealed that "the more successful or unsuccessful the subject is, the more the success and failure depends on the personality and less on the situation. For subjects with a medium level of success, success and failure will depend more on the situation than on the personality," states Machalová (2010, p. 148).

Success is conditioned by the influences of the social environment (such as standards, behavioural models and performance standards). Pupils with relatively the same level of talent and abilities can achieve significantly different performances also because the motive for attaining successful performance has been developed in them in different cultural and family environments. Low levels are seen in those who, as children, were more dependent on their parents and behaved in a more subordinate way towards them (Madsen, 1972).

Therefore, the success of a personality is both a psychological as well as social phenomenon. Self-assessment will be affected by an external evaluation of the student's or learner's performance, which has an impact on how the personality will behave in further performance situations and what aspirations will guide his/her performance. From the social point of view, it is important how the activity and performance of the personality is assessed and evaluated by others, according to the criteria applied in the school or other social environment.

The criteria for evaluating the learning results of pupils or adults in education are related to the control of educational activities, the performance of teachers, lecturers and educators, the performance of students or other participants in education, as well as the effectiveness of teaching and education. The starting point for determining the success criteria is the determination of the goal of education, educational activity or programme (Matúšová, 2019). When determining the education goal, it is necessary to determine what is to be achieved through education (acquisition of knowledge, formation of skills and attitudes, practical skills, etc.).

Forecasting success in education is oriented on the detection of intelligence, intellectual abilities, cognitive style of personality, personality motivation (interests, attitudes and value orientation) and knowledge of personality traits. A no less important source is also knowledge, analysis, comparison and evaluation of performance over the course of learning and education of the subject and the statement of whether the subject has always been successful, whether their performance has progressed, stagnated or declined, in which situations and under what conditions.

For instance, research in young people has confirmed certain characteristics of successful learners. They have developed and strengthened:

- effective learning habits;
- positive attitude towards study;
- defined interests with preference for intellectual interests;
- control of impulsivity in behaviour;
- a positive image of oneself;
- increased introversion (closure), or self-orientation;
- lower activity in establishing relationships;
- independent thinking;
- criticality in thinking;
- ability to develop and solve problems;
- logic and accuracy of answers (Machalová, 2010, p. 149).

Success in education is associated with psychological determinants and applies equally to students and young adults:

1. *Motives for learning and education*: In education, successful pupils/students are more guided by motives of personality development and personal (prestigious) goals.
2. *Success is linked to interest preferences*: The interest orientation of successful students is more oriented towards more distant life goals; among unsuccessful students it has several features of existential orientation.
3. *The course and results of education are greatly affected by the ability to learn (habits and attitudes to learning and education)*. In the unsuccessful, attitudes to the study are significantly more negative in the cognitive, emotional and activity components. Learning lacks favourable circumstances such as lack of perseverance, deficiencies in

scrupulous work on assignments and writing of papers, inconsistent and unplanned learning, mental lability and nervousness, learning under the influence of moods and current mental states, time constraints, difficulties in understanding more demanding texts, difficulties in written expression, insufficient concentration, lack of concentration, will, desire to learn.

4. Learning performance is significantly affected by adaptation. Successful students are not under the influence of personal (health, emotional) and social adaptation during education. Failing learners are affected in the education by the family, health and emotional adaptation, etc. (Machalová, cited according to Matúšová, 2019).

It transpires from the Maslow's hierarchy of needs how important the needs for acceptance, recognition, performance, competence or self-actualisation are important for an individual. All these needs are a motivation source for students, also during their education. If teachers want teaching to be effective, they should work from these needs. In educational practice this means creating an opportunity so that students experience success, recognition as often as possible, and are praised, awarded and encouraged a lot in the learning process.

The current method in the work of a teacher – manager, is *formative education and assessment*, as a process that is gradually being implemented in several areas, whether it is the assessment of those in education or assessment of learners in the process of their self-assessment, or evaluation of projects, teamwork and individual work. The main goal of formative assessment, as presented by Laufková, V. (2017), Starý, K. & Laufková, V. et al. (2016), is to improve, develop and acquire new occupational competencies needed to manage and evaluate the teaching process through innovative forms and methods. In European countries, considerable attention is paid to formative assessment (Bell-Cowie, 2001, Frey, N. & Fisher, D., 2011, William, D., 2015), whereas in Slovakia there is a lack of information. In practice, assessment is most often used when students are placed in classification levels (Szarka, 2017). However, formative assessment is focused on the continuous identification of areas that primarily require some improvement and subsequent decision on the further course of teaching (Tóthová, Kostrub, & Ferková, 2017).

The function of motivating students to learn is fulfilled by various, and that is not only positive, motivational factors. These factors affect differently the students and their overall success in the learning process. Often times, students' learning is guided by fear either of a bad mark, punishment by a parent, fear of teacher, or duty, or the need to achieve success, prestige,

and reward. In the case of intrinsic motivation, the student is motivated by the activity itself, i.e., he/she is interested in the curriculum, motivated by a desire to know, etc. In extrinsic motivation students care for praise by a parent or improvement in marks. Since the basis of students' active and creative activity in lessons, as well as their success, is what motivation they use to do these activities, the primary role of the teacher is to arouse and maintain students' genuine interest in cognitive reality and to develop in them a desire for continuous learning. Inducing and maintaining intrinsic motivation is not an easy task. Modern didactics offers teachers the options of inducing and sustaining intrinsic motivation of students by using initial and continuous motivational methods, activating methods, methods of differentiated teaching, which allow to transform educational content according to age and individual peculiarities of students and motivate all students not by fear of failure but by desire to succeed (Petty, 2002), and here lies a built-in requirement of formative education, or formative approach.

The aim of the school's current educational activity must be to develop the student's personality so that, in addition to the acquired knowledge and skills, the student also learns such qualities as activity, independence, creativity, responsible approach to learning and then later to work. The path of further improvement of the educational activities for students is in the whole complex of motivational factors that activate the internal resources of students and based on that they lead them to conscious regulation of activities. The issue of the relationship between the educational process and the learning motivation of students must be viewed from two aspects, as write Petlák et al. (2006, 2019), which overlap:

● The problem of using motivational factors to facilitate learning, to gain knowledge. The authors included here the use of motivational factors by a teacher in teaching, the organisation of learning activities, the use of content, methods and forms during lesson, and the impact on the social climate in the classroom. An important fact is that teachers are able to use motivational factors in the greatest possible unity with the needs and interests of students.

● The problem of influencing the motivational sphere of students, the development of the level of motivation of students, the formation of new motives.

In terms of strategies for forming a positive relationship to learning activities, important are positive motivation, student's positive attitude to the course of learning activities, interest in content, understanding of context, ability to apply knowledge in other learning situations, need to know, find out the result, solve a problem independently and seek problem solving

options. In order to ensure positive motivation, it is necessary to strip the lessons of stereotype, boredom and avoid uninteresting activities (Petlák et al., 2006, 2011).

Motivation to learn is also influenced by the way students interact. Such interaction can take three forms: cooperation, competition or individualism. Vendel (2005) states that cooperation between students arises in the events of complex learning. This form though can sometimes slip into a situation where the two or three most skilful students do the work of the whole group. Then it turns into a situation when these students are gaining, while the other students in the group "just enjoy the ride" without the desired effect. It is frequently beneficial to have equal representation of both genders when forming a group that is to work together. Imbalance has often proved to be disadvantageous. In general, it may, therefore, be said that for very timid and introverted students, individual learning is more beneficial precisely because they are unable to express themselves enough within a group.

