

CORVINUS UNIVERSITY OF BUDAPEST

**QUALITY ASSURANCE IN HIGHER  
EDUCATION, THE IMPACT OF THE CHANGING  
ECOSYSTEM ON COURSE DEVELOPMENT**

PhD THESIS

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changing ecosystem on course development

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Corvinus University of Budapest  
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*To Péter, Dóri, Andris, Mom, and Csabi, who were always there for me and supported me,*

*to Bumbi, János, friends, and colleagues, who believed I could do it,*

**THANK YOU!**

*Motto: 'Accounting is the most wonderful invention of the human spirit.'*

*(Goethe)*

## 1. INTRODUCTION

The topic of my doctoral research was 'life served on a silver platter.' In addition to my role as a lecturer at the Department of Accounting at Corvinus University of Budapest (CUB), I also have more than 25 years of experience in finance and accounting. My professional path took me from the banking world to consulting and auditing, and in the meantime, I had the opportunity to teach accounting in various training programs. I then joined the CUB Doctoral School as a student and researcher. This thesis is partly the result of that journey.

Throughout my career, I have encountered accounting as a user, and now, when we teach (among other things) the subject of Foundations of Accounting<sup>1</sup>, which I develop with my colleagues from semester to semester, this multiple perspective also comes into play. Our task is to fill this course with content that, on the one hand, provides our finance and accounting students with the necessary professional foundation and motivation for their further studies, and on the other hand, as a compulsory accounting subject in all general business courses, to provide a conceptual and skill-based foundation that our non-specialist students will encounter in almost any area of corporate/business life. And we should do this within the given institutional framework, adapting with sufficient sensitivity to changes in the environment around us, keeping in mind the needs of our students and their individual learning paths, and developing our teaching methods.

### 1.1 Justification for topic selection

The changing university system and the current challenges of professional development encourage all dedicated educators to seek effective, innovative solutions to the pitfalls of the education system. The COVID-19 pandemic has accelerated development in certain areas, such as the spread of online tools, but has hindered education in other areas, such as personal relationships, communication, and collaboration. It is also important to take a step back after new developments in

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<sup>1</sup> The subjects taught in Hungarian and English are as follows: Foundations of Accounting, Analysis of Accounting Statements, Elements of Accounting, Foundations of Accounting, Understanding Financial Statements (hereinafter, in the case of general references to Foundations of Accounting taught at Corvinus University of Budapest, I also include these subjects).

teaching methodology and evaluate the results achieved from a distance to examine how well they support the desired learning outcomes and how well they meet the needs of students (Tarpataki & Mikáczó, 2022).

The constantly changing economic and educational environment always provides new research topics, the results of which are of interest not only to researchers but also to educators and education organizers, so that they can incorporate them into their materials and compete for those who want to learn (Jordan & Samuels, 2020). Knowledge is now available in many forms on today's education market. Vocational training within the framework of public education, specialized further education based on high school graduation, full-time and part-time higher education, evening or correspondence courses, bachelor's and master's programs, as well as the opportunities offered by the internet, longer or shorter courses available online (even with a degree certificate)<sup>2</sup> are all worth considering for those who wish to develop their knowledge, skills, and abilities (Tarpataki, 2021).

However, it is easy to get lost among the many options. As interested parties, we may have several questions: Which training is accepted by the labor market? Are the curriculum and methodology of the course up to date? Can I acquire competencies that can be used in multiple roles and jobs, and on which I can build to develop further? There are no definite answers to every question, but with the introduction and continuous development of quality assurance, higher education can provide guidance to some of these questions. This is the perspective from which I began my research.

## 1.2. Description of research topic and concept

Quality assurance, which encompasses both internal and external evaluation of colleges and universities, plays a key role in preserving and developing the fundamental strengths of higher education and shaping the future. This includes maintaining and renewing the fundamental values of academic freedom, institutional independence, and social responsibility. From its inception, quality assurance in

---

<sup>2</sup> I am thinking here of the popular MOOCs (Massive Open Online Courses), which are internet-based courses available to anyone, allowing unlimited participation and web access. Unlike traditional teaching materials such as lecture videos, presentations, texts, and case studies, these courses offer users a variety of interactive forums, thereby promoting knowledge sharing, group work, and communication between students, instructors, and teaching assistants. (mooc.org)

higher education has reinforced and, at times, led the way in its commitment to these fundamental values. (Eaton, 2021)

Today, a broader and more thorough approach to quality assurance can be observed. Both institutions and quality assurance organizations have begun to apply a holistic approach to quality, recognizing that quality in higher education (as well) has many components, encompassing not only teaching and learning, but also research, management, student support services, and community engagement: that is, integrated quality assurance methods have been developed that focus on the entire educational ecosystem, not just individual programs or institutions (Kayyali, 2023).

At the beginning of the 21st century, in a period of continuous and sudden changes in the world and the innovation that responds to them, this approach has become perhaps more important than ever. Quality assurance also plays a key role when we apply new teaching and learning practices, develop new types of institutions or programs, and involve new types of education providers. Given the emergence of the COVID-19 pandemic, which has caused a shockwave of change, the importance of quality assurance efforts has, perhaps, never been more significant (Eaton, 2021).

*1. Figure: Doctoral research and its environment (own edition)*

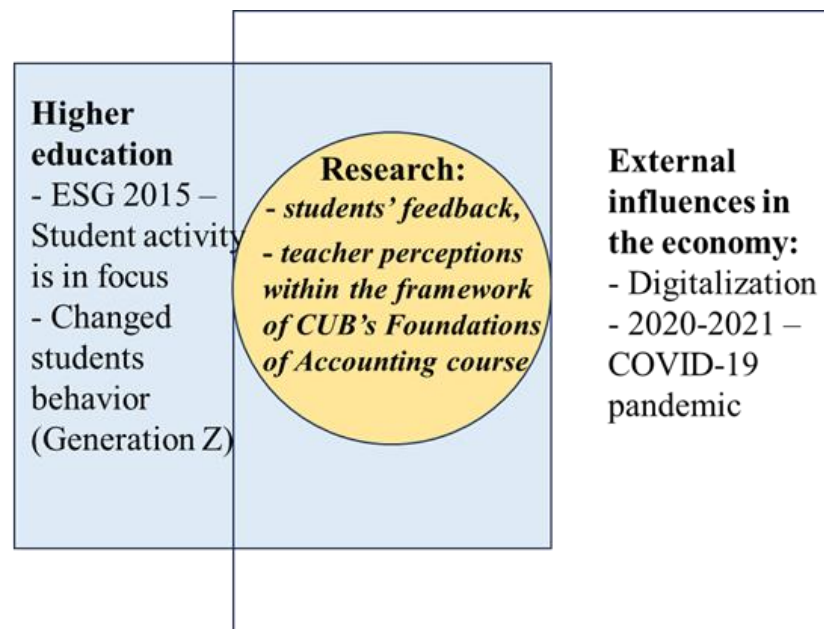


Figure 1 shows the context of my doctoral research. I do not attempt, nor could I attempt, to provide a comprehensive overview of all aspects of higher education or its quality assurance, nor do I attempt to provide a detailed description of the external

influences affecting higher education in recent years. However, taking these aspects into account, I examine and analyze in my empirical research the changes that have taken place in the development of the subject of Accounting Foundations at Corvinus University of Budapest in this environment. The fundamentally exploratory research approaches the process of subject development from several angles: on the one hand, it takes into account the results of student feedback, and on the other hand, it includes the experiences and reflective feedback of teachers in this regard, as well as the conclusions drawn from them.

Why did my research focus on the Foundations of Accounting? The answer goes beyond the fact that, as a lecturer at the CUB Department of Accounting, I myself participated/participate in teaching the subject(s). I summarize the reasons below:

1. The Foundations of Accounting are taught in almost all economics-related courses<sup>3</sup>. Whether someone is studying tourism and hospitality, economics and management, or commerce, tourism, marketing, or finance and accounting, at least one semester of accounting is required.
2. Studying accounting requires several skills that are also essential in other economics-related programs (corporate finance, operations research, etc.), which means that the research results can also be used in teaching these subjects.

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<sup>3</sup> The subject of 'Foundations of Accounting' is a fundamental part of almost all economics-related courses worldwide. This subject is essential for understanding financial and business processes and for supporting corporate decision-making. International examples:

United States: Courses in 'Financial Accounting' or 'Principles of Accounting' are mandatory in business and economics programs at American universities. For example, the course 'Financial Reporting and Control' is part of the core curriculum in the MBA program at Harvard Business School. (<https://hbsp.harvard.edu/course-explorer/courses/financial-reporting-and-control>) Similarly, most business schools accredited by the Association to Advance Collegiate Schools of Business (AACSB) also include the Foundations of Accounting as a compulsory subject. (AACSB, 2024)

United Kingdom: At the University of Oxford Said Business School, the subject 'Financial Accounting' is included in both undergraduate and master's programs, introducing students to the Foundations of Accounting. (<https://www.sbs.ox.ac.uk/programmes/degrees/bahons-economics-and-management/degree-outline>)

Germany: At the University of Mannheim's Faculty of Economics, the subject 'Buchführung und Bilanzierung' (Accounting and Balance Sheet Preparation) is compulsory for students of economics.

Asia: Many Asian universities include teaching the Foundations of Accounting in their core curriculum for economics and business programs. For example, the National University of Singapore Business School and the Faculty of Economics at the University of Tokyo offer such courses.

Australia: University of Melbourne (Australia): The 'Principles of Financial Accounting' course teaches the Foundations of Accounting, integrated into their economics and business programs, similar to the practice in Hungary. (<https://handbook.unimelb.edu.au/2024/subjects/acct10004>)

The above examples confirm that teaching the basics of accounting is a recognized part of economics education in international higher education, providing students with the necessary basic knowledge and skills.

3. The computational or quantitative characteristics of the subject often cause students to feel anxious beforehand (van der Heijden, 2017), and they arrive at their first classes with negative preconceptions. While a small amount of anxiety can be useful, a large amount of anxiety significantly impairs student performance. (Clark & Schwartz, 1989) With this in mind, it is worth using a variety of teaching methods that best suit different learning styles, thereby reducing student anxiety, which can have a positive effect on both learning motivation and results. During the development of the subject, special attention was paid to the diversity of teaching methods, understanding the needs of students with different learning styles, and meeting those needs in line with the available opportunities.
4. Foundations of Accounting is considered a foundational subject; several subjects in university education build on what is learned in this course (learning basic concepts, understanding basic relationships, mastering basic calculations, becoming aware of business implications, etc.), Therefore, it is particularly important to use the most effective teaching methods to ensure that the output competencies are met and that students can continue their studies with these competencies.
5. Entrepreneurial and managerial skills also require certain basic accounting knowledge, the development of which receives special attention in higher education (Árváné Ványi et al., 2017; Mihalkovné Szakács, 2014) and adult education.
6. Accounting itself, and thus the material learned/taught in the course Foundations of Accounting (concepts, relationships, ideas, practical application, etc.), is generally completely unfamiliar to students entering higher education in economics.<sup>4</sup> This fact allows me to largely isolate the

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<sup>4</sup> At the start of the research at CUB, only 10% of the 530 student responses to questionnaires sent out in the spring semester of 2019/20 and the fall semester of 2020/21 (55 people) responded that they had encountered accounting either during their high school studies (19 people) or based on their work experience to date (36 people). In other words, the subject was completely new to 90% of them. The above sample included students majoring in finance and accounting as well as all other majors (applied economics, international business, business and management, etc.), so it can be considered representative overall.

results of student feedback from one of the external components of the subject, namely prior knowledge of accounting.<sup>5</sup>

Accounting is not generally considered a STEM (science, technology, engineering, and mathematics) subject. STEM subjects typically relate to fields that are based on science and mathematics, and although accounting involves mathematical skills, it is primarily considered a business and social science discipline. However, the intensive calculation, quantity interpretation, quantitative nature, and use of technology and data analysis in modern accounting involve STEM-related skills. It is therefore worthwhile for both sides to consider the results of methodological research and examine the extent to which they can be adapted in course development.

The results of my doctoral research are therefore not solely applicable to this subject. Responses to changes and modifications, changes initiated in the curriculum and teaching methodology, and feedback from teachers and students can offer suggestions for improvement, development, and solutions in several similar subjects.

### 1.3. The structure of the thesis

The research and analysis presented in the doctoral thesis were carried out in the environment illustrated in Figure 1, therefore it is particularly important to describe the most important facts and connections related to the research environment.

The second chapter, following the Introduction, entitled 'Framework', deals with quality assurance in higher education. However, before providing a brief historical overview of the topic, the thesis explains the concept of quality. Of course, the interpretation of this concept is very broad and many different approaches are possible, so the focus is on quality as used in the context of higher education. Almost simultaneously with the emergence of higher education, the issue of quality assurance arose in the Middle Ages, with quality (improvement)

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<sup>5</sup> Researchers have long studied the relationship between demographic variables (gender, English as a first or second language, field of study, and previous educational experience) and students' attitudes toward learning accounting, and thus their academic performance. These studies have shown that each of these demographic variables influences how students learn. (Duff & Mladenović, 2015)

and accountability immediately emerging as the two cornerstones of quality assurance.

The third chapter deals with student-centered learning, teaching, and assessment (SCLA), which is a central element of the ESG (European Standards and Guidelines for Quality Assurance in the European Higher Education Area) and the Bologna Process in Europe. It examines the learning process from the perspective of students, teachers, institutions, and their learning support and student services departments. It pays particular attention to different learning styles, motivation, and changes in the role of teachers.

A review of the research environment cannot be complete without a presentation of the impact of digitalization processes and the COVID-19 pandemic on higher education. This is summarized in the fourth chapter, highlighting examples of steps taken by Corvinus University of Budapest in recent years towards quality assurance and student-centered learning. Also in this chapter, I summarize the framework of empirical research using the TPACK model and mention other tools for measuring teachers' digital competencies (DigCompEdu<sup>6</sup> and HeDiCom).

The fifth chapter summarizes the expectations related to accounting education in higher education. Both professional organizations and employers have expectations regarding the competencies of students graduating from higher education in economics. Based on this, the focus is on the training requirements expected in relation to the Foundations of Accounting course, which is the subject of the empirical research.

The sixth chapter describes the research conducted to verify the hypotheses formulated on the basis of the research questions, both in terms of methodology and data collection, as well as in terms of results. Both studies are exploratory in nature; one examined student feedback over several semesters using a questionnaire, which was typically processed using quantitative statistical data analysis. The qualitative research, on the other hand, seeks answers to the research questions from the perspective of teachers in the form of expert interviews and presents the results.

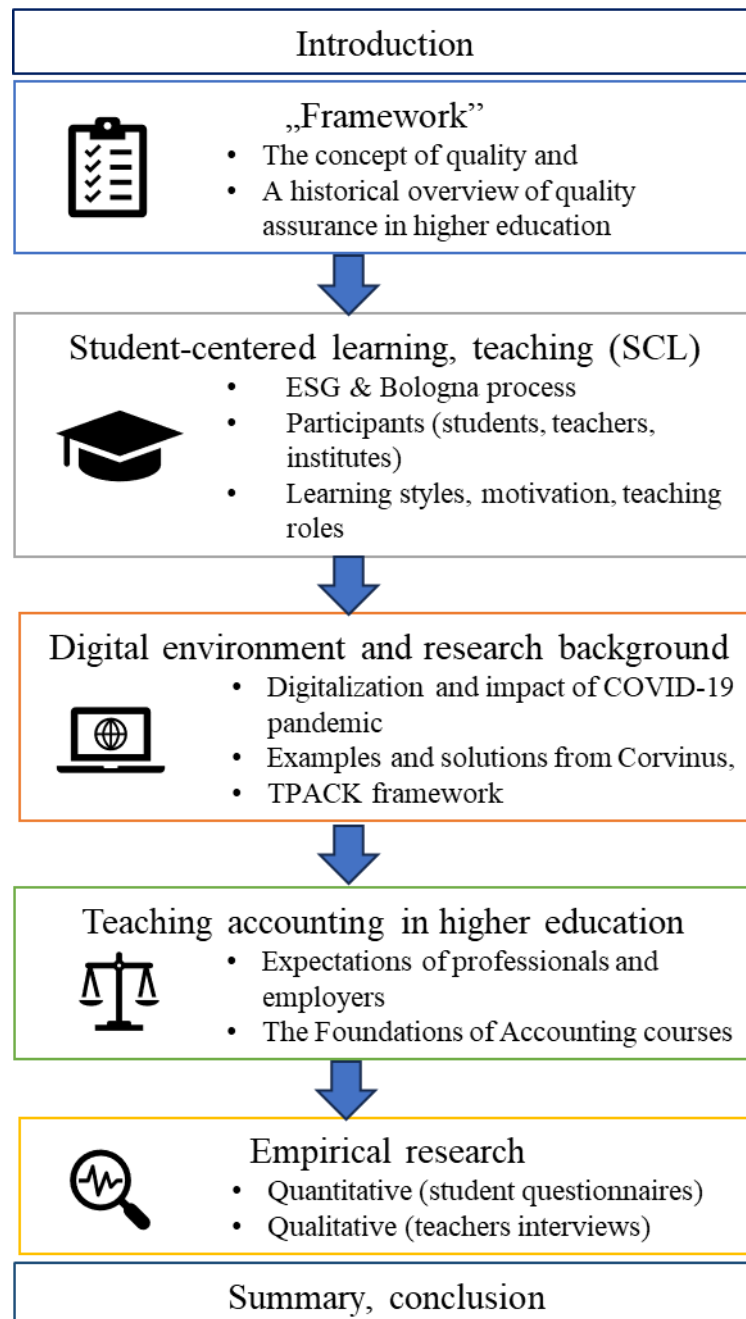
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<sup>6</sup> European Framework for the Digital Competence of Educators

In Chapter 7, while summarizing and drawing conclusions, I also discuss the generalizability of the results of the thesis and the limitations of the research.

Figure 2 provides a visual overview of the main sections and chapters of the thesis.

2. Figure: The structure of the thesis (own edition)



## 2. 'THE FRAMEWORK' – Quality assurance in higher education

The quality of higher education programs and institutions, as well as the external and internal procedures and tools that ensure this quality, have been placed on the priority list of higher education stakeholders worldwide (Szanto, 2005) (Bertalan & Mészáros, 2020) (Polónyi, 2006). Who are the stakeholders and interested parties within the framework of higher education? The two main stakeholders in higher education are students and employers, who expect experiences and results that are commensurate with public and private investment in higher education (Tomlinson, 2018). However, in a broader sense, stakeholders include teachers, non-teaching staff at higher education institutions, parents of students, actors in the economic sphere and the scientific world, supervisory bodies and, ultimately, society as a whole<sup>7</sup> (Polónyi, 2006).

### 2.1 Quality and quality assurance in higher education

It is impossible to talk about quality assurance without first clarifying the concept of quality. Quality in higher education is not an easily definable concept. There is no consensus in the literature on a clear definition of quality in higher education, so we can consider it a multidimensional concept that encompasses the quality of education, research, and social engagement. The interpretation of quality may differ depending on the perspective of the various stakeholders: students, teachers, employers, and regulatory authorities (Srikanthan & Dalrymple, 2003). According to Polónyi's summary study, the main approaches to interpreting quality in higher education are as follows:

1. **Transcendental approach:** Quality is an absolute value, difficult to define but recognisable when it is present.

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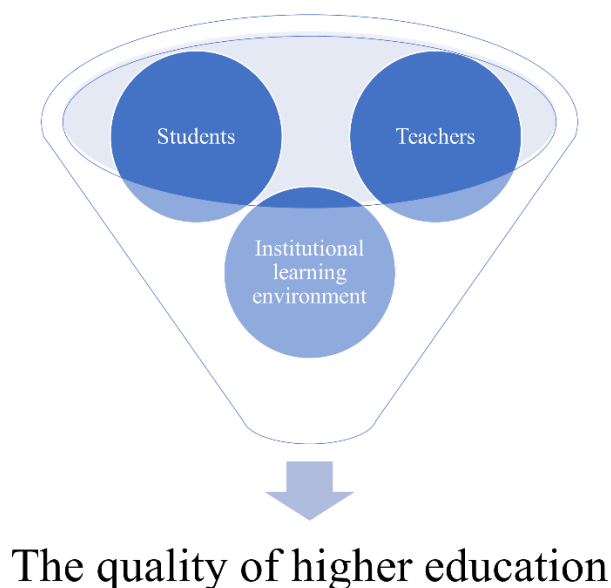
<sup>7</sup> Theodore Schultz's human capital theory is cited as an example in Lakatos and Makó's study, which summarizes, among other things, the benefits of higher education for the state. People who have participated in higher education pay more taxes into the budget (together with their employers) from their higher incomes earned from higher value-added work, and then consume and save more. Due to their higher skills, they can perform a wider range of jobs (they are more flexible in the labor market), and if necessary, retraining is cheaper and faster, making it easier for them to find employment later on. (Lakatos & Makó, 2021)

2. **Product-based approach:** Quality refers to the excellence of the ‘products’ of higher education, such as the knowledge and skills of graduates.
3. **Process-based approach:** Quality reflects the efficiency and effectiveness of educational processes, including the quality of curricula, teaching methods and assessment systems.
4. **User-based approach:** Quality is about meeting the needs and expectations of students and employers.
5. **Value-based approach:** Quality is the balance between the services provided and the resources invested, i.e. cost-effectiveness and efficiency.

These approaches are often confused when assessing the quality of higher education. For example, the reputation of an institution (transcendental approach) can influence student satisfaction (user-based approach), while the quality of curricula (process-based approach) can affect the success of graduates in the labour market (product-based approach) (Polónyi, 2006) (Halász, 2010).

According to the European Higher Education Area Quality Assurance Standards and Guidelines approach, **quality in higher education refers to the quality of the learning environment created by the student-teacher-institution** (Figure 3).

*3. Figure: The quality of higher education (own editing)*



In this context, quality assurance aims to create a learning environment in which training, learning opportunities and facilities are fit for purpose<sup>8</sup>. All actions to ensure quality are driven by accountability and the will to improve. If both are present, it can build trust in the institution on the part of stakeholders. A good quality assurance system maintains accountability by conveying information about the performance and activities of the Higher Education Institution (HEI) and makes recommendations for improvement. Quality assurance is thus a continually renewed process of improvement, which supports the development of a quality culture. The latter is important for students, teachers and management (*ESG 2015*, 2015).

As institutions compete internationally, quality and ratings are a major concern. In addition to the internal processes developed by HEIs to ensure quality, there is also a need for external quality assessment of programmes and institutions. Numerous quality assurance agencies have been established and are operating in most countries of the world. However, the question may legitimately be asked: who checks the adequacy of their procedures and who ensures the quality of external agencies? (Szanto, 2005)

This question and procedure is not unknown in the field of accounting in general (e.g. accounting services): auditors issue an opinion on whether the financial statements of the company they audit present a ‘true and fair view’ of the company's assets, liabilities, financial position and income after gathering evidence and performing various other procedures. However, they are also subject to quality control of their own internal processes, and the Chamber<sup>9</sup> and the Public Supervisory Authority<sup>10</sup> regularly carry out quality control of auditors and audit firms in accordance with the Hungarian Chamber of Auditors, Auditing and Public Audit Supervision Act of 2007. LXXV of 2007, during which it is examined whether the professional's activities were appropriate and whether the work carried out achieved

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<sup>8</sup> Since higher education can have multiple objectives, such as preparing students for active citizenship and/or equipping them with modern knowledge and skills to meet labour market needs, stimulating their creativity, research and innovation, promoting their personal development, etc., stakeholders with different priorities have different attitudes towards the quality of higher education. Quality assurance must take all these aspects into account.

<sup>9</sup> Hungarian Chamber of Auditors (HACA)

<sup>10</sup> Public Audit Oversight Authority (within the Ministry of Finance)

the objective already mentioned - and which is socially agreed - of producing a reliable and fair overall picture. This approach - i.e. whether an activity has achieved the (near) consensus objective - can also be applied in the field of education.

## 2.2 The development of quality assurance in higher education - the beginnings

In order to understand how accreditation developed in the late 19th century and then spread in the 20th century, it is first worthwhile to reflect on the practice and activities of universities going back to the mid-century.

Today's higher education can be seen as a direct descendant of the medieval universities of Paris and Bologna, which had a similar collegiate atmosphere to Oxford and Cambridge and were as committed to maintaining standards of institutional quality and accountability<sup>11</sup> as today's universities (Haskins, 1957). As Selden later points out, *'The whole world owes a debt of gratitude to the medieval genius for the creation of universities dedicated to the spirit of learning, the university concept'* (Selden, 1960). A good illustration of the initial 'quality assurance processes' is that, on the one hand, students, who were grouped in guilds to maintain standards and protect their interests, obliged their masters (the professors) to comply with a detailed set of rules that guaranteed that students would receive a satisfactory quality of education in return for the fees they paid. On the other hand, guild masters (employers) naturally always had the right to examine the qualifications of applicants before admitting them to the profession (Charles, 2007).

The regulations of medieval universities set out in detail the duties of professors and the expectations of teaching practice<sup>12</sup>, which were manifested in several areas:

(a) they had to deliver lectures at precise times, which were announced to the students in advance, and the lecture topics had to be clearly related to the defined curriculum, usually theology, law, medicine or the "artes liberales", and all had to be delivered in a way that was comprehensible to the students.

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<sup>11</sup> Accountability - could also be translated as answerability. According to Kozma, 'Accountability in higher education is measurement and evaluation in which profession and funding are linked. It is not carried out by an expert, but by the 'community' (the public), 'society'. It is therefore more appropriate to speak of the community (social) accountability of higher education' (Kozma, 2004, p. 47).

<sup>12</sup> To give a concrete example, an early set of rules at the University of Paris required professors to meet certain practical conditions, such as: the accurate and structured delivery of course material; fair assessment of exams and dissertations; and the publicising of lectures so that anyone could freely attend (Willinsky, 2018).

b) They were required to ensure that students had equal opportunities to sit examinations, avoiding discrimination or unfair procedures, and that assessment was based on the material learned in lectures and classroom exercises.

c) They were required to use published, officially approved and (especially in science and medicine) up-to-date textbooks and teaching materials and were expected to be familiar with the latest scientific findings.

d) Professors were required to guarantee that students would receive a good quality education in return for the fees they paid, and procedures were laid down for dealing with student complaints, opening up the possibility of prosecution in the event of non-compliance.

e) They were expected to lead an exemplary life, consistent with academic and social norms, and to behave in a fair and respectful manner in their dealings with students (Rashdall, 1936) (Charles, 2007) (Haskins, 1957) (Selden, 1960) (Willinsky, 2018).

In Paris, professors formed their own master guilds to maintain institutional quality, and as the ability to teach a subject was a good test of their knowledge of a subject, students received a professorial license (*licentia docendi*<sup>13</sup>) as a certificate of achievement. Such was essentially the idea of the ‘conventus’<sup>14</sup>, ‘principium’<sup>15</sup> or ‘inceptio’<sup>16</sup> - which formed the cornerstone of the entire university constitution (Rashdall, 1936). Secular and ecclesiastical leaders controlled institutional norms by issuing charters, thus formally establishing the *studia generalia*<sup>17</sup> (Selden, 1960). Later papal bulls further extended the privileges of universities with the bull *Parens scientiarum*<sup>18</sup>, which gave universities the right to suspend lectures<sup>19</sup> and strengthened their power to draw up their own statutes (Hofstadter and Metzger, 1955). It follows that, although the founders controlled institutional norms, they

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<sup>13</sup> teaching licence (Latin)

<sup>14</sup> meeting (Latin)

<sup>15</sup> principle (Latin)

<sup>16</sup> initiation (Latin)

<sup>17</sup> general studies (Latin)

<sup>18</sup> parent of science (Latin)

<sup>19</sup> The ‘right to suspend lectures’ was particularly significant in a historical context where universities had to cooperate with or even oppose a number of powers, secular and ecclesiastical. The right to suspend lectures was a unique tool that demonstrated the autonomy of universities vis-à-vis the secular and ecclesiastical powers of the Middle Ages; it protected academic freedom and the interests of students, while serving as an effective means of protest and crisis management, and supported quality assurance by allowing universities to control when and how they conducted their activities. This right was a precursor to modern autonomy in higher education, which continues to play an important role in the functioning of universities today (Charles, 2007).

ensured that institutions could regulate, evaluate and control their programmes within themselves<sup>20</sup> (Charles, 2007) (Barakonyi, 2004).

The University of Berlin, founded in 1810, was already a new type of higher education institution, which emphasized scientific research and '*the search for truth through original inquiry*' (Charles, 2007, p. 5) and the concept that a true university must maintain freedom of teaching and learning within certain carefully drawn boundaries. In France, at the same time, Napoleon reorganised the universities into a single centralised, state-run institution directly administered by the government and the state created the Université de France, which was under the control of the French Ministry of Education. The Ministry of Education was thus given broad political and administrative powers, a model which can be found with varying degrees of modification in continental Europe and in Arab countries in the Middle East, and was followed, for example, by the University of Virginia as an institution controlled by the US state (Charles, 2007).

Oxford and Cambridge also saw a renewal of regulation in the 19th century, in which academic autonomy played a key role. The founding charter of the universities gave them a monopoly on the granting of degrees in a given geographical area, and thus control over institutional quality and accountability, particularly in terms of programme review and evaluation<sup>21</sup>.

### 2.3 The emergence of modern quality assurance in higher education (USA)

The word accreditation itself is derived from the Latin word *accredere*, which means to give credit or authority to someone or something; to inspire confidence (Barrett, 2020).

An early example of centralised 'quality control' is the practice whereby members of the Board of Regents<sup>22</sup> of the University of the State of New York<sup>23</sup> in the US began

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<sup>20</sup> Following the example of the universities of Paris and Bologna, the rulers of Central Europe all founded universities in the mid-14th century, but only the University of Prague (founded in 1347) continued to operate. In Hungary, the first continuously functioning university was founded in 1636 by Péter Pázmány, Archbishop of Esztergom, in Nagyszombat, the seat of the Esztergom Archbishopric at the time. The earlier universities, typically founded by monarchs, gradually ceased to exist (Barakonyi, 2004).

<sup>21</sup> Under the founding documents, universities were granted the exclusive right to award degrees in their geographical region. This meant that other institutions could only operate with their approval or within their system, which allowed Oxford and Cambridge to tightly control the quality of degrees and prevent the spread of lower quality education programmes in the region (Beloff, 1998).

<sup>22</sup> Governmental, licensing body (not university)

making annual visits to public institutions of higher education in the 1780s<sup>24</sup> to evaluate their curricula. Moreover, professional bodies such as the American Medical Association were formed in 1847, which introduced systematic evaluation of medical schools<sup>25</sup> to ensure the credibility of degrees and the quality of education (Barrett, 2020). These early efforts were precursors to more formal accreditation processes. By the end of the 19th century, the growing number of higher education institutions and the need for standardised quality measures led to the emergence of regional accreditation bodies. This period laid the foundations for the comprehensive accreditation systems that developed in the 20th century (Charles, 2007).

In the early 1900s, regional accrediting bodies in the United States developed standardised criteria for evaluating educational programmes and institutions. By 1909, these bodies had laid down written requirements for institutional accreditation, marking a move towards more structured quality assurance practices (Barrett, 2020). By the 1930s, however, the concept of ‘meeting a purpose’<sup>26</sup> had emerged, which emphasised the assessment of institutions on the basis of their individual purposes rather than a fully standardised approach. This was also the time when various professional accreditation bodies were established, for example for business, engineering and teacher education, each with its own standards and procedures. Self-evaluation was introduced at the same time as a key element of quality assurance processes in higher education (Bogue, 1998).

By the middle of the 20th century, quality assurance in higher education had become more complex, structured and comprehensive, encompassing different approaches

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<sup>23</sup> Board of Governors

<sup>24</sup> These visits included a review of the educational curriculum, with particular attention to curriculum content and hours. They examined whether the teaching of each subject met the state requirements, checked students' examination results and how well they reflected the achievement of the educational objectives. Institutions were also required to submit detailed reports on their operations, highlighting staff and student numbers, library resources and financial sustainability.

<sup>25</sup> After the creation of the American Medical Association (AMA), regular evaluation of medical schools played a key role in ensuring the quality of medical education. The AMA has set minimum requirements for medical education, such as: making the teaching of anatomy, physiology, pharmacology and clinical practice compulsory, standardising the duration of courses and the practical training of students. During the personal site visits, AMA delegates visited medical schools to assess the qualifications and professional experience of the instructors; the educational infrastructure, such as laboratories and clinical sites; and the examination results of students to ascertain the quality of the training outcomes. The AMA has regularly published reports ranking medical schools and disclosing which institutions have met the standards. <https://www.ama-assn.org/about/ama-history/ama-history>

<sup>26</sup> ‘fitness for purpose’

such as traditional peer review and total quality management (TQM<sup>27</sup>). These developments laid the foundation for the modern accreditation system, which balanced institutional self-regulation with external review (Bogue, 1998)

## 2.4 Quality assurance in the European higher education

Returning to Europe, of course, quality assurance in higher education has also undergone significant developments in the 20th century, driven by various reforms and initiatives to improve educational standards and institutional accountability.

### 2.4.1. Early developments and national initiatives

At the beginning of the century, quality assurance in Europe was mainly managed at national level, and countries developed their own systems: national quality assurance organisations and accreditation authorities were set up to externally validate and monitor educational programmes. These early efforts were largely uncoordinated and varied considerably from nation to nation<sup>28</sup> (Ewell, 1989).