Individual learning is learning when students learn independently and are evaluated for their own performance only. With the right approach and the necessary time and adequate explanation provided, most students can meet the goals.

3.2.5. *Procedures for increasing motivation to learn*

According to Petty (2002), the main prerequisite for optimal motivation is properly prepared and organised *classroom climate and rules*. The teacher should be patient, helping, should form the right relationship with the students, also individually with each student, should not criticise them and should especially not shame them in front of the classroom. It is important for the teacher to be able to assign tasks that are not too easy or too difficult, as in both cases there may be a loss of motivation. It is essential for students to be reminded of the meaning of what the teacher is presenting to them. When evaluating students' performance, it is appropriate to emphasise the comparison of the student with himself/herself, not with others, and point out the improvement. It is necessary to provide feedback and tell students what they are doing right and what wrong. Vendel (2005) brings up again the fact that when a teacher makes a student feel that he or she believes the student or that he/she can get better, it becomes a certain obligation for the student. Regarding motivation, Petlák (2006) talks about the magic circle, where success feeds success and failure leads to failure.

3.2.5.1. Assessment

Assessment measures the depth and breadth of knowledge and skills. It is sometimes criticised for being inaccurate and unreliable, and distorting both teaching and the curriculum. It should also be borne in mind that assessment results are not always a good or appropriate prediction of future performance. Nevertheless, both teachers and society need them. Properly implemented assessment inspires, motivates and gives feedback, which is important for, for instance, directing a quick correction or assistance if needed. However, according to Petty (2002), it can also result into an oversight of that what cannot be easily assessed.

Assessment can serve for various purposes. It can classify student performance, assist in job interview processes, assess the effectiveness of courses, teachers, lecturers, coaches, and can provide learners with a goal. This mainly concerns the assessment of the teaching or course, which should contain what the student/adult learner has achieved.

Teachers most frequently use *continuous – formative* assessment, which takes place during the lessons/course, and which assesses whether and how much the student has learned. With precision it also determines the student's learning problems, which the teacher can use to provide help. Since summative and formative assessment have very different goals, they are implemented by different methods.

3.2.5.2. Self-assessment

Assessment of students has been becoming more and more humanistic (Szarka, K. 2017), it is focused on the development of self-assessment skills. The student compares the development of his/her skills with himself/herself in a given time. In assessment, it is appropriate to focus on the cognitive, affective and psychomotoric side of the personality, which makes the evaluation of the student comprehensive. In assessing, the teacher prioritises the positive aspects of the student and constantly encourages him/her to improve. The meaning of self-assessment lies in the fact that students be able to assess their learning performance and at the same time be able to realistically assess their own strengths and abilities. Self-assessment can be implicit when the student assesses own results for himself/herself, re-evaluates what he/she has or has not managed to do, and explicit when self-assessment can take place outside the classroom between the teacher and the student, or possibly in front of the classroom, where each student assesses himself/herself publicly.

In self-assessment, the teacher's important role is to create climate and space for students in the classroom by, for example, providing students during lessons with procedures for solving individual tasks, in conclusion by providing information on the correctness of tasks, using tests that are not marked and thus verify only students' knowledge, by giving the assessment criteria in advance and informing the students of the given assessment criteria, in case of incorrect problem solving by not giving bad assessment immediately, but by giving students room for correction, and thus actually supporting the student's awareness of what is correct, and last but not least, by requiring from students to assess their own performances (Chmelíková, 2003, Tomášková, 2015).

There can be more ideas and suggestions and it is up to the teacher which procedures he/she chooses to succeed among the students and thus induce the right climate in the classroom, natural motivation, and to make students feel confident, comfortable and have the desired impact on them.

Conclusion

Formative assessment is a long-term, responsible and demanding activity, which – provided it becomes a school philosophy – makes sense and continuously brings demonstrable results. The goals of self-assessment, but also the methods and forms, are determined by the school itself. This allows its self-regulation and management from within (Turek, I., & Albert, S. 2006). The use of self-assessment though also increases the quality of education provided, report Spilková, 2012, Braunová, 2013, Straková, & Slavík, 2013, and Marks, 2014.

Systematic assessment and self-assessment of work is thus one of the main tools of school autonomy, it is a starting point for compiling annual reports, school educational programme,

updating the goals of further development, etc.; it should definitely not become a formal issue. On the contrary, thanks to team cooperation in its implementation, it should be an important tool, without which quality management in school is difficult to imagine. By knowing your strengths and weaknesses, it is possible to advance.

Therefore, it will be interesting as well topical to:

● examine some issues of formative assessment and motivation of students;

● assess the pedagogical training of future teachers;

● what innovations have been put into practice, whether teachers of vocational subjects use assessment methods promoting students' learning process and metacognitive development, for the purpose of purposeful and targeted planning of personal progress;

● it will be necessary to expand knowledge about formative assessment at the secondary school level as one of the current trends in secondary school assessment;

● explaining emphasise its benefits in respect of students, teachers, vocational lecturers, instructors, and for the school as such as well as practical training centres;

● and to analyse whether teachers use appropriate teaching strategies and whether, in the generation of the new millennium, within the upbringing and educational process, they really assess what will be needed in the future regarding the requirements of the labour market in Slovakia and abroad.

3.3. Formative assessment in teacher practice

Igor Marks

Formative assessment of the learner is presently a current, pedagogical-psychological requirement of positive pedagogy. The teacher (at different types of schools) as a teaching manager has the possibility and free hand to use formative assessment as a process that is gradually implemented in several areas, whether it is the assessment of those in education or the assessment of learners in the process of self-assessment or assessment of projects, teamwork and individual work (Laufková, 2017).

The main goal of formative assessment is to improve, develop and acquire new professional competencies needed to manage and evaluate the teaching process with innovative forms and methods (Bell & Cowie, 2001; Kaščák, & Pupala, 2009; Kratochvílová, 2012; Straková & Slavík, 2013; Tóthová et al., 2017).

Formative assessment is a long-term, responsible and demanding activity, which – provided it becomes a school philosophy – makes sense and continuously brings demonstrable results. The goals of self-assessment, but also the methods and forms, are determined by the school itself. This allows for its self-regulation and management from within. The use of self-assessment also increases the quality of education provided, as write Spilková, 2012 and Marks, 2014.

At present, not only at the level of primary schools, but also secondary schools, including secondary vocational schools, there is widespread knowledge about formative assessment as one of the current trends in assessment and all participants in the educational process are aware of its benefits. Whether for pupils, teachers, lecturers of vocational education, instructors, and for the school as such, and also for practical training centres.

At present, the teacher in all schools should use both summative and formative assessment during their work. Summative assessment usually involves measuring what students have learnt over a period of time. It has a formal character, it includes partial assessment into a summary, final form. Most frequently, it takes the form of an official classification. If summative evaluation prevails in the teacher's work, there may be situations where, for instance, during the final examination, testing, etc., the teacher realises that his/her students understood the discussed issue completely differently than expected. This can be avoided by using a formative (continuous) assessment that is oriented to the needs of the student. The information

that the teacher obtains will be used to plan and improve further lessons. The teacher not only assesses the condition of students, but also the condition of lessons. The information is intended not only for the teacher but also for the student. The teacher informs the student of the state of his development and at the same time such information has a motivating effect for the student (Kompolt, 2010, p. 158).

According to Gavora (2010, p. 16), such diagnostic practice corresponds to current trends in diagnosing students. The diagnostic model oriented at the student's errors is being abandoned and attention is shifting towards student support and development. At the same time, the thesis is postulated to raise the student to an active subject of diagnosis. The student should act not only as the diagnosed, but also as a diagnoser. He is to observe, examine and assess his/her own activity and qualities. Encouragement should be directed towards his/her self-reflection, which should lead to the creation of a realistic self-image. This is the so-called autonomous assessment (Slavík, 1999, pp. 133-139).

3.3.1. *Advantages of formative assessment*

The diagnostic methods used by the teacher directly in the classroom during lessons have several advantages (Angelo & Cross, 1993):

- they are formative in nature, unlike final or main exams, they provide feedback on students' learning;
- they are fast: they often take only a few minutes during the lesson; they can be processed easily and quickly;
- they are flexible: they can be adapted to suit the unique and specific interests and needs of the teacher;
- they are anonymous to the pupils (but they do not have to be): the aim of the assessment in the classroom does not necessarily have to be there needs to assess the work of the students with a particular degree, or provide them with feedback on their performance, the aim may be feedback on students' learning. Anonymity can provide a relaxed feeling among students so they could express not only what they understand but also what they do not understand;
- they have a positive effect on the students' learning process itself, promote writing (competence), critical thinking and increase the motivation of learning.

Both teachers and students need effective ways to monitor learning throughout the school year. Although individual teachers often come up with, discover, or simply come across a strategy that works, these informal discoveries seldom become a matter of public interest.

Data from similar activities that take place in schools are extremely important for improving teaching and learning. They show students how to learn and study, encourage teachers to objectively analyse what has happened in the classroom, and support students in self-assessment of their own learning processes.

Methods, techniques, strategies and tools of formative assessment can be used in various modified ways and forms at primary, secondary and higher education institutions. Formative assessment provides a wealth of information that can be used to improve lesson content, teaching methods and ultimately student learning. Formative assessment is most effective when done frequently. Effectiveness is ensured when the information obtained is immediately assessed and used immediately during the nearest teaching unit.

3.3.2. *The impact of formative assessment methods on students and teachers*

In the case of frequent use of formative assessment methods, they can have the following effects (Haugen, 1999). For the school, the teacher they:

- provide daily and ready-to-use feedback;
- provide a useful link to what students have learned without wasting the time required for test preparation, oral examination, etc.;
- make it possible to deal with students' lack of understanding in a timely manner;
- contribute to building good relationships with students, encourage them to understand that education and learning are continuously ongoing processes requiring their active engagement.

For students they:

- help to develop self-assessment and the ability of how to learn;
- reduce feelings of isolation and helplessness;
- increase comprehension and develop the ability to think critically about the content of the lesson;
- ensure long-term preservation of acquired information.

Briefly said, formative assessment refers to assessment that provides useful information about the current state of knowledge and skills of students. By useful information we mean that students will know where they are in the learning process and also what they must do to move forward and learn something new (Starý, & Laufková et al., 2016, p. 12).

The aim of formative assessment is not to remove marks from schools. Marking and the associated classification of students are likely to always belong to schools. The problem, however, is that marks (classification) do not provide all the assessment functions. This is because the mark does not always provide the student with feedback (feedback information). Subsequently, the student can perceive the assessment (at the level of appropriate goals) so that he/she can subsequently improve their work (learning). Concurrently, they must learn two pieces of information:

1. in what way his/her work is right or wrong (qualitative component of assessment – criterion);
2. to what extent his/her work is satisfactory (quantitative component of assessment – ranking on some scale).

It follows from the above that the mark lacks a whole range of information, namely: in what specific way (in what criterion, area, sphere, skills, etc.) the student proceeds correctly or incorrectly in the given learning activity. Nevertheless, the second component of assessment (quantitative) is also needed; in its absence, assessment cannot be assessment (more Slavík, 1999).

If teachers at school use mainly numerical assessment (marks, different scales of marks, points, letters, or percentages...), they primarily use marks to determine who is better and who is worse.

If we want to assess formatively, it cannot conclude the process only with marks. It is necessary to add value to the mark – to inform students what they have learned, what they have not yet learned and what and how to learn in the future.

The problem may not only be in the mark itself, but in the fact that students do not get from it information about how their performance failed to meet the assessment criteria. If, though, the criteria were explicitly expressed and clear in advance (e.g. in the form of specific goals), it would no longer be just about which student is better and which is worse, but the verification of what has been learnt (mastering the curriculum) would take over the importance over the mark as such (Starý & Laufková et al., 2016, p. 15).

The mark can also have a negative impact on students who are assessed as "*excellent*". It can give them the false feeling that they know everything and that they do not have to learn and improve further.

Assessment is useful for the student if it provides information. Such information (information assessment) that will enable and help them to make better decisions about how to achieve the goal. Information assessment is a student's advisor on how to do something and not a punishment for what he/she did not do or what he/she did wrong (Slavík, 1999, p. 112). Assessment that the teacher does not justify has no informational value for the student. For this reason, it is necessary for the teacher to try to clearly present his/her assessment to the student and provide it in the form of some sort of message or report.

It is appropriate that the information (report) on the evaluation has a written form, or be suitably memorable for the student. Subsequently, the student can return to it on a regular basis and without problems. Formative assessment is the first step on the way to the student's autonomous assessment, because with the help of formative assessment, the student learns (and later himself/herself recognises) what is right in his/her work and at the same time where he/she has specific shortcomings. So, we can call a formative assessment only such an assessment that provides students with relevant information for their progress in learning.

3.3.2.1. Why use formative assessment in teaching?

The main arguments for using formative assessment:

- students perform better as a result of formative assessment;
- work climate in the classroom improves;
- students learn to accept assessment as a natural part of life (Starý & Laufková et al., 2016, p. 21).

Research from abroad (Black & William, 1998; Floréz & Sammons, 2013; William, 2011) shows that if formative assessment techniques are used in the classroom on a regular basis, students' results as well as the quality of their learning improve significantly. Another benefit is the positive acceptance of formative (verbal) assessment by less successful students.

The potential of formative assessment lies in the fact that the student begins to perceive the teacher not as an authority (assessor), but rather as an assistant who helps him/her in learning. At the same time, the student takes responsibility for own learning (results), which is also manifested in a situation of a failure when the student does step away from responsibility, does not use excuses, but is aware of what his/her performance lacked and how he/she can (and is able to) improve.