The organisations that were established set predefined standards and criteria against which universities were assessed. Governments, businesses and society needed assurances that education programmes would produce graduates who were skilled and ready to enter the labour market. Institutions could gain public trust by demonstrating through accreditation that they met these requirements and were committed to excellence (Kayyali, 2023). Kayyali stresses that quality assurance is not only a means of maintaining educational standards, but also a fundamental

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<sup>27</sup> total quality management

<sup>28</sup> A few examples of different national approaches illustrate how different these initiatives have been and how they may have differed considerably from country to country.

a) United Kingdom: The early British quality assurance system, while emphasising the autonomy of universities, also used external evaluations. University programmes and examination systems were regularly audited to ensure that they met nationally set standards. The British model emphasised student feedback, which was built into quality assurance processes (Harvey, 2005).

b) In France, in the late 19th and early 20th centuries, the Ministry of Public Education under the Université de France strictly supervised higher education, carried out curriculum audits, and monitored the appointment of professors and the quality of study programmes (Van Vught & Westerheijden, 1994).

c) The German Länder supervised higher education institutions autonomously. Each Land education authority established specific rules for the control of university curricula and programmes. Autonomy at the Länder level allowed for the development of quality assurance systems tailored to local needs, but the autonomy of each Land meant that quality assurance practices still varied in the mid-20th century (Drori et al., 2006).

d) In Spain, the Consejo de Universidades coordinated quality assurance systems in the 20th century, linking university autonomy with central educational policy objectives. Here, too, regional autonomy led to significant differences between higher education institutions (Scott, 2006).

condition for the stability and development of higher education systems, contributing to meeting the expectations of students, employers and the state

In 1968, students of the University of Paris came forward with a demand for a specific agenda and objectives, the first initiative to give students a collective say in the management and running of the university. Their demands ranged across a broad spectrum: from participation in higher education structures and governing bodies, to the content of education, to pointing out deficiencies in infrastructure. They also called for a rejection of elitism and for higher education to be accessible to all (Todorovski et al, 2015). Their movement has had a significant impact on the development of higher education institutions in developed countries, and major changes have been initiated almost everywhere. The decades that followed were spent managing the growth in student numbers, and the massification went hand in hand with the diversification of the system, affecting the composition of students and teachers, as well as the needs of the labour market.

The range of societal demands on higher education subsequently expanded rapidly. It now has to meet a wide range of needs of evolving knowledge societies and economies: educating an ever-increasing population; providing appropriate opportunities for non-traditional students<sup>29</sup>; developing research and innovation; responding to local and regional economic challenges (Chung et al, Higher education has been placed at the centre of the global transformation from an industrialised society to a post-industrial knowledge society as a key factor in national competitiveness and modernisation (Gayef & Hurdag, 2014a).

At the end of the century, various European countries established national quality assurance agencies to oversee the quality of higher education. Examples include the UK Quality Assurance Agency, established in 1997<sup>30</sup>, and the German Foundation

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<sup>29</sup> The definition of the non-traditional student group has been addressed by several researchers. Pusztai et al. formulate non-traditional students as ‘students who differ from the social, demographic and cultural characteristics of elite higher education students’ (Pusztai et al., 2012, p. 123). Who are they? People from low-status families, women, people belonging to minority ethnic, religious and denominational groups, people who have been colonised for centuries, people who start their studies earlier than the average, people who are breadwinners, people who study while working, etc. (Pusztai et al., 2012) (Chung et al., 2014) (Simándi, 2015) (Kozma, 2024).

<sup>30</sup> Quality Assurance Agency, QAA

for the Accreditation of Study Programmes, established in 1999<sup>31</sup> (Harvey & Newton, 2004).

The European Union has played a crucial role in promoting quality assurance through various programmes and initiatives. The Erasmus programme, established in 1987, and its successor Erasmus+, facilitated the mobility of students and staff in higher education, whereby a group of stakeholders could now more easily compare the 'quality' of different European higher education institutions.

#### 2.4.2. The Bologna process

A landmark development in European higher education was the Bologna Process, launched in 1999 with the signing of the Bologna Declaration by 29 European countries<sup>32</sup>. The primary objectives of the initiative were to make degrees comparable and compatible across Europe, to facilitate the mobility of students, teachers and support staff, and to improve the quality of higher education through common standards and practices. It also aimed to create a European Higher Education Area (EHEA) by 2010, promoting interoperability between institutions, employability and the international competitiveness of European higher education (Feeney & Horan, 2015).

The main pillars and impacts of this process are illustrated in Figure 4, based on the adoption of a three-cycle degree system (bachelor, master and doctoral degrees), the European Credit Transfer and Accumulation System (ECTS) and the promotion of quality assurance cooperation. This cooperation ensures that quality assurance mechanisms in European countries comply with the European Standards and Guidelines (ESG), introduced in 2005 and revised in 2015<sup>33</sup>. The initiative has had a significant impact on quality assurance practices, promoting harmonisation and cooperation between higher education institutions (Gayef & Hurdag, 2014). The Bologna Process introduced a common basis for quality assurance, including the establishment of the European Association for Quality Assurance in Higher

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<sup>31</sup> Akkreditierungsrat - Accreditation Council

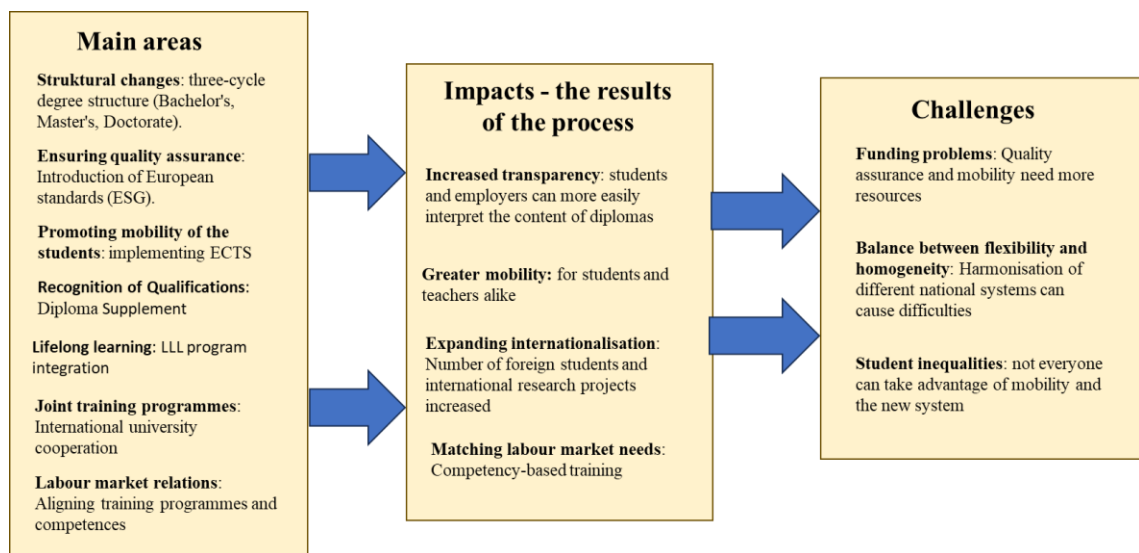
<sup>32</sup> From 2024, the Bologna process will involve 49 countries, all of which will participate in the creation and maintenance of the European Higher Education Area (EHEA).

<sup>33</sup> Standards and Guidelines for Quality Assurance in the European Higher Education Area

Education (ENQA<sup>34</sup>) in 2000, which provided a framework for mutual recognition of degrees and cooperation between institutions (Westerheiden et al, 2014).

Despite the progress achieved, the Bologna Process has faced/is facing several challenges. These include the need for continuous improvement of quality assurance practices, the transition and financing of new tasks, the automatic recognition of diplomas, and a common European approach to quality assurance in joint programmes. The European Commission has a key role to play in boosting the momentum for educational reform and in facilitating cooperation (Grek & Russell, 2023).

*4. Figure: The impact of the Bologna process (own editing)*



The Bologna Process aims to improve the quality and comparability of higher education qualifications, making European higher education more competitive and attractive to students and researchers from Europe and other continents (Gayef & Hurdag, 2014).

In 2005, following proposals from the European Association for Quality Assurance in Higher Education (ENQA), the European Students' Union (ESU), the European Association of Higher Education Institutions (EURASHE) and the European University Association (EUA), Ministers responsible for higher education adopted the European Standards and Guidelines (ESG) to set a common framework for quality assurance across the European Higher Education Area. One of the aims of the ESG was to ensure that higher education institutions and quality assurance agencies

<sup>34</sup> European Association for Quality Assurance in Higher Education

develop common procedures and practices. One of the main objectives of the ESG is to promote a common understanding of the concept of quality assurance in learning and teaching across borders for all stakeholders (ENQA, n.d.) (“MAB”, 2024).

The ESG, introduced in 2005 and revised in 2015, provides a common framework for internal and external quality assurance within the European Higher Education Area (EHEA). These guidelines ensure that institutions establish consistent quality assurance processes, increasing transparency and trust across borders.

The Bologna Process has led to the establishment of various quality assurance mechanisms, such as the European Quality Assurance Register for Higher Education (EQAR)<sup>35</sup> in 2008. The EQAR maintains a list of quality assurance agencies that adhere to the ESG, including the Hungarian Accreditation Board (MAB).

At the beginning and middle of the 20th century, participating countries and institutions started to adapt their quality assurance systems, which were still fully fragmented, nationally organised and at different levels, to the Bologna Process (Gayef & Hurdag, 2014). For example, Hungary has fully integrated the Bologna Process into its higher education system. The process has led to significant reforms that have facilitated interoperability and recognition of qualifications. However, the introduction of the three-cycle degree structure and the European Credit Transfer and Accumulation System (ECTS), as well as the alignment of quality assurance mechanisms with European standards, have not been uniformly implemented in the different countries (ENQA, n.d.).

#### 2.4.3 ESG 2015 and its role in changing the higher education ecosystem

Since 2005, significant progress has been made in other areas of quality assurance and the Bologna process, such as the application and dissemination of the qualifications framework and learning outcomes. The ESG 2005 guidelines were revised in 2015 and the ESG 2015 document, which is still valid today, was published. This has contributed significantly to the paradigm shift towards student-centred learning and teaching.

Among other things, student-centred learning, teaching and assessment is a completely new standard in ESG 2015. Standard 1.3 states: *Institutions should*

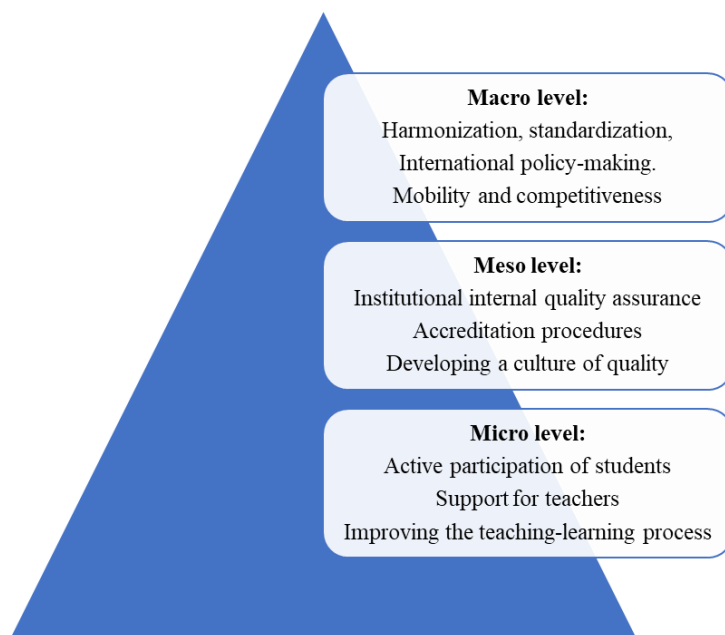
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<sup>35</sup> European Quality Assurance Register for Higher Education

ensure that their training programmes are delivered in a way that encourages students to play an active role in<sup>36</sup> the learning process. Student assessment should reflect this approach.’ (‘MAB’, 2024). How can and should this be achieved? The standard requires institutions to design and implement their training programmes to take into account the diversity of students and their needs in order to increase students' motivation, self-reflection and engagement in the learning process. In student-centred learning and teaching, flexible learning pathways should be developed, different teaching methods should be used and appropriate guidance and support should be provided. In addition, the document provides essential guidelines for the assessment of learning, the complaints process and mutual respect in the teacher-student relationship. It also highlights the importance of feedback to students(ESG 2015, 2015)<sup>37</sup>.

ESG 2015 includes standards and guidelines at multiple levels, which have an impact at the macro, meso and micro levels of the higher education ecosystem (Figure 5).

5. Figure: Impact of ESG 2015 on the ecosystem of higher education (own editing)



At a *macro* level, ESG 2015 has systemic implications for the functioning of national higher education systems and the European Higher Education Area (EHEA),

<sup>36</sup> The aim of the standard is to design and develop the learning process in a way that *encourages not only passive knowledge absorption but also active participation and ownership of the learning process*. The following chapter describes in detail the different ways of doing this in the context of student-centred learning and teaching.

<sup>37</sup> Student-centred teaching and learning will be discussed in more detail in the following chapters.

strengthening national and European cooperation and supporting global competitiveness. It will harmonise quality assurance principles<sup>38</sup>, facilitating mutual recognition of qualifications, thereby supporting student mobility and labour market interoperability, making qualifications and study programmes comparable. In policy-making, it contributes to the harmonisation of national education strategies and funding models, taking into account the cultural and educational specificities of each country. It also promotes the integration of quality assurance into national higher education policies, enhancing the transparency and accountability of systems. By adhering to the ESG principles, European higher education institutions can maintain their global competitiveness<sup>39</sup>, make themselves more attractive to international students and academics and design education programmes that reflect not only national but also international labour market needs (*ESG 2015*, 2015). In the overall framework, *ESG 2015* represents not only a set of rules but also the cornerstone of a quality assurance culture in European higher education.

The operation of higher education institutions (*mezo level*) is directly affected by the *ESG 2015* guidelines, which aim to ensure that institutions develop and operate harmonised, transparent and accountable quality assurance systems. The Standards and Guidelines encourage institutions to continuously monitor, evaluate and improve their teaching and research activities as part of their internal quality assurance systems. This not only means compliance with regulatory authorities, but also requires the active involvement of relevant stakeholders - students, teachers, administration - to adapt the general guidelines to their own contexts. Under the *ESG*, institutions should regularly review their own operations<sup>40</sup> and formulate directions for improvement through self-evaluation reports and quality assurance policies.

The twin goals of transparency and accountability are also reflected at this level. Accountability means that higher education institutions take responsibility towards

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<sup>38</sup> The European Quality Assurance Register (EQAR) registers ESG-compliant quality assurance agencies, thus ensuring transparency in accreditation processes at national and international level (*ENQA*, n.d.). In Hungary this task is carried out by the MAB (Hungarian Accreditation Committee), which will be discussed in detail in the next chapter. National agencies share best practices and experiences in cooperation, contributing to the continuous development of quality assurance systems.

<sup>39</sup> One concrete example of competitiveness is that higher education institutions applying *ESG* guidelines can improve their position in international rankings, especially in the area of quality assurance indicators.

<sup>40</sup> self-evaluation

their stakeholders that their activities meet the required quality standards. In the same context, the requirement of transparency means that higher education institutions must publish details of their operations, decision-making processes and quality assurance systems in an understandable and accessible way, and involve stakeholder groups in certain decision-making processes<sup>41</sup>. Preserving institutional autonomy means that institutions are free to develop their strategies, curricula and research agendas within the framework of internal and external quality assurance requirements.

Creating a student-centred learning environment is one of the principles of ESG 2015, which encourages institutions to introduce learning outcomes-based curricula in the design and delivery of their educational programmes, focusing on the development of students' skills and competences. In delivery (i.e. teaching), it emphasises innovative teaching methods, interactive teaching, project-based learning; the development and integration of digital learning materials is given a prominent role<sup>42</sup>.

The meso-level impact of the ESG 2015 guidelines is a key area for successful implementation, linking macro-level national regulations with micro-level learning and teaching processes. In Hungary, the Hungarian Accreditation Committee plays a

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<sup>41</sup> Examples include the involvement of students in the course development process, or consultation with the supervisor when starting a new course, etc. Catherine Bovill's 2014 study "Students and Staff Co-creating Curricula: An Example of Good Practice in Higher Education?", examines the increasing attention in higher education to student and staff collaboration in the co-design of curricula. The author reviews the reasons why lecturers give students the opportunity to co-create curricula and describes the benefits of such collaborations (e.g. co-designing parts of the virtual learning environment, developing assessment criteria or defining their own learning objectives). Bovill's study highlights that joint curriculum design between students and teachers not only enriches the learning experience, but also contributes to improving the quality of higher education (Bovill, 2013). Moreover, it can increase their engagement and ownership of the learning process.

<sup>42</sup> The OECD's Programme on Institutional Management in Higher Education (IMHE), launched in 2007 under the 'Quality Teaching in Higher Education' project, analysed the internal processes of 29 universities that had implemented notable initiatives in this area. The IMHE analysis showed that quality teaching support services are often vulnerable and sometimes the target of criticism from the academic community; they are often perceived as bureaucratic and unnecessary in relation to the academic mission of the institution. (Hénard, 2012) Previous IMHE research also emphasises that '*developing quality teaching takes time and sustained motivation*' (Halász, 2010, p. 15). Developing an organisational culture that supports learning takes years and cannot be accelerated. The impact of well-functioning learning support services on the organisation is often only felt in the longer term, after several years. The impact is not achieved through the introduction of instant formal rules or technical innovations, but through a gradual, time-consuming transformation of human and organisational behaviour. The importance of time is also reflected in another aspect: mutual learning in communities of practice also requires time, as discussions to identify problems, find solutions and develop common understandings take time (Halász, 2010).

crucial role in facilitating these quality assurance activities, encouraging faculties/institutions to take an active role in quality development processes. Hungarian higher education institutions, for example, adhere to these standards as part of their membership of the European Association for Quality Assurance in Higher Education (ENQA) and are included in the European Quality Assurance Register ('MAB', 2024).

At the *micro* level, ESG 2015 has a direct impact at the level of teachers, students and learning processes. It draws attention to the transformation of the role of the instructor: they are not only required to deliver learning material, but also to become facilitators of the learning process. They have (part of) the task of motivating students and guiding their learning paths. For teachers, the ESG stresses the importance of academic freedom and the need for professional development. It expects them to deliver high quality teaching and to participate in curriculum development and evaluation, as well as in professional development to keep up to date with the latest teaching practices and technologies. However, in order for trainers to meet the expectations placed on them, an institutional framework must be put in place to provide them with resources and training opportunities<sup>43</sup>.

Both student feedback and peer reviews provide valuable input for trainers to improve their teaching methods and contribute to raising the overall quality of

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<sup>43</sup> A good example of institutional development is the EFOP-3.4.3-16 call for proposals co-funded by the European Social Fund and the Government of Hungary for the joint improvement of the quality and accessibility of higher education in 2017. Within the framework of this call, funds were awarded for the renewal of training courses, methodological developments, the preparation of blended learning teaching materials, etc.

One of the projects implemented at the CUB was the 18-part video series on Foundations / Elements of Accounting, produced in 2018-19 with the collaboration of the Department of Accounting. The series consisted of short and longer video lectures, recorded and edited in the so-called "green room", covering the material of only 4 live classroom lectures. The videos contain detailed explanations of the parts of the material which are the more difficult to master and require a more complex approach in the case of the Foundations of Accounting subject. Some elements of the series also include detailed explanations of the solutions to examples necessary to understand and deepen the theoretical foundations. The creation of the videos has made it possible to embed them in Moodle as part of the curriculum, so that students can watch them back and listen to them again at any time.

The video tutorials cover the following topics: accruals; valuation of trade receivables; cost of tangible assets, depreciation, net book value, revaluation; valuation of inventories;

Cost of intangible assets, accounting treatment of research and development, amortisation, year-end valuation; treatment of provisions; accounting treatment of post balance sheet events, valuations.

The choice of the above content was based on the need to make complex topics easier for the students to assimilate through the possibility of feedback. It also provided the opportunity to design a syllabus in which students would listen to the lecture material in advance, arrive at the seminar prepared to learn the material in greater depth through practical examples, case studies, group work or pair work.

teaching. *‘It is a huge step forward in curriculum design when our thinking is no longer determined by ‘what we are going to teach’ but by ‘what students should do to make what we call learning happen for them’* (Halász, 2010, p. 11).

By redefining the role of students, ESG 2015 contributes to the development of a higher education environment that supports active student participation, independent learning and commitment to lifelong learning. The standards treat students not only as beneficiaries of education, but as key actors in it, thus contributing to the continuous improvement of the quality of higher education. Students should be actively involved not only in the teaching process but also in quality assurance processes, including feedback on courses, institutional evaluations and participation in decision-making bodies. Based on the guidelines, students are active participants in their own learning processes, which they can design according to their learning style, taking advantage of the flexible learning opportunities and personalised learning pathways developed by the institutions. Their feedback should be systematically collected and used by institutions to improve the quality of education<sup>44</sup>.

In the context of student assessment, the ESG 2015 Guidelines emphasise that assessment should not only reflect the results achieved, but also their participation in the learning process. The standards encourage institutions to develop and implement assessment methods that support students' critical thinking, problem-solving and reflective skills. They promote the use of formative assessment methods<sup>45</sup> that focus on students' continuous development and learning and encourage students to self-

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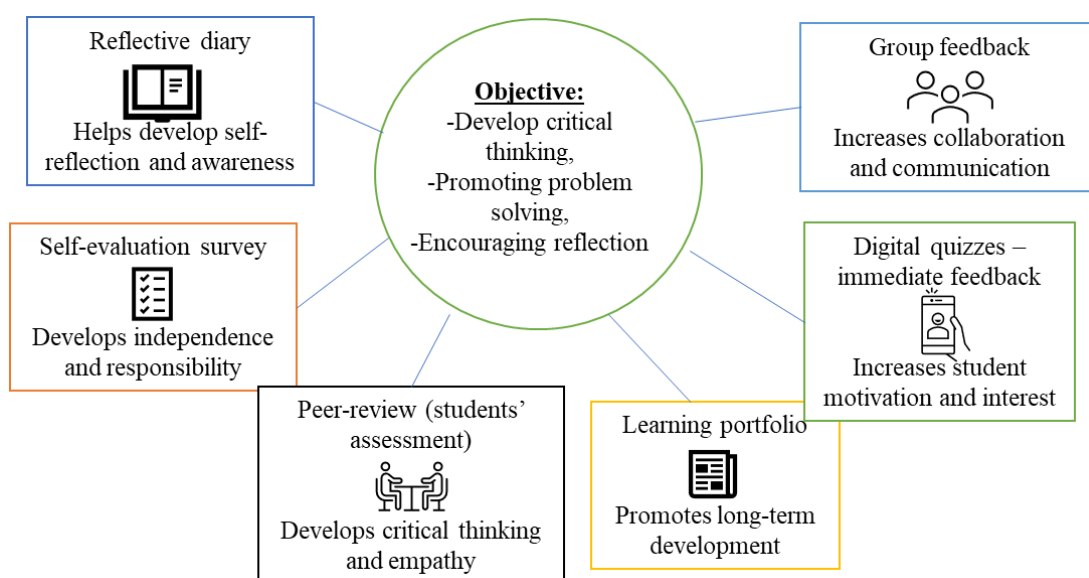
<sup>44</sup> For example, when fine-tuning teaching methods and assessment systems.

<sup>45</sup> Formative assessment is not intended to close the learning process (like summative assessment), but to provide feedback on progress and help the student to move on. Some examples that are well suited to higher education in a student-centred environment:

1. reflective diaries: students regularly write a diary in which they report on their own learning, difficulties and achievements.
2. group feedback loop: after a seminar or workshop, students give feedback on each other's work and ideas in a structured way.
3. Self-evaluation questionnaire: students evaluate their own work on the basis of a set of pre-established criteria.
4. learning portfolio: students collect and organise their own work and document their progress.
- 5 ‘One-minute paper’: at the end of the lesson, students write for 1 minute what they have learnt and what is still unclear.
6. peer-review (student evaluation): individual or group assignments are evaluated by peers on the basis of predefined criteria.
7. the use of digital tools: e.g. Kahoot, Mentimeter, Socrative or quizzes built into a Learning Management System (e.g. Moodle) with quick feedback.

assess their own performance, which helps them to develop their autonomy and self-reflective skills. Figure 6 summarises some examples of formative assessment and their impact.

**6. Figure: Tools for formative assessment in student-centered higher education based on ESG 2015 (own editing)**



At macro-, meso- and micro-levels, the process has contributed significantly to increasing student mobility and the recognition of qualifications at European level, which provides students with more opportunities for international education and career prospects (ESG 2015, 2015) ('Comparative Analysis of the ESG 2015 and ESG 2005 - ENQA', 2016)

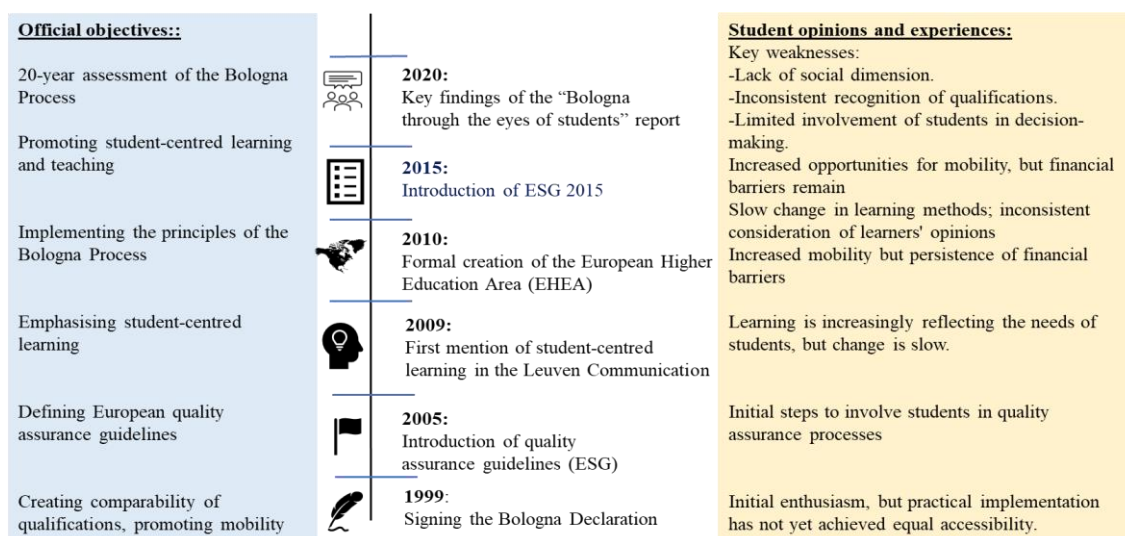
#### 2.4.4 ESG 2015 - Fine-tuning - challenges and the way forward

As the focus of ESG 2015 is student-centered, it is worth recalling a few thoughts on how students perceive the implementation of the guidelines. The report 'Bologna through the eyes of students 2020' provides a critical analysis of the Bologna Process from the perspective of students in the European Higher Education Area (Figure 7), produced by the European Students' Union (ESU) and reflecting on the commitments made by national governments in the Bologna Process and the actual experiences of students (Hovhannisyann et al., 2020).

The key areas highlighted by the document are:

1. **Student participation:** The report stresses the importance of student participation in the governance of higher education. However, it notes that despite the fact that in many EHEA countries this is required by law, in practice their effective participation and influence remains limited.
2. **Social dimension:** The social composition of higher education, which aims to ensure that students reflect the diversity of society. However, there is a significant gap between policy commitments and actual implementation, as many groups are still underrepresented and find it difficult to participate successfully in higher education.
3. **Quality assurance:** Quality assurance remains a cornerstone of the Bologna process. Students are increasingly involved in quality assurance processes, as originally intended, although the report points out that there is still room for improvement in recognizing students as equal stakeholders.
4. **Internationalization and mobility:** The Bologna process has facilitated student mobility, but financial barriers continue to limit access, particularly for disadvantaged students. The report calls for adequately funded mobility programmes.
5. **Recognition of qualifications:** Despite the objective of automatic recognition of qualifications throughout the European Higher Education Area, significant progress is still needed in the consistent implementation of diploma recognition procedures and the recognition of prior learning outcomes.
6. **Student-centred learning:** The report stresses the importance of student-centered learning and points out that, although widely ‘talked about’, its implementation is not uniform. It recognises that its implementation depends to a large extent on the extent to which students are involved in the learning process, in curriculum development and in the quality of feedback, but it remains an area that needs increased attention.
7. **The future of the Bologna Process:** The document calls for a renewed commitment to the Bologna Process goals, emphasising the need for better communication, more inclusive practices and a continued focus on the social dimension and student participation (Hovhannisyan et al., 2020)

### 7. Figure: The results of the Bologna Process and the evolution of student attitudes (own editing)



Efforts to improve quality must never stop. That is why the EU-funded project (QA-FIT<sup>46</sup>), which runs from June 2022 to November 2024 and is coordinated by ENQA, is so important. The results of the project include the assessment that an essential element of the future challenges is the need to review the quality assurance guidelines that will become necessary with digital learning and the rise of new forms of educational collaboration in order to ensure that quality assurance frameworks remain relevant and effective (Biaggi et al., 2024).

#### 2.5. Role and activities of MAB in Hungary

The predecessor of the MAB, the Interim National Accreditation Board (IOAB), was established in 1992<sup>47</sup> to evaluate applications for prospective doctoral programmes. The first version of the institutional accreditation manual was written in 1994, which contained a thorough, data-based set of criteria for the evaluation of higher education institutions and their programmes, recognised internationally (Szántó, 2023). Act LXXX of 1993 on higher education further extended the remit of the MAB, and subsequent amendments and new legislation have added other tasks. In addition to the establishment of new faculties and institutions, the MAB was responsible for the accreditation of existing faculties and institutions and the evaluation of distance

<sup>46</sup> Quality Assurance Fit for the Future project

<sup>47</sup> In addition to the general international practice, the reason for delegating doctoral training and degree awarding to universities (and keeping their control only at the state level) was that the 'European Rectors' Conference considered as a university the higher education institution which has such a right in the given country' (Szántó, 2023, p. 90).

education, in varying procedures, first in direct contact with the institutions and then as part of the state administrative procedure (Szántó, 2023).

A significant step in the development of quality assurance in Hungarian higher education was the two-year priority project 4.1.4 ‘Quality Development in Higher Education’ of the 2009-2011 TÁMOP (Social Renewal Operational Programme), which was led by the Institute for Educational Research and Development as project promoter. The expected outcome of the project was that *‘an internationally accepted quality assurance system should be established and functioning in most higher education institutions, one of the prerequisites for which is the creation of a significantly more advanced quality development culture than today. The main objective of the project is to bring Hungarian higher education closer to the European Higher Education Area.’* (TÁMOP 4.1.4 ‘Quality Development in Higher Education’ | Institute for Educational Research and Development, n.d.)

The MAB's international embeddedness is demonstrated by its full membership of several international organisations, such as ENQA from 2002 and the V4 Quality Assurance Forum in 2021. In 2019, the MAB was included in the EQAR 80 list of ESG trusted agencies based on the 2018 ENQA assessment (Szántó, 2023). However, much earlier, in 1999-2000, the first international external assessment of the MAB was carried out with the involvement of renowned European foreign agencies and academics. The report's recommendations were useful and forward-looking; the criticisms were mainly directed at the accreditation process, which at that time in Eastern Europe (and the USA) resulted in accreditation with a general yes/no decision. In Western Europe, at the same time, evaluations were still typically of an audit or advisory nature, but not leading to an accreditation decision (Szanto, 2005).

Among the MAB's annual reports and ongoing activities, the ‘Sectoral Modernisation of Higher Education Training Priority Project (RRF-2.1.1-21)’, running from 2021-23, stands out for this thesis, which reviewed, among other things, the factors (whether legislation, procedures, standards, regulations, guidelines or others) *that* exclude or limit modernisation in the field of higher education, vocational training and innovation:

- ‘- the restructuring of the training structure of higher education,*
- strengthening the role of quality assurance in the new training structure,*

- *simplification of the institutional accreditation process,*
- *activities to support the communication of the centralised higher education admissions process,*
- *matching higher education performance with labour market needs,*
- *removing obstacles to credit recognition,*
- *developing the operational conditions for validation.’ (MAB Press Release: Priority Project on Sectoral Modernization of Higher Education Training (RRF-2.1.1-21) - MAB, n.d.)*

An OECD publication, *Ensuring Quality Digital Higher Education in Hungary*, published as a result of the project, analyses in detail the situation of Hungarian higher education today and points out that the changing study formats developed almost instantaneously due to the COVID-19 pandemic were only approved by the authorities with exceptional approval because they did not comply with the legislation in force. The report also makes recommendations for the adoption of new quality standards, based on international best practice, and proposes amendments to existing regulations, notably to give institutions more flexibility to develop innovative and digitally accessible study programmes. For students, this means flexibility in where, when and how they learn, and for teachers, it means taking better advantage of digital technology to improve the quality of teaching and assessment. To achieve a profound modernisation of teaching and learning in Hungarian higher education, the study's authors argue, the government and higher education stakeholders need to support institutions in taking increasing responsibility for quality and provide them with the resources to offer students a high-quality learning experience using digital technology. *‘All students, regardless of background, discipline or mode of study, should have access to high quality (digital) teaching, learning and assessment.’ (OECD, 2023).*

MAB's main objectives according to their website<sup>48</sup>:

- *‘To protect higher education stakeholders in terms of quality.*
- *To support quality improvement in higher education.*

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<sup>48</sup> mab.hu

- *To report on the quality of higher education to the government and Hungarian society as a whole.*

*The MAB carries out quality validation, i.e. it examines whether an institution or programme meets the quality requirements predefined and published by the MAB. If this is the case, the institution or programme is certified or 'accredited'. Its two main activities are therefore the accreditation of institutions, faculties and programmes.'* ('MAB', 2024) The purpose of institutional accreditation is to certify whether the higher education institution in question is conducting its activities in accordance with the ESG 2015, whether its quality assurance system continuously monitors and evaluates compliance with the standards, and whether it actively contributes to the development of measures and processes to support implementation based on the results of the evaluation.

## 2.6. Quality assurance as a tool for institutional management

Quality assurance is not just a regulatory requirement for higher education institutions, but an essential tool for institutional management. This dual role is particularly important for strategic planning, governance and the development of institutions.

The governance of higher education has undergone a major transformation in recent decades, closely linked to the expansion of higher education. The growth in student numbers is not only reflected in student numbers, but has also led to the emergence of a diversity of demand, which has resulted in a differentiation of supply and, as a consequence, the creation of a number of new public and private higher education institutions in many countries. The diversity of training structures has also increased, including new levels of training, work-structures and programmes such as distance learning and MOOCs (Massive Open Online Courses) (Kozma, 2024) (Kálmán, 2004).

The massification of higher education has significantly increased the need to ensure the regulation, control and transparency not only of administrative and support processes, but also of core activities such as teaching and research. This is a natural consequence of the growing demand for accountability and is reflected in the increasing importance of quality assurance systems, external and internal audits and accreditation processes. The basis for controllability and auditability is

standardisation, which allows for predictability and repeatability of processes (Drótos & Kováts, 2009). However, both research and education are difficult to standardise, whether we approach the issue from the process, the activity chain<sup>49</sup>, or from the output, the 'desired outcome'.

Nevertheless, administration is characterised by stable processes and reliable 'business continuity', where the smooth running of business is the priority. Process control, a hierarchical structure, a functional division of labour and a well-defined system of responsibilities and competences plays an important role in ensuring that this runs as smoothly as possible. In terms of its functioning and values, administration is thus more akin to classical bureaucratic models, in contrast to the academic sphere, where work is characterised by greater autonomy, minimal functional division of labour and a flatter hierarchy (Kováts, 2009). However, it is not only internal processes that can and should be the focus of data-driven evaluation and decision-making processes.

Quality assurance systems that are thoughtfully structured and embedded in 'core operations'<sup>50</sup> also support the development of institutional strategies by regularly collecting and analysing data on student satisfaction, academic progress and the

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<sup>49</sup> process control

<sup>50</sup> For example, the quality assurance system at Corvinus University of Budapest (CUB) is closely intertwined with the strategic goals of the institution, particularly with regard to research excellence and educational innovation. CUB understands its internal quality system at a strategic level, ensuring that its procedures and processes are implemented at a systemic level. The University has recognised the importance of organisational self-evaluation for coherent operation and renewal at a strategic level. In this context, CUB regularly participates in the accreditation processes carried out by the Hungarian Accreditation Committee for Higher Education (MAB), during which the institution's quality assurance system is assessed against the European Standards and Guidelines (ESG). 'In its decision of 18 October, the Board accredited Corvinus University of Budapest until 31 December 2029', reads the news of 6 November 2024 on the university's website. <https://www.uni-corvinus.hu/post/hir/megujitotta-magyar-intezmenyi-akkreditaciojat-a-corvinus/?utm>

The impact of international accreditation on the competitiveness of the university is undeniable, as illustrated by the fact that the CUB's English-language Business and Management degree in Economics has been internationally accredited by the EFMD (European Foundation for Management Development) since 2009, and this accreditation was extended for another five years in June 2024. This accreditation also confirms that the course meets international standards and demonstrates the university's commitment to modern and effective business education. <https://www.uni-corvinus.hu/post/hir/siker-es-efmd-re-akkreditacio-a-corvinuson/>

The University has a Quality Manual, which sets out the organisational framework and processes of the quality management system. This document ensures that the University's operations are in line with quality principles and encourages continuous improvement in education and research. [https://www.uni-corvinus.hu/contents/uploads/2024/03/Minőségügyi\\_kézikönyv\\_20230309.5a6.pdf](https://www.uni-corvinus.hu/contents/uploads/2024/03/Minőségügyi_kézikönyv_20230309.5a6.pdf)

labour market situation of graduates<sup>51</sup>. As Scott put it in 2006, high technology and rapid globalisation are transforming the structure of formal education; at the heart of the new information society are academic institutions, which have a vital interest in remaining flexible and thus able to respond to emerging societal needs, technological developments and economic transformations (Scott, 2006)<sup>52</sup>. Increasing international mobility has also become an important strategic objective: most countries, having lost the capacity to grow their own base, have started to recruit students from abroad. This has not only led to the globalisation of higher education, but has also created new challenges for institutions to consider the needs of foreign students when designing their courses (Kováts, 2020) and has increased competition between countries and institutions.

From the perspective of institutional strategies, quality assurance systems help to set and achieve goals<sup>53</sup>. By applying Total Quality Management (TQM)<sup>54</sup> or other quality assurance and management principles, institutions are able to integrate stakeholder feedback into decision-making while ensuring continuous improvement. A data-driven approach and regular feedback mechanisms can enable institutions to respond to local and global challenges, such as the internationalisation of education or the rise of digital learning.

Internal self-evaluation, an important tool for quality assurance, can help institutions to identify their strengths and weaknesses. External audits and accreditation processes can help to increase transparency and maintain institutional autonomy and competitiveness. Tools such as the ESG 2015 guidelines can support institutions in addressing quality assurance in an integrated way, linking it to education, research and social engagement. For example, involving students in the assessment of their learning processes not only improves the quality of education, but also fosters an

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<sup>51</sup> An example is Aalto University, which has used the data available through its quality assurance processes to strengthen its position in international rankings such as QS and THE (Times Higher Education).

<sup>52</sup> Similar conclusions are reached by Barakonyi in his 2004 study, in which he analyses the domestic situation and points out that the adaptation of the Bologna processes in this country requires a significant change in the strategy of higher education institutions, taking into account several aspects, and that their successful implementation is also a pledge for the international competitiveness of institutions (Barakonyi, 2004).

<sup>53</sup> For example, if a university wants to enter the international market on the basis of its strategy, international accreditation is indispensable. See the example of CUB mentioned above.

<sup>54</sup> For example, BME (Budapest University of Technology) follows a total quality management (TQM) approach, which focuses on the full satisfaction of the needs of its stakeholders (students, teachers, employers) (Bihari & Czigány, 2013).

innovative, student-centred learning culture. Collaboration with industry ensures that curricula are in line with labour market expectations. It is worth bearing in mind, however, that an organisational environment conducive to real skills development and 'deep learning' can only be created if it is backed by strong and, perhaps more importantly, sustained managerial commitment and sufficient time to follow through (Gibbs et al, ' *An analysis of the practice of universities committed to the quality of learning and teaching and with active initiatives in this area shows that successful initiatives are always accompanied by organisational and leadership changes, and that the latter are a crucial condition for the success of the initiatives.*' (Halász, 2010, p. 14)<sup>55</sup> summarises in Halász's study one of the important factors for the steps needed for progress.

Ultimately, students in the 21st century need to be able to integrate both study and work, so the demand for programmes offering work experience opportunities is growing. Educational institutions have a responsibility to respond to students' needs with adaptive and innovative approaches, thereby facilitating their successful career development and continuous learning (Bodnár, 2024).

Overall, quality assurance is not just a compliance function, but a complex system that enables institutions to respond competitively to rapidly changing societal and economic demands, while fostering internal innovation and the achievement of strategic goals. It is this integrated approach that underpins the long-term success and relevance of higher education institutions in the 21st century educational space.

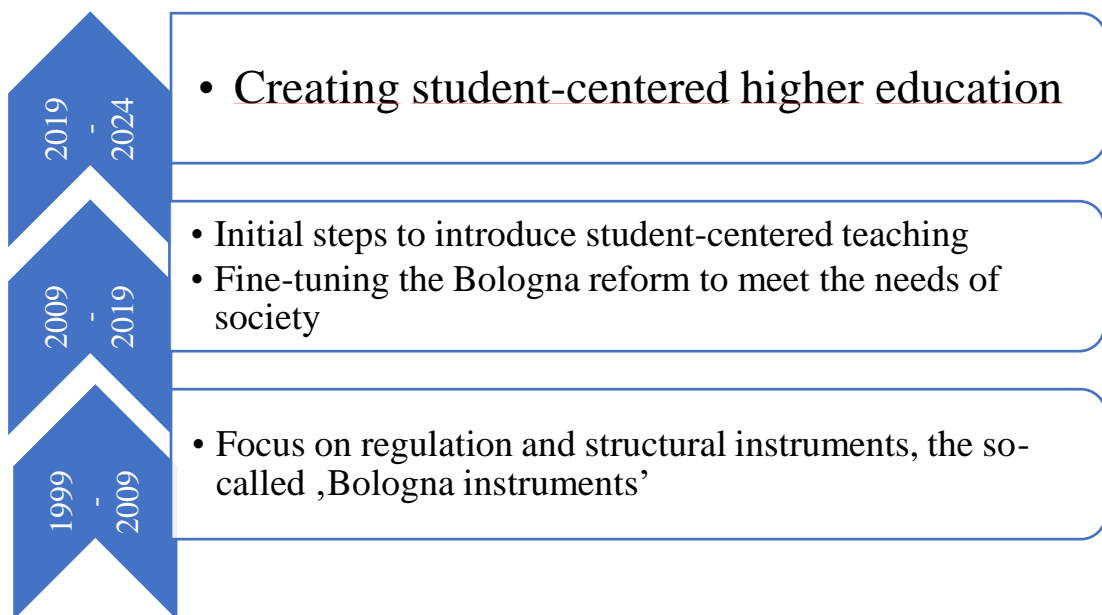
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<sup>55</sup> An example is the Student Appraisal System (HALVEL) at CUB mentioned in Mikáczó's thesis (Mikáczó, 2021), which was transformed as a result of institutional transformation and internal quality assurance processes and continues to operate as a CTE (Corvinus Teaching Excellence) programme. A significant difference between the two systems is that while in HALVEL only students gave feedback to lecturers and subject supervisors, CTE includes self-evaluation by the lecturer, feedback from subject supervisors and, at certain intervals, peer review feedback from colleagues from both a professional and methodological perspective.

### 3. STUDENT-CENTRED LEARNING - TEACHING

In her study (Hrubos, 2024), Ildikó Hrubos describes in detail the process of the emergence of student-centred learning and teaching, and points out that in the 2010s new approaches to research on content and methodology of learning and teaching have emerged. In the European higher education context, the Bologna Process has institutionalised this issue. Students have become increasingly vocal about their needs<sup>56</sup>, and the issue of student-centred learning<sup>57</sup> has come increasingly into focus. The role of students and the issue of teaching-learning really came to the fore at the 2009 Leuven Ministerial Conference<sup>58</sup>. In the Communiqué<sup>59</sup> issued after the conference, the objective of student-centred learning and teaching, which had not previously been specifically mentioned in the Bologna documents, was a priority for the next decade. Ministers hoped that this new approach would help students to become more competent workers and active and responsible citizens in a rapidly changing labour market (Hrubos, 2024).

*8. Figure: Changing focus in the Bologna Process (own editing based on Hrubos description)*



<sup>56</sup> The 1968 student riot at the University of Paris was discussed in more detail in the previous chapter. Interestingly, in 1999, student representatives were not yet invited to the ministerial conference that launched the Bologna Process, but *'they took the stage and fought to be fully involved in the management of events and the introduction of the reform (from 2001 they have played such a role)'* (Hrubos, 2024, p. 119).

<sup>57</sup> HKT or Student Centered Learning (SCL)

<sup>58</sup> Meeting of European Ministers responsible for higher education in Leuven, 28-29 April 2009.

<sup>59</sup> Communiqué of the Conference of European Ministers Responsible for Higher Education, Leuven and Louvain-la-Neuve, 28-29 April 2009 (Communiqué..., 2009)

The ‘Bologna instruments’ in Figure 8 refer to the regulatory elements that have underpinned the current higher education structure and enabled the spread of international “interoperability”<sup>60</sup>. The promotion of international mobility was one of the main objectives of the Bologna Process, which is also a pillar of student-centered learning, as will be discussed in more detail in the next sub-chapter. The presence of students is a fundamental condition for higher education to function: where there are no students, the university cannot function. Moreover, the success of institutions also depends on the success of their graduates in the labour market. To this end, the organisation of alumni groups, which also provide support and a network of contacts, and the identification and ongoing support of student communities are important (Kozma, 2024).

### 3.1 Student-centered learning (SCL)

*‘Based on the literature, the theoretical roots of the subject are traced back to Jean Piaget’s learning theory and the constructivism and transformative learning theory that emerged from the mid-20th century onwards, as interpreted in higher education.’* (Hrubos, 2024, p. 119) According to this theory, students are active participants and managers of their own learning process and the institution and their teachers relate to them in this way. Teachers strive not only to transfer lexical knowledge but also to develop skills such as problem-solving, critical thinking and reflective thinking. The starting point of the SCL is that passive learning is replaced by active learning, with an emphasis on understanding and deep learning. Consequently, students’ responsibility, accountability and with it a sense of autonomy are increased. Reflectivity and mutual appreciation form the basis of the student-teacher relationship. An essential element is the implementation of flexible learning pathways, taking into account the learning outcomes identified. Students participate in the design of curricula, consult with their teachers and institutional staff. Special attention is also given to ‘learning to learn’, but the whole learning process is interactive and students learn from each other (Attard et al., 2010).

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<sup>60</sup> Examples of such tools are the multi-level training system (bachelor, master and doctoral), quality assurance, the development of measurement and assessment systems (e.g. by establishing a credit system to certify the completion of different courses, students can flexibly design their learning pathways, i.e. it allows them to move between institutions, courses and programmes). It should be stressed that the credit system established is based on the student’s workload in certain courses, rather than on the number of contact hours (Hrubos, 2024).

The European Students' Union in its 2015 Overview of student-centred learning in higher education in Europe reports on the results of an EU survey in which student representatives from twenty countries responded to a survey on their experiences of student-centred learning so far. As can be seen in Figure 8, the first initiatives towards SCL were launched in 2009 and it was therefore essential to take stock of the results achieved in the meantime and to fine-tune them. The project participants agreed that SCL is not yet a well-established concept, and that SCL is often interpreted in many different and sometimes contradictory ways (Geven & Attard, 2012). The uncertainty of interpretation is perhaps illustrated by the fact that no strong counterarguments have yet emerged in the literature (Todorovski et al, What is certain is that teacher-centred learning<sup>61</sup>, which is the opposite of SCL, has proved counterproductive in meeting the needs of a diverse student population<sup>62</sup>.

According to one approach, SCL represents a way of thinking and a culture within a particular higher education institution; it is characterised by teaching methods that aim to promote communication between teachers and students, to engage students actively in their learning process, and to enhance students' problem-solving, critical and reflective thinking (Todorovski et al, At a conference in Bucharest in 2010, the basic principles of understanding student-centred learning, as presented in Figure 9, were agreed upon by students and (representatives of) teachers in an intensive discussion.

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<sup>61</sup> Teacher-centered education is a pedagogical approach in which the teacher dominates the teaching process and the learners participate as passive recipients. In this model, the instructor determines the content of the curriculum, teaching methods and forms of assessment, while learners focus mainly on memorising and reproducing information. <https://www.tanulaskutatointezet.hu/kutatas/melyik-hatekonyabb-a-kutatas-alapu-tanulas-vagy-a-hagyomanyos-tanarkozpontu-oktatas?utm>. Cf. Principle VIII in the SCL.

<sup>62</sup> and has led, among other things, to high drop-out rates.

9. Figure: Principles of student-centered learning in the ESU approach (own editing)



Figure 9 illustrates the nine principles of student-centered learning in a pie chart. Starting from the center, the headings of each principle are shown, emphasising freedom of choice for learners, collaboration between teachers and students, and consideration of individual learning needs. The nine principles reflect the essence of the EHEA<sup>63</sup>, which are:

Principle I - EHEA requires a continuous reflective process, i.e. teachers, students and institutions must continuously reflect on their teaching, learning and infrastructural systems in order to improve the student experience and achieve the desired learning outcomes.

Principle II - There is no one-size-fits-all solution, i.e. personalised learning pathways are necessary. The EHEA recognises that all higher education institutions,

<sup>63</sup> And by thinking through the principles, we can understand why the transition process is moving slowly.

teachers and students work in different contexts, with different subjects and disciplines, and that teaching and learning should be adapted to local circumstances.

Principle III - Students have different learning styles, so some learn more effectively through practical experience (e.g. trial and error), while others learn more effectively by reading theory or participating in discussions.

Principle IV - Students may have different needs and interests, including academic, cultural, social and personal differences, which the EHEA takes into account<sup>64</sup>.

Principle V - Choice is central to effective learning. The EHEA provides students with choices in their learning pathways, for example in terms of subjects, learning materials or methods<sup>65</sup>.

Principle VI - Institutions design education taking into account students' existing professional and life experience and prior knowledge in order to make the learning process more relevant<sup>66</sup>.

Principle VII - Student control over the learning process, i.e. during the EHEA, students are actively involved in shaping the learning environment and can make autonomous decisions about the direction of their learning. Students should be seen as active partners with an interest in the functioning of higher education.

Principle VIII - Support, not 'delivery' of knowledge, is the main role of teachers in the EHEA process. In the simple transmission of facts and knowledge (narration), the initiative, preparation and content are primarily the responsibility of the teacher. The aim of the SCL approach is to give the student more responsibility, allowing him/her to think, process, analyse, synthesise, critique, apply and problem-solve. Tutors are primarily responsible for guiding and facilitating the learning process.

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<sup>64</sup> For example, some people are interested in culture, others in sport, others in sustainability, NGOs or charity. Students may have children, psychological problems, illness or disability. These should also be taken into account when designing the EHEA.

<sup>65</sup> In some curricula, the list of optional subjects, the choice of whether a student fulfils the requirements of a subject by obtaining a mark offered during the term or by taking an exam during the examination period, are all good examples of choices.

<sup>66</sup> A very simple and common example is full-time and correspondence courses. Typically, full-time undergraduate courses are attended by students fresh out of secondary school, while correspondence courses are typically attended by working students. Different timetables and curricula can make a difference and support the learning process of both types of students.

Principle IX - Collaboration between students and instructors, i.e. learning takes place through constructive interaction between students and instructors based on mutual respect and partnership (Todorovski et al., 2015)

*'In the SCL model, the student is not a consumer (whose favours are sought) and the teacher and support staff, or the institution as a whole, are not providers. It is a collaboration at a higher intellectual level, the understanding of which and its implementation in practice is the great task of the future.'* concludes Hrubos (Hrubos, 2024, p. 126).

### 3.2 Student-centred teaching - teacher roles – challenges

Why is the paradigm shift necessary, and what are the main reasons for the shift from teacher-centred to student-centred teaching in higher education? It is a combination of factors, but its roots lie in the changing social and economic context, employer and student expectations, and academic research on teaching effectiveness.

One component is the information explosion, i.e. the fact that digitisation has made information easily accessible to all, with the consequence that the teacher is no longer the only source of knowledge. In this context, digital learning is also gaining ground; online education, e-learning platforms and digital tools allow students to learn autonomously and to personalise the learning process. This also increases competition between universities, as students can now access the best learning materials and programmes from anywhere in the world.

Another factor is the changing expectations of employers. As information becomes more readily available and the rules to which businesses have to adapt and the technologies they have to adapt to change very rapidly, employers are placing increasing emphasis on ensuring that their employees are constantly upgrading their knowledge<sup>67</sup> and skills. They expect competences such as problem solving, critical thinking, creativity, collaboration and communication, which, when possessed by employees, directly contribute to the effective functioning of organisations, increasing their capacity to innovate and their long-term competitiveness. Employers

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<sup>67</sup> Lifelong learning (LLL). It is of paramount importance that higher education prepares students to develop analytical, critical and reflective thinking, so that they become independent learners who appreciate the importance of learning, recognise that learning is a lifelong process and understand that they are solely responsible for their own learning (Hoidn & Klemenčič, 2020).

are therefore now making these skills a priority both when recruiting new employees and when training their existing staff.

A third factor is the diverse student population<sup>68</sup> with heterogeneous backgrounds, experiences and learning styles, and the increased need for student autonomy, which cannot be effectively addressed by a teacher-centred approach.

Last but not least, research in the psychology of learning shows that learning with students' active participation can ensure deeper understanding, greater knowledge retention and better outcomes. Reflective and cooperative learning methods such as group work, discussion and project-based learning have been shown to be more effective in many cases than face-to-face teaching<sup>69</sup>. According to Hinton and colleagues, neuroscientists and cognitive scientists agree that for learners to use their brains effectively, they need to engage in cognitively active forms of learning. To (re)build the human mind, we need to actively use our brains to organise and connect isolated pieces of information (Hinton et al, *'Student-centred learning and teaching (SCLT) therefore means teaching in accordance with the way the brain learns - learners only build new neural networks when their brains are actively attending to new information by practising, reading, writing, thinking, talking, collaborating or reflecting'*(Hoidn & Klemenčič, 2020, p. 18) *'in a sense, we 'trap' the learner so that it is difficult for him to escape without learning what he wants to learn'* (Biggs, cited in (Halász, 2010, p. 10)) (Biggs, 2003).

For the reasons detailed above, and later, due to the constant change and development of the digital environment, we can observe the need for a significant evolution of the teaching tasks in higher education institutions<sup>70</sup>. The main details of this paradigm shift in the teaching/learning paradigm of student-centered teaching/learning are summarised in Figure 10.

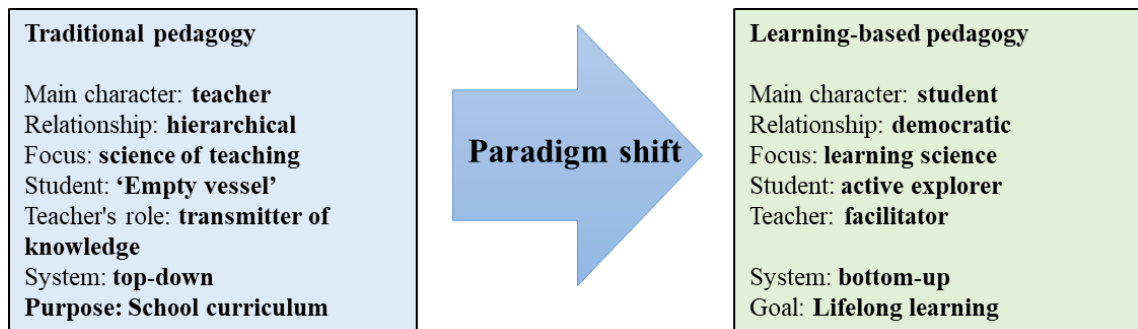
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<sup>68</sup> 'non-traditional' students, as mentioned and defined several times in previous chapters

<sup>69</sup> Research has clearly shown that lecturing during the whole lesson is not an effective teaching method. This is because our working memory and ability to concentrate are limited; usually after listening to 10-15 minutes of lecture, students' attention wanders (Hoidn & Klemenčič, 2020) 'It is what students learn that is important, not how much the lecturer knows and what he or she covers in his or her lecture' (Blight, cited in (Loughlin & Lindberg-Sand, 2022)).

<sup>70</sup> Meanwhile, the 'dilemma of the changing role of the lecturer', i.e. the tension between the lecturer's ability to meet the expectations of both the research and the student community, is still emerging in the system, Kozma points out in his study (Kozma, 2024).

*10. Figure: A paradigm shift in higher education pedagogy (own editing based on Kozma's description)*



Implementing student-centered teaching is a slow and resource-intensive process. The regulatory and curricular constraints and the costs of providing the necessary resources for active learning models (e.g. curriculum development, digital tools and learning spaces) can be a challenge for institutions. Furthermore, familiar practices, structures and culture make it difficult to replace traditional teaching models and, as Kozma has pointed out, institutional priorities often point in a different direction, i.e. institutions place more emphasis on research outputs than on improving education (Kozma, 2024).

The paradigm shift on the part of educators also creates difficulties in several respects: First, it is important to highlight that designing, implementing and evaluating active learning methods requires much more time and effort on the part of instructors, which is not always acknowledged by institutions; second, instructors often lack the pedagogical knowledge and technological competences needed to implement student-centred courses; and there are also instructors who are not open to changing teaching methods, especially if there is no adequate training or support (McCabe & O'Connor, 2014).

In many cases, students are found to be resistant to active forms of learning because they are 'used to' teacher-centered teaching models, have developed passive learning habits and are uncomfortable with taking greater responsibility for their own learning. Different learning styles also influence 'who likes what'.

### 3.3 Learning styles

Learning style is an individual's preferred way of receiving, processing and applying information (D. A. Kolb, 2014). These styles are reflected in different theoretical models and are relevant in education because they influence the performance of learners and the effectiveness of teaching methods. Students' intellect and learning habits are diverse and therefore do not always fit into predefined frameworks of institutional education. According to Piaget's teaching, each student should be taught according to their own way of learning, i.e. they should be taught to learn according to his intellect. Within the framework of group teaching, general individualisation has become the focus of qualitative development in higher education pedagogy. This is most relevant in the context of teaching methodology, as different methods give students (even adult learners) specific tasks to perform certain thinking and action activities, thus acquiring new knowledge and new ways of thinking and acting (Csoma, 2003).

Learning style typically consists of a combination of four different factors. (1) What is the most effective way of learning information? (2) What is the most effective way of organising and processing information? Is it right- or left-hemisphere, analytical, detailed or more comprehensive? (3) What conditions facilitate the reception and storage of information? Emotional, social, physical and environmental factors. (4) What is the way information is retrieved? (Bodnár et al., 2017; Dunn & Burke, 2005) That is, *'learning style is formed by a combination of environmental, emotional, social, physiological, and psychological characteristics that determine how a person learns best.'* (Bodnár et al., 2017, p. 67).

There are several different models and approaches for identifying and describing learning styles. These styles are based on a combination of experience, abstraction, and practice (A. Y. Kolb & Kolb, 2017; D. A. Kolb, 2014). The Felder-Silverman learning style model considers dimensions such as sensory-intuitive, visual-verbal, active-reflective, and sequential-global learning styles (Felder, 2002; Graf et al, 2007). The VARK model developed by Fleming and Mills (1992) classifies learning preferences into four categories: visual, auditory, reading/writing, and kinesthetic (Fleming & Mills, 1992). And Honey-Mumford's model identifies four types of learners: activist, reflective, theoretical, and pragmatic thinkers (Swales & Senior, 1999).

In Hungary, Imre Szitó has developed a questionnaire for diagnosing learning styles, which distinguishes seven different learning styles based on three learning approaches. Learning styles can be categorised according to the acquisition of information through the senses: auditory, visual and motor. Auditory learners rely on auditory information and learn most effectively from verbal information. They read aloud, listen to explanations and often recite the material they are learning aloud. Visual learners build their knowledge on what they see and therefore prefer pictures, graphs, diagrams and other visual elements in their learning. For mobile learners, movement aids learning, they often walk while processing the material or express what they are learning through movement. Based on the social environment, we distinguish between quiet and social learning styles. Quiet learners tend to prefer to learn alone and are reluctant to talk during the learning process, while social learners prefer to learn in the presence of others and actively participate in group work. Based on their reaction to information, we can talk about impulsive learners who react quickly without thinking about the answer and like to discuss in the group. Finally, the mechanical learning style is typically associated with rote learning, where no exploration of relationships takes place. For learners with a mechanical learning style, learning is easiest when they can process material based on their own experience (Black I et al., 2024).

The literature on learning styles is wide-ranging, but three other findings of relevance to this thesis are worth highlighting:

- 1) Based on Cameron and Pagnattaro's observation, when instructors incorporate multiple methods and student activities that fit different learning styles into courses, they support student engagement and fewer students drop out (Cameron & Pagnattaro, 2017) (Csillik, 2023).
- 2) Online and hybrid learning environments enable the use of adaptive learning technologies that support different learning styles (Pashler et al., 2008).
- 3) Learning styles may manifest differently in different cultural contexts (intercultural differences), which is particularly relevant to consider when designing educational programmes and courses where students from several countries may be among the participants (Joy & Kolb, 2009).

### 3.4 Motivations for learning

Establishing, maintaining and developing motivation to learn is a fundamental prerequisite for learning and teaching. *Motivation* to acquire new knowledge is essential for effective learning, acting as an intrinsic driving force that influences an individual to initiate or continue the process by which they aim to achieve their goals (Kiss, 2015) (Schunk et al., 2010).

By focusing on individuals' beliefs, values, and goals, motivation researchers have learned a great deal about why individuals choose to participate in various activities or not, and how individuals' beliefs, values, and goals are related to their performance behaviors. There are many theoretical perspectives on these issues and motivation research remains very active (Eccles & Wigfield, 2002). However, for the purposes of this paper, the focus is on learning motivation: '*Learning motivation is the internal or external drive that determines the intensity and persistence with which one engages in the learning process.*' (Réthyné 1988, cited in (Kiss, 2015, p. 160)).

Different theories frame why and how individuals are motivated to learn. For example, according to Maslow's hierarchy of needs, motivation is based on a hierarchical system of human needs, from basic needs to self-actualization (Maslow, 1943). According to Deci and Ryan's self-determination theory, motivation is determined by three basic psychological needs: autonomy, competence and relatedness (Deci & Ryan, 2000). It distinguishes between intrinsic and extrinsic motivation: intrinsic motivation<sup>71</sup> arises from interest and pleasure, while extrinsic motivation<sup>72</sup> is related to external rewards or expectations. According to Eccles and Wigfield's expectancy-value theory, an individual's motivation depends on the extent to which they believe they will succeed and how they value the goal<sup>73</sup> (Eccles & Wigfield, 2002).

Research and experience to date has shown that motivation strongly influences student performance, persistence and satisfaction. Pintrich and De Groot found that learners with higher motivation perform better (Pintrich & De Groot, 1990). Reeve

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<sup>71</sup> For example, a student learns a new programming language because it amuses them.

<sup>72</sup> In this case, the student learns in order to get a good grade, recognition, scholarship, etc.

<sup>73</sup> There is also an integrated motivation, where, for example, a student learns because the knowledge they acquire fits their life goals.

has investigated the role of the instructor and found evidence that instructors can act as motivators, for example by creating a supportive environment and setting relevant learning goals (Reeve, 2006). New directions in research on motivation to learn focus on the effects of technology, culture and the learning environment. Deterding et al. found evidence that adaptive learning systems, such as gamification, can promote motivation (Deterding et al, 2011), while others have drawn attention to cross-cultural differences, suggesting that motivation may be influenced by cultural differences and different values in educational systems (Markus & Kitayama, 1998). Markus and Kitayama's research highlights that Eastern and Western cultures have different approaches to the concept of self-image, which are reflected in learning motivation. In the US and Western cultures, the educational system often emphasises individual success, autonomy and self-actualisation (students take responsibility for their own decisions, motivation to learn often stems from intrinsic drives such as the desire for self-development). In contrast, in Japan, for example, the education system focuses strongly on belonging to the community and meeting family or group expectations (students' motivation is often determined by external factors, such as parents' or teachers' expectations, and social harmony and responsibility for the community are more strongly emphasised). As a result, while American students tend to make more autonomous decisions and adapt their learning processes to their personal goals, Japanese students place more emphasis on the social relevance of learning and learn for group goals (Markus & Kitayama, 1998).

## 4. DIGITALISATION AS AN OUTCOME AND RESPONSE TO CIRCUMSTANCES

Digitalisation<sup>74</sup> has become one of the key drivers for the transformation of education systems in recent decades. Advances in technology have created new opportunities to modernise educational processes, personalise the learning experience and make more efficient use of resources. At the same time, digitalisation has not only brought innovation, but has also served as a response to global crises such as the COVID-19 pandemic.

This chapter looks at how digitisation has become an integral part of higher education, how it has been organically integrated into the functioning of institutions and how it has suddenly transformed the higher education environment during the COVID-19 pandemic.

### 4.1 The emergence and integration of the digital environment in higher education (natural process and shock effects)

Digitalisation has gradually become a dominant factor in higher education since the second half of the 20th century. The emergence of the information society and technological developments have not only transformed business and industry, but have also had a significant impact on education systems. One should mention Siemens' study on the theoretical foundations of digital education and the role of networked learning (Siemens, 2004). The first significant milestones in digital education appeared in the 1960s in the United States, when universities began to experiment with the use of computers in education. In the 1970s and 1980s, universities began to use educational software and computer simulations that allowed students to practice in an interactive way. In 2001, MIT's OpenCourseWare program was among the first to make its course materials available free of charge to anyone (Setényi, 2013).

In the 1990s, the spread of the Internet brought revolutionary changes to higher education. Universities started to digitise their teaching materials, and the development of e-learning platforms enabled the launch of online courses, for

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<sup>74</sup> The word 'digitisation' refers to the process '*whereby physical quantities are transformed into something that can be processed by computer*' (Horváth et al., 2022, p. 1)

example, the first Massive Open Online Courses (MOOCs) were launched in the early 2000s on Coursera and edX platforms.

The development of digitalisation in higher education has taken two main forms: **organic spread** and **shock application**. An understanding of these two phenomena is essential to see that digitisation is not only a natural consequence of technological innovation, but also a process driven by environmental factors that are radically changing the context of education.

#### 4.1.2. The organic spread of digitalisation (natural process)

By the beginning of the new millennium, most universities had introduced blended learning models, based on a combination of online and traditional learning methods. The integration of learning management systems (LMS) such as Moodle, Canvas and Blackboard enabled the organisation of courses, the monitoring of student performance and the digital accessibility of learning materials. By 2010, technological innovations such as gamification, virtual reality (VR) and artificial intelligence (AI) further enriched the higher education experience. These tools have increased learner motivation and educational effectiveness<sup>75</sup>.

Technological advances go hand in hand with societal advances and changes in the way individuals adapt. The characteristics of today's high school and university students, also known as Generation Z (young people born between 1995 and 2009, also known as 'zappers' or changers), are shaped by demographic (smaller families) and sociological (older mothers, longer periods of study) factors, in addition to the technological innovations of our time (e.g. online and visual content). For this age group, 'multitasking', i.e. simultaneous activities require constant attention. They can maintain their concentration by frequently renewing new stimuli every 7-8 minutes. They typically require visual, entertaining content and immediate feedback (Tari, 2011) (Fromann & Damsa, 2016) (Tarpataki & Mikáczó, 2022).