By having formative assessments, students will also be prepared for the future and for practice, as they will automatically encounter manifestations of assessment in adulthood. Therefore, formative assessment does not only have to be a means of supporting learning, but also a goal of teaching.
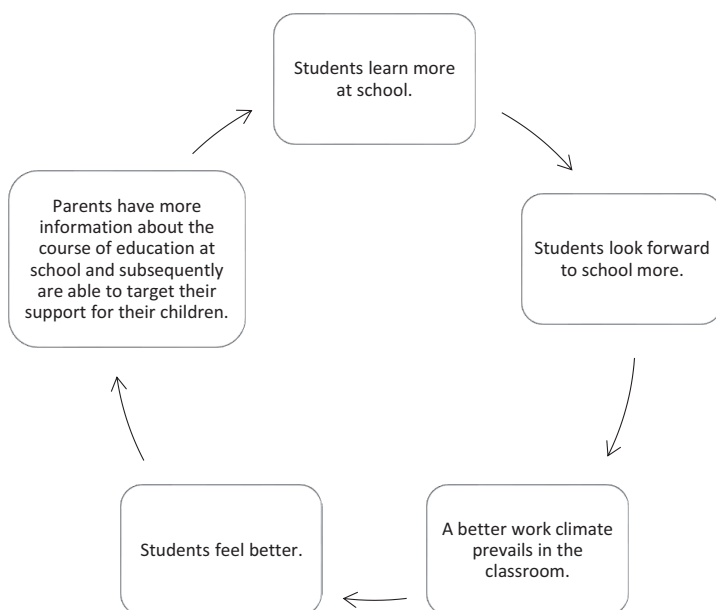

Figure 1. Why use formative assessment in teaching? (Starý & Laufková et al., 2016, p. 24)

3.4. Formative vs summative assessment in the work of a teacher

Igor Marks

Summative as well as formative assessment are important in schools, but both methods of assessment differ in their informational value.

Student assessment can currently be characterized as an interpretive and communication process that provides diagnostic information about comparable qualities of learning performance and behaviour of students in order to increase the quality of learning and teaching effectiveness (Průcha, 2009, p. 587 In Žlábková & Rokos, 2013, p. 328).

Formative and summative assessment differ in the way assessment is used to influence students' learning. Formative assessment provides feedback during the activity, its goal is to support further effective learning of students. Summative assessment evaluates the learning outcomes of the student after the end of the activity, its goal is to get an overview of the student's performance.

Formative and summative assessment are considered to be the basic types of assessment depending on the goals in the educational process (Szarka, 2017, p. 47).

Table 1   General overview of the properties of assessment types (Szarka, 2017, p. 47).

ASSESSMENT TYPE	diagnostic	formative	summative
Function	Revealing previous knowledge and the causes of learning difficulties	Identification of errors, deficiencies. Feedback to the student and the teacher. Finding a solution to a problem.	Student categorisation and qualification.
Place	Before the learning phase. In case the problem arises.	During the learning phase.	At the end of the learning phase.
Subject	Cognitive, affective and motor area	Cognitive area	Cognitive, but can also be another area

3.4.1. General overview of the properties of assessment types

The task of *diagnostic assessment* is the revelation of the previous knowledge and real knowledge of a group of students (much more rarely only a student). Its aim is to find out whether the student has a suitable knowledge base and whether his cognitive precursors are ready to receive new knowledge and process new information. Examples of diagnostic assessment in routine pedagogical practice are level tests, entrance and exit tests, of which mainly exit tests are used by teachers exclusively as tools for summative assessment. The word 'formative' is often confused with the notion 'formal'. Meaning of the word '*formative'*, though, expresses the meaning of 'to shape, to form, to create, to form'. The goal of *formative assessment* is thus the formation of a student, his/her personality and learning process. While diagnostic assessment is mostly applied at the beginning of the learning process, formative assessment accompanies the whole process and gives immediate information about where the learner is in the learning process, what he/she knows and what his/her shortcomings are.

In case of *summative assessment*, we receive information about the student's performance from a comprehensive teaching unit, while the completing and summing up of a learning unit is reflected in our school system in the classification on a scale of 1 – 5. It is therefore an assessment that is understood as final, the aim of which is to determine the results of the learning process. Information about the results is especially useful for the teacher. The teacher can apply the lessons from the results of the summative evaluation only in the next teaching phase, or in another group of students. The results of the summative assessment no longer have an effect on the student's learning process associated with the subject matter, therefore the learning supporting the character of the summative assessment is very weak or none in this respect. Neither does it offer the option of correction. By having the effect of opening a new learning phase, the summative assessment communicates to the students their final "verdict" based on their performance, as well as that the given learning phase has been completed (Szarka, 2017).

The notion "*summative"* (from the Latin summa = total) indicates that the purpose of this type of assessment is to obtain a final overall overview of the achieved performance (final assessment) or qualitatively categorise (divide) the entire assessed set (students, teachers, work results, procedures, etc.). Its essence is a decision such as yes - no, complies - does not comply.

The aim of such assessment is therefore not to continuously lead the student (as is the case of formative assessment), but conversely to rank, or select the most successful students.

A typical example of summative assessment are entrance examinations for a university (secondary school), but also various tests in job interviews.

Another type of summative assessment is applied at the end of a certain study period (school semester, end of school year, etc.) in order to make a final assessment of what the pupils have learnt (or how they behaved). The summative assessment includes various "exams", "essays", "five-minute tests", "didactic tests", etc., which are to measure performance in order to "give a mark". Summative assessment does not only have to take the form of a mark, but also be in a verbal form. So, a summative assessment may be expressed by, for example, a mark on a school certificate (or in other school documents during the school year), but may also be in other verbal form (of a summary nature) such as the results of final tests, etc.

The information provided by the summative assessment for the student is limited to a certain informational value (passed - failed, $1 – 2 – 3 – 4 – 5...$). Such assessment does and will certainly belong to schools for a long time to come. In such assessment, we, mostly from the position of a teacher, balance the results, performances for a certain period of time. It is important that such assessment follows a long-term, systematic and thoughtful formative assessment. Consequently, this may have an effect that students approach the summative assessment with the necessary understanding.

We refer to formative assessment as feedback assessment, corrective or working assessment (Slavík, 1999, p. 38). It provides assessment information (feedback) at a time when a certain performance or activity can be further improved (Pasch et al., 1998). Such assessment helps the teacher and the student to find a better way to the goal, at the same time it serves to manage education (Cangelosi, 1994, p. 109). Formative assessment is aimed at supporting further effective learning of students and improving their performance.

The aim of formative assessment is to point out the positives and also the shortcomings, but so that the subsequent activity of students can be influenced in a targeted manner. A suitable example of formative assessment is, for example, the teacher's comments and corrections during the student's activity, but also, for instance, dialogues and communication of students during group work, or while working on a project.

Formative assessment is usually a dialogue (verbal, written), it takes place as a conversation about the course of student's activity. Dialogue is a condition for being able to think about the assessed activity and to exchange experiences. Formative assessment then has a great chance and potential to be taken by the student as help, means and a way to self-improvement, self-knowledge and not as a final verdict, or judgment. Consequently, it can also have a positive effect on the motivation of the assessed student (Slavík, 1999, p. 39).

The goal of formative assessment is to change the assessed student, the changes in performance are only of secondary importance. The results thus change more slowly, more demandingly.

Summative and formative assessment have different motivational and conative consequences (Harding & Cowen 1982 in Slavík, 1999, p. 39). Summative assessment encourages the assessed student (teacher) to hide shortcomings and deliberately present strengths. On the contrary, in formative assessment, it should be in the self-interest of the assessed not to hide his/her problems, shortcomings and deficiencies in understanding during learning, as the aim of formative assessment is to help eliminate them.

a) different timing;
b) addressee;
c) purpose for which the given type of assessment serves (Starý & Laufková et al., 2016, p. 19).

So, in terms of timing, a summative assessment is a de facto final assessment (overall student performance, student performance over a period of time in order to "only" measure student performance) that informs what the student has managed at the end of a period. Formative assessments are therefore considered to be continuous assessments in terms of timing.