Even before the shocking changes, several researchers have already drawn the attention of education experts to the fact that there is a backlog in training instructors to use the developments that have been implemented organically over the years, i.e., given the explosive growth of online learning, there is a pressing need for guidelines

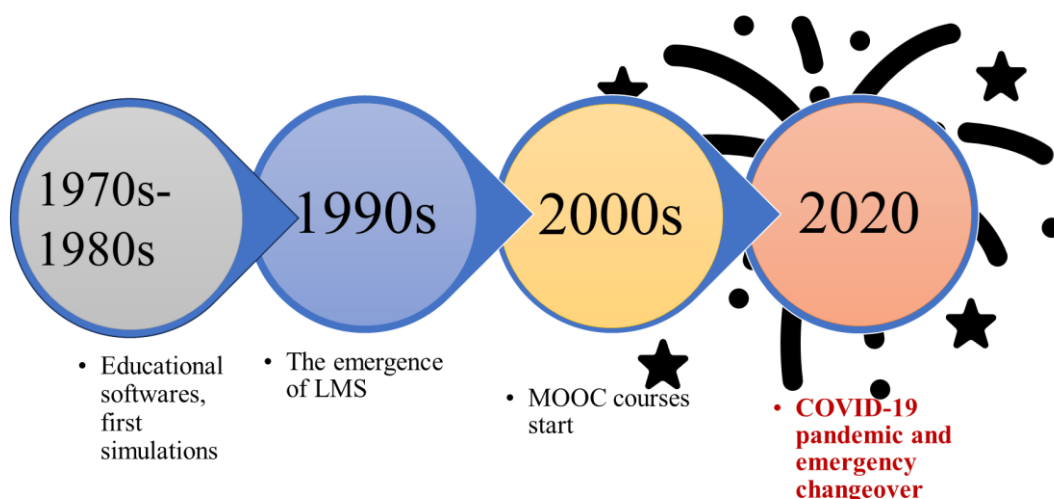
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<sup>75</sup> For example, the language learning platform Duolingo is a successful example of gamified education that became globally known in 2012 (Duolingo, 2024).

in higher education institutions to prepare instructors on how best to teach in online spaces (Martin et al., 2019).

The advance of digitalisation provides opportunities for students and young people to access knowledge in diverse and modern ways (Figure 11). However, the education system in Hungary has not yet fully exploited these opportunities. The epidemic has forced education to use ICT, but for this to be truly effective, it is not only necessary to improve infrastructure and technical knowledge, but also to strengthen text comprehension, emotional intelligence and media literacy (Lannert, 2022).

*11. Figure: Digitalisation in higher education (own editing)*



#### 4.1.3. COVID-19 pandemic - virtual (digital) education, shock effect

In 2020, the COVID-19 pandemic gave a significant boost to the uptake of digital education. Educational institutions were forced to move their operations online, highlighting the challenges and opportunities of digitalisation<sup>76</sup>.

The rapid transition to emergency online education in higher education has posed significant challenges, as revealed by a comprehensive survey conducted by the International Association of Universities (IAU) (Marioni et al., 2020). The results highlighted the need for robust student support systems, as limited resources, inadequate technological infrastructure and lack of face-to-face interaction have led

<sup>76</sup> According to a UNESCO survey, more than 1.5 billion students worldwide will have migrated to digital platforms in 2020 (UNESCO, 2020).

to difficulties for students in adapting to the online learning environment. Lecturers and support staff in higher education have also faced challenges, including job insecurity and the need to reassess and reorganise university operations, which they have not yet encountered and were therefore unprepared for. Technical barriers, such as the strength of internet connectivity and unfamiliarity with effective pedagogy for distance education, added to the difficulties (Ahmed et al., 2023).

A few weeks after the announcement of the COVID-19 pandemic<sup>77</sup>, Hodges and his co-authors published an article in which they list the key differences and similarities between emergency remote teaching (ERT)<sup>78</sup> and online learning. By their definition, online teaching/learning is a systematically designed, structured educational experience delivered on digital platforms. Quality online learning/teaching applies best practices in instructional design, pedagogy and technology to deliver a high-quality learning experience. It is usually preceded by a long planning period in which educational experts and teachers work together; interactive tools, multimedia materials, thoughtful, comprehensive and systematic assessment systems/methods are built into the course, with an emphasis on active learning, collaboration and student engagement (Hodges et al., 2020).

In contrast, ERT is a temporary, very abrupt form of teaching, implemented in a crisis situation (e.g. during the COVID-19 epidemic) to ensure that education can continue as soon as possible.

Figure 12 summarises both the differences and the common elements. The characteristic feature of ERT introduced in response to shock changes is its immediate implementation, usually without adequate planning, organisation, resources and instructional design, i.e. institutions, subject and subject supervisors, and instructors had minimal planning opportunities during the rapid transition. In the main, teachers and higher education institutions have sought to implement emergency distance learning using existing or temporary learning materials produced at a particularly fast pace, using traditional classroom methods in the digital space, and replacing classical assessment methods with online tests (Hodges et al., 2020).

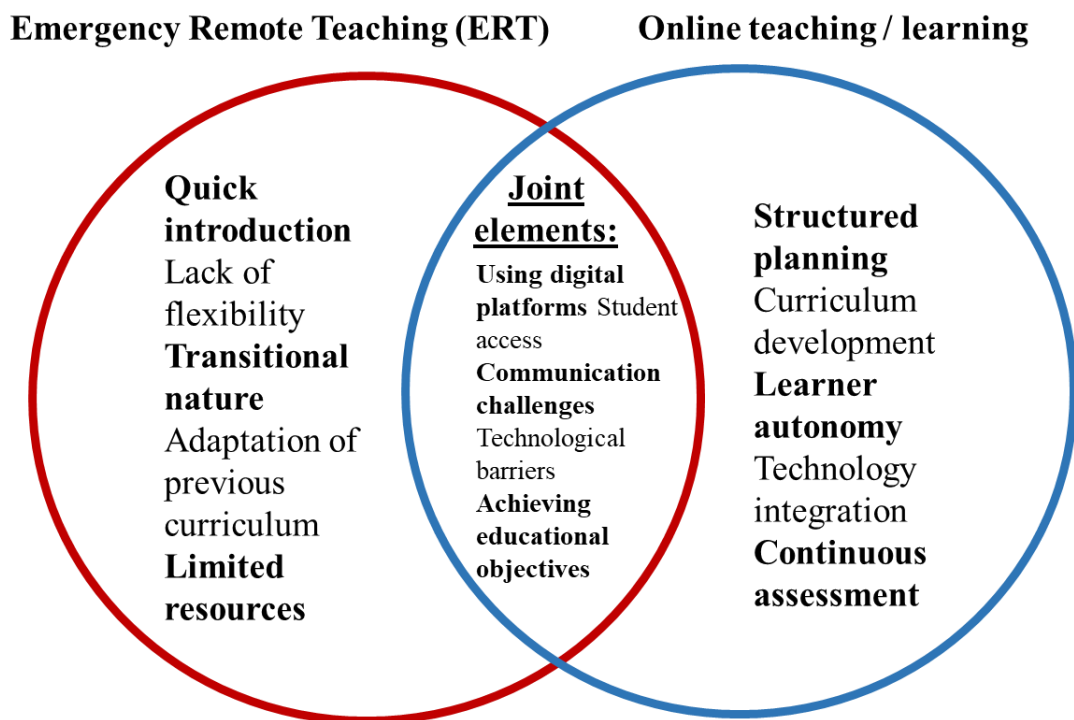
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<sup>77</sup> COVID-19 has been classified as a global pandemic, according to a World Health Organization (WHO) statement published on 11 March 2020.

<sup>78</sup> Emergency Remote Teaching (ERT)

The main objective of both forms of education is to achieve learning outcomes for students, and this requires digital tools and online platforms (e.g. Zoom, Teams, Moodle, etc.) where students can access the learning material. Another common element is the challenge of communication between teacher-student and student-student, as well as the availability of internet access and digital tools.

*12. Figure: Similarities and differences between emergency remote teaching (ERT) and online learning (own editing based on Hodges et al.)*



European universities declared a widespread state of emergency for the **COVID-19 pandemic** in March 2020 in response to the World Health Organization (WHO) declaration of 11 March 2020, in which COVID-19 was classified as a global pandemic (Cucinotta & Vanelli, 2020). This was necessary to reduce health risks among students and faculty. At the same time, countries introduced travel restrictions and closed university campuses. The speed of the changeover varied from country to country and institution to institution, but the pandemic has brought drastic changes to higher education systems across Europe. The key to the solution was the existence and rapid availability of online platforms that enabled continuity of education.

The dual nature of digitalisation shows that both natural evolution and unexpected events play a key role in the transformation of education systems. During slow,

organic evolution, long-term changes that are sustainable, and become a fundamental part of the system are developed. During shock change, rapid adaptation that implements technology at high speed is initiated; time is needed to evaluate and fine-tune the long-term effects.

The period of shock change has shown where there are still gaps in the organic development of digitisation in education and why it is worthwhile to monitor the spread and depth of technological progress in the future through continuous feedback. There were gaps in training of trainers, inequitable access to digital tools for students, and in the management of time pressures, which affected almost all stakeholders, especially at the dawn of the COVID-19 pandemic. It is therefore worthwhile to plan and invest in the long term in online educational infrastructure, to support trainers in acquiring new competences and to launch programmes to ensure that students have access to modern tools, taking into account equal opportunities. And to monitor, through continuous feedback, whether the planned objectives have achieved the desired impact after implementation (Zhu & Liu, 2020).

The internet, big data, artificial intelligence, 5G and cloud platforms, along with other technologies, have been put at the service of education. But a more flexible approach to teaching and learning is not just a question of infrastructure. Infrastructure is the first step towards a new paradigm for teaching and learning in the post-pandemic era. This paradigm represents a shift from traditional teacher-centered and lecture-based methods to student-centered activities, including group work, discussions, hands-on learning and limited use of traditional lectures. This calls for a rethinking of the very essence of teaching and learning, the roles and relationships between teachers, students and learning materials in post-digital learning communities (Jandrić et al., 2018).

#### 4.2 The development of digitisation at Corvinus University of Budapest

At Corvinus University of Budapest, the process of digitalisation has started in parallel with international trends. Its predecessor institution, the Marx Károly University of Economics, established the University Computer Centre (ECC) in 1964, which functioned as the university's first computer laboratory. Its purpose was

to support teaching and research in economics by means of computer science<sup>79</sup> and to promote the integration of computer science into economics education. This has enabled both students and teachers to learn the basics of computing and to apply them in economic analysis and research (Szécsényi & Zsidi, 2021).

During the 1980s, computer laboratories were made more widely available at universities and laid the foundations for the teaching of computer science in economics courses. In the 1990s, the university started to build up its internal networks, connected to the Internet, and developed IT infrastructure which enabled electronic communication for faculty and students.

The early 2000s saw the testing of different e-learning platforms and technologies, which led to the introduction of the Moodle e-learning system (Orbán, 2021) in 2009, which has since become the official distance learning platform of the university, and which has enabled online sharing of course materials, assignment of tasks and communication between lecturers and students (Szécsényi & Zsidi, 2021). The introduction of Moodle has also contributed significantly to the university's move towards student-centred learning/teaching by creating opportunities for students to actively participate, learn independently and personalise the learning process<sup>80</sup>.

Since 2010, the CUB has developed digital learning materials for several subjects<sup>81</sup>, especially in economics and business, with the aim of modernising education and adapting to the challenges of the digital age (Bodnár et al., 2017). The role of computing and data-driven decision making has also become increasingly important

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<sup>79</sup> Initially, the high-performance computers of the ESRC were used for economic and statistical analysis.

<sup>80</sup> Even if not from the very beginning, the introduction of Moodle can be seen not only as a digitalisation milestone, but also as a step towards student-centred learning in several respects, supporting features and pedagogical approaches that promote active student participation, autonomy, and individual learning needs. For example: (1) Supporting **individual learning pathways** by providing flexible access to learning materials made available by teachers (accessible anytime and anywhere via the Internet), so that students can progress through the learning material at their own pace, which is particularly beneficial for students with different learning styles and paces. Furthermore, it can be used to create a variety of learning modules (quizzes, exercises, multimedia content, videos, etc.) to meet individual learning needs, provide practice for deeper learning and increase motivation and engagement. (2) Support **active learning strategies** (gamification) and the use of collaborative tools. (3) Promote **self-regulated learning** by allowing students to track their progress, mark completed tasks and receive immediate and automatic feedback on tests and quizzes, helping them to identify their strengths and weaknesses. (4) Teachers can provide **personalised feedback**, which can also increase student participation and engagement. (5) Moodle gives teachers the opportunity to analyse students' activities and progress, so they can identify difficulties and, based on the analytics, instructors can refine learning content and teaching methods.

<sup>81</sup> E.g.: microeconomics

in economics and management courses. Later, the university started to experiment with hybrid education, which combined digital and face-to-face teaching elements and provided essential technological and pedagogical expertise for the subsequent comprehensive digital transition.

In 2018, Corvinus University of Budapest identified digitalisation as a priority, for its long-term strategy, both in education and in internal processes. Infrastructural upgrades (computer labs and Wi-Fi network) and the development of digital learning materials<sup>82</sup> continued. At the same time, the university started to organise pedagogical and digital methodology training for teachers to take advantage of the opportunities offered by technology.

The COVID-19 pandemic in 2020 led to a significant acceleration in this area, and the university was forced to make a major digital switchover in a short period of time to adapt to the changed circumstances. The university chose Microsoft Teams and Moodle to deliver online education: course materials and assignments were shared through Moodle (as before), while live lectures and seminars were delivered through Teams. The rapid implementation was made possible by digitalisation developments in previous years<sup>83</sup>.

The beginning of the renewal process of CUB can also be linked to this period, as the university became a foundation institution on 1 July 2019, thus initiating significant structural and content-related changes<sup>84</sup>. One of the main objectives of the model change was to renew the training portfolio and to promote professional development in order to better align their content and methodology with market needs and international trends. As a result, several courses were renewed and new courses could

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<sup>82</sup> Referring, for example, to the video-based treatment of accounting topics presented in section 2.4.3 and the writing of text-based learning materials on [tankonyvtar.hu](http://tankonyvtar.hu) mentioned by Zsolt Orbán (Orbán, 2021).

<sup>83</sup> This period is of particular importance for the research discussed in the dissertation: in the spring semester of 2020, I started a questionnaire survey among the students of the Hungarian Foundations of Accounting course on which teaching methods helped (or not) their learning the most, the results of which I shared with my colleagues in the department for the preparation of the next semester. In the following semesters, I extended the research to the English language students, which was also used for further improvements and refinements. In the summer of 2021, the other ‘leg’ of my research was data collection, when I conducted semi-structured interviews with all colleagues of the Accounting Department who teach the Foundations of Accounting course in either Hungarian or English.

<sup>84</sup> <https://www.uni-corvinus.hu/post/jelentos-eredmenyek-szulettek-2021-ben-az-also-modellvalto-egyetenen-a-corvinuson/>

be launched<sup>85</sup> in autumn 2021. The modernisation of student services has also moved towards digitalisation, including the development of the MyCorvinus mobile app<sup>86</sup>, which makes it easier for students to manage their university and access information. And returning to the issue of quality assurance, it was also during this period that the University obtained the international AACSB accreditation<sup>87</sup>, which was an important milestone in the implementation of the long-term strategy.

The changes, reviews and management expectations associated with the change in the university model more or less overlapped in time with the emergency measures taken in the wake of the COVID-19 pandemic. However, a student-centered, practice-oriented, output competency-based approach to teaching, using the results of the digitalisation process, clearly started earlier at CUB, which is well supported by the 2018 digitalisation strategy, in the framework of which the Centre for Teacher Education and Digital Learning developed an e-learning and m-learning strategy<sup>88</sup>, and the document that was published on the day of the emergency declaration, already on March 12<sup>th</sup> 2020, the ‘Methodological guide for the transition to distance learning in the face of the coronavirus emergency’. This suggested solutions for educators to make the transition to distance learning, and included a detailed description of the methods, as well as advantages and disadvantages and support options.

#### 4.3 Digital competence<sup>89</sup> in higher education

The naming and interpretation of teachers' attitudes towards digital technology and related knowledge has changed several times in the literature over the past decades. In the past, the term “digital literacy” was used to describe the abilities that enable teachers to use and evaluate digital resources, tools and services and to apply them in

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<sup>85</sup> Examples of modernisation of Bachelor of Business Administration and Management BA (in Hungarian and English) and Bachelor of International Business Administration BA (in English), and the creation of new courses such as Bachelor of Business Data Science BA (in English)

<sup>86</sup> Launched in November 2020.

<sup>87</sup> Founded in 1916, the AACSB (Association to Advance Collegiate Schools of Business) is the oldest global accrediting body for higher education in business.

<https://www.uni-corvinus.hu/post/hir/magyarorszagon-elsokent-szerzett-aacsb-akkreditaciot-a-corvinus/>

<sup>88</sup> m-learning = mobile-learning chrome-extension://efaidnbmnnnibpcajpcgclefindmkaj/https://www.uni-corvinus.hu/contents/uploads/2021/01/Tan%C3%A1rk%C3%A9pz%C5%91%20%C3%A9s%20Digit%C3%A1lis%20Tanul%C3%A1si%20K%C3%B6zpont%20strat%C3%A9gi%C3%A1ja.fbf.pdf

<sup>89</sup> ‘Competence is a system of psychological formations that encompasses an individual's knowledge, beliefs, motives, practical skills in a given domain, and thus enables effective activity’ (Falus, 2005, p. 6).

lifelong learning (Horváth, 2023). Recent research has taken a more open approach to the term and has interpreted it as digital competence<sup>90</sup>. This definition does not only focus on skills, but also covers much broader dimensions. According to Janssen et al., digital competence does not only mean that teachers know of, and know how to use, tools and applications. The term ‘competence’ allows for the possibility to include attitudinal elements in the interpretation of the concept alongside knowledge and skills (Janssen et al.). A digitally competent teacher therefore not only has technical skills, but also a positive, proactive attitude towards the digital learning environment, recognising its potential, limitations and challenges.

In 2006, Mishra and Koehler developed and published an integrated model of teacher digital competence called Technological Pedagogical And Content Knowledge (TPACK) (Mishra & Koehler, 2006). This framework has extended Shulman's (1986) concept of Pedagogical Content Knowledge (PCK) (Shulman, 1986) to include a technological element, thereby distinguishing three main knowledge domains: content, pedagogical and technological knowledge and their intersections. TPACK aims to describe the core competency elements and their interactions that are necessary for the effective integration of technology in education. The model argues that subject (content) knowledge, pedagogical methodological knowledge and technological tool knowledge are all essential to the teaching process and emphasises that these components are not isolated but interrelated. The representation of the model also reflects this close interconnection: three circles are connected like a Venn diagram, forming intersections (Horváth, 2023). Later, researchers extended the model with the component of knowledge about the educational environment, Contextualized Knowledge (Contextualized Knowledge) (Mishra, 2019), and then with teacher knowledge shaped by external contexts (XK, ConteXtual Knowledge) (Petko et al., 2025).

The original model (TPACK) was not developed specifically for the higher education environment, but I found it the most appropriate to frame the theoretical background

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<sup>90</sup> Digital competence has become a new focus area for quality assurance in higher education. The educational integration of technological tools, the digital literacy of teachers and students, and the effective use of online learning environments all influence the quality of the learning process. Quality assurance systems will therefore in future have to play not only a monitoring but also an improvement role in this area.

of this thesis and the studies highlighting technology-oriented changes in the research environment, and to identify and explore problem areas.

The areas of knowledge represented in the TPACK framework are (Mishra & Koehler, 2006):

1) Content Knowledge (CK): in-depth knowledge of the subject taught by the teacher, including the basic facts, concepts, theories and procedures of the subject. This component ensures that the teacher has a solid professional foundation in the content of the subject matter<sup>91</sup>.

2) Pedagogical Knowledge (PK). The teacher understands how students construct knowledge, acquire skills and develop habits of mind, and can plan the teaching process accordingly<sup>92</sup>.

3) Technological Knowledge (TK): it includes knowledge of educational technology tools and digital platforms, especially those tools and software that are relevant to accounting education (e.g. spreadsheets, accounting software, auditing software, online learning platforms) (Thomas & Chukhlomin, 2020).

In turn, different combinations of knowledge areas are represented by the following items:

4) Pedagogical Content Knowledge (PCK): an integration of subject matter-pedagogical knowledge that shows how to teach a given content effectively. According to Shulman, this knowledge includes knowledge of the teaching methods that are appropriate to the content of the subject matter, how to make concepts and phenomena understandable, ‘digestible’ and interesting for students (Shulman, 1986). PCK includes knowledge of how to explain concepts, which topics are difficult or easy for students, what prior knowledge and misconceptions they may have, and how

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<sup>91</sup> In the context of this thesis, this means knowledge and professional competences in the field of accounting.

<sup>92</sup> E.g., for accounting lecturers, it is important to understand that this is a rules- and mathematics-oriented subject, which in many cases is perceived by students as ‘high-risk’ and can cause them anxiety. Addressing this should be part of the teaching strategy. Or, for example, raising awareness and building into the curriculum that repetition, summarisation and the systematic presentation of logical relationships help students in their learning process.

to overcome these difficulties. This knowledge enables the teacher to teach subject content adapted to the needs and prior knowledge of the students<sup>93</sup>.

5) Technological Content Knowledge (TCK): knowledge of how technology impacts on subject content and vice versa - i.e. how a technological tool can transform the teaching and understanding of content. TCK recognises that different digital tools offer new ways of representing and organising content. It is the competence of the teacher to recognise how technological tools can be integrated with subject content and how they shape the teaching of that content<sup>94</sup>.

6) Technological Pedagogical Knowledge (TPK): the knowledge of how different technologies can be used for teaching-learning purposes and how the use of technology can lead to pedagogical changes. TPK involves understanding that there are different digital tools for a given pedagogical task and being able to make a targeted choice between them, exploiting the potential of each tool. It also includes being familiar with the technical tools and platforms that support teaching (e.g. learning platforms, educational software, simulations, social media) and how they can be used to enhance student engagement and support the teaching process<sup>95</sup>.

7) Technological Pedagogical And Content Knowledge (TPACK): a new, synthesizing form of knowledge, a competence that goes beyond the above three components and their combinations: it is an integrated application of all of them. Also part of TPACK is the knowledge of students' prior knowledge and conceptual

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<sup>93</sup> Within the framework of the thesis, knowledge of the elements of the Foundations of Accounting course and the logical sequence in which they follow each other; which parts are easier and which are more difficult to learn; what examples should be used to 'illustrate' them, how and what type of example exercises should be included; how to motivate students who are lagging behind and how to further inspire those who are interested. Finally, to raise awareness that the Foundations of Accounting require not only theoretical skills but also practical skills, which need to be developed along with professional knowledge. These aspects should also be taken into account when designing the course.

<sup>94</sup> The application of the technological component in an accounting professional environment is not new, as the 'digitalisation' of the profession started very early (we can trace its origins back to the days of mechanical calculators and accounting machines (Campbell-Kelly, 2003)) and is constantly evolving. However, at CUB, the use of technology was only moderately prevalent in the Foundations of Accounting subject until the advent of the COVID-19 pandemic (e.g. Moodle platform for sharing course material), but after that its importance has grown by leaps and bounds (as, of course, in many other areas).

<sup>95</sup> Technological-pedagogical competence also evolved significantly during the introduction of distance learning during the COVID-19 pandemic; peer-to-peer learning was typical at the beginning, but soon formal training courses, workshops to demonstrate and test good practices and the technical (hardware and other) background became more stable.

frameworks, the ability to build new knowledge on existing knowledge using the right technology, and the ability to develop students' thinking<sup>96</sup>.

Mishra and Koehler's framework is one of the most widely used models in the literature (Horváth, 2023); since its first publication, it has been applied and developed in various ways, of which I will only briefly mention two: the Digital Pedagogical Competences Framework developed by the European Commission, DigCompEdu<sup>97</sup> and HeDiCom<sup>98</sup>.

DigCompEdu identifies six areas of competence and twenty-two subgroups, and the main aim of the framework is to support teachers in the informed, reflective and effective use of digital technologies in teaching and learning, as well as in assessment. It points out that the use of digital tools is not enough to achieve learner-centred teaching - their pedagogically conscious use is also necessary. It also lends itself to teacher self-reflection and planning professional development pathways, supports quality assurance<sup>99</sup> and is in line with the goals of lifelong learning and digital transformation (Redecker & Punie, 2017). I have discarded this method in the comparative analysis because of its wide range of competency areas and its essentially non-academic context.

HeDiCom is explicitly higher education focused, aiming to create a transparent, practice-oriented digital competency framework for educators (Tondeur et al., 2023). The framework not only helps to develop digital teaching practice, but also to prepare students to participate in the digital society. This framework includes four dimensions of digital competences for teachers: teaching practice, preparing students for the digital society, teachers' 'digital literacy', and professional development for teachers. The resulting Digital Competences Framework for Higher Education provides guidance and clearer expectations on digital competences for educators. However, 'empirical validation of the model is still awaited' (Horváth, 2023, p. 49). I did not choose this framework because of its novelty and immature usability.

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<sup>96</sup> The conscious integration and development of TPACK components among accounting educators can improve the quality of education and prepare students for the challenges of a digitalising business environment.

<sup>97</sup> European Framework for the Digital Competence of Educators

<sup>98</sup> Higher Education Digital Competence

<sup>99</sup> e.g. ESG 2015 - point 1.3: student activity and the learning process

In Appendix 1, I summarise the main features of the three models mentioned above, which showed that the TPACK model best suited my research objectives and provided a reasonably transparent theoretical basis for understanding the process of technology integration and curriculum development. In contrast to DigCompEdu or HeDiCom, it is not a generic catalogue of competences, but an analytical framework that allows a deeper understanding of the complexities of subject-specific development and blended/online education in higher education.

## **5. THE IMPLEMENTATION OF STUDENT-CENTERED LEARNING AND TEACHING: THE EVOLUTION OF A CORE SUBJECT**

In my thesis, I have reviewed the development and evolution of quality assurance frameworks in higher education over time, with a particular focus on European developments, with the Bologna Process and the ESG, issued in 2005, revised in 2015 and still in force today. I have shown that student-centred learning and teaching is no longer a matter of choice in higher education, but that if institutions want to meet the requirements of the 'industry', remain competitive in the international market and meet the expectations of society, stakeholders and stakeholders in higher education, a paradigm shift in education is a necessary step. The issue of quality assurance and accreditation is not just a 'tick-box' task in the operation of higher education institutions, but a key element at the strategic level of the institution. The direction in which a higher education institution takes steps, where it concentrates its intellectual and financial resources, is closely linked to the values it considers of paramount importance and how it demonstrates this to its stakeholders.

In the third chapter of the thesis, I have reviewed the main characteristics and challenges of student-centred learning/teaching in university education, including the main frameworks of learning styles and motivation. I consider a critical component to be a high level and regular training of teachers on different methods, good practices and digital opportunities, giving them the opportunity and motivation to try them out in a safe environment, and to find their own teaching style that matches the criteria of student-centred teaching/learning and the personality of the teacher. Core subjects at university level are usually taught jointly by several colleagues, so these

(even occasional) working groups make it easier to spread good practices that have already been tried and tested and to share the burden of development, which can and should be built upon in the future.

In the fourth chapter, I pointed out that, while the digitalisation acquis is broadening the methodological possibilities for teaching, it has been very slow to penetrate higher education until the shock of change accelerated the process. The COVID-19 pandemic has triggered a number of educational innovations and reforms, particularly in the area of digital education and the use of distance learning tools, which can further enhance the effectiveness of education and prepare students for future challenges (Hodges et al., 2020). I have also described the TPACK framework, which provides an appropriate theoretical basis for both my research.

As I indicated in the introduction, I have chosen to focus my research on Foundations of Accounting for a number of reasons, and it is therefore imperative that I go into detail about the expectations, specificities and opportunities for accounting education in higher education.

## 5.1 Role, approaches and methods of accounting education in higher education

Accounting in higher education plays a key role in equipping students with the theoretical and practical skills that are essential in the modern economy. For decades, the international literature has addressed the question of how to make accounting learning more enjoyable and 'digestible' for students, while at the same time conveying that the effects of almost every event in the life of a business are reflected in the financial statements according to the accounting rules (Bruns Jr, 1965) (Sprouls, 1962).

### 5.1.1 Role of the Foundations of Accounting subject

Foundations of Accounting is one of the most important subjects in business education, and its development is a recurrent element of research. For students, Foundations of Accounting is part of their curriculum, so successful completion of this subject is essential for their graduation (C. B. Lloyd & Abbey, 2009). In the Foundations of Accounting course, students are introduced to the basic concepts and valid contexts that they will use in their future studies (and work), so it is critical that they are 'steered' as much as possible towards deep learning by their teachers. A key

aim in teaching the subject is to stimulate the interest of non-financial accounting students in accounting and to develop additional skills in the process of learning accounting. When developing the course design, it should be taken into account that for many students, Foundations of Accounting is one of the most difficult, rule-dominated, mathematics-oriented courses and is consequently considered to be a 'high-risk' course (C. Lloyd, 2011).

According to Howieson, it is particularly true for accounting studies that we are preparing students for the labour market, which should be reflected in expectations and learning-teaching processes. Accounting has always been an information system that aims to collect, analyse and disseminate knowledge in a way that is useful to a variety of decision-makers (Howieson, 2003).

### 5.1.2 The role and responsibilities of accounting lecturers

The role of accounting lecturers is multidimensional: they must not only impart knowledge but also help students to apply this knowledge effectively in practice. They need to keep abreast of changing labour market needs and develop courses and teaching methods that are both interdisciplinary and analytically oriented (Howieson, 2003). The aim is not only to teach and practice basic concepts and contexts, but also to develop a range of other skills (communication, critical thinking, cooperation) and to emphasise ethical and sustainability aspects (Schroeder et al, 2014).

There are also academic debates today on whether digital tools, group work, case studies and project work should be included in the basic accounting course. According to Sisa et al., *'in basic accounting courses (e.g. Foundations of Accounting, financial accounting), digital support is not justified, since the aim of these courses is to understand and master basic concepts, terminology, basic accounting terminology and economic situations'* (Sisa et al, 2020, p. 42). On the contrary, I believe that digital tools can be used to introduce more varied tasks, case studies, pair and group work, which can also lead to 'experiential' learning by introducing playfulness (serious play) and competition.

### 5.2 Special attribute of accounting education: STEM, 'anxiety'

Students may become disengaged while completing the course and find themselves unable to catch up later on. They may not understand the context and may therefore

have a negative perception of the essence of accounting. They may not expect to have fun while learning accounting and thus become satisfied with putting in only the effort required to pass the exams, adopting a superficial approach to learning. (Duff & Mladenović, 2015) Some of these students also experience anxiety about mathematics, which is often developed from an early age and increases during their later studies.

Early negative experiences, such as answering a question incorrectly (because there is only a specific answer to that question) and not feeling at home in class (in a safe, accepting, non-shaming environment), may lead students to avoid anything related to mathematics in later life. This math-related anxiety can easily transfer to accounting anxiety, as students often perceive accounting as mathematical or at least quantitative (Clark & Schwartz, 1989).

While it has been argued that a certain level of anxiety may be appropriate and even desirable in accounting education, high levels of anxiety in complex cognitive tasks are more likely to be detrimental to performance (Clark & Schwartz, 1989) (van der Heijden, 2017).

### 5.3 Expectations of employers and professional organisations regarding accounting education in higher education, expectation gap

‘Higher education achieves several goals: it prepares students for active citizenship and their future careers (for example, by improving their employability), supports their individual development, equips them with a broad and modern knowledge base, and encourages research and innovation.’ on page 9 of the ESG 2015 document<sup>100</sup>.

The Fourth Industrial Revolution presents many opportunities and challenges in the world of digital work. There is a wealth of diverse and often conflicting evidence on the impact that this 'revolution' is likely to have on the skills, abilities and personal attributes expected of accountants. Employability has already been 'talked about' in the context of quality assurance in higher education as an expectation of the state, i.e. that students should be able to accumulate the skills, knowledge, experience and personal qualities in higher education that will make them more likely to get a job in their desired field (Tsiligiris & Bowyer, 2021).

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<sup>100</sup> Recommendation Rec (2007) 6 of the Committee of Ministers of the Council of Europe on the public responsibility for higher education and research

The ACCA (Association of Chartered Certified Accountants), identifies six technical areas in which professional accountants work: 1) audit and assurance, 2) corporate reporting, 3) financial management, 4) strategic planning and performance management, 5) taxation, and 6) social risk and ethics.

These classifications and the size of the potential employer (small, medium or large company, including the ‘Big Four’) are very determinant of the skills that employers expect in the various accounting-specific job roles. The literature goes into great detail about what employers expect and what graduate students perceive from this when applying for certain jobs.

For example, Maradona and colleagues used a list of forty-seven items in nine categories to assess, on a self-reported basis, which skills and competences are most important for Indonesian accountants in the transition to IFRS (International Financial Reporting Standards). Accounting judgement and reflection were found to be the most important skills, but ethical skills and other general skills were also at the top of the list (Maradona et al., 2022).

One of the main findings of their study was that, as IFRS is a principles-based system, one of the biggest challenges for accounting staff dealing with it is to understand the economic substance of transactions and events accurately and to be able to place them in the context of the applicable accounting standards. In addition, they must be able to make relevant estimates and assumptions about where and at what value items should be presented in the financial statements. However, this requires a general understanding of the business processes, the economic environment and the specificities of the industry, and thus a wide range of knowledge, which can be acquired through time spent in the profession and work experience (Maradona et al., 2022).

In another study in 2018, Smith et al. sought to answer the question of what skills graduate accounting students should have, as perceived by employers. In their study, they find that, as in other professional fields, technical and professional skills alone are not sufficient in accounting, and communication skills are one of the most important (Smith et al., 2018).

During and after the Covid era, changes in accounting jobs accelerated as a result of the evolution of the global business environment. In particular, the transformation

has been driven by digitalisation and changes in information technology, as well as the globalisation of economies (Elo et al., 2024). Elo and colleagues identified and measured thirty-one more different skills (typically based on previous research) in terms of the extent to which accounting students perceived them to be relevant for their entry into the labour market and the extent to which they perceived the development of these skills during their studies. The research focused on the so-called 'expectation-performance gap', which Bui and Porter based their study on the gap between the skills desired by employers and those actually perceived by accounting graduates (Bui & Porter, 2010). The most significant gap was measured in the area of technology and data processing skills, which coincides with the direction of change and its tracking in the field of education. It is important to highlight those skills where the 'gap' has been found to be widest, as these are the ones against which it is worth reviewing professional development in higher education. Students in the 2019 survey ranked several professional skills (e.g. continuous learning, analysis and critical evaluation, and time management) and some technological skills as the most important, leaving out emerging technologies such as robotics and artificial intelligence. Based on the authors' findings, students consider the latter as expected skills of the future rather than the present (Elo et al., 2024).

Bui and Porter took a holistic approach to the issue of expected skills. Their research was designed with a broad range of stakeholders (i.e. employers, graduate and postgraduate students, and academics) at a New Zealand university in 2004-2005. In-depth interviews were conducted to gather stakeholders' views on the competencies (knowledge, skills, abilities, attitudes) required by recent accounting graduates and whether they perceived an expectation-performance gap between their expected and actual perceived (developed) skills (Bui & Porter, 2010). Already on the employers' side, a more significant expectation-performance gap was observed between small, medium and large employers. One of the most typical examples is that small firms wanted to hire graduates who had skills that could be immediately applied in practice, e.g. accounting skills (skill level knowledge of accounting programs), while larger and medium-sized firms were almost not interested in this at all, because they have the opportunity (time, programs, capacity, etc.) to teach these to new entrants.

On the other hand, large companies (typically the Big Four<sup>101</sup>) highlighted technical presentation skills as one of the most important, as their work processes may require them to effectively present results, formulate questions, etc. to customers or internal managers almost immediately after starting work (Bui & Porter, 2010).

However, studies on specifically technological skills point out that Generation Z accountants already need skills such as data analysis, diagnostics and the ability to identify accounting fraud<sup>102</sup> (Imjai et al., 2024). However, these studies also emphasise that communication skills are also of particular importance because they are essential for effective collaboration in fraud detection and for presenting complex information in a comprehensible way.

Higher education in the 21st century faces many challenges and opportunities generated by technological development, globalisation and societal change. Both the teaching and student sides face new challenges, which institutions must adapt to the diverse needs and expectations of students in order to meet (Bodnár, 2024).

#### 5.4 Evolution of accounting education, the organic and shock-like ‘revolution’

Many dedicated academics are looking for new and innovative ways to prepare students for the future. In recent years, many university departments have formed teaching and learning committees and organised internal workshops to promote educational innovation. Nevertheless, those who wish to further reform accounting education face significant obstacles. These include a lack of financial and physical resources<sup>103</sup>, and in many cases we even see that research results are rewarded more by the institution than teaching innovation (Howieson, 2003).

My hypothesis is that the digital development of the Foundations of Accounting course has not only responded to the challenges posed by COVID-19, but has also improved the effectiveness and relevance of the course in the long term. This is an area that is worth expanding my research in the future. Certainly in that it provides students with a much wider range of practice opportunities; students with different

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<sup>101</sup> Deloitte, EY, KPMG, PwC

<sup>102</sup> Big Data Analytics skills, Diagnostic skills, Forensic Accounting skills

<sup>103</sup> Most university accounting departments do not have independent and sufficient resources to support educational innovation effectively. For example, the student-to-instructor ratio is generally too high and the number of teaching locations is limited, which makes it difficult to use small group teaching that could support innovative teaching methods.

learning styles will find an approach that suits them and helps them to become more involved in learning, understanding and practising the subject matter.

### 5.5 Expectations after a pandemic

In their 2021 study, Tsigilis and Bowyer systematically reviewed recent research published by accounting professional bodies on the impact of digital technologies on the accounting profession, the latest research by analysts. In their summary paper, they critically assessed the types of skills and personal attributes that will be needed by accountants of the future. The analysis reveals that the skills needed by future accountants can be grouped into four categories: a) ethical skills; b) digital skills; c) business skills; and d) soft skills. Furthermore, the analysis suggests that the two key personal attributes of future accountants are 'adaptability' and 'a lifelong commitment to continuing education' (Tsiligiris & Bowyer, 2021)

The expectations of students and the labour market in the 21st century require a change in higher education, and in this process the role, activities and methodological skills of students, lecturers and institutions need to change.

## 6. EMPIRICAL RESEARCH

In higher education, quality assurance processes are driven by accountability and the will to improve, with institutions (and in some cases external experts) regularly assessing and summarising the current situation, making recommendations for further improvement and reporting on their experiences to stakeholders. Then, incorporating the recommendations and guidance into day-to-day practice, they continue their activities at a higher level and repeat this process at intervals, thus returning to the tasks in hand in a circular way. The PDCA (Plan-Do-Check-Act)<sup>104</sup> cycle is a good model of a process that can be widely applied either in the quality assurance of an institution or in the development of a single subject.

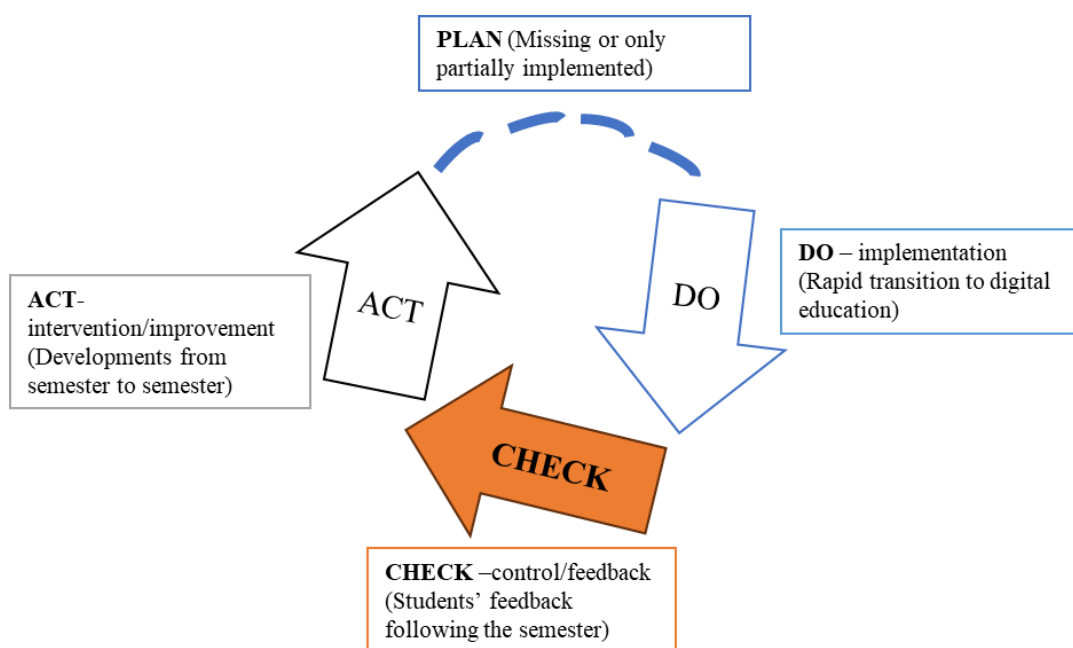
Referring back to the ESG approach discussed in Chapter 2, the key to quality is to create a learning environment in which the courses, learning opportunities and facilities are fit for purpose and the learning environment created by the student-teacher-institution can function harmoniously and to a high standard.

The shocking changes in our environment in spring 2020 (pandemic COVID-19) forced urgent changes in which one of the basic elements of the above-mentioned cycle, the planning (Plan), could not be implemented in the first period, due to the very sudden need to switch to digital education (Do). This is why I considered it essential to ask for feedback (Check) from the students after the first semester on how well the hastily developed learning materials and methodologies introduced supported their learning process. Using the feedback received, we were able to implement (Act) modifications, fine-tuning and further improvements from semester to semester, thus serving quality education, as illustrated in Figure 13.

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<sup>104</sup> Plan - planning (setting goals, collecting data, developing a plan); Do - implementing (carrying out the plan); Check - monitoring, feedback (collecting and analysing feedback, identifying problems); Act - intervention and improvement, setting new goals

### 13. Figure: PDCA cycle adapted to the COVID-19 situation (own editing)



#### 6.1. Analysis of student feedback - results of the questionnaire

The first survey was carried out in the spring semester of the academic year 2019/20 among undergraduate students of accounting and applied economics studying the subject Foundations of Accounting. In the middle of the semester (15 March 2020), the course was closed due to the COVID-19 pandemic, and we switched to online education on campus. The questionnaire was sent out in the spring semester of the 2019/20 academic year, at the end of the semester, after the exams, with the help of the subject coordinator, using the group messaging function of the Neptun system. The questionnaire sent out was then completed anonymously by about one-third of the students (126). The survey was designed to obtain honest responses from students about their learning preferences, which is why anonymity was essential. There was very little differentiation between students who specialized in finance and accounting and other majors (e.g., tourism)<sup>105</sup> in terms of education and teaching material, so I did not seek to differentiate between students according to their undergraduate specialization. My main concern in the first instance was to obtain valid feedback from students for further curriculum development in the department.

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<sup>105</sup> The difference is typically observed in the requirements for the completion of the course: students in finance and accounting were required to submit two homework assignments (optional for others), the minimum requirement for the four Moodle tests was 75% (60% for others), and students in finance and accounting had an oral exam at the end of the semester.

In compiling the questionnaire, I relied primarily on the guidance of my subject supervisor<sup>106</sup>; the finished questionnaire was checked by another colleague in the department for content, grammar and spelling. I also had the text of the English-language questionnaire, which was introduced the following semester, validated by a native speaker proofreader to ensure clarity. In the following semesters, I consulted with my colleagues<sup>107</sup> who were then involved in teaching the subject about the teaching methodological tools currently in use, which I used to update the data in the questionnaire<sup>108</sup>.

I repeated the questionnaire survey with the same or similar questions in the following semesters among students of the Foundations of Accounting<sup>109</sup> courses in both Hungarian and English. The data summarised in Table 1 show that the average response rate in the nine semesters covered by the survey was 22%<sup>110</sup>. It can be observed that the proportion of students willing to answer the questions was much higher at the beginning of the period under study than after the pandemic period of COVID-19 (56%, 45%, 51%, etc.). The reason for this is probably that they felt it was important to ‘voice’ their opinions about their experiences in the changed teaching-learning environment<sup>111</sup>. The periods indicated in Table 1 are not exactly the same for Hungarian and English language courses, because there was no English language course in the spring semester of the 2019/20 academic year, so it is not included in the periods studied. Furthermore, due to the low response rate in the Hungarian language course and the introduction of the ‘myview’<sup>112</sup> student questionnaire at the university, I completed the research in this segment one semester earlier.

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<sup>106</sup> Péter László Lakatos was the lecturer for the Foundations of Accounting courses in Hungarian and English during these semesters.

<sup>107</sup> highlighting my colleagues Janka Filyó and Éva Mikáczó

<sup>108</sup> A detailed table of the methodological elements used in each course and semester is given in Annex 2.

<sup>109</sup> Elements of Accounting, Foundations of Accounting, Understanding Financial Statements

<sup>110</sup> The same figure rises to 24% if we exclude the number of students in the second semester of 2022/23, when the Hungarian course did not send out the student questionnaires and therefore did not receive any response.

<sup>111</sup> In the case of several other subjects, we asked for the students' opinions in a similar way and used them in the course of curriculum development and teaching methodology development, but I will not discuss them in this paper, the focus remains on the subject of Foundations of Accounting and its Hungarian-language equivalents.

<sup>112</sup> ‘myView’ is a digital tool introduced at CUB in autumn 2022 to collect students' opinions on subjects and lecturers.

*1. Table: Summary of the students' questionnaires of the Foundations of Accounting between 2020 - 2024 (own editing)*

<b>Foundations of Accounting courses in Hungarian</b>			
	Number of students answered the survey	Total students	Response rate
2019/2020 Spring semester	126	224	<b>56%</b>
2020/2021 Fall semester	319	1204	26%
2020/2021 Spring semester	128	252	51%
2021/2022 Fall semester	229	857	27%
2021/2022 Spring semester	32	647	5%
2022/2023 Fall semester	68	513	13%
2022/2023 Spring semester		652	
2023/2024 Fall semester	51	290	18%
	<b>953</b>	<b>4639</b>	<b>21%</b>

<b>Foundations of Accounting courses in English</b>			
	Number of students answered the survey	Total students	Response rate
2020/2021 Fall semester	85	189	<b>45%</b>
2020/2021 Spring semester	81	212	38%
2021/2022 Fall semester	32	118	27%
2021/2022 Spring semester	58	223	26%
2022/2023 I. szemeszter	28	151	19%
2022/2023 Spring semester	52	223	23%
2023/2024 I. szemeszter	26	132	20%
2023/2024 Spring semester	43	257	17%
	<b>405</b>	<b>1505</b>	<b>27%</b>

Before carrying out detailed statistical analyses, I also sought to answer the question of how representative the above sample could be considered. Since the questionnaire responses were anonymous, only the grades actually received and the questionnaire's question 'What was your result in the Foundations of Accounting? (or what do you expect if you do not know your grade yet)'. The questionnaires were sent out to students after the exams, so even if they were not 100% sure of their final grade, they probably gave answers that were in line with reality, with some (wishful or

pessimistic) exceptions. A further reason for this may be the Dunning-Kruger effect, a psychological phenomenon whereby lower-performing individuals tend to estimate their own performance more inaccurately and upwardly biased than their more prepared peers (Kruger & Dunning, 2000) (Kun et al., 2023)

For all 8 semesters of English language education included in the study, I had data for both questionnaire responses and actual grades, so I was able to make a comparison on this. I performed a Mann-Whitney test on the two independent samples, the results of which showed that the centres of the distributions of the two populations were different, i.e. the two populations could not be considered to belong to the same distribution<sup>113</sup>. The results are shown graphically in Figure 14. There is a significant difference between the distribution of expectations (questionnaire) and the distribution of actual grades (Neptune).

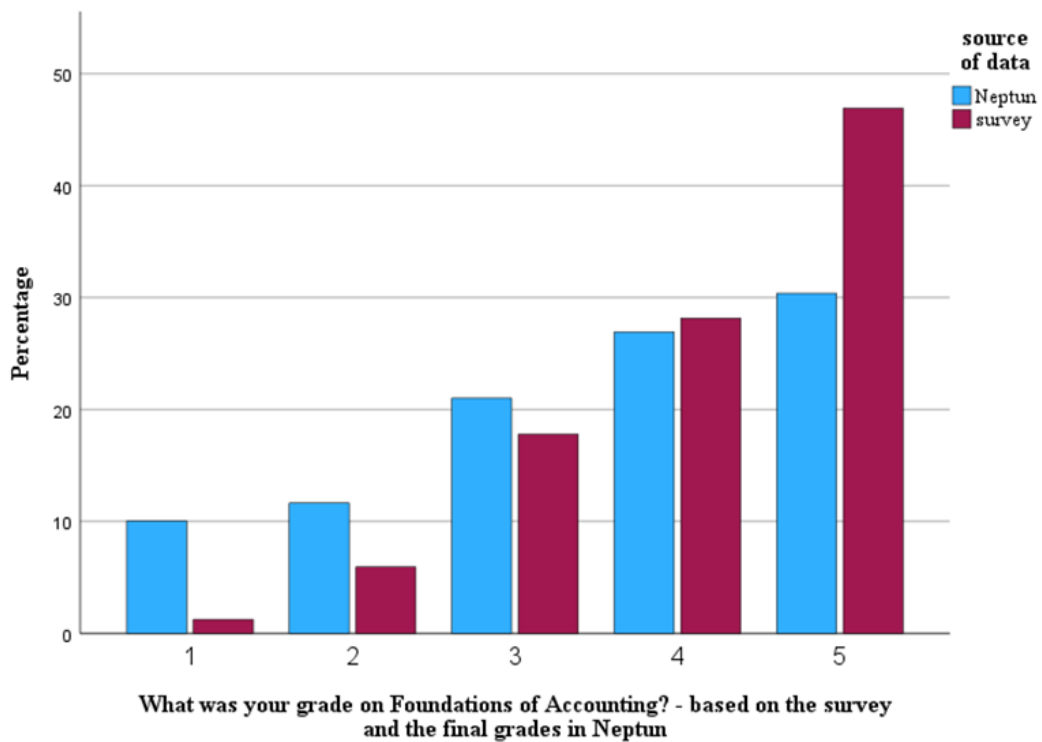
There was a negative difference between those who expected a mark and those who ended up with a grade of 5. In other words, when looking at the proportions, there was a higher proportion of respondents who received the highest grade at the end of the semester (47%) than in the student population as a whole (30%). From the distribution of grades, it can be seen that within the group of students who received a grade of one, two or three, there was an under-representation of survey respondents, especially among those who did not complete the course (only 1.2% of respondents expected a grade of one, but in fact 10% of students received an unsatisfactory grade)<sup>114</sup>

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<sup>113</sup> The Mann-Whitney test on actual grades and prior expectations showed a significant difference. Standardised test statistic: 9.354, p-value < 0.01

<sup>114</sup> I did not examine the difference between the final grades obtained in the online and offline periods because the examination was administered differently in the two periods. In the online semesters, students wrote an unsupervised Moodle exam and it gave the bulk of their grade, whereas in the offline semesters, exams were always given in a supervised environment.

14. Figure: Distribution of students by expected and actual grades obtained



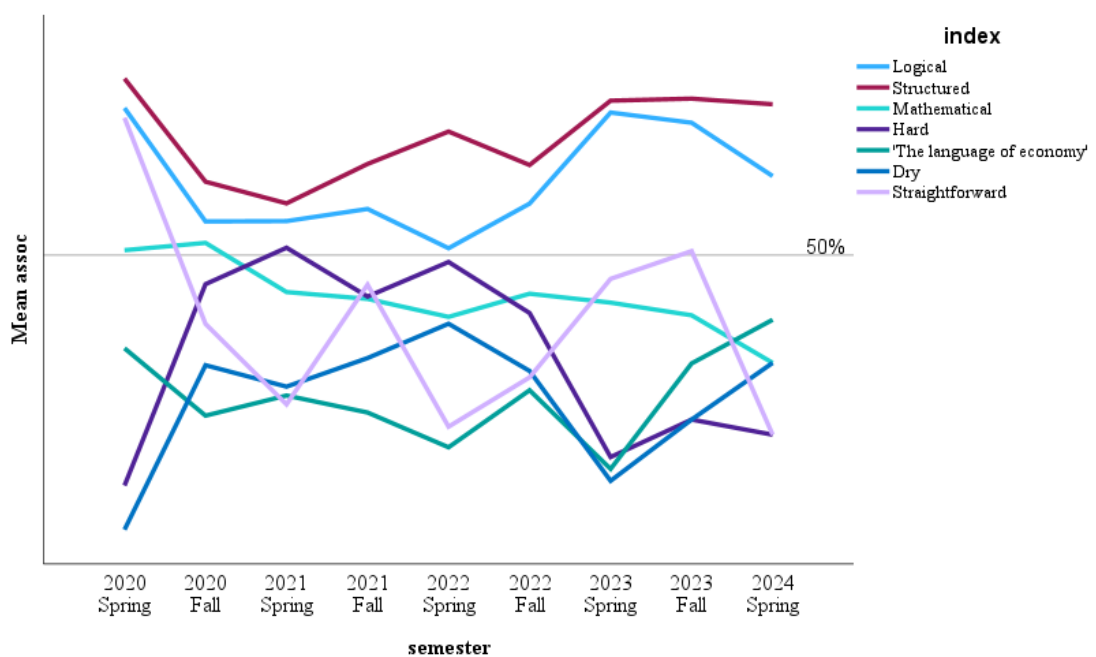
*Source: own editing based on actual grades (Neptun) and marks (survey) for the 8 semesters*

In my opinion, there are two main reasons for the different patterns. On the one hand, it is likely that the better performing students were more willing to answer the questionnaire sent out by the lecturers of the subject and more willing to share their experiences of different learning methodologies, and on the other hand, in some cases students may have overestimated their expected grade.

The questionnaire contained only one demographic question (male/female), one optional question on prior learning (Have you ever encountered accounting?) and one closed question, i.e., a list of possible answers, on the student's association with the subject matter. A total of 1358 respondents completed the questionnaires, with a roughly 50/50 split between men and women (56% women, 44% men). 89% of respondents had never encountered the subject before, only 5% indicated that they had dealt with accounting during their studies (probably at vocational school) and 6% at work.

I conducted separate analyses of online and face-to-face presence in several cases and compared the results. The semesters of online education<sup>115</sup> included semesters II of 2019/20 and semesters I and II of 2020/21 - even if part of these semesters (see chapter 4.2 for details) were attended or mixed on campus. Based on the data summarised in Table 1, taking into account the higher response rate during the online education period, 54% of the 1,358 students reported their experiences in online semesters and 46% in face-to-face semesters, so the two groups of students can be considered to be almost equally represented. The proportion of English and Hungarian respondents was between 30% and 70%. However, it can be observed that the proportion of participants in the English language courses in the Foundations of Accounting course has increased in parallel with the change in strategy of the university.

*15. Figure: Percentage of associations related to the subject Foundations of Accounting in the questionnaire responses, by semester (own editing)*



In the questionnaire, I listed seven typical expressions, which students could tick if they liked, that came to their minds at the end of the semester in connection with accounting. This list appeared in random order in the questionnaire, in order to

<sup>115</sup> In the analysis of the research results, I consistently refer to the online semester (semester) as semester II of the academic year 2019/20, semesters I and II of the academic year 2020/21, and the offline semester as the period from semester I of the academic year 2021/22 to semester II of the academic year 2023/24.

minimise the influence of the order on the response. The seven expressions are: Logical, Structured, Mathematical, Dry, Hard, Straightforward, ‘The language of economy’<sup>116</sup>, two of which are rather negative (dry, difficult), three are neutral (calculating, clear, ‘the language of the economy’) and two are rather positive (logical, structured). Any number of these could be marked; on average, students marked three. Figure 15 shows the proportion of terms occurring in each semester.

My preliminary expectation was that, as the number of available teaching methodological elements increased, the proportion of terms with positive associations with the subject would improve and the proportion of terms with negative associations would decrease. It is likely, however, that student impressions are driven by a number of other factors (e.g. grades received, other subjects to be taken in a given semester, life situation, etc.), and therefore no clear trend-like patterns can be identified in relation to the improvements in teaching methodology. However, terms of a positive nature (logical, orderly) retained their predominance throughout, while negative association terms typically remained below 50%<sup>117</sup>.

The difference between the English and the Hungarian questionnaires was that, after interpreting the first results, I added two additional questions to the questionnaire from the spring semester 2020/21 onwards, which provided me with clarifying data on the respondent's English language skills. This aspect arose because I hypothesised that whether or not a student learns a particular professional subject in their mother tongue of English might be relevant in terms of preferences for knowledge transfer methods. 95.3% of the students studying in English language courses and responding to the questionnaire were non-native speakers of English<sup>118</sup>. The second question concerned the level of language proficiency. Based on self-reporting, 81.6% of the 320 students had the highest level of C1 or C2, 16.6% B2 and 1.9% B1. For students in the latter two categories (59 students), it is possible that they had more difficulty understanding and/or communicating in English and that this may have influenced their preferences.

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<sup>116</sup> Same in the Hungarian questionnaire: logikus, rendezett, számolós, száraz, nehéz, áttekinthető, ‘a gazdaság nyelve’

<sup>117</sup> With the exception of the third semester, when the entire period was taught online, the term ‘difficult’ slipped to just over 50%.

<sup>118</sup> Only 15 people in the seven semesters said they were native English speakers; they were probably Erasmus+ or study abroad students.

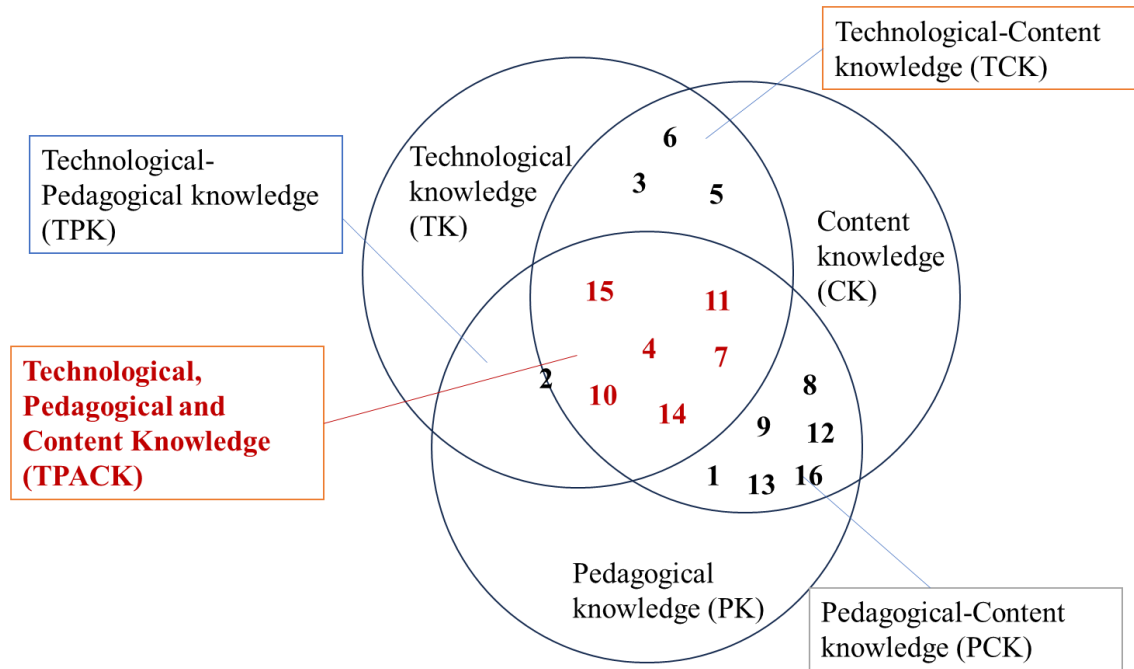
In addition, the difference in the structure of the questionnaires was due to the fact that not exactly the same teaching methodologies were used in the training courses in each semester. One reason for this was that there were some elements that were developed later, so they were not available in the earlier periods. On the other hand, there were also elements that were no longer available to students after the return of face-to-face teaching. Furthermore, the English and Hungarian forms of training had slightly different accountability and completion requirements, and the content supporting learning was correspondingly different.

#### 6.1.1 Classification of the methodological elements of the Foundations of Accounting in the TPACK model

The methods of knowledge mediation used in the questionnaires and in the teaching of the Foundations of Accounting subject, which are available to students in each semester and which support learning, are detailed in Annex 1. In Figure 16, I show which set or intersection of these methodological elements used in the undergraduate accounting course can be classified in the TPACK model.

The TPACK framework, as I summarized in Section 4.3, emphasizes the integration of the three main components of teaching knowledge - content, pedagogical and technological knowledge - is well suited for evaluating the methodological elements used in the development of the Foundations of Accounting course, as it interprets instructional decision-making at the intersection of content, pedagogy and technology (Darkwa & Agyei, 2021).

16. Figure: Application of the TPACK model to the methodological elements used in the CUB Foundations of Accounting courses



Source: own editing using Mishra & Koehler figure

**1. Face-to-face lecture** (traditional, attendance lecture) - Pedagogical content knowledge (PCK): In this method, the teacher imparts content knowledge (subject knowledge of the Foundations of Accounting) using traditional pedagogical tools with minimal use of technological tools (computer, projector). The lecture, which lasts one and a half hours and requires personal presence, draws on the instructor's knowledge of the subject methodology, i.e., how to make the subject content understandable to the students in the context of a lecture. As technology has a limited role here, the method relies mainly on the integration of pedagogical and content knowledge.

**2. Video lectures** (recorded lectures on video) - Technological pedagogical knowledge (TPK): The lectures, recorded in the university's video room and edited afterward, could be accessed by the students on Moodle, watched at their own pace, paused or rewound at any time. The use of this method has led to a change in the teaching-learning process through technology - for example, it has allowed for time flexibility and self-pacing of repetition. For the teacher, this method implies a knowledge of CPD, as he/she needs to know how a new technology (video

presentation) transforms the pedagogical process and how to exploit the potential of video in teaching. Here, the content is still delivered in lecture form, but the pedagogical strategy is a more modern one, due to the inclusion of technology, which places this method in the category of TPK<sup>119</sup>.

**3. Lecture slides in PDF** (slides without audio available on Moodle) Technological content knowledge (TCK): The technology here is a means of making the course material (content) accessible: students can take notes and follow the course material more easily, as they receive the slides in advance. The slides themselves capture the content of the course and their electronic sharing does not require any specific pedagogical interaction, but rather makes the delivery of the course material more effective. This method relies primarily on the intersection of technological and content knowledge - the instructor knows how to use technological tools (Moodle, PDF) to deliver the content. As the pedagogical intervention is minimal (slides are worked on by students independently or during lectures), the element can be classified as TCK<sup>120</sup>.

**4. PPT with voiceover** (solutions with explanations - explanatory PowerPoint video). – Technological- pedagogical and content knowledge (TPACK): This technological tool enables the teacher to deliver the material to the students by integrating his/her content knowledge and pedagogical explanatory skills. The recording shows the teacher step by step through a task, with explanations to aid understanding. This is a typical TPACK method, because it requires the teacher to combine all three areas of knowledge: understanding the subject problem and its solution, being able to explain in a didactic and comprehensible way, and managing

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<sup>119</sup> For this element, both (TPK, TPACK) are appropriate for the case included in the study. If viewed in a general way and the video presentation is merely a technical tool into which the instructor “transposes” a traditional course material, then it is more TPK, but if the video itself is a central element of the teaching, created by the instructor through a conscious integration of content, pedagogical objectives and technology, then it falls into the TPACK intersection. In the case of the subject development examined in this thesis, both cases occurred: 1) in the EFOP 3.4. The 18-part video series produced in the framework of the grant project “Emergency Distance Learning” (see section 2.4.4.4) falls explicitly into the TPACK category, as both the choice of content and the length and structure of the videos were carefully designed to take maximum account of the professional content, pedagogical and technical possibilities, while 2) the video presentations produced in “rapid succession” during the transition to emergency distance learning were typically intended to replace face-to-face lectures and thus typically fall into the TPACK category.

<sup>120</sup> Of course, the content, detail and sequence of the slides is adapted to the lecture that contains the pedagogical element, so in this case, as in many other methodological tools, I have taken the most emphatic one(s) into account in the classification.

the technology needed for recording and sharing. The integrated use of the three components results in students being able to learn independently from the recorded explanations at any time - this is the essence of technology-enhanced, meaningful and pedagogically thoughtful teaching.

**5. Step-by-step solutions in PDF** - Technological content knowledge (TCK): here the instructor publishes the complete, detailed solution procedure for the accounting problems to be solved in class (or out of class) in a PDF document on Moodle, without explanation. Students can download these worked example solutions and follow the steps. The method is mainly about the technological transfer of content knowledge: the teacher knows that he can use technology (uploading a PDF document) to deliver the detailed solutions to the students so that they can study them independently. Since pedagogical interaction such as explanation or feedback is not present in this form (the document merely facilitates the independent processing of the content), this method can be classified as TCK. Here, technology is an extension of the way in which content is delivered, but it is not linked to direct instructional guidance or an adaptive pedagogical process.

**6. Numerical solutions in PDF** (results only) - Technological content knowledge (TCK): This method differs from the previous one in that only the solutions containing the results of the exercises (calculation results) are shared with students in PDF. Students can compare the results of their own calculations with the official results. The role of technology here is simply to make the content information (the correct solutions) easily accessible. From a pedagogical point of view, it is more of a monitoring tool than a learning management method, since the teacher does not give explanations, only results. Therefore, this solution also falls into the TCK category - the teacher needs to know how to use the technology platform (Moodle) to disseminate the subject content (solution keys), but the pedagogical interaction is minimal.

**7. Moodle tests** - regular online practice tests - Technological, pedagogical and content knowledge (TPACK). These tests contained a variety of question types (multiple choice, true-false, number writing, etc.), were time-limited (15-20 minutes) and students were allowed to try several times (usually three times), but only the best score counted towards the semester assessment. The development of this method

required complex knowledge on the part of the instructor: content knowledge (how to compile questions from the accounting syllabus at the appropriate level and on the appropriate topic), pedagogical knowledge (the didactic value of regular practice and feedback, encouraging self-checking), and technological knowledge (use of the Moodle test platform, knowledge of question types). The combination of these three factors has resulted in a learning tool that is technology-based to facilitate content mastery (e.g. instant assessment and multiple attempts motivate students). The design and use of tests integrates all three knowledge areas - putting the technological platform at the service of the subject content with a specific pedagogical strategy - and is a good example of the TPACK category.

**8 Other exercises in the example book and workbook** - Pedagogical content Knowledge (PCK): the official example book, workbook, and Activity Kit<sup>121</sup> for the subject of Foundations of Accounting contain additional exercises for students to deepen their knowledge independently. The fact that the instructor recommends and integrates these resources into the learning process is part of the pedagogical content knowledge. The teacher knows the content of the course material and the types of tasks that best serve understanding (methodological knowledge), so he or she consciously encourages students to practise further with the content material available. Technology is only involved here to the extent that the resources are available (e.g. in print or PDF format<sup>122</sup>), but the focus is on the relationship between content and pedagogy - i.e. PCK. The essence of the method is that the teacher supports learning with practice tasks that are appropriate to the subject matter, which is a pedagogical-subjective consideration.

**9. Weekly seminar with the teacher - face-to-face** (attendance seminar) - Pedagogical content knowledge (PCK): the weekly 90-minute seminar session is in face-to-face attendance, typically in a smaller group than the lecture. Here students work through the week's material under the guidance of the instructor, usually through practical exercises. The successful application of this method requires both subject knowledge (understanding and explanation of the exercises) and pedagogical knowledge (small group work, question and answer sessions, guided practice) on the part of the teacher, i.e. knowledge of teaching methods specific to the subject. Since

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<sup>121</sup> Collection of exercises used in English-language programmes.