Summative assessment serves mainly as information for the parent (addressee) or for the purpose of admission to a higher type of school (addressee), formative assessment is intended primarily for the student (addressee).

Wren and Cotton (2008) consider the fundamental difference between summative and formative assessment to be the very purpose of assessment as well as the way in which assessment results are used. The purpose of formative assessment is to discover what students know, understand, or can change in the future. The purpose of the summative assessment is whether students master or understand the curriculum.

Table 2   Characteristics of summative and formative assessment (processed according to Slavík, 1999, Bell & Cowie, 2001; Starý & Laufková et al. 2016).

Characteristics	Summative assessment	Formative assessment
Objective	measure student performance at the end of the process; summarise the achievements; compare students' performances with each other	identify the educational needs of students and then adjust the teaching according to the findings; improve the study results of each student
Timing	total, final (at the end of a certain period of time)	continuous (provided during the learning process)
Purpose	*assessment **OF** learning* (checking students' learning)	*assessment **FOR** learning* (support for students' learning)
Who is the assessment primarily intended for	teacher; parent; school the student is applying to; education policy	student
Teacher's role	measure the level of the learnt and determine the mark	provide immediate and specific feedback; support students' learning
Student engagement	minimum	required
Student motivation	extrinsic	intrinsic
Effect on learning	weak; short-term	strong; positive; long-term

Similar processing and comparison of attributes of developing (formative) assessment and assessment of learning from various aspects as given in the table can be found in other authors (e.g., Szarka, 2017, p. 72-73).

Assessment of learning (summative assessment) - what we can conceive in the Slovak language as assessment of learning, assessment of learning results, assessment of learning performance, etc.

Assessment for learning (formative assessment) - in the Slovak translation it is an assessment for learning, but we can also formulate it as an assessment supporting learning, but the formulation 'developing assessment' captures much more the essence of the notion in terms of the assessment of progress and development of students in the learning process (Szarka, 2017, pp. 61-62).

3.4.2. *Assessment, that takes place directly in the classroom*

If we, as teachers, are interested in continuous improvement of students' learning results, it is important to focus on the teaching process and to improve the assessment that takes place directly in the classroom. Assessment must be an integral part of learning, it must respond directly to students' performance, it must provide quality information about the knowledge and skills of each individual student, as well as about the student's way of reasoning and thinking in order to adapt teaching to the needs of a particular student's needs in the future. Good feedback must be provided immediately, it must relate to criteria that specify expected performance. It must also contain specific recommendations on how to improve, while it must be comprehensible, graded according to the level of individual students. Subsequently, based on quality feedback, the student will learn to reflect on their own work and its results. Based on the feedback, students are involved in their own development and progress. When students learn how to learn, there is a great presumption that they will achieve better results.

Assessment with feedback aims to promote learning processes and the development of metacognition (of students). Thereby, such assessment has formative consequences for the student.

Teachers themselves must gradually and systematically learn to use formative assessment and concurrently teach students to work with formative assessment. Students are mostly used to informal methods of assessment. Formative methods of assessment represent a fundamental change not only in the teaching process itself, but also in the student – teacher relationship. Students cannot hide their shortcomings and mistakes, because effective learning consists of their identification and subsequent elimination (Looney, 2011 in Straková & Slavík, 2013, p. 279).

Both forms of assessment, formative and summative, complement each other. The difference between formative and summative assessment is that when using formative assessment, the formative function of assessment prevails, the aim of assessment is to improve

the student's learning process and make it more effective. When using summative assessment, the control function of the assessment dominates in order to evaluate the student's performance.

In terms of time, formative assessment is carried out continuously, during the performance, so that the student can improve (change) their performance. Summative assessment is carried out as a conclusive assessment (final) and the student can no longer change their performance. Summative assessment also provides the student with, among other things, feedback about his/her performance and can have a positive but also a negative impact on his/her further performance. The differences between formative and summative assessment are also in the way of application of feedback towards the student. In the formative assessment, the feedback is applied during the activity, in a situation where the student can still respond and subsequently regulate his/her following learning process. Such feedback thus contains information that allows further regulation of learning. In the summative assessment, the feedback is applied at the moment when the regulation of the student's learning process is no longer possible and often takes the form of information about the student's overall result (Žlábková & Rokos, 2013, p. 340).

In terms of the teaching concept, the summative assessment is a part of the transmissive concept of teaching focused on the transfer of "finished" knowledge. In the concept of constructivist research-oriented teaching, and similar approaches, formative assessment is conversely an integral part of teaching, which allows the regulation of the learning process of students. An important condition for the implementation of formative assessment is the concept of the assessment process in terms of partnership between teacher and student(s), or students to each other or the student's self-assessment. However, if the participants in the assessment deviate from such an understanding of the assessment process, the assessment itself can then only be considered as a control check. And this even if shortcomings are identified on the student's side. The use of formative assessment is considered to be the basis for the development of students' assessment and self-assessment competences. Acquisition of these competencies is an important goal of education (Žlábková & Rokos, 2013, p. 340).

3.5. Innovative methods, strategies and techniques of formative assessment

Igor Marks

Among the methods of formative evaluation, we include in particular:

- setting and formulating educational goals;
- Assessment criteria (we do not address this issue in the text, see e.g., Starý & Laufková, 2016, etc.);
- feedback;
- self-assessment and peer assessment.

Among the techniques of formative evaluation, we include various specific methods and procedures by which a certain method is implemented.

Under the notion 'formative assessment tool' we include specific products (student's portfolio, school certificate, student's workbooks, etc.) (Starý & Laufková et al., 2016, p. 26). Practice used at schools among teachers shows that in terminology, the differences between methods, strategies and tools of formative assessment are blurred.

Formative, developing assessment tools, which currently play a significant role in the success of the process of teaching and learning, mean not only the application of new methods and forms of assessment in a narrowly defined educational process, but are useful tools for reflection in general, but also for self-reflection and metacognitive reflection implemented into school practice in order to teach students to know their learning process, to get the most objective picture of their knowledge, skills, based on which they can then plan their personal progress with target and purpose. With such approaches, students will gradually be able to guide their learning process themselves, gain a realistic picture of themselves and become a responsible "designer" of their personal development (Szarka et al., 2019, p. 7).

Research results (see e.g., Szarka et al., 2019)[5] show that traditional forms and methods of assessment still predominate in teachers' pedagogical practice, and thus the most commonly used assessment strategies in general are regular verbal and written assessments of students' learning results. The results of testing stochastic associations show that the length of

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[5] Research focused on an overview of the use of assessment tools in the process of assessing student learning outcomes and developing assessment with respect to the teacher factor and its selected attributes, namely the length of teaching practice and the educational area of the teacher's approbation subject.

pedagogical practice of respondents and their affiliation to educational areas weakly determines their responses to the use and degree of assessment of student learning outcomes and tools for developing assessment in respondents' pedagogical practice (Szarka et al., 2019, p. 24).

3.5.1. Autonomous assessment

The changes in the student's quality of life that have been achieved during teaching are all the more pronounced the more the pupil himself/herself is engaged in the process of assessing his/her development and its influencing. The student himself/herself thus becomes an active participant in the teaching process (Helus, 2015).