<sup>122</sup> Exclusively during the COVID-19 pandemic, during the emergency distance learning, the exercises were available in PDF on Moodle.

technology does not play a significant role in this traditional form of seminar, the conduct of seminars should be classified as PCK. The teacher's competence in the methodology of the subject is reflected in the way he or she makes accounting problems comprehensible and accessible to the students in an interactive session supported by clear examples.

**10. Weekly seminar with the teacher on Teams – online synchronous seminar<sup>123</sup> -**

Technological, pedagogical and content knowledge (TPACK): Seminars in the online space (Microsoft Teams platform) are essentially the digital equivalent of a face-to-face seminar, but the change in format means that the instructor must combine technological, pedagogical and content knowledge to deliver them effectively. In 90-minute online sessions, the instructor discusses and solves accounting problems with students in the same way as in a traditional seminar, but has to use technology tools: sharing screens, forming groups, managing chat, and interacting in the virtual space. This requires knowledge of TPACK (how teaching changes when new technology - in this case, a videoconferencing platform - is used) and subject-specific pedagogical knowledge (how to teach the specific concepts and practices of accounting in an online environment). A successful online seminar falls into the TPACK category, as the instructor had to manage content, pedagogy and technology together and in harmony.

**11. Weekly Kahoot! quiz (a playful quiz used to review course material) -**

Technological, pedagogical and content knowledge (TPACK): The use of the Kahoot! online quiz platform was in the form of a weekly, playful competition, typically during lecture or seminar time. The quiz questions were always drawn from the previous week's syllabus, so the content was targeted to review the current syllabus. The inclusion of technology (Kahoot application with projector or online) made the exercise experiential and motivating: students experienced the review as a competition, and the immediate feedback and ranking increased participation. The method was based on the teacher's knowledge of TPACK: they had to know the content to create good questions; they had to know the pedagogical impact of a playful quiz (e.g. how repetition reinforces knowledge, how it affects motivation); and they had to manage the technology, i.e. the creation and delivery of the Kahoot!

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<sup>123</sup> Only during the COVID-19 pandemic, during the emergency distance learning, were the seminar classes held online

quiz. By combining the three knowledge elements, the Kahoot! quiz was both content-rich (repetition of the curriculum), pedagogically motivating, and technologically fluid in format.

**12. Compulsory homework assignment** - Pedagogical content knowledge (PCK): the aim of the homework assignments required during the semester is to enable students to practice regularly what they have learned and to acquire certain problem-solving skills at a basic level. In general, a minimum of two out of four assignments had to be solved and uploaded on Moodle during the semester, and this was a condition for completing the course (although not graded, it was a requirement). The design and application of this method is indicative of the instructor's pedagogical content knowledge. The teacher is aware that accounting is a subject in which regular practice is key; therefore, he or she incorporates a compulsory practice element as a pedagogical tool. This requirement combines knowledge of the subject matter of the exercises (CK) and their teaching strategy (PK). The technology (Moodle) in this case is only an administrative framework for submission, the methodological point itself - that the student should solve the task independently through practice - could be achieved without technology, even on paper<sup>124</sup>.

**13. Optional homework assignments** - Pedagogical content knowledge (PCK). Solving and completing these did not affect the grade, they were just an option for extra practice for those who wanted to deepen their knowledge. PCK is also behind such a method: the instructor recognizes that students with different backgrounds or motivations may require different amounts of practice and is pedagogically flexible in providing extra assignments to practice the content. The content knowledge here manifests itself in the instructor's ability to set exercises of appropriate difficulty and topic, and the pedagogical knowledge in the instructor's ability to make them attractive to some students as an opportunity for self-development without reward (points). There is no technological innovation in this either.

**14. Interactive video** (interactive tutorial video for self-study) - Technological, pedagogical and content knowledge (TPACK): for the more difficult-to-understand units, the trainers have created interactive animated videos, in which accounting concepts are introduced through a story-like situation and at certain points in the

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<sup>124</sup> This was also the case in previous years.

video, students have to answer questions to continue. If the answer is correct, the story continues, so the video is both entertaining and challenging, which encourages active learning. These interactive videos can be watched, completed and scored by students at any time and for any reason - they are purely designed to aid understanding. Creating and operating this complex method clearly requires TPACK-type knowledge on the part of the instructor. Content knowledge was needed to select the more complex topics for which it was worth making such a video and to include the right questions. Pedagogical knowledge to recognise that a form of learning embedded in a real-life story, which encourages interaction, can make difficult material more effective (immediate feedback, self-monitoring, experiential learning). Finally, technological knowledge was needed to create, design and adapt the videos to the platform. Here, technology, pedagogy and content are closely intertwined: the interactivity provided by technology serves the pedagogical purpose (deeper understanding, increased motivation) in the case of specific accounting curricula<sup>125</sup>.

**15. Sample exam/test in Moodle** - Technological, pedagogical and content knowledge (TPACK): to help prepare for the exam, students could complete an online mock exam in Moodle before the quarterly and semester exams in the English language course and before the Moodle tests in the Hungarian course. These mock tests consisted of the same types of questions, structure and time frame as the real exam, but with unlimited repetition. The system did not show the correct answers, only the score, so that students could independently deduce the areas where they needed to improve. In using this method, the content knowledge of the teacher was needed to construct good exercises and questions that faithfully represented the material on the exam. Pedagogical knowledge was also needed, as the didactic function of the mock test is to enable students to prepare in a stress-free, self-monitoring way - the teacher needed to know how the mock test opportunity affects learning (e.g. reduces test anxiety, helps to practice time management). Finally, all of this was done with the help of technology (proper configuration of Moodle test settings, timing, knowledge of feedback methods).

**16. Group work (project tasks)** - Pedagogical, content knowledge (PCK): during the semester, students were also given group project tasks (one in the Hungarian

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<sup>125</sup> This method exemplifies what the TPACK model emphasises: the use of modern technology is effective when it is integrated with pedagogical goals and content to help students overcome difficulties.

programme, two in the English programme). The task was typically a simulation of a real-life business situation: modelling the setting up and accounting and reporting of a start-up company, in which the groups had to perform the necessary accounting tasks and then present their results. The design and management of the group work method essentially requires pedagogical and content knowledge on the part of the instructor. He/she must know the professional content well enough to be able to give a project task of sufficient complexity and relevance (e.g. the preparation of financial statements for a start-up company) and must know the pedagogical methodology to teach it in groups on a project basis (e.g. how to facilitate deeper understanding by solving real problems, how to evaluate the work of groups). The use of technology is not central to this method, students may use tools to work (Excel for accounting, PowerPoint, Canva, etc. for presentations) but these are only support tools. The second group project in the English programme was a Harvard simulation, a computer-based business simulation game, so technology was also used as a tool in the learning of the content<sup>126</sup>.

The knowledge mediation elements classified in the TPACK framework above are used in the English or Hungarian language courses of Foundations of Accounting; student feedback questionnaires asked students to rate how much each element helped them in their learning process. It is interesting to note that all the methodological elements in the TPACK intersection highlighted in red in Figure 16 were developed and introduced into the courses by the CUB Accounting Department staff during or after the emergency transition.

After a detailed description of the structure of the questionnaire and the methodological elements of the teaching methods, I will move on to the hypotheses and results of the research.

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<sup>126</sup> When the group work includes an online simulation software, such as the Harvard simulation, a component of the method also addresses the TCK category, as the subject content is facilitated by a specific technology. However, the overall framework of the group work still reflects the pedagogical design according to the PCK, as the group project task is a well-chosen methodological tool for developing higher-order thinking and practical skills in accounting education.

## Research questions / hypotheses

**H1:** In terms of student learning, the different knowledge transfer methods can be ranked in order of preference within the framework of the Foundations of Accounting course.

**H2:** Is there a difference in terms of student preferences between each knowledge mediation method in the online and offline learning period for the Foundations of Accounting course.

**H3:** Groups can be identified in terms of student preferences for each knowledge delivery method for the Foundations of Accounting course.

**H4:** There is a correlation between students' online activity and their final grade.

### 6.1.2 Hypothesis H1 related test and result

There were only four methods that were used in both the Hungarian and English language courses in all the semesters studied:

- a) lecture slides in pdf format (Lecture PowerPoints without voiceover);
- b) detailed examples in pdf (PDF solutions with completed steps shown);
- c) Moodle test - four practice tests to be done at home (Moodle test assignment);
- d) Weekly KAHOOT! championship.

The aggregated preference scores for these four elements are summarised in Table 2.

*2. Table: Descriptive statistics of student preference ratings (scores on a Likert scale from 1 to 5)*

	Lecture slides in PDF	Step-by-step solutions in PDF	Moodle test	Weekly Kahoot! championship
No. of responses	1358	1358	1358	1358
Average of scores	3.15	<b>4.05</b>	<b>4.00</b>	3.00
Standard deviation of scores	1.303	1.172	1.156	1.491

*Source: own editing based on aggregated student responses*

The two methods that supported student learning the most were the step-by-step example solution and the 15-20 minute Moodle test, which could be taken four times at home, repeated three times for each topic, and only the best result counted<sup>127</sup>. These two methods also had the lowest variance, which suggests that the majority of students' scores were relatively close to the average, i.e. most students' learning was indeed supported by these elements. The weekly Kahoot! tournament and the publication of lecture slides had lower mean scores and higher standard deviations. Thus, these learning support tools could be considered more divisive: they helped some students and others less in learning accounting.

However, when looking at Hungarian and English language courses separately, a broader spectrum of student preferences can be examined<sup>128</sup>.

a) In the Foundations of Accounting, among the methodological elements available in the seven semesters, students felt that the video lectures were highly supportive (mean: 4.5), with the weekly face-to-face seminars and the four Moodle pre-test practice sample tests ranking second and third with almost the same values (mean: 4.18 and 4.14). The Moodle tests (mean: 4.06) were only ranked fourth. Students rated the optional homework assignments<sup>129</sup>, the weekly Kahoot! tournament and the pdf slides of the lectures as the least helpful (with an average of less than 3).

b) For the Elements/Foundations of Accounting and Understanding Financial Statements courses, based on the aggregate data for the 8 semesters studied, students rated the sample exam in Moodle as the most supportive (mean: 4.81), followed by the detailed example solution (mean: 4.54), and third place with equal mean (4.36 - 4.36) went to the in-person attendance seminars and video lectures. Surprisingly, there was no methodological item with a mean rating below three in the questionnaire sample. Least popular were the in-person lecture (mean: 3.37), the example presentation with only final results (mean: 3.49) and the document with lecture slides in the student learning support ranking.

However, when I examined the semesters and the two courses (Hungarian and English) separately, it is not yet confirmed that each knowledge transfer method can

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<sup>127</sup> In the Hungarian course this was a criterion requirement for the examination, in the English language course the score on the four tests was 15% of the final grade.

<sup>128</sup> Detailed aggregated data are given in Annex 3.

<sup>129</sup> not worth a specific point and not a criterion requirement

be ranked in terms of preference within the framework of the Foundations of Accounting course in terms of student learning; thus, *I reject research hypothesis H1*. Appendices 3/a and 3/b present the average of the obtained preference values per semester. I have highlighted the top three most preferred methodological elements so that I can visually identify that there is a difference between semesters and between the two courses. What can be observed, however, is that in the last four (offline only) semesters of the study, we see some similarity for the most preferred tools:

(a) In the last two offline semesters of the Hungarian training research, the first three categories in terms of preference were detailed example exercises, face-to-face seminars and exercise examples from the exercise book. The order of preference within these is not the same, but these proved to be the most popular during the last two semesters. It is interesting to note and worthy of consideration that pre-recorded video lectures, available on Moodle, were included in the top three elements of knowledge transfer methods as long as this was available in the course content (Annex 3/a)

b) In the case of the English language course, the last three of the semesters examined match the preference list: here, too, the detailed example and face-to-face seminars are part of the list, but the sample exam available in Moodle, which can be completed without restriction, is the third element (Annex 3/b)

I would point out, however, that the lists per course and per semester often contain very few items (respondents) (26, 28, 32, etc.), so I would draw a cautious conclusion. However, it would be worthwhile to continue (in time and with other methods) to better understand the needs of the students<sup>130</sup>.

### 6.1.3 Hypothesis H2 related test and result

It seems reasonable to further analyse the preferences for Hungarian and English language training separately, as well as for online and face-to-face periods, in order to get a more accurate picture. After rejecting hypothesis H1, I will turn to the validity of hypothesis H2, i.e. whether there is a difference in student preferences between the different knowledge delivery methods during the online and offline

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<sup>130</sup> The average values described above are probably biased by the fact that I have examined the whole period and that the higher propensity to respond at the beginning of the period (online semesters) has significantly influenced the totals, which are presented in Table 2.

teaching periods for the Foundations of Accounting course. Due to the detectable difference based on the aggregated data, I conducted the analysis separately for students studying in Hungarian and English language courses. Annex 3/c shows the data separately, broken down by periods and courses. The last column of both tables shows the difference in preference averages for the online and offline periods. Methodological elements for which data were available for only one of the two forms of education were excluded from the analysis.

Nine comparable data were available for Hungarian courses and ten for English courses. When comparing means, I considered differences of more than 0.4 to be significant, regardless of whether the mean was higher for face-to-face or online instruction. The cut-off of 0.4 is often used as a threshold for identifying practically significant differences, especially in education research. Lower values ( $x < 0.4$ ) may indicate small differences that are within the sample variance or within the margin of measurement error, while differences above 0.4 indicate differences that may have a noticeable impact on students, instructors or the implementation of instructional strategies. An average effect size of 0.4 means that the intervention or method, or the use of particular learning tools, has a measurable and noticeable impact on learning outcomes and the student experience (Hattie, 2008)

I have structured the methodologies showing significant differences in Table 3. It can be seen that there are differences in both directions, i.e. there are elements that, according to student evaluations, supported learning more strongly in the online period and elements that supported learning more strongly in the offline period. The video lectures and the task solutions published in the audio ppt received much more positive evaluations in the online semesters, which may be explained by the fact that the methodology of including live audio to complement the written text, without meetings and personal contacts, played a more prominent role. As for the contrasting difference in the evaluations given during the online and offline periods, I would highlight the group work and KAHOOT! tests, where personal presence probably not only enhanced the student experience, but also the immediate instructor feedback during the tests and group work proved to be useful for student preparation.

*3. Table: Changes in student preference ratings for educational support tools during online and offline periods (own editing)*

	Online average	Standard deviation	Offline average	Standard deviation	Difference between averages
<b>FoA courses in Hungarian</b>					
Ppt with voiceover (solution to exercises)	3.49	1.514	2.85	1.582	0.64
Group work (case studies)	2.70	1.449	3.34	1.326	-0.63
Detailed activity solutions in pdf	3.68	1.272	4.09	1.163	-0.42
Moodle test practice activities	4.24	1.007	3.79	1.266	0.45
<b>FoA courses in English</b>					
Weekly KAHOOT! championship tests	3.66	1.287	4.20	1.115	-0.54
Other practice exercises in Activity Kit	3.44	1.286	3.97	1.159	-0.53
Video lectures	4.65	0.650	4.16	1.111	0.49
Moodle test assignments	3.58	1.227	4.07	1.159	-0.48

*Based on the above, hypothesis H2 is confirmed, i.e., there is a difference in student preferences between knowledge delivery methods in the online and offline teaching periods for the Foundations of Accounting course.*

#### 6.1.4 Test and result related to hypothesis H3

Hypothesis H3 was proposed based on the results of a questionnaire<sup>131</sup> conducted in the first online semester. I conducted a cluster analysis on that respondent base and identified three clusters of learning styles. Using the cluster analysis, I wanted to find an answer to the question of which methods were the most supportive (rating higher than 3) for the learning process of students belonging to all three clusters: video lectures, detailed assignments with audio lectures, weekly Moodle tests and compulsory homework were the dominant teaching methods at that time.

Several studies have shown that students' learning can be more enjoyable and effective if they have the opportunity to acquire knowledge, skills and competences in a way that is appropriate or close to their own learning style (Gál & Árváné Ványi, 2018). Therefore, I considered it particularly important to get to know the learning

<sup>131</sup> questionnaire sent out only to students of the Foundations of Accounting in Hungarian in the second semester of 2019/20

support methods for students studying Foundations of Accounting as thoroughly as possible. I planned to repeat the study taking into account whether the training is conducted in Hungarian or English, and whether it is conducted online or face-to-face. I assumed that due to language difficulties, methodological elements that are permanently available and can be downloaded and viewed at any time and schedule would be more helpful in English-language training.

In order to carry out further cluster analyses, I needed to look carefully at the methodological elements used in each semester of the courses and select periods that both corresponded to the online-offline split and that had the widest possible range of learning support tools available to students in the semesters<sup>132</sup>. In SPSS, I performed the analyses using the K-Means Cluster method. I examined the clustering of the students' preference patterns into two and three clusters, respectively, and then found the three cluster clustering to be more appropriate. In order to validate the cluster structure, I also conducted additional ANOVA analyses, which revealed significant differences in the perceptions of all educational methodological tools among the students in the three clusters. I also tried other clustering methods (centroid model), but the same results were obtained.

In both the online (semesters 1 to 3)<sup>133</sup> and offline (semesters 4 and 5)<sup>134</sup> teaching periods of course Foundations of Accounting in Hungarian, I was able to include nine methodological elements. The summary data in Appendix 4 shows that the range of learning support tools available to students changed significantly during the semesters of the offline period, so although the number of options increased, I was not able to include more tools in the analysis. In Annex 5, I present the preferences of the students in two different representations, divided into three clusters. During the online period, there was only one methodological item that scored above four on average in all three clusters: video lectures that can be repeatedly viewed. Next in line were the Moodle practice tests, which presumably provided significant support

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<sup>132</sup> In order to perform the cluster analysis on the broadest possible basis, I had to select the semesters and the teaching methodologies included in the study in such a way that I could obtain valid preference responses from students for all items during the entire period indicated. This was the main criterion on the basis of which the semesters and methods were selected.

<sup>133</sup> Analysing a total of 573 student responses, the number of students assigned to the three clusters was: cluster 1 170 students, cluster 2 168 students, cluster 3 235 students.

<sup>134</sup> Out of a total of 261 responses, 65 students were placed in cluster 1, 92 in cluster 2 and 104 in cluster 3.

to the majority of students with different learning styles. A further three learning support tools were rated at or above an average of three: 1) the elaborate numerical examples available online, 2) the other exercises in the example library, and 3) the compulsory homework.

In contrast to the former, the toolkit examined and the beginning of the offline period<sup>135</sup> no longer contained any item that received an average student rating above four for all clusters. Only two items, video presentations and group work, had an average score above three. Out of research curiosity, I also looked at semesters 6 and 8, which were further away from the online period<sup>136</sup>. The main difference was that neither video lectures nor audio lecture ppt materials were available anymore, but instead, live lectures in the lecture hall were added to the toolbox. During this period, the in-person seminar achieved an average score above B for all three clusters of students. Above the three average was achieved by the sample exercises and the numerical examples developed; these methods also supported the learning of a wide range of students to a relatively significant extent.

There were no teaching methodological tools that scored below the average of three for all clusters. This is important because when lecturers and subject leaders are designing the curriculum for foundation subjects such as accounting, it is worth considering which elements of teaching methodology will both achieve the desired learning outcomes and help students with different learning styles to acquire the necessary skills and competences in an enjoyable and effective way.

In the English courses, I was able to include ten methods in the online semesters and thirteen in the offline semesters. For the sake of feasibility and data availability, I only included the third semester of the online period<sup>137</sup>, while in the offline period I used the questionnaire responses from the sixth to the ninth (last) semester<sup>138</sup>. Detailed figures of the analysis are shown in Annexes 5/3 and 5/4. Again, in this case, only the video lecture met the criterion of having an average of student ratings

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<sup>135</sup> Semesters 4 and 5, i.e. semesters Fall and Spring of 2021/22

<sup>136</sup> In these two semesters, I was able to analyse the preferences of only 119 people, of whom 31 were classified in cluster 1, 50 in cluster 2 and 38 in cluster 3.

<sup>137</sup> In the second semester of the academic year 2020/21, analysing the responses of a total of 81 students, the number of students classified in the three clusters was 36 in cluster 1, 38 in cluster 2 and 7 in cluster 3.

<sup>138</sup> Out of a total of 149 responses over the four semesters, 20 students were placed in cluster 1, 69 in cluster 2 and 60 in cluster 3.

above four for all three clusters. However, there were four other items for which the average of the evaluations within all three clusters was above three: 1) group work, 2) compulsory homework, 3) lecture slides in PDF format, and 4) detailed, elaborated assignment solution also in PDF format uploaded to Moodle.

In the offline period, the sample Moodle exam and the detailed step-by-step solutions were the most supportive. Both methodological elements received average ratings above four; in addition to the former, 1) video lectures<sup>139</sup>, 2) in-person seminar lessons, 3) the problem solution with teacher explanations in the audio lecture PPT, and 4) the example solution with only final results received an average of more than three. Here again, in none of the periods was there a method that achieved an average rating below three for students in each cluster.

Based on the statistical cluster analysis and in the theoretical context discussed in chapter 4.3, and then in section 6.1.1 according to the dimensions of the TPACK model discussed in the specific practical context, I interpreted the knowledge mediation methods used in order to identify which knowledge elements play a decisive role in supporting the learning experience for which groups of learners. The clusters were named accordingly to reflect both the typical learning style and level of engagement of the learners and the corresponding dimensions of the TPACK model<sup>140</sup>:

- Asynchronous, video-based learners who preferred primarily structured digital learning materials with teacher explanation;
- Students requiring a structured, present or hybrid learning environment, who responded in a balanced way to pedagogical and technological support;
- Students with a high level of digital activity, who were autonomous and performance-oriented and actively engaged in all aspects of the learning process;

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<sup>139</sup> These were no longer a substitute for the live lectures, but were available to the students on Moodle at the end of the quarter and semester, about a week before the exams, and could be viewed as many times as they wished.

<sup>140</sup> The detailed characteristics of the student clusters based on the TPACK dimensions are presented in Appendix 5/5.

- Groups with minimal engagement, who valued the methodological diversity of the courses little and were characterised by low involvement.

The analysis showed that the majority of the clusters with high learning engagement had a strong co-occurrence of at least two TPACK dimensions. The clusters where technological knowledge was integrated with pedagogical support and professional content stand out - these students are typically among the most active and reflective learners. Examples include cluster 3 of English-language online and offline education and cluster 2 of Hungarian presence education. In other clusters, especially the low engagement clusters, either the technological or the pedagogical component was absent, and there were even clusters (e.g. Hungarian - online 2) where neither dimension was really dominant, which may indicate low levels of learning engagement.

The TPACK-based typology of learning patterns not only helps to interpret the present research, but also allows pedagogical conclusions to be drawn. The learning strategies based on different knowledge elements are effectively adapted to different groups of students, so differentiated consideration of these strategies in future course design may be useful.

A comparison of the preferred learning support methods of the students in the two courses shows that they did not differ significantly. In the online period, theoretical and practical elements<sup>141</sup> that could be looked back at several times and included explanations, and methods that support self-organised learning (preferably with immediate control and feedback)<sup>142</sup> were indicated by students with different learning styles. In the offline period, this list was extended to include seminar sessions that provided opportunities for personal interaction.

*On the basis of the cluster analysis , I consider hypothesis H3 to be accepted , according to which groups can be identified in terms of student preferences for each knowledge transfer method in the case of the Foundations of Accounting subject.*

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<sup>141</sup> Video presentation, detailed exercises in pdf or audio ppt format

<sup>142</sup> homework, Moodle tests, group work to be completed by the deadline

### 6.1.5 Test and result related to hypothesis H4

In their responses to the questionnaire, students expressed their opinions on the methodological elements used in the semester in terms of how they helped them in their learning process. In addition, it was also possible to investigate how active students were in actually using the teaching support materials and whether this was related to their final grade. For English language courses, I had data for the six offline semesters<sup>143</sup>. Moodle logs the activity of course participants, which I was able to download in excel format. Furthermore, since I taught each semester, I had the final grades of the students. From this data, I compiled the database from which I conducted further analyses. I examined the logged system usage activity categories available in the Moodle statement to see which ones were truly relevant to student learning<sup>144</sup>. I excluded Moodle activity categories that were found to be irrelevant, but included an additional item showing participation in Kahoot! tests<sup>145</sup>. Thus, the activity categories tested were:

- system / basic system (logging into the course);
- activity / task (solving the first and second homework);
- report (viewing results);
- H5P and H5P package (viewing interactive videos);
- material / course material (download lecture slides);
- test/tests (sample exams, solving quarterly and end-of-year exams);
- video (view lecture video);
- Kahoot! (solve Kahoot! test during seminar).

On the database thus compiled, I performed a principal component analysis in order to reduce the number of variables and compress the information content<sup>146</sup>. The first principal component represents 27.2% of the total variance of the activities, the

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<sup>143</sup> From the 2nd semester 2020/21 to the 2nd semester 2023/24 for a total of 1104 students.

<sup>144</sup> For example, activities such as the overview report, the user tours, the forum, the response option are typically not related to the learning of the course material

<sup>145</sup> Students were allowed to take 10 or 11 (depending on whether the semester was 12 or 13 weeks) Kahoot! tests in seminars during a semester. Participation was graded (with a round of applause for excellent performance) so that those who took all of them received five extra points, and those who took fewer were entitled to four, three, two or one extra point per week, in decreasing order. Those who participated even less than this were awarded zero points. The points received per student were inserted into the database as a measure of activity.

<sup>146</sup> The resulting detailed statistical table is given in Appendix 5.

second represents a further 26.6% of the variance, so together they capture more than half of the information that can be extracted from Moodle activities. The most significant components of the first principal component (in terms of principal component weights) are course enrolments, course material downloads, solving the first and second homework assignments, and completing tests, let us call this the “Minimum’ principal component, while the second is most correlated with interactivity and watching lecture videos, let us call this the “Interactive’ principal component. The two principal components are therefore conceptually well distinguishable, as shown in Table 4.

**4. Table: Principal component weights of the first two principal components of the Moodle activity categories**

**Rotated Component Matrix<sup>a</sup>**

	Component	
	1	2
system	,830	,130
activity	,742	-,112
report	,280	,408
H5P	,123	,905
H5P_package	,110	,870
material	,749	,220
test	,617	,192
video	-,018	,732
Kahoot!	,405	,050

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.<sup>a</sup>

a. Rotation converged in 3 iterations.

*Source: analysis in SPSS on own database*

Next I used multivariate linear regression analysis to examine the effect of the ‘Minimum’ and ‘Interactive’ factors on students' final grades. Based on the regression R<sup>2</sup> value, the two principal components explain almost 20% of the variability in grades<sup>147</sup>. Furthermore, the standardized regression coefficients indicate that the effect size of the ‘Minimum’ factor is medium, more than twice that of the

<sup>147</sup> Adjusted R Square = 0.193

'Interactive' factor, whose effect size is small. However, the effect size of both components is significant (p-value < 0.01) and positive, i.e., the higher the student's activity, the better the grade, as expected<sup>148</sup>.

*Based on the above, I consider hypothesis H4 partially accepted, i.e., there is a clear positive but not strong relationship between students' activity in the online interface and their final grade.*

## 6.2 Qualitative research

During my research, the responses to the student questionnaires showed that, due to the different learning styles of students, the methodological elements developed by the instructors all significantly support the learning process and development of a group of students. The different methodologies used to develop the knowledge, skills and abilities to be acquired in the Foundations of Accounting course provide an opportunity for students with different backgrounds and learning styles to find the element that best suits them, while keeping in mind the fact that in accounting, a certain degree of memorisation of concepts and contextual systems and their use in different contexts is expected. It is essential to create a safe learning environment for both students and instructors, with mutual respect and acceptance of diversity on both sides as an elementary component. One of the most important tasks for instructors in teaching core subjects in higher education in business is to maintain student motivation and engagement in order to minimise drop-out rates, to enable the core subject to fulfil its purpose and to maximise the scope for deeper learning that can be developed in other subjects in the future.

If we apply the PDCA cycle approach mentioned in the previous chapter and take into account the importance of the student-instructor-institution collaborative triad for ESG higher education quality, it was certainly relevant to capture and draw conclusions from the feedback of the instructors in this particular situation. Therefore, in addition to the students, I also asked the trainers about their experiences of online-offline teaching.

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<sup>148</sup> The calculation of the regression coefficient is presented in Appendix 7

I involved all colleagues teaching Foundations of Accounting in either English or Hungarian in the research and conducted the interviews in the summer of 2021, when we had already completed three semesters of online education, but it was not yet clear how higher education would continue due to the COVID-19 pandemic.

### 6.2.1 Literature review

Several researchers, including Mitev et al., have examined this period from the perspective of academics (Mitev et al., 2024); their study examined the identity change and role transition of higher education academics in the light of the digital transition imposed by COVID-19. Their theoretical framework - Bridges' transition theory - focuses on the psychological processing of technological change, with a particular emphasis on the interrelationships between identity loss, digital proficiency and teacher-student relationships. In contrast, the present research focuses not on identity change but on the characteristics of the curriculum, the evaluation of teaching formats along student preferences and practical experiences. The two studies approach the same phenomenon from different perspectives: while Mitev et al. model primarily the transformation of the teacher's role and self-image, the present paper focuses on the content, form and methodological dimensions of teaching.

Among the publications sharing early domestic experiences following the first wave of the COVID-19 pandemic, it is worth mentioning the rapid research of Mariann Fekete (2020), who used text mining analysis to investigate how teachers and students reacted to the sudden shift in social media (Fekete, 2020) Her results showed that Hungarian educational actors were forced to adopt a digital working system at very short notice, which was a serious challenge for schools and teachers due to the lack of necessary ICT skills and technical conditions. And Ádám Nagy and Mariann Fekete (2020) reported that 'digital natives' often helped their older teachers to use online tools and solve technical problems during the forced distance learning (Nagy & Fekete, 2020)

Watermeyer and colleagues conducted a large-scale UK survey (n = 1148) to assess the experiences of higher education lecturers in the transition to online education.

The results showed that lecturers experienced a number of difficulties<sup>149</sup>, with fewer perceived positive benefits<sup>150</sup>. Respondents reported that the transition to online had caused significant disruption and operational problems in their teaching roles, as well as worsening work-life balance (Watermeyer et al., 2021).

Already in 2023, González et al. reported the results of two years of interview-based research (involving 151 university lecturers) in their publication on university lecturers' experiences of teaching online during the pandemic (González et al., 2023). The results of the hybrid thematic analysis showed that despite initial difficulties, lecturers had learned several important lessons. Many instructors quickly expanded the digital tools they used to deliver and maintain interaction, deepened their knowledge of online course design and assessment, and became more empathetic to students' individual situations. According to the authors, these experiences provide an important basis for post-pandemic professional development and the development of digital competences.

Galbreath and Creel's study, published in the *Journal of Higher Education Theory and Practice*, focused specifically on the pandemic experiences of accounting educators. In a US survey, university accounting educators assessed their own and their institutions' preparedness and shared their views on the changes introduced in online education. The results showed that many felt unprepared for the sudden transition to online and experienced the situation as a strong shock. However, instructors identified innovations that were worth keeping after the pandemic<sup>151</sup>, as well as methods they would prefer to abandon (such as 100% online teaching, recorded video lessons<sup>152</sup>, upward grade adjustments during the pandemic and the supervision problems of online examinations) (Galbreath & Creel, 2024)

Online and blended learning environments require a different pedagogical approach than face-to-face learning environments. Several researchers claim that the preparation of instructors can have an impact on the quality of blended and online courses (Gurley, 2018; Tondeur et al., 2023; Zhao et al., 2021).

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<sup>149</sup> 'afflictions'

<sup>150</sup> 'affordances'

<sup>151</sup> For example, better technological infrastructure (stable Wi-Fi), the use of Zoom in certain classes, or virtual student reception.

<sup>152</sup> In this case, a video recording captures the synchronous lesson and makes it available to students asynchronously.

Similar experiences have been made during the period by the lecturers of the Accounting Department of the CUB in relation to the online migration of the Foundations of Accounting course during the pandemic period. In analysing the interviews conducted during the summer of 2021, I will not only address the specific research questions below, but will also extend the investigation to the dimensions of the TPACK framework, instructor motivation, engagement and perceived difficulties. Where I have had the opportunity, I have also cross-referenced with student feedback, which seems to provide an even more plausible basis for a period of consolidation after the shock of the digital switchover, when it is worth summarising the experience and preparing for further developments (see: artificial intelligence).

### 6.2.2 Research methodology

I designed and conducted semi-structured interviews to answer the research questions. This involved preparing predetermined questions to provide clear direction to the conversation with my colleagues, but also to allow for flexibility and further clarifying questions based on the responses. This allowed for an exploratory approach that allowed me to capture detailed and nuanced information.

For the interviews, I tried to include all the teachers of Foundations of Accounting. I tried to give them room to express their opinions and experiences as well as answering the set of questions that I had. (spring semester of the academic year 2019/20, autumn and spring semesters of the academic year 2020/21). Based on the data extracted from Neptun for the three semesters, I had a total of 20 interviewees, which is a complete sample. I interviewed them one by one for one and a half hours at a pre-arranged time. For the interviews, I tried to include all the teachers in the research, on the one hand, and to give room for their opinions and experiences, on the other hand, but also to answer the questions I had planned.

I discussed the composition, relevance, order and relevance of the questions to the research questions with my supervisor and with experts in qualitative research at the Doctoral School of Business Administration. Before starting the interview series, I conducted a “test interview” with one of my colleagues who did not meet the preliminary criteria for interviewing (she only taught Foundations of Accounting in

correspondence courses), but her teaching competence, experience and feedback helped me to refine the interview questions, their order and to better estimate the expected length of the interviews. I did not record the “mock interview”, and what was said there is not included in the research findings.

I shared with the interview subjects beforehand that I would ask them about their experiences of teaching the Foundations of Accounting (English, Hungarian) course online during the pandemic for the purpose of my doctoral research and that I would include all the colleagues involved in the study. I have informed the participants that I will keep the personal data revealed during the interview confidential, and the information that I learnt during the interview will be published in the thesis only anonymously, sometimes summarized.

I feel that I have developed a good personal and working relationship with my colleagues, so I did not fear that any personal conflict would prevent me from receiving honest responses from them. I have therefore not carried out any other testing of the reliability of their answers. The semi-structured interviews allowed me to explore the perspectives of my colleagues, my interviewees, about their teaching experiences under changed circumstances. I was also interested in the personal, confidential reflections of the teachers during the interviews, so I was careful to maintain a ‘confidential tone’ throughout the interview. However, as I also had my own experiences on the subject, I took special care during the dialogue to exclude my own opinions and experiences from the conversation.

I divided the interview questions into several topics so that, on the one hand, I could keep the focus on the purpose of the interview throughout and, if we deviated, I could steer the interview back, and on the other hand, so that I did not inadvertently leave out any relevant questions. The interview questions are given in Annex 8. The interviews were conducted at pre-arranged times between 7 July 2021 and 31 August 2021, with interview subjects being asked to give a minimum of 1.5 hours of time, based on the time requirements of the ‘mock interview’.

The interviews were conducted on the Microsoft Teams platform with video recording, and I also recorded the interviews with the verbal consent of the interviewees. The transcription of the recordings was first done using the Alrite

software; this was followed by re-listening to the interviews and refining the transcriptions. The answers to the questions were summarized by instructor and question, either by summarizing the content or by quoting from the interview. To ensure researcher skepticism and credibility, I had the transcripts, summaries, and codes derived from the recorded interviews validated by four interview subjects and also validated (triangulated) by an independent researcher (Miles & Huberman, 1994).

I have summarised in detail the teaching experience of the twenty lecturers involved in the research in general undergraduate and in Foundations of Accounting in Appendix 9. The interviewees' experience in university teaching ranged from one to thirty-nine years, with an average of twenty-one years. In terms of position, the range of faculty colleagues involved in the research varies from doctoral students to university professors. Twelve were full-time and eight were part-time or hourly lecturers at the CUB. My interviewees taught a total of eighty Foundations of Accounting seminars during the three academic semesters under study (between Semester II 2019-20 and Semester II 2020-21) (an average of four seminars), which typically accounted for 50% of the total number of their classes taught during this period. Fourteen taught exclusively in Hungarian, two in English, and four in both.

### 6.2.3 Results of the research

#### **Research questions:**

**Q1)** Can we identify curricular areas within the subject that should be made available online, taking into account the learners' preferences?

**Q2)** Can we come to a different conclusion if the mode of delivery is non-native, i.e., if the students learn the subject in a foreign language?

**Q3)** What are the advantages and disadvantages of synchronous and asynchronous online teaching for the course Foundations of Accounting (a compulsory undergraduate subject in English and Hungarian), taking into account student preferences?

**Q4)** How do lecturers interpret the concept of modern curricula after the digital switchover and what are their experiences with online curriculum development?

#### *6.2.3.1 Instructor motivation*

*'The effectiveness and success of teachers is primarily a function of their personal satisfaction'* (Mikáczó, 2021, p. 15).

Before discussing the research questions, I consider it essential to describe this determining factor (which I have also explored in depth during the interviews), because it is the “engine” of university teaching: what is the basis of teaching motivation and commitment? When do lecturers feel that they enjoy their work, are enthusiastic about it and draw inspiration from it? I have tried to explore this area through a series of questions, as I can only interpret difficulties, future prospects and opportunities correctly if I understand the underlying motivation.

The questions exploring this theme also covered the most memorable moment during the interviewees' teaching activity, the recollection of the ideal “online”, ‘offline’ class and the best experience they had while teaching the Foundations of Accounting course. The responses were unanimous (100%) that active student participation in the classroom, interactivity<sup>153</sup>, and the relationship with the students are the most important elements that motivate the lecturers. Instructor 6 put it in terms of the ideal class: *'it gives me the experience of having fun while teaching... we get from somewhere to somewhere and everyone is happy at the end.'* Instructor 2's response also included several different formulations when describing the ideal lesson: “there is a connection between us, communication’, *'this connection, this bonding of some kind, even if it's only for a few weeks, I think it's very important'*. As in many cases, there is a link between several components, as the previous quote suggests, since the second most frequently mentioned factor that causes satisfaction is the atmosphere of trust and personal connection. A trusting atmosphere between students and between

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<sup>153</sup> Kozma describes the interactivity process that occurs during a lecture in a very figurative way: 'In representative encounters between students and instructor (e.g. lectures), the same thing is created as in a theatre performance or a sports competition. The instructor understands the expectations of the audience, as it were, confronts his audience. And although he is preparing to perform according to the rules of his discipline, he steps outside these rules to fulfil the expectations radiated towards him. The audience, noticing that the instructor is beginning to address them personally, gives feedback. And the teacher, increasingly aware of the listener's feedback, moves closer and closer to the listener, moving away from the constraints of his discipline (or even from the originally constructed lecture)' (Kozma, 2024, p. 129).

tutor-students is the basis for interactivity and engagement, as reflected in Instructor 6's response '*...a bond can be formed*'. ... not to make the student feel 'anxious', and as Instructor 15 describes the ideal class: '*Students actively participate, dare to ask questions, the teacher explains thoroughly, supported by examples, students also contribute, give examples, give their opinions*'.

A similarly important component of instructor satisfaction was when instructors received formal or informal confirmation that they had succeeded in engaging students' interest and involving them in the active learning process. Instructor 1 mentioned the story as the most memorable moment when he managed to stimulate his students to think further about the topic of the lesson, and they communicated this through spontaneous expressions. Recalling from Instructor 12's responses: '*I got a homework assignment draft from someone that made my jaw drop. I said that it was so impressive that I was glad that I had set this [specific] assignment.*' '*I got a homework assignment draft from someone that made my jaw drop and I said that it was something of a miracle and it was worth giving up the assignment.*' Also, this is reinforced by the comment of several respondents that it is the eliciting of the 'Aha' experience from students that gives a sense of satisfaction.

The interviewees specifically mentioned (40%) that one of the most important components was a good atmosphere, humour and playfulness, which is closely related to both trust and personal connection and interactivity. Instructor 2's responses were summarised as '*The ideal lesson is to have a good atmosphere, so I make jokes, or they do too. ... to be in a good mood, to laugh, so there should be humour, a good atmosphere.*'

And of course, positive immediate or later student feedback also increases instructor satisfaction. There was a wide variety of ways in which this moment was expressed in the responses, and Table 5 shows some examples of the varied feedback:

**5. Table: Examples of immediate or subsequent positive student feedback**

Instructor 2	<i>'Reading positive HALVEL (Student Opinion) reviews, positive feedback.'</i>
Instructor 3	<i>'a semester-ending last seminar when I said goodbye to them and all kinds of well wishes .... And then I got the hearts from the students, and</i>

	<i>they wished the same back, messaged me, or liked me, or the hearts came.'</i>
Instructor 5	<i>'Towards the end of the semester, we found out that we were going to finish the Foundations of Accounting here, and then they would go on and study financial accounting. But not from me anymore. And I saw the shock on their faces, how could they not choose me? Why can't they come with me? Why couldn't I teach them later, because they loved me, they enjoyed it.'</i>
Instructor 6	<i>'They applaud me during the last lecture.'</i>
Instructor 10	<i>'Feedback from students that they looked forward to the accounting class.'</i>
Instructor 14	<i>'some students changed majors or applied to be demonstrators because they liked the subject.'</i>
Instructor 17	<i>'when someone has come in, a company manager, ... and he tells me ... that he remembers this example, ... that it has stuck with him.'</i>
Instructor 19	<i>'thanked by the students'</i>

*Source: own editing based on interviews with trainers*

### *6.2.3.2 The challenges of online education*

Understanding the most important motivations of instructors, which highlighted the active involvement of students, personal connection, interactivity, and good atmosphere resulting from the development of a climate of trust, we can feel even more significant the challenge that instructors faced in March 2020, when suddenly, as a result of the COVID-19 pandemic, online education started on campus. In my interviewees' responses, the problems can be grouped around several main factors:

- firstly, technical barriers and fear of the unknown, and secondly
- the lack of student interest and interactivity.

Also part of the challenges faced by instructors was the development of curricula adapted to online teaching, which I will discuss in more detail later.

The technical difficulties faced by instructors were also on several levels. At a macro level, global technical conditions such as *'reliable internet and adequate bandwidth'*, as raised by Instructor 18 in his response, and *'stable power and internet networks,*

*stable software background*' are essential, as raised by Instructor 5. At the institutional, university level, there is a need to increase studio capacity '*so that recorded material can be produced quickly and flexibly,*' noted by Instructor 13 and to expand the audiovisual training opportunities for colleagues, which was concretised in the response of Instructor 19. At the individual level, the existence of appropriate hardware (camera, microphone, headphones, etc.) for both teachers and students, and of an infrastructure that is suitable for active student-teacher collaboration. The situation is illustrated by the response of Instructor 20, who suggested improvements to online teaching: '*I should soundproof my room at home. I also need new headphones.*'

Beyond the technical barriers, the biggest difficulty was the lack of interactivity. This element was strongly present in eight instructors, followed by a lack of student interest and fear of the unknown. As Instructor 4 explained, the worst thing is '*when you don't see anyone and there is no reaction during online teaching*', or according to Instructor 12, '*For me it is always the student passivity that is the worst*'. Impersonalism was highlighted by Instructor 18 as the worst experience in the online transition to Foundations of Accounting. Fear of the unknown was also present in several (five) instructors: '*'*. Time management was also mentioned as a problem, for example in the following form during the interview.

#### 6.2.3.3 Response to research questions - Q1

The interviews with the trainers revealed that the digital switchover imposed by COVID-19 not only posed technical and methodological challenges, but also tested the motivation and role interpretation of the trainers. Several teachers reported that the lack of personal contact, student passivity and technical difficulties caused frustration, but some also saw the situation as an opportunity to try out new forms of teaching materials or to expand their own teaching toolbox<sup>154</sup>.

This dichotomy - challenge and opportunity - is reflected in the way teachers perceived the online adaptability of different types of curricula. According to the

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<sup>154</sup> Twelve instructors mentioned that their IT competence had improved a lot, five experienced it as a creative process, and eight indicated in their answers that the online curriculum development was a team effort.

interview analysis, the following parts of the curriculum were identified by the trainers as being specifically suitable for online (mainly asynchronous) delivery<sup>155</sup>:

- Theoretical lectures
- Exam preparation and practice exercises
- Moodle tests
- Recorded video material, audio slideshows

I examined the degree of consistency or difference between the instructors' and students' opinions about the future (of the online methodological tools to be taught) by comparing the answers obtained during the instructor interviews with the students' answers obtained in either the Hungarian or the English language course in semesters 1-3<sup>156</sup>. In total, 739 student responses were received in these three semesters. Out of these, 270 students did not answer or did not give a relevant answer to the question “In traditional education, what would you prefer to receive from these methods?” So, if we look at student responses as a proportion of respondents, we are looking at a ratio of 739-270=469 responses. The reason why I only collected responses from the student questionnaires for semesters 1-3 is that the faculty interviews were conducted in the summer of 2021, when neither faculty nor students knew how university education would continue from September.

**6. Table: Summary of student responses on methodological tools to be retained (own editing)**

		future_vide o_lecture	future_ka hoot!	future_qu izzes	future_H W	future_lec ture_ppt	future_gr oupwork	future_pp t_with_vo ice
N	Valid	307	47	134	38	28	12	162
	% of valid answers (469)	65%	10%	29%	8%	6%	3%	35%

<sup>155</sup> Specific examples from the instructors' answers are 'Lectures, exam preparation, exercises' (Instructor 3), 'Video lecture with control, only those who are really active should go to the seminar.' (Instructor 7), 'Mid-year tests, homework, audio-loudspeaker slides - these are worth having.' (Instructor 4), 'Theoretical lecture with control, practical exercises with feedback' (Instructor 11), 'Lectures, audio-assisted ppt's, tests - these worked well online.' (Instructor 14)

<sup>156</sup> Semester II 2019/20, Semester I 2020/21, Semester II 2020/21.

Table 6 shows the student responses, which I compared with the methodological elements suggested by the lecturers to be retained for the offline period<sup>157</sup>.

In Table 7. I summarise the instructors' and students' suggestions, which I have supplemented with the TPACK dimension, discussed several times in this thesis. There are several similarities in the table, but the summary comments, which are only in the instructors' suggestions, 'multiple and frequent accountability' and 'practice with feedback', meet the 'Moodletests' and 'compulsory homework' elements in the students' suggestions. From the students' point of view, it is understandable that the possibility to practise rather than the frequency of the feedback dominates their answers.

*7. Table: Teacher and student suggestions and the relevant TPACK dimension (own editing)*

<b>Methodological elements proposed for retention</b>	Proposed by the instructors	Proposed by the students in proportion of students who responded	TPACK category
A wide range of frequent accountability	90%		TK+PK+CK = <b>TPACK</b>
Moodle tests		29%	
Compulsory homework assignments		8%	
Practice with feedback	85%		TK+PK+CK = <b>TPACK</b>
Step-by-step problem solution (ppt with voiceover)	55%	35%	TK+PK+CK = <b>TPACK</b>
Kahoot!	50%	10%	TK+PK+CK = <b>TPACK</b>
Detailed activity solutions in PDF		19%	PK+CK
Lecture videos for viewability	65%	65%	TK+(PK)+CK = <b>TPACK</b>

These forms were considered by trainers to be effective on the basis of pedagogical efficiency, student feedback and technical feasibility.

The curricular elements proposed for retention (e.g. Moodle tests, video examples, audio slideshows) can be understood within the triple intersection of the TPACK model, as these forms of instruction build on technological competence, pedagogical

<sup>157</sup> The interview question read: "If we return to face-to-face instruction completely from next semester, which curriculum development elements do you recommend keeping and why?"

purpose and content structure at the same time. In teachers' experience, these methodological elements not only respond to student preferences but also effectively support independent learning and accountability.

The answer to research question Q1, i.e. whether we can identify curricular areas within the subject framework that should (also) be made available online, taking into account student preferences, is clearly yes. Table 7 identifies the knowledge transfer and methodological elements that should be considered for online access, taking into account the needs of both sides. These are video lectures, video or audio ppt activity solutions, mid-year Moodle tests, compulsory homework and detailed example solutions in pdf format on Moodle.

#### *6.2.3.4 Response to research questions - Q2*

Closely related to this topic is research question 2, which addresses the same issue in relation to English language teaching<sup>158</sup>. Although the majority of respondents did not teach specifically in a foreign language teaching context<sup>159</sup>, several teachers indicated that different curriculum structures, examples and support formats were needed to take account of the language difference. In particular, visual and interactive elements, concrete examples and video/audio formats are essential to reduce language barriers.

Some specific answers are: *'Our existing examples should be expanded to provide context for students learning English.'* (Instructor 6 - Hungarian/English courses) *'For videos, subtitling would reduce poorer performance due to language difficulties.'* (Instructor 13 - Hungarian/English courses). Due to the small number of instructors involved, I did not get a clear answer to this question from the interviews. However, as a very high proportion of both instructors and students in both language courses indicated the methodologies to be retained offline for the first question, the difference is probably not significant if students do not learn accounting in their mother tongue. However, I have not been able to obtain scientifically sound evidence for this.

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<sup>158</sup> Research question 2: 'Is there a different conclusion if the mode of delivery is non-native, i.e. if students learn the subject in a foreign language?' That is, do the methodological tools developed in the online period differ from those proposed to be retained in the offline period if students learn the Foundations of Accounting in a non-native language?

<sup>159</sup> Out of the twenty main instructors, only two taught exclusively in English and three taught in both languages.

#### *6.2.3.5 Response to research questions - Q3*

What are the advantages and disadvantages of synchronous and asynchronous online teaching for the Foundations of Accounting course, taking into account student preferences?

In my thesis, I use the term synchronous education to refer to real-time or live, non-recorded, non-recurring instruction on an online platform with simultaneous presence of teacher and students, and asynchronous education to refer to pre-recorded, online, structured course materials with a final exam deadline framework, accessible to students of the institution at any time.

Asynchronous teaching may be the interactive delivery of teaching material designed by the instructor, the implementation of a student activity in the form of a seminar coordinated by the instructor, or student-led consultation.

In asynchronous teaching, the students independently achieve the learning objective using the available learning material and structure, but also in this case, they have the opportunity at regular intervals to ask questions in writing or orally to an instructor who responds within a short time.

In order to answer research question 3, I have prepared Table 8, in which I summarise the instructors' opinions on the two forms of teaching. The knowledge mediation elements proposed by teachers for asynchronous teaching fit well into the triple common intersection of the technological, pedagogical, and content dimensions of the TPACK model.

8. Table: Aspects of synchronous and asynchronous education (own editing)

Aspects	Asynchronous education	Synchronous education
<b>Benefits (according to the instructors)</b>	learning at your own pace, repeatability, support for exam preparation	real-time presence, active student participation, a sense of personal contact
<b>Typical methodological elements</b>	Moodle test, pre-recorded lecture, PPT with voiceover (audio-assisted problem-solving PPT)	seminar, small class size
<b>Student benefit (based on instructor judgement)</b>	Flexibility, own schedule, repeatability	the possibility to ask, active participation, emotional involvement
<b>Common drawbacks</b>	passivity, technical errors (e.g. not seeing/hearing the speaker)	difficult to maintain attention, tiresome long online presence
<b>Quotes</b>	"Theory asynchronously, maybe some problem solving so you can go back and repeat if you missed something." (Instructor 19) "Materials that are harder to understand should be available asynchronously. For group work, introductory material that they can refer back to to see what is expected. audio ppt assignment solution, brief review of essential basic concepts." (Instructor 15)	"bookkeeping basics in any case, problem solving, practice." (Instructor 3) "Basically synchronous, so I could see the reactions of the students. They understand-don't understand, they fall asleep, so I need a story, etc." (Instructor 7) "The principles should only and exclusively be synchronous" (Instructor 17) "Kahoot!, Menti, seminar" (Instructor 14)

#### 6.2.3.6 Response to research questions - Q4

Research question 4, i.e. 'How do instructors understand the concept of a modern curriculum after the digital switchover and what are their experiences with online curriculum development?'

A separate block of questions in the interviews conducted in the context of the Foundations of Accounting course explored what instructors consider to be a modern curriculum and how they envision the future of online curriculum development in the changed ecosystem. Based on the instructors' responses, the concept of 'state-of-the-art curriculum' has a multi-level meaning, which is not limited to the use of technology alone, but also includes pedagogical and content adaptability.

From a content point of view, respondents consider a curriculum to be modern if it:

- is based on current examples<sup>160</sup>,
- is linked to a real economic context<sup>161</sup>,
- and can be adapted to the students' life situation (e.g. practical examples, interactive situations)<sup>162</sup>.

From a methodological point of view, the trainers consider that modernity is achieved if:

- interactive (mentioned by 85% of interviewees), with an emphasis on student activity (75%)<sup>163</sup>, and problem solving (40%),
- the learning material is modular and well structured (e.g. short videos, targeted exercises)<sup>164</sup>,
- supports self-assessment and practice (e.g. Moodle test, feedback)<sup>165</sup>,
- allows for optional learning pathways (asynchronous/synchronous combination),
- experiential (60%) and can be combined with different digital tools<sup>166</sup>.

And from a quality assurance perspective, modern learning materials are understood by trainers as a form of learning that:

- supports the achievement of learning outcomes (ILOs) in a transparent way<sup>167</sup>,
- and support student autonomy and development<sup>168</sup>.

Overall, the interview-based data confirms that modernity is not a technical improvement in itself, but a way of optimising the student learning experience and learning outcomes together. This approach also fits well with the theoretical

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<sup>160</sup> *'Contemporary: it is about the period and its rules.'* (Instructor 16)

<sup>161</sup> *'Probably what is contemporary is what brings the student closer to the practice'* (Instructor 7)

<sup>162</sup> *'... modern curriculum is, on the one hand, transmitted through a medium that is innovative. By this, we obviously know what is meant. Modern curricula can change very quickly and can be changed very quickly. A modern curriculum is one that puts the student under pressure in relation to the student's abilities, so it's not too demanding. A modern curriculum has to be sexy for the students.'* (Instructor 6)

<sup>163</sup> *'It should definitely be based on the student's activity. So, involve the student in an active participation'* (Instructor 12)

<sup>164</sup> *'Definitely something that is fast, fast-paced, has visual, video elements, keeps their interest, and importantly, gives them the opportunity to interact, which doesn't necessarily mean that they have to talk, but that they can get involved and get some feedback on that.'* (Instructor 13)

<sup>165</sup> *'Typically, without the constant presence of a teacher, he can prepare himself, he can click on a phrase, he can look at it, he can check a context in some way'* (Instructor 20)

<sup>166</sup> *'Which can be available on all platforms'* (Instructor 16)

<sup>167</sup> Fourteen out of twenty interviewees stated that online learning materials can be used to achieve the desired outcome objectives (EOI).

<sup>168</sup> *'It should be optional whether the student wants to learn online or offline.'* (Instructor 1)

framework of the TPACK model, which sees the synergy of technological, pedagogical and content knowledge as the key to effective education.

The positive impact of online curriculum development was cited by instructors as a novelty<sup>169</sup> and a creative process. They worked in teams to develop the tests, supported each other (typically in the use of technology) to develop the task-solving video learning materials and acknowledged that their IT competence had increased significantly (12 mentioned). Negative aspects were time pressure<sup>170</sup> (11) and lack of experience<sup>171</sup>. These two crucial elements were unfortunately unmanageable during the period of transition to emergency distance learning during the COVID-19 pandemic.

Based on the instructor interviews, it emerged that Moodle tests, recorded lectures, audio lecture slideshows, and self-paced practice exercises are elements that rely on both:

- technological knowledge (digital tools, recording, Moodle management),
- pedagogical knowledge (supporting independent learning, providing feedback),
- and content knowledge (didactic presentation of accounting concepts and logic).

These elements are therefore located in the triple intersection of TPACK and, based on the interviews, are not only technically feasible but also effective according to student preferences. In contrast, the advantages of synchronous forms, such as interactive questioning, real-time counselling or a sense of personal presence, are strong primarily in the pedagogical dimension, but would not work without technological tools, so TPACK-level competence is important there too. Overall, educators who effectively combined different knowledge areas during the pandemic were able to create flexible, student-centred teaching solutions. The TPACK model is

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<sup>169</sup> *'I now feel that we have an expanded toolbox online. We are working with a much wider range of tools'* (Instructor 12)

<sup>170</sup> *'Fire-fighting, time pressure in development. Afterwards, taking into account professional aspects. Whether technical implementation is possible (what can students absorb and how, higher IT skills and pedagogical sense for online, teamwork)'* (Instructor 6)

<sup>171</sup> *'Online development lacked experience and technical knowledge, therefore higher stress and time requirements'* (Instructor 3)

therefore a useful framework not only for instructional design but also for understanding instructor adaptivity.

### 6.3 Validation, generalisability, limitations and ethical issues

My research was conducted among students and lecturers of the Foundations of Accounting course at the Corvinus University of Budapest, during the period of the COVID-19 pandemic and the following semesters.

All participants - students and lecturers - took part in the research on a voluntary basis and were informed beforehand about the purpose of the research. The student questionnaires were sent out and processed anonymously, so no personal identification was possible. Peer review was also used in the development of the questionnaire.

In the correlation analysis of activity data, Kahoot! results and merit marks downloaded from Moodle, Neptune codes were used to aggregate the data, but the results obtained and published in the statistical analyses no longer contain any identifiable data.

For the tutor interviews, all participants gave verbal consent to participate and to be audio-recorded. The video files of the teacher interviews containing personal data will be deleted from the Teams cloud storage after transcription, encoding, validation and triangulation and will be stored separately. The results of the interview processing did not involve any personal data, so they could be used in aggregate form in the thesis.

In analysing the qualitative interviews, I used thematic coding, which allowed for a structured interpretation of the instructors' experiences and motivations. I also double-checked the coding (with interviewees) to minimise bias.

I complied with data protection regulations and GDPR provisions when handling the data.

#### **Limitations of the research:**

Sampling: self-selection bias cannot be ruled out due to the voluntary nature of the questionnaires, i.e. more motivated students were more likely to respond.

Research setting: the study was conducted within the framework of a specific institution and in relation to a specific subject (CUB - Department of Accounting - Foundations of Accounting), so the results may not be generalisable to all higher education institutions.

Changing context: the teaching arrangements introduced under COVID-19 changed rapidly, so the experiences of students and lecturers may have varied over time.

Subjectivity in the qualitative analysis: interviews were coded and interpreted based on the researcher's interpretation, even if based on a structured methodology.

*However, given the limitations, I believe that the research findings in the Foundations of Accounting subject are suitable for consideration by colleagues in the development of the topics and curricula of foundation courses with similar structures and requiring similar skills, abilities, and attitudes.*

## 7. SUMMARY, CONCLUSION

The higher education ecosystem has undergone a rapid and shocking transformation in the wake of the COVID-19 pandemic. This transformation has had a profound impact not only on the technical framework of education, but also on the relationship with curricula, teaching methods and student expectations. The aim of this thesis was to examine the current issues and responses to quality assurance in the light of changes in the higher education ecosystem, with a particular focus on the curricular and methodological development of a core subject - Foundations of Accounting. The study was carried out at two main research levels: firstly, through the analysis of student preferences and feedback using quantitative statistical methods, and secondly, through qualitative interviews with lecturers.

The cluster analysis based on students' responses allowed us to explore not only the specificities of each period, but also how students' learning preferences changed according to the different forms of education. The typology of attitudes towards methodological elements can help to design teaching solutions that are better adapted to students' different learning needs and, in the event of sudden changes in higher education in the near future, can provide a basis for a more conscious construction and curriculum development.

In addition, different groups of students could be identified, characterised by different levels of motivation and digital activity; they rely on asynchronous video-based learning or prefer structured face-to-face teaching; they prefer independent learning or continuous pedagogical support. This should also be kept in mind during the curriculum development process.

In the case of the Foundations of Accounting subject, the environmental change caused by the pandemic has triggered a multi-level adaptation:

### **Development of digital competences**

During the COVID-19 pandemic period (and even before), trainers created new types of digital learning materials: video lectures, audio lectures, example slideshows, Moodle tests and practice exercises. These developments have not only served as a solution for distance learning, but will also be integrated into teaching practice in the long term, as it has been confirmed by both teachers and students that these types of

digital learning materials effectively support the learning process, increase accessibility and autonomy for students, and make teaching more flexible and differentiated.

### **Reconfiguring student expectations**

Students with different learning styles have started to favour flexibility, self-paced learning and structured digital content in distance learning. However, they perceived the lack of face-to-face connections as a disadvantage, and therefore, by reintroducing face-to-face teaching, classroom seminars show above-average results on the preference list of learning support elements.

### **Content adaptation**

In the new environment, curriculum development meant not only changing digital formats, but also expanding the range of examples and incorporating practice-oriented elements - taking into account the students' interpretative context. In some cases, the content was also adapted to international curriculum models (e.g. ACCA) by the trainers.

### **Redefining the teaching role**

A significant number of teachers have acquired new skills (video editing, interface management), while at the same time the quality of the visual and content of the teaching material has increased. Student feedback has led teachers to become more reflective about their own teaching practice.

### **The following hypotheses and research questions were confirmed by the research conducted among students and teachers:**

Hypothesis H2, that a difference can be detected between online and offline (face-to-face) teaching periods in terms of student preferences for the course Foundations of Accounting.

Hypothesis H3, that (student) groups can be identified in terms of student preferences for each knowledge delivery method in the Foundations of Accounting course.

Hypothesis H4 is partially accepted (further investigation is beyond the scope of this thesis), i.e. there is a clear positive but not strong relationship between students' activity in the online interface and their final grade.

Moving on to the analysis of the interviews with the teachers, while examining research question Q1, I identified the elements of knowledge mediation methodology that should be considered for online accessibility, taking into account not only the teachers' but also the students' preferences. These are video lectures, video or audio ppt assignment solutions, mid-year Moodle tests, compulsory homework and detailed example solutions in pdf format on Moodle.

In the summary of the Q3 research question, the advantages of synchronous online teaching are real-time presence (and, in this context, the possibility to ask questions immediately and establish personal contact), the disadvantages are the difficulty of maintaining attention and the tedious, long online presence. The advantages of asynchronous online learning include flexibility, repetitiveness, self-paced time management, which are important elements of self-regulated learning for the conscientious student who takes responsibility for their learning, while the disadvantages include passivity and inappropriate time management.

When examining research question Q4, I explored the characteristics of a modern curriculum in several dimensions and found that modernity does not mean technical improvement for its own sake, but rather it serves to optimise the student's learning experience and learning outcomes.

## **Conclusion**

In the development of the Foundations of Accounting subject, the impact of changes in the higher education ecosystem can be clearly traced: teaching methods, curriculum structure and student learning pathways have changed. A major challenge for future subject development will be how to integrate the benefits of online learning with the values of face-to-face learning in a sustainable way - balancing student expectations and quality assurance concerns and preparing for continuous change (e.g. artificial intelligence).

The research has demonstrated that the shock of digitalisation brought about by the COVID-19 pandemic has required not only technological but also content and pedagogical responses from educators. The process of curriculum development, in particular digital curriculum development, in the context of quality assurance, has emerged not only as a forced adaptation but also as a conscious and value-creating process.

Based on the student clusters and the TPACK model, it has emerged that different learning preferences can be effectively supported by different types of curricula. For example, video-based asynchronous forms of learning are well suited to technology-oriented learners, while synchronous attendance and interactive tasks tend to have a positive effect among those who prefer pedagogical knowledge.

Based on the analysis of the interviews with instructors, it can be concluded that the concept of modern curriculum is not only understood by instructors as a technological innovation, but also as a student-centred system supporting student activity and experience. The most important curriculum development experiences included the creation of video content, the adaptation of Moodle testing, the expansion of the questionbank and the increase of flexibility. A summary of instructor experiences and difficulties shows that individual instructor learning dispositions, including technical self-learning, were an important part of the success of the digital transition.

Under the quality assurance framework, the results can contribute to fine-tuning future subject development strategies. Based on the results of this thesis, it is recommended that:

- The curriculum structure should continue to support optionality.
- Modernisation should focus not only on content but also on the learning experience.
- The online format should not be seen as an add-on, but as an equivalent alternative in the subject toolbox.

The study was exploratory, based on empirical data and qualitative experiences, while the TPACK and quality assurance models were used as a theoretical framework. Its limitation is that it is limited to the teaching practice of a single subject, so generalisations can only be made with caution. However, the methods and approaches used can be adapted to other subjects with a similar structure.

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## List of own (and co-authored) publications related to the topic

### Professional journal articles

Tarpataki E., & Mikáczó É. I. (2022). Lépések az élményalapú oktatás irányába: A játékosítás határmezsgyéjén a számvitel alapjai tárgy oktatásában. *Vezetéstudomány / Budapest Management Review*, 53(12), Article 12. <https://doi.org/10.14267/VEZTUD.2022.12.04>

Tarpataki, E. (2021). Online oktatás a hallgatók szemszögéből. In *Fókuszban a változás, avagy nemzetközi trendek a pénzügyi és számviteli oktatásban és kutatásban*. Budapesti Corvinus Egyetem. [chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://unipub.lib.uni-corvinus.hu/7029/1/Foluszban\\_a\\_valtozas\\_2021\\_final.pdf](https://unipub.lib.uni-corvinus.hu/7029/1/Foluszban_a_valtozas_2021_final.pdf)

Filyó, Janka; Mikáczó, Éva; Tarpataki, Eleonóra; László, Norbert (2020) A kamarai oktatás digitalizálása SZÁMVITEL ADÓ KÖNYVVIZSGÁLAT: SZAKMA 62 : 9pp. 18-20., 3 p. (2020)

Tarpataki, Eleonóra (2019) Élmény alapú oktatási lehetőségek a számvitelben In: Kőszegi, Irén Rita (szerk.) III. Gazdálkodás és Menedzsment Tudományos Konferencia: Versenyképesség és innováció Kecskemét, Magyarország : Neumann János Egyetem Kertészeti és Vidékfejlesztési Kar(2019)1,175 p.pp. 466-471. 6 p.

### Conference presentations in Hungary

Tarpataki Eleonóra: Esettanulmányok szerepe és célja az egyetemi Számvitel alapjai oktatásában és hallgatói fogadtatása (egy kutatás első eredményei), Bosnyák János Emlékkonferencia Budapest, 2025

Tarpataki Eleonóra: Egyetemi számvitel oktatás változása a 2020-as évek elején, Magyar Tudomány Ünnepe Konferencia, Budapest, 2023

Tarpataki Eleonóra: Egyetemi számvitel oktatás változása a pandémia után, Bosnyák János Emlékkonferencia Budapest, 2023. február 17.