If we want the development of key competencies to be one of the goals of today's school, we should lead students to take responsibility for their learning. If students will be able to assess their own performance, or the performance of classmates, we can talk about autonomous assessment. We mean such an assessment, when the student evaluates himself/herself, he/she can explain and defend the assessment. In essence, it means a metacognitive skill, as it concerns a reflection of student's learning processes, support and development of student's self-knowledge, self-confidence and development of learning skills, regulation of the learning process by the student, awareness of own progress and responsibility for the quality of his/her performance. Then autonomous assessment can be perceived as one of the goals of teaching (of a student) - to learn to evaluate themselves, but also others. Autonomous assessment includes peer assessment and self-assessment (Starý, Laufková et al., 2016, p. 27).

Among the techniques of formative assessment with emphasis on peer learning and assessment can be included (more Starý, Laufková et al., 2016, pp. 32 - 34):

- recognition - question;
- mutual assessment of spelling exercises;
- peer-assisted writing workshops;
- A-B-C / C3B4ME rule (*"See three before me"*)
- peer assessment of homework;
- two stars and a wish (request).

In the process of self-assessment, it is assumed that if the student is to be active in the assessment, the teacher must offer and present the assessment criteria (Slavík, 2003). Subsequently, the student is able to reflect on their performance, or performance of classmates.

The student's meta-reflection lies in the fact that he/she identifies not only the error, but also why the error has occurred. On the other hand, the teacher's meta-reflection lies in the fact that he monitors the student's thought processes during his work on solving a task (learning problem), knows how to predict the student's progress, knows why the student has made a mistake and can advise him on further progress in the learning activity.

In order for self-assessment to be meaningful, it cannot focus only on the affective component and also cannot be without rules. On the contrary, it must be a planned and systematic activity that will be part of education. Quality self-education leads to all-round personality development, supports the student's learning process and also saves time for all participants in the educational process (Kratochvílová, 2012).

Among the techniques of formative assessment with emphasis on self-assessment we can include (more Starý, Laufková et al., 2016, pp. 36 - 37):

- movements;
- graphic symbols;
- one sentence in conclusion of a lesson (or the given lesson activity);
- Assessment communication circle;
- self-assessment sheets;

3.5.2. *Educational goals and assessment*

Educational goals are verbal descriptions of what students should learn, what specific knowledge, findings, skills, attitudes should be the result of their learning. In order to be able to explicitly state whether or not a student has met a given goal, it is necessary to specify the goals (more on the goals, e.g., Marks, 2015).

Educational goals must always be formulated from the student's point of view, as this is the student's goal and not the teacher's goal.

Explicit, clear, distinct and specific expression of the goal can help in planning the lesson. The goal thus directly affects other didactic categories such as teaching methods, didactic principles, content and scope of teaching, etc. Consequently, it directs the teacher to what the students are to learn (not what they will learn).

The goals expressed explicitly are sufficiently understandable for students and are perceived as stimulating, are able then to motivate students, remove fear in their learning, they can also support their learning.

The question is how the teacher could control the fulfilment of the goals in relation to the formative assessment. The teacher can get help from two very simple strategies, which may or may not be in writing.

For teachers who have not previously purposefully worked with formative assessment, it is recommended to start with the following two methods. Angelo and Cross (1993, pp. 115-361) list up to 50 such methods:

- **"I understand, I don't understand" (The One-Minute Paper)**

The teacher asks the students 2-3 minutes before the end of the lesson to briefly answer one of the following questions in writing: "*What was the most important thing you have learnt today?*"; "*What problem has remained unanswered for you?*". Possibly, students can be offered an open-ended sentence: "*The most important thing I have learnt today in my opinion is...*"; "*On today's lesson I didn't clearly understand...*" (Enerson et al., 2007, p. 5)

This method makes it possible to assess the relationship between learning goals and students' ideas about these goals and their own learning. It can be used, for example, in classes, where students work with a large amount of new, basic information, which is used to introduce the given issue, etc.

- **"What I don't understand clearly" (The Muddiest Point)**

The teacher asks the students to give a brief and quick written answer, broken down into several points, to the question: "*What was least clear to you, clear, understandable in today's lesson, homework assignment, during reading, watching a film...?*"

This method provides quick feedback about which problem is the least understandable for the student, or which problem he/she understood least. This information can help the teacher decide what must be emphasised more in the future and how much time must be devoted to the topic, or issue. Students also need to make quick decisions and determine what they do not understand and be able to express what they did not understand. The method is recommended to be used at the end of the class, lesson, thematic unit, assignment, etc. (more e.g., Marks, 2014).

3.5.3. *Feedback and formative assessment*

Feedback and formative assessment are inseparable notions, and, in essence, quality feedback is considered to be the essence and core of formative assessment.

The assessment gives us the information contained in the feedback: it distinguishes better from worse. For this reason, it is present in every activity that has a goal. Assessment is considered a powerful intellectual tool that determines the value and quality of the assessed performance. Assessment can also affect performance. In the education system, assessment has not only a basic feedback (or evaluation) function, but should also be the subject of pupils' learning. This means that students themselves should be able to assess and not be mere passive objects of assessment (Straková & Slavík, 2013, p. 277).

Feedback is information that a student receives from a teacher in response to their performance. The aim of the feedback is to improve the assessed activity. If we were to remain at the level of upbringing and education, then the feedback, or its message, must have an information level. The provided feedback should help the student influence his/her repeated performance.

The main goal of the feedback is to achieve a positive change in the student and his/her results in order to learn better, or to learn more. Feedback should answer three basic questions:

- *"Where is the student going?";*
- *"How is he/she currently doing?";*
- "*Where and how is he/she to proceed further?"* (Hattie and Timperley, 2007).

In relation to the solution of a specific learning task, the objectives of the feedback process can be specified as follows:

- determine the degree of task fulfilment by the student;
- inform the student about what he/she has mastered;
- using appropriate questions, help the student get closer to the full completion of the task;
- help the student plan the next progress in learning (Košťálová & Straková, 2008 In Starý & Laufková et al., 2016, p. 62).

We distinguish between different types of feedback, which to varying degrees fulfil the functions of feedback (regulatory, social, cognitive, developing...):

1. task-oriented feedback - determines the degree of accuracy of the result;

2. process-oriented feedback - focuses on the process that leads to mastering the task, contains information on how to modify the procedure in order to master the task;

3. self-regulation-oriented feedback - helps students to regulate their learning and motivate them to master the given task;

4. personality-traits-oriented feedback - contains information aimed at assessing the student's personality (Hattie and Timperley, 2007).

In terms of time, feedback can be divided into (William, 2006):

1. short-term cycle - immediate feedback, at most within two days (e.g., one lesson or two-hour lesson block);
   - summative assessment need not appear in this cycle, formative assessment often has a verbal, dialogue, public form, etc.

2. medium-term cycle - e.g., written feedback, range of 3 days to 4 weeks (e.g., thematic unit);
   - rather, the teacher prepares a summative assessment (e.g., a didactic test). Formative assessment takes more the form of ongoing support and preparation for the final assessment.

3. long-term cycle - during the whole teaching period, range of 4 weeks and longer (e.g., part of the school year - quarter, half-year... - students expect summary information);
   - summative assessment has a public form (for students, parents...), formative assessment can take the form of verbal assessment in an official report for the student (and parents). It can also be supplemented with an interview between the teacher and the students (or together with the student)

3.5.4. *Feedback and mistake*

The impetus for feedback from the teacher is the most common mistake on the part of the student. Mistake can be an important indicator for the teacher of the degree of mastering the curriculum, indicating areas that students have not yet mastered. Feedback is not just about responding to a mistake. Feedback is also very important for trouble-free learning.