Eleonóra Tarpataki: Gamification & accounting, Embracing Change & Transformation Conference, Budapest, 2022

dr. Mikáczó Éva - Tarpataki Eleonóra – Filyó Janka – László Norbert: Hallgatók vélekedése a vírushelyzet alatti tanulásról. CUB Számviteli oktatási konferencia 2020

dr. Mikáczó Éva – Tarpataki Eleonóra (2019): Módszertani megújulás IV. Bosnyák János emlékkonferencia előadás

## Abbreviations

	English	Hungarian
USNY	University of the State of New York	kormányzati engedélyezési és akkreditációs szervezet
EHEA	European Higher Education Area	Európai Felsőoktatási Térség
ENQA	European Association for Quality Assurance in Higher Education	Európai Felsőoktatási Minőségbiztosítási Szövetség
ESG	Standards and Guidelines for Quality Assurance in the European Higher Education Area	az Európai Felsőoktatási Térségre vonatkozó szabványok és iránymutatások
EQAR	European Quality Assurance Register for Higher Education	Európai Felsőoktatási Minőségbiztosítási Nyilvántartás
ECTS	European Credit Transfer and Accumulation System	Európai Kreditátviteli és Kreditgyűjtési Rendszer
TQM	Total Quality Management	Teljeskörű minőségirányítás
MAB/HAC	Hungarian Accreditation Committee	Magyar Akkreditációs Bizottság
QAA	Quality Assurance Agency	Minőségbiztosítási Intézmény
ECTS	European Credit Transfer and Accumulation System	Európai Kreditátviteli és Kreditgyűjtési Rendszer
ESU	European Students' Union	Európai Hallgatói Szövetség

### Comparing HeDiCom, a DigCompEdu és a TPACK frameworks

Category / Aspect	HeDiCom	DigCompEdu	TPACK
<b>Target group and context</b>			
<b>Main target group</b>	Specifically higher education instructors	General educators (from kindergarten to adult education)	All education level
<b>Applicability in higher education</b>	Fully applicable, adapted to the higher education context	Partially applicable, but primarily optimized for general education levels	Can be applied as a theoretical model, though it was not specifically designed for higher education purposes
<b>Structure and dimensions</b>			
<b>Number of dimensions</b>	Four main dimensions (teaching, student preparation, teachers' digital literacy, professional development)	Six competence areas (e.g. learner engagement, digital assessment)	Combination of three core components (Technology, Pedagogy, Content)
<b>Structure</b>	Practice-oriented and competence-based	Divided into competences and proficiency levels	Theoretical model (meta-framework)
<b>Methodological orientation</b>	Based on the cyclical design of higher education teaching	Aligned with the general educational policy objectives of the European Union	Aims to support the understanding of the knowledge structures underlying technological integration
<b>Strengths for higher education instructors</b>			
	Specifically designed for higher education contexts (e.g., blended learning, online teaching, disciplinary focus).	Widely recognized, detailed framework structured across proficiency levels.	Flexible theoretical framework for the integration of knowledge domains.
	Places particular emphasis on preparing students for their future professional roles, not merely on general digital literacy.	Covers general teaching competences in a well-structured manner.	Particularly valuable in teacher education, where the integrated management of technology, pedagogy, and content is taught.
	Emphasizes teacher reflection, self-development, and research-based	Can serve as a reference point in higher education, though it is less discipline-specific.	Does not include a concrete list of competences or defined proficiency

	innovation.		levels.
	Practice-oriented: competences are described through concrete behavioural indicators (e.g. digital assessment, student data protection).	Lacks emphasis on higher education specific aspects (e.g. research, discipline-specific digital knowledge).	Not operational: does not prescribe what a teacher “should know,” but rather outlines what types of knowledge systems are required
<b>Weaknesses in higher education</b>	A relatively new framework with limited large-scale adaptation so far.	Less aligned with the complex challenges of higher education.	Theoretical in nature; does not provide a detailed or measurable list of competences.
<b>Summary</b>	<b>Provides practical support for higher education instructors.</b>	<b>Serves the developmental objectives and internal training initiatives of higher education institutions.</b>	<b>The TPACK framework offers a transparent theoretical foundation for understanding technological integration.</b>

*Source:* own editing based on descriptions of Horváth, Mishra és Koehler, Redecker and Punie, and Tundeor et al.

## APPENDICES

Appendix 1.

### Detailed description of the teaching methodologies used in the survey

Face-to-face lecture	A 90-minute lecture held in person (with students and teachers present) in a lecture hall on the university campus.
Video lecture	A lecture recorded in advance by a university staff member in a video room, then edited and published on the Moodle platform. Students could watch, rewind, slow down, and speed up the video as many times as they wanted. During offline semesters, we posted videos of the material covered so far one week before exams in English-language courses. During the online period, lectures were replaced, and students were asked to watch the relevant lecture before seminars. This method was available during the online period and the first three semesters of the offline period for Hungarian-language courses.
Lectures in ppt format (without audio)	The slides of the lectures are available to students in pdf format on the Moodle platform at the beginning of the relevant week (mainly to facilitate note-taking)
Ppt with voice-over (task solutions)	Detailed solutions to individual tasks in the example collection, supplemented with explanations, typically in the form of audio-narrated PowerPoint presentations recorded by the instructors. These can also be viewed, rewound, etc. at any time. In the Hungarian-language program, these were available during the online period to support student learning; the exercises to be solved in the seminar could also be followed in this way. In English-language courses, tasks are available in this way (both online and offline) that are not solved in class but help students master the material.
Step-by-step numerical calculations in PDF format	Detailed solutions to class and/or other example exercises without instructor explanations can be downloaded in PDF format from the Moodle interface.
Numerical solutions in PDF format (final results only)	The final results of the tasks solved in class and/or other example tasks can be downloaded in PDF format from the Moodle course.
Moodle test practice activities	In both Hungarian and English language courses, there are two tests per quarter, i.e. a total of four, which can be completed within the deadlines specified in Moodle. The tests are varied and contain Moodle-supported task types (multiple choice, true/false, fill-in-the-blank, etc.), which students must complete as homework within 15-20 minutes. Each test can be attempted three times, and the best result is included in the final grade.
Other practice exercises in the example book	The Foundations of Accounting activity book and workbook, as well as the examples and practice exercises in the Activity Kit
Weekly seminar with the instructor - in	A 90-minute seminar held in person (with students and instructor present) in a classroom on the university campus.

person	
Weekly Teams seminar with the instructor - online	A 90-minute seminar held synchronously online (with students and instructor present at the same time) on the university's Teams platform at the scheduled time.
Weekly Kahoot! championship	A Kahoot! quiz played live in classrooms during the scheduled lecture or seminar time or during offline periods. quiz played live in classrooms during the lecture or seminar schedule time (with students and instructor present at the same time) or offline, with questions compiled from the previous week's material. Typically used to review the course material, participation may be rewarded with extra points by instructors (up to 5% of the final grade).
Mandatory homework assignments	Typically, a minimum of two examples from four homework assignments per semester must be completed and uploaded to Moodle in order to complete the course (no points are awarded for this).
Optional homework assignments	There are some courses in Hungarian education where completing and uploading the optional homework assignments is optional. This does not affect the final grade.
Interactive video - for independent study	Animated videos created for more difficult course material, in which students must answer multiple-choice questions as the story progresses. If the answer is correct, the video continues. It can be viewed and completed at any time (designed to support learning, no points are awarded for it) and is made available to students on the Moodle platform along with the weekly material.
Sample (mock) exam/test in Moodle	In the English-language program, both the quarterly and semester exams are computer-based. Mock exams are available to students at least one week before the actual exam; their time frame, structure, and the style and type of examples are similar to those of the exam. Students can complete them as many times as they like; the correct answers are not shown, but they can infer the right and wrong answers from the points they receive. In the Hungarian-language program, a sample test is available to students before the four Moodle tests, which they can practice on as many times as they want.
Group work	In the Hungarian-language program, students are given one group work assignment, while in the English-language program they are given two. In both courses, students are provided with a 'real' company formation and start-up documents, from which they must prepare the bookkeeping and financial statements (report). The second case study in the English-language course is a Harvard simulation. Students work in groups of 3-4 and give presentations.

Students' survey summary between 2020/21 Spring and 2023/24 Spring													Appendix 2							
Courses in Hungarian	responses	total students	proportion	Video lectures	Activity solution with PowerPoints voiceover	Lecture PowerPoints (without voiceover)	PDF solutions completed steps shown	Other practice exercises in Activity Kit / Mock exam in Activity Kit	Moodle test assignments	Weekly seminars on Teams/in the classroom with the tutor.	The optional homework assignments.	Ppt with voiceover-mock exam	Group work	In-person lectures	Mock exams in Moodle.	Total				
																	1	1	1	1
2019/2020 II.	126	224	56%	1	1	1	1	1	1	1	1	0	0	0	0	0	9			
2020/2021 I.	319	1204	26%	1	1	1	1	1	1	1	1	0	0	0	0	0	9			
2020/2021 II.	128	252	51%	1	1	1	1	1	1	1	1	0	0	0	0	0	10			
2021/2022 I.	229	857	27%	1	1	1	1	1	1	1	0	1	0	0	0	0	9			
2021/2022 II.	32	647	5%	1	1	1	1	1	1	1	0	1	0	0	0	0	10			
2022/2023 I.	68	513	13%	1	0	1	1	1	1	1	0	1	1	1	1	1	11			
2022/2023 II.		652															0			
2023/2024 I.	51	290	18%	1	1	1	1	1	1	1	1	1	0	1	1	1	11			
	953	4639	21%	6	5	7	7	7	7	7	4	4	1	4	2	1	0			
Courses in English																				
Courses in English	responses	total students	proportion	Video lectures	Activity solution with PowerPoints voiceover	Lecture PowerPoints (without voiceover)	PDF solutions completed steps shown	Other practice exercises in Activity Kit / Mock exam in Activity Kit	Moodle test assignments	Weekly seminars on Teams/in the classroom with the tutor.	The compulsory homework assignments.	The optional homework assignments.	Group work (homework + presentation)	In-person lectures	Mock exams in Moodle.	PDF solutions with final results shown	The interactive video activities (self study material).	Total		
																			1	1
2020/2021 I.	85	189	45%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	9		
2020/2021 II.	81	212	38%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	10		
2021/2022 I.	32	118	27%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	11		
2021/2022 II.	58	223	26%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	12		
2022/2023 I.	28	151	19%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	13		
2022/2023 II.	52	223	23%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	13		
2023/2024 I.	26	132	20%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	13		
2023/2024 II.	43	257	17%	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14		
	405	1505	27%	8	7	8	8	7	8	8	8	8	0	0	0	7	4	5	8	1

**The average preference and standard deviation of individual teaching methodology tools in the Hungarian-language programs across the research semesters.**

Statistics 2020 tavasz																	
		In-person lectures	Video lectures	Lecture PowerPoints (without voiceover)	Activity solution PowerPoints with voiceover	PDF solutions with completed steps shown	PDF solutions with final results shown	Moodle test assignments	Other practice exercises in Activity Kit	Weekly seminars on Teams with the tutor.	Weekly seminars with the tutor (in the classroom).	Weekly KAHOOT! championship tests	The compulsory homework assignments.	Optional homework assignment	The interactive video activities (self study material).	Mock exams in Moodle.	Group works (I & II)
N	Valid	0	126	126	126	126	0	126	126	126	0	126	126	0	126	0	0
	Missing	126	0	0	0	0	126	0	0	0	126	0	0	126	126	126	126
Mean			4,74	3,15	4,29	3,71		4,15	3,68	3,24		3,21	4,13				
Std. Deviation			0,609	1,194	1,051	1,238		0,904	1,129	1,450		1,393	0,903				
Statistics 2020 őszi																	
N	Valid	0	319	319	319	319	0	319	319	319	0	319	319	0	319	0	0
	Missing	319	0	0	0	0	319	0	0	0	319	0	0	319	319	319	319
Mean			4,61	2,74	3,18	3,76		4,25	3,81	3,66		2,47	3,34				
Std. Deviation			0,777	1,319	1,594	1,287		1,035	1,237	1,405		1,373	1,243				
Statistics 2021 tavasz																	
N	Valid	0	128	128	128	128	0	128	128	128	0	128	128	0	128	0	0
	Missing	128	0	0	0	0	128	0	0	0	128	0	0	128	128	128	128
Mean			4,30	2,94	3,47	3,44		4,28	3,48	3,91		2,59	3,63				2,70
Std. Deviation			1,047	1,315	1,414	1,247		1,034	1,236	1,280		1,383	1,129				1,449
Statistics 2021 őszi																	
N	Valid	0	229	229	229	229	0	229	229	0	229	229	0	229	0	0	0
	Missing	229	0	0	0	0	229	0	0	229	0	0	229	0	229	229	229
Mean			4,37	3,07	2,50	4,02		3,94	4,08		3,96	2,34		2,05			
Std. Deviation			0,916	1,363	1,500	1,201		1,255	1,161		1,369	1,363		1,337			
Statistics 2022 tavasz																	
N	Valid	0	32	32	32	32	0	32	32	0	32	32	0	32	0	0	0
	Missing	32	0	0	0	0	32	0	0	32	0	0	32	0	32	32	32
Mean			4,13	2,81	3,03	3,97		3,59	3,72		4,38	2,09		2,28			3,69
Std. Deviation			1,129	1,176	1,576	1,204		1,316	1,114		1,100	1,254		1,350			1,203
Statistics 2022 őszi																	
N	Valid	68	0	68	68	68	0	68	68	0	68	68	0	68	0	0	0
	Missing	0	68	0	0	0	68	0	0	68	0	0	68	0	68	68	68
Mean		3,26		3,24	3,93	4,13		3,54	4,13		4,53	2,71		2,31			3,09
Std. Deviation		1,378		1,211	1,353	1,105		1,309	1,064		0,762	1,383		1,319			1,379
Statistics 2023 őszi																	
N	Valid	51	0	51	0	51	0	51	51	0	51	51	51	51	0	51	51
	Missing	0	51	0	51	0	51	0	0	51	0	0	0	0	51	0	0
Mean		3,73		3,47		4,45		3,55	4,41		4,63	3,08	3,76	2,22		4,14	3,45
Std. Deviation		1,218		1,206		0,986		1,154	0,876		0,824	1,398	1,436	1,460		1,059	1,286

**The average preference and standard deviation of individual teaching methodology tools in the English-language programs across the research semesters.**

Angol nyelvű képzés statistics 2020 őszi																	
		In-person lectures	Video lectures	Lecture PowerPoints (without voiceover)	Activity solution PowerPoints with voiceover	PDF solutions with completed steps shown	PDF solutions with final results shown	Moodle test assignments	Other practice exercises in Activity Kit	Weekly seminars on Teams with the tutor.	Weekly seminars with the tutor (in the classroom).	Weekly KAHOOT! hip tests	The compulsory homework assignments.	Optional homework assignment	The interactive video activities (self study material).	Mock exams in Moodle.	Group works (I & II)
N	Valid	0	85	85	0	85	85	85	85	85	0	85	85	0	85	85	85
	Missing	85	0	0	85	0	0	0	0	0	85	0	0	85	85	85	85
Mean			4,62	3,24		4,42	2,82	3,42	3,44	4,11		3,34	3,69				
Std. Deviation			0,597	1,333		0,956	1,187	1,238	1,286	1,069		1,359	1,134				
Statistics 2021 tavasz																	
N	Valid	0	81	81	81	81	81	81	0	81	0	81	81	0	81	81	81
	Missing	81	0	0	0	0	0	0	81	0	81	0	0	81	81	81	0
Mean			4,68	3,80	4,01	4,46	3,77	3,75		4,14		3,99	3,99				4,09
Std. Deviation			0,704	1,005	1,178	0,690	1,175	1,199		1,104		1,124	0,844				0,951
Statistics 2021 őszi																	
N	Valid	0	32	32	32	32	32	32	0	32	32	32	32	0	32	32	32
	Missing	32	0	0	0	0	0	0	32	32	0	0	0	32	32	32	0
Mean			4,41	3,94	4,44	4,38	3,69	3,66		4,19	4,38	3,78					3,88
Std. Deviation			1,012	1,243	0,801	1,008	1,424	1,494		0,998	1,040	1,289					1,264
Statistics 2022 tavasz																	
N	Valid	0	58	58	58	58	58	58	0	58	58	58	58	0	58	58	58
	Missing	58	0	0	0	0	0	0	58	0	0	0	0	58	58	58	0
Mean			4,52	3,55	4,50	4,60	3,43	4,12	3,86		4,17	4,31	3,93			4,81	3,72
Std. Deviation			0,843	1,157	0,960	0,748	1,141	0,993	1,146		1,201	1,012	0,896			0,476	1,240
Statistics 2022 őszi																	
N	Valid	28	28	28	28	28	28	28	28	0	28	28	28	0	28	28	28
	Missing	0	0	0	0	0	0	0	0	28	0	0	0	28	28	0	0
Mean		2,71	4,11	3,11	4,04	4,71	3,46	4,25	4,14		4,50	3,75	4,21			4,96	3,68
Std. Deviation		1,384	1,370	1,286	1,427	0,535	1,170	0,752	1,208		0,962	1,323	0,787			0,189	1,219
Statistics 2023 tavasz																	
N	Valid	52	52	52	52	52	52	52	52	0	52	52	52	0	52	52	52
	Missing	0	0	0	0	0	0	0	0	52	0	0	0	52	52	0	0
Mean		3,42	4,19	3,65	4,44	4,73	3,92	4,40	4,15		4,50	4,37	4,10			4,96	3,98
Std. Deviation		1,273	1,121	1,136	1,037	0,598	1,045	0,913	1,036		0,980	0,950	0,934			0,194	1,038
Statistics 2023 őszi																	
N	Valid	26	26	26	26	26	26	26	26	0	26	26	26	0	26	26	26
	Missing	0	0	0	0	0	0	0	0	26	0	0	0	26	26	0	0
Mean		3,88	3,42	3,42	3,96	4,58	3,62	3,96	3,96		4,38	3,85	4,08			4,62	3,85
Std. Deviation		1,243	1,102	1,362	1,076	0,643	1,267	1,183	1,183		1,023	1,287	1,164			1,098	1,287
Statistics 2024 tavasz																	
N	Valid	43	43	43	43	43	43	43	43	0	43	43	43	0	43	43	43
	Missing	0	0	0	0	0	0	0	0	43	0	0	0	43	0	0	0
Mean		3,42	3,93	3,63	4,40	4,63	3,60	3,84	3,77		4,49	4,21	3,95		3,65	4,63	3,84
Std. Deviation		1,200	1,100	1,047	0,660	0,787	1,237	1,233	1,269		0,827	1,166	1,112		1,307	0,691	1,045

**Distribution of student preference responses in Hungarian and English programmes across online and offline teaching periods (Spring 2020 – Spring 2024).**

Foundations of Accounting in Hungarian	HU - Online				HU - Offline				(online - offline)
	N		Mean	Std. Deviation	N		Mean	Std. Deviation	
	Valid	Missing			Valid	Missing			
In-person lectures	0	573			119	261	3,46	1,326	
Video lectures	573	0	4,57	0,826	261	119	4,34	0,945	0,23
Lecture PowerPoints (without voiceover)	573	0	2,87	1,300	380	0	3,13	1,308	-0,26
Activity solution PowerPoints with voiceover	573	0	3,49	1,514	329	51	2,85	1,582	0,64
PDF solutions with completed steps shown	573	0	3,68	1,272	380	0	4,09	1,163	-0,42
PDF solutions with final results shown	0	573			0	380			
Moodle test assignments	573	0	4,24	1,007	380	0	3,79	1,266	0,45
Other practice exercises in Activity Kit	573	0	3,71	1,219	380	0	4,11	1,113	-0,39
Weekly seminars on Teams with the tutor	573	0	3,62	1,405	0	380			
Weekly seminars with the tutor (in the classroom)	0	573			380	0	4,18	1,225	
Weekly KAHOOT! championship tests	573	0	2,66	1,409	380	0	2,48	1,387	0,17
The compulsory homework assignments.	573	0	3,58	1,191	51	329	3,76	1,436	-0,19
Optional homework assignment	0	573			380	0	2,14	1,351	
The interactive video activities (self study material).	0	573			0	380			
Mock exams in Moodle.	0	573			51	329	4,14	1,059	
Group works (I & II)	128	445	2,70	1,449	151	229	3,34	1,326	-0,63

Foundations of Accounting in English	Online				Offline				mean diff (online - offline)
	N		Mean	Std. Deviation	N		Mean	Std. Deviation	
	Valid	Missing			Valid	Missing			
In-person lectures	0	166			149	90	3,37	1,307	
Video lectures	166	0	4,65	0,650	239	0	4,16	1,111	0,49
Lecture PowerPoints (without voiceover)	166	0	3,51	1,215	239	0	3,57	1,193	-0,06
Activity solution PowerPoints with voiceover	81	85	4,01	1,178	239	0	4,35	1,000	-0,33
PDF solutions with completed steps shown	166	0	4,44	0,834	239	0	4,62	0,735	-0,18
PDF solutions with final results shown	166	0	3,28	1,269	239	0	3,63	1,198	-0,34
Moodle test assignments	166	0	3,58	1,227	239	0	4,07	1,117	-0,48
Other practice exercises in Activity Kit	85	81	3,44	1,286	207	32	3,97	1,159	-0,53
Weekly seminars on Teams with the tutor	166	0	4,12	1,083	0	239			
Weekly seminars with the tutor (in the classroom)	0	166			239	0	4,36	1,019	
Weekly KAHOOT! championship tests	166	0	3,66	1,287	239	0	4,20	1,115	-0,54
The compulsory homework assignments.	166	0	3,84	1,011	239	0	4,00	1,021	-0,16
The interactive video activities (self study material).	0	166			43	196	3,65	1,307	
Mock exams in Moodle.	0	166			207	32	4,81	0,584	
Group works (I & II)	81	85	4,09	0,951	239	0	3,83	1,163	0,26

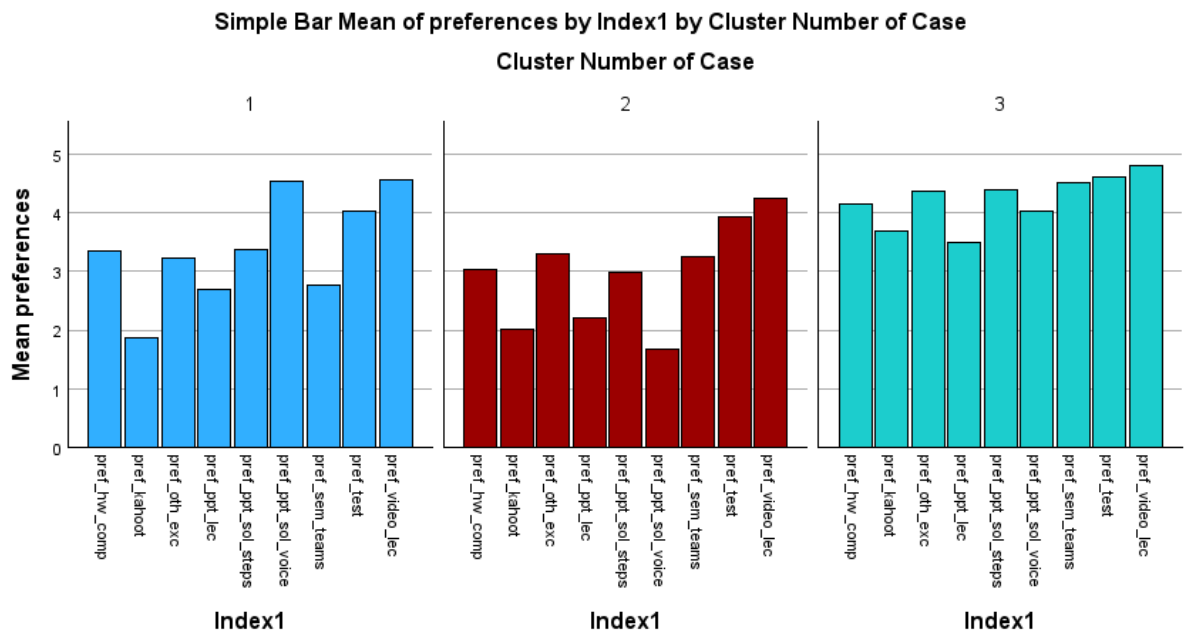
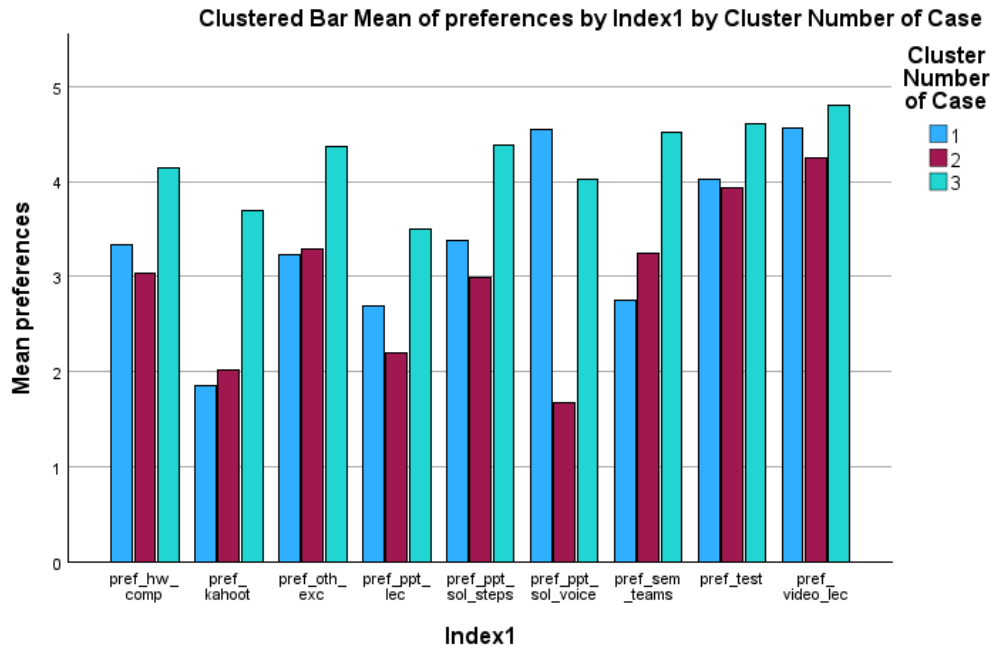
**Semesters included in cluster analysis and teaching methodology tools**  
**Foundations of Accounting – Hungarian programs**

<b>online</b>		<b>offline</b>	
<i>semester</i>	<i>educational tools</i>	<i>semester</i>	<i>educational tools</i>
2019/2020 Spring semester	Video lectures	2021/2022 Fall semester	Video lectures
2020/2021 Fall semester	Lecture PowerPoints (without voiceover)	2021/2022 Spring semester	Lecture PowerPoints (without voiceover)
2020/2021 Spring semester	Activity solution PowerPoints with voiceover		Activity solution PowerPoints with voiceover
	PDF solutions with completed steps shown		PDF solutions with completed steps shown
	Moodle test assignments		Moodle test assignments
	Other practice exercises in Activity Kit		Other practice exercises in Activity Kit
	Weekly seminars on Teams with the tutor		Weekly seminars with the tutor (in the classroom)
	Weekly KAHOOT! championship tests		Weekly KAHOOT! championship tests
	The compulsory homework assignments		Optional homework assignment

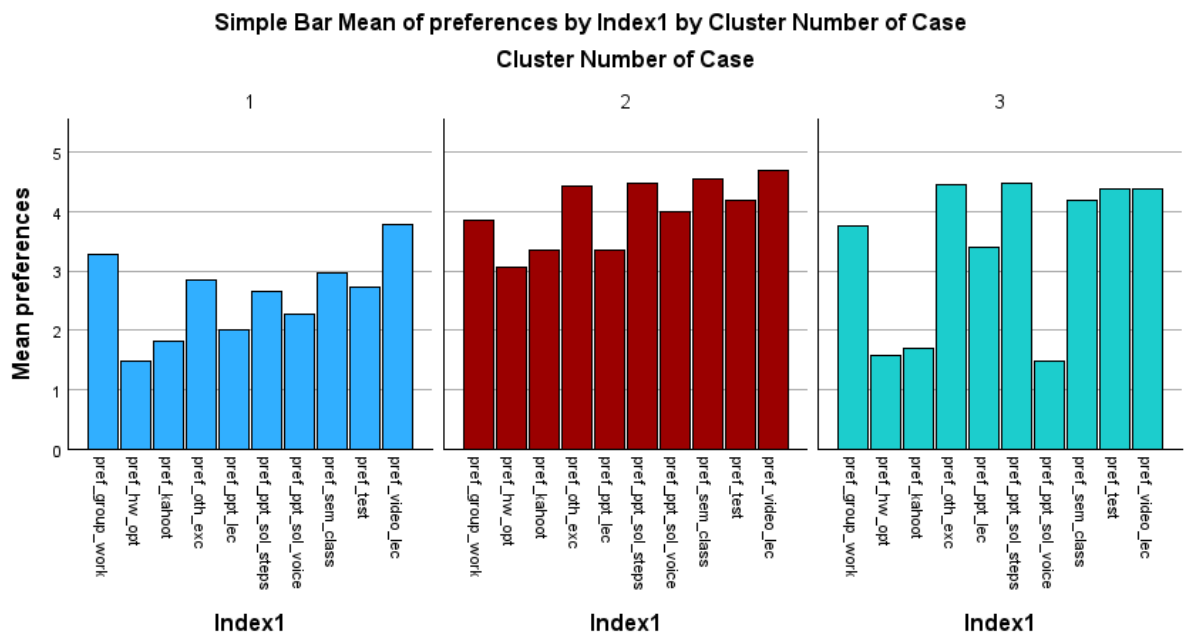
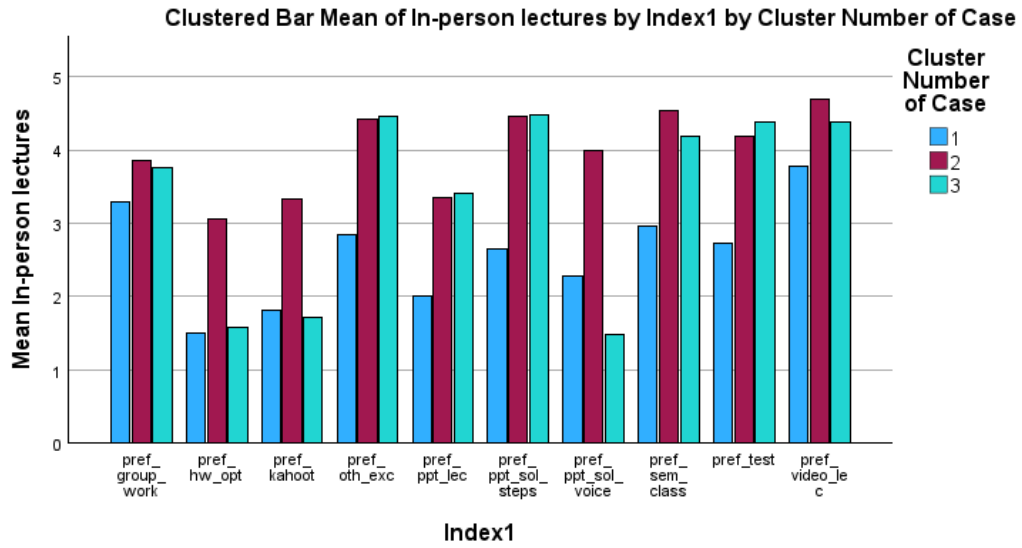
**Elements/Foundations of Accounting, Understanding Financial Statements – English  
programmes**

<b>online</b>		<b>offline</b>	
<i>semester</i>	<i>educational tools</i>	<i>semester</i>	<i>educational tools</i>
2020/2021 Spring semester	Video lectures	2022/2023 Fall semester	Video lectures
	Lecture PowerPoints (without voiceover)	2022/2023 Spring semester	Lecture PowerPoints (without voiceover)
	Activity solution PowerPoints with voiceover	2023/2024 Fall semester	Activity solution PowerPoints with voiceover
	PDF solutions with completed steps shown	2023/2024 Spring semester	PDF solutions with completed steps shown
	PDF solutions with final results shown		PDF solutions with final results shown
	Moodle test assignments		Moodle test assignments
	Other practice exercises in Activity Kit		Other practice exercises in Activity Kit
	Weekly seminars on Teams with the tutor		Weekly seminars with the tutor (in the classroom)
	Weekly KAHOOT! championship tests		Weekly KAHOOT! championship tests
	The compulsory homework assignments		The compulsory homework assignments
			Mock exam in Moodle
			Group works
			In-person lectures

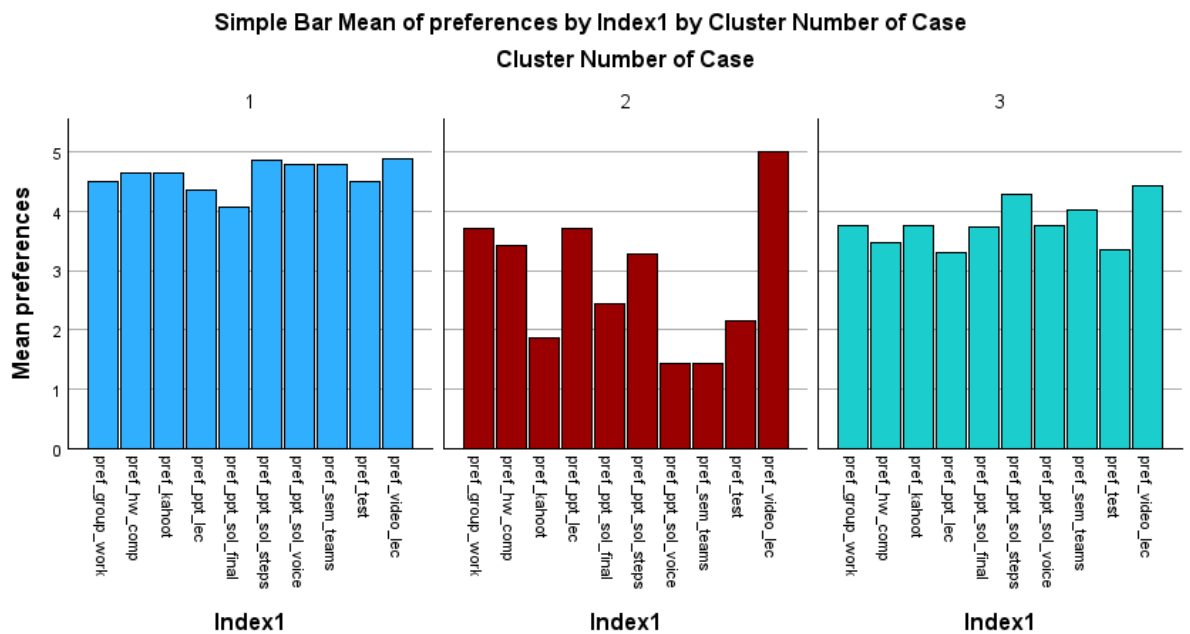