Mistake in the learning process can be beneficial in three ways. The teacher (1) is informed about the progress of a particular student; (2) for the student, it is a means of learning; and also (3) it conveys knowledge about how the student masters the curriculum, what strategies, techniques and procedures are used by the student to master the given curriculum. Students are

often given information that their answer contains a mistake, they also learn the correct answer, but often there is no information on how to reach the correct answer (solution).

Quality feedback leads to positive results, which are beneficial not only for the student but also other participants in the educational process. While there is a consensus that feedback is beneficial, it remains questionable what quality feedback should look like. The resultant form of effective feedback is influenced by many factors. This is because the teacher makes a number of simultaneous and complex decisions in providing feedback with respect to the timing, scope, focus, function, style, clarity, accuracy, and tone of the feedback, often over a very limited period of time. Feedback should help the student to bridge the gap between the current and the target state of knowledge. However, if the feedback is unclear, inaccurate, or does not relate to the goal of the given student's learning activity, then feedback has the opposite effect (Starý & Laufková et al., 2016, p. 73).

Given the nature of formative assessment, providing feedback makes sense if it purposefully and over the long term develops a given skill of the student (Straková & Slavík, 2013).

3.5.5. *Student portfolio*

One of the tools to monitor a student and his/her progress in the long run is *student portfolio*. It can be described as an organised set of students' works, collected over a period of time, providing various information about the development and progress of the student and his/her results (more e.g., Slavík, 1999, Kratochvílová, 2011).

The principle of the portfolio is based on the continuous archiving of the results of students' activities. Subsequently, we can map their individual development - we observe, analyse and diagnose the development of the student, we monitor how his/her skills change over a period of time.

The basic types of portfolios include:

1. *work portfolio* - contains a large amount of materials on students' learning, which are selected for the portfolio by the students themselves;
2. *presentation (selection) portfolio* - contains a well-thought-through set of a limited amount of the student's work; its purpose is to select the best of his/her work. It can be used for public presentation, for instance;

3. *documentation portfolio* - contains a large number of works (student products) that document students' development with respect to the goals of education. The selection of documents is a joint activity of the teacher and the student.

The presentation and documentation portfolio serve more for a summative purpose; for formative purposes, the work portfolio is used. The work portfolio documents the daily activities of students.

Reasons for using the work portfolio in teaching are (Starý & Laufková, 2016, p. 75 - 76):

1. The student becomes aware of his/her value when looking through his/her works and products in his/her portfolio; it can help him/her to understand the meaning of learning and the mutual relationship between the skills he/she has acquired.
2. It develops students' organisational and decision-making skills; the student defends the choice of his/her works and products in the portfolio.
3. It helps teachers to observe the student's learning, to diagnose his/her strengths and weaknesses. The work portfolio also helps the teacher to plan carefully his/her lessons.
4. It provides many opportunities for students - teacher cooperation, it is the basis for the student's assessment by the teacher, for the self-assessment by the student, for consultation with parents, for monitoring the student's progress and the development of his/her personality. The student receives feedback through the work portfolio.
5. When working with the portfolio, each student can be successful in something, the portfolio stimulates an individual approach to students with an emphasis on the personal development of each student.

If the portfolio is to fulfil a formative purpose, it is necessary that it:

- reflect not only the specific description of the student's performance, but also the teaching and learning process itself, including the rationale for the assessment (reasons);
- judge the student according to his/her developmental possibilities, respecting his/her uniqueness;
- also focus on social relations and cooperation and not only on cognitive processes;
- also contain a future outlook, the perspective of the development of the student's performance, as well as a description of how the student should avoid mistakes, how he/she should develop, etc.

3.5.6. Selected methods of formative assessment

In the context of this paper, we have presented above two specific methods of formative assessment *(I understand, I don't understand (The One-Minute Paper) and What I don't understand clearly (The Muddiest Point))*. Here are further three specific methods for teachers who have not previously purposefully worked with formative assessment. Angelo and Cross (1993, pp. 115 - 361) list up to 50 such methods:

- *"The One-Sentence Summary"*

The teacher asks the students to summarise the lesson material in 1-2 sentences. For the teacher, this can be a measuring device of the extent to which students can summarise (concisely, completely, accurately) a large amount of information. Students should follow the rules for making sentences, they need to think creatively about the content of what they have just learnt. Students will gain the ability to sum up information, which they can later process and remember with greater ease.

- *"Directed Paraphrasing"*

The teacher invites students to talk through a part of the lesson in their own words, or that they retold it for a specific (fictional) audience, purpose. This method makes it possible to examine how students understand information, their ability to transform information into such a meaningful form that it can be understood also by other specific groups such as the student and the teacher. This method is much more complex than the usual paraphrasing (summing up) in that that the school teaches the student to speak and write for a specific purpose and for a specific audience.

- *"Practical use of the curriculum" (Application Cards)*

After the students have been introduced to the issue, the teacher distributes sheets of paper to the students and asks them to write at least one possible, realistic use of the issue they have just addressed. This method makes it possible to quickly determine whether students have understood the delivered lesson. At the same time, students are forced to combine new information with their previous knowledge and insights.

The given methods look simple at first. The problem, however, is that they are fully absent from lessons and classes due to lack of time. As a result, teachers are denied the background and notes they could use for feedback in the evaluation of the lesson. Teachers

thereby repeat the same mistakes over and over again and teach in the same "well-trodden" method.

There are no limits to designing own formative assessment methods. However, teachers need to keep in mind that such methods need to be simple. They have to ask themselves the following simple questions:

- "*What do I want students to learn?*";
- "*What kind of answer will I get?*" etc.

Teachers must get only such information that is relevant for them at the given moment, which they, as teachers, want to further process, evaluate and use in the future.

Concurrently, students need to know why the teacher uses the given method. A true and reasonable explanation of the method and its purpose can influence well any further planning of lessons.

After collecting data from students, it is necessary to analyse them, classify the answers into several main categories, and, most importantly, not to overlook anything. Teachers can use the help of the following questions:

- "*What are the most common answers?*";
- "*What else did I not know about my students?*";
- "*How do I plan to use the information obtained in the future?*" (Enerson et al., 2007).

Furthermore, there is no need to be afraid to acquaint the students with part of the analysed data. Students can use the information to help them improve their learning skills (Nicola & MacFarlane-Dick, 2006, pp. 208 - 210).

Formative assessment can be a useful means of reflection, which is implemented in schools in order to teach students to know their learning process, to get the most objective picture of their knowledge, skills, based on which students can deliberately and purposefully plan their personal progress. With such attitudes, students will gradually be able to guide their own learning process, gain a real picture of themselves and become responsible "constructors" of their personal development. The skill acquired in this way is useful for graduates of all schools, as the period of compulsory school attendance is no longer sufficient to acquire the necessary knowledge and skills. The general effort of the educational process is to constantly support and lead the learner towards knowledge and provide them with the best possible conditions and diversity of strategies in acquiring the necessary competencies, as well as to

create a learning habit that should be the basis for their lifelong learning. It is the school that should be one of the institutions that can to some extent influence the fulfilment of the mentioned, generally necessary requirements of society (Szarka, 2017, p. 124).

One way how to improve education is to improve teaching. Formative assessment methods can help to attain this. Their advantage is that they do not require specialised training, as they can be performed by all teachers, at all levels and types of schools, in different fields of studies.

CONCLUSION

The monograph entitled *Innovations in Current Educational Practice and its Management* deals with the issue of a series of attributes of education and its management and originated from the mutual cooperation of an international research and author team.

The first chapter – *Innovations in Higher Education Management* – focuses on quality management of education at universities, providing a framework for pedagogical management in teaching and current trends in teaching methods in higher education. The management of education is presented by the authors as a self-regulatory process involving basic managerial functions that ensures effective teaching by teachers and supports students in their study in terms of efficient professional and didactic procedures. These are linked to innovative approaches to planning, organisation, management, control, and evaluation of educational processes at universities. The issue of cooperation between universities and industry within the EU countries is also discussed here, including a presentation of interesting research results. The authors of the chapter also reflect on the difficult situations in the work of a manager, consider strategies in management and ethical contexts in the work of the manager, and in his resilience ability.

Innovations in the management of adult education and lifelong learning, also in light of the recent past, are presented in the second chapter – *Innovations in Adult Education Management.* The authors of the chapter emphasise mainly the transversal competencies of education managers, the specifics of lifelong adult education in the EU, and point to the needs of a learning society in relation to EU goals.

The monograph concludes with the third chapter – *Innovation Processes in the Education System and Practice.* The focus here is on formative education and assessment in schools as a requirement of positive pedagogy. It also addresses motivation as a part of education, and assessment in the teacher's practice. The authors compare formative and summative evaluation in the work of a teacher, and point to their positives and negatives. The chapter concludes with a look at the methods, strategies, and techniques of formative education and assessment, and at systematic self-assessment of work, which is one of the main tools of school autonomy.

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About the Authors

Associate Prof. Erika Juhász Ph.D., is a qualified cultural manager and adult educator. She obtained her PhD degree in the Doctoral Program of Educational Studies and Cultural Management at University of Debrecen, Hungary. She is associate professor and head of the Department of Cultural Management and Adult Education at the Faculty of Humanities, University of Debrecen. Furthermore, since 2012 she has been the director for Cultural Research and Education of the Hungarian National Institute of Culture where she is in charge of training and further training of cultural education professionals of the Carpathian Basin; she is also conducting research in cultural education. She is a board member of several non-governmental organizations, the president of "KultúrÁsz" Cultural Association and the vice-president of the Hungarian Educational Research Association. Her research is centered around the connection between adult education and culture, its methodology and institutional framework with the key focus on cultural learning.

She is the chairwoman of the scientific boards of several international conferences as well as the chief organizer of various events, e.g.: Hungarian Conference on Educational Research, Cultural Management Conference named after "Mátyás Durkó" to name just a few. She is the chief editor of the journal "Cultural Review (Kulturális Szemle)" and the member of the editorial board of numerous journals, e.g.: Hungarian Educational Research Journal, Polymatheia - History of Culture and Education (Művelődés- és Neveléstörtènet), etc. She is the professional leader and research group leader of various subsidized research projects, the latest one, supported by the European Union, investigated cultural learning in 4 countries (Hungary, Romania, Slovakia and Ukraine).

Prof. PaedDr. Ing. Daniel Lajčin, PhD., DBA, LL.M is a university teacher (functional professor) at the Department of Management at DTI University in Dubnica nad Váhom, Slovakia, and is the Chairman of the Governing Board of this private institution. Since its foundation, he has been a member of the Scientific Board. Assoc. Prof. D. Lajčin is also the General Director of an international holding company focused on education and information technology.

In his pedagogical, scientific and research publications, he has been focusing on management, especially on how to cope with demanding life situations.

He is the author and co-author of many monographs, books, textbooks and articles published in Slovakia and abroad. Currently, he is the chief investigator or a co-investigator of several scientific research projects.

Mgr. Igor Marks, PhD., works as an assistant professor at the Department of School Pedagogy and Psychology (deputy director) of the DTI University in Dubnica nad Váhom, Slovakia.

He lectures in the field of didactics, pedagogical diagnostics, history of vocational education and is the coordinator of teaching practice. In his pedagogical, scientific and research publications, he focuses on the history of vocational schools in the first half of the 20th century, as well as on formative assessment. He also participates in solving domestic and international scientific projects.

Csilla Pesti, PhD. is an assistant professor at the Teacher Training Centre, Faculty of Humanities and Social Sciences, Karoli Gaspar University of the Reformed Church in Hungary. She earned her doctorate in Educational Sciences at Eötvös Loránd University (Hungary) and the University of Innsbruck (Austria) in 2019. She was a Marie Skłodowska-Curie Early Stage Researcher in the European Doctorate in Teacher Education programme between 2016 and 2019.

As an assistant professor, she is involved in pre-service and in-service teacher education programmes, where she teaches pedagogical subjects. Her research interest covers a wide spectrum, including teacher education systems, the notion of teachers as researchers, as well as digital pedagogy. She has been involved in numerous national and international research projects in the field of teacher education.

Prof., PhDr. Viola Tamášová, **PhD.,** currently works at DTI University in Dubnica nad Váhom, Slovakia, in the Department of school pedagogy and psychology. Since 1990, she has been working as a university teacher and has developed the expertise in university education and educational research. Within the last 12 years she has been the editor-in-chief of the peer-reviewed international scientific open journal Acta Educationis Generalis.

She habilitated in pedagogy at the Faculty of Education of Comenius University in Bratislava, and inaugurated in 2020 at DTI University in the field didactics. In her publications, she deals with the issues of pedagogy, sociology, adult education and lifelong learning. She cooperates

with colleges, universities and institutions of adult education in Slovakia and abroad in national and international projects.

In the current scientific project IGA 007-DTI/2020 - *University Managerial Competences and Innovations in Current Educational Practice* (2021-2022), she is the Head of Research Team.

Roman Tandlich, PhD is Associate Professor and Senior Lecturer in the Division of Pharmaceutical Faculty of Pharmacy, Rhodes University, Grahamstown, South Africa. He is originally from Slovakia where he completed his education up to Masters level. He then continued on to complete his PhD in Pharmaceutical Sciences at North Dakota State University in Fargo, USA.

Dr. R. Tandlich joined the Faculty of Pharmacy at Rhodes University in South Africa in 2008. He has been with the same department ever since. He is lecturing on Pharaceutical Chemistry and Biochemistry and Disaster management. Dr. Tandlich´s research towards disaster management approaches towards shift action to address water, sanitation and hygiene challenges in developing countries has been explained in the internationally cited publications and Scopus journals. He has also been a very active partner in a number of international research teams. His research activities have also been interconnected with his pedagogical activities not only in undergraduate courses but also in his supervision of PhD students. Being the supervisor of graduation theses and PhD theses, Dr. Tandlich uses his pedagogic expertise to make his students understand the need for making the theory meet the requirements of everyday life. This has been documented by the topics the above mentioned theses deal with.

**INNOVATION IN CURRENT EDUCATIONAL PRACTICE
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Assoc. Prof. Erika Juhász, Ph.D.
Assoc. Prof. Ing. Daniel Lajčin, PhD.
Assist. Prof. Igor Marks, PhD.
Assist. Prof. Csilla Pesti, Ph.D.
Assoc. Prof. PhDr. Viola Tamášová, CSc.
Assoc. Prof. Roman Tandlich, PhD.

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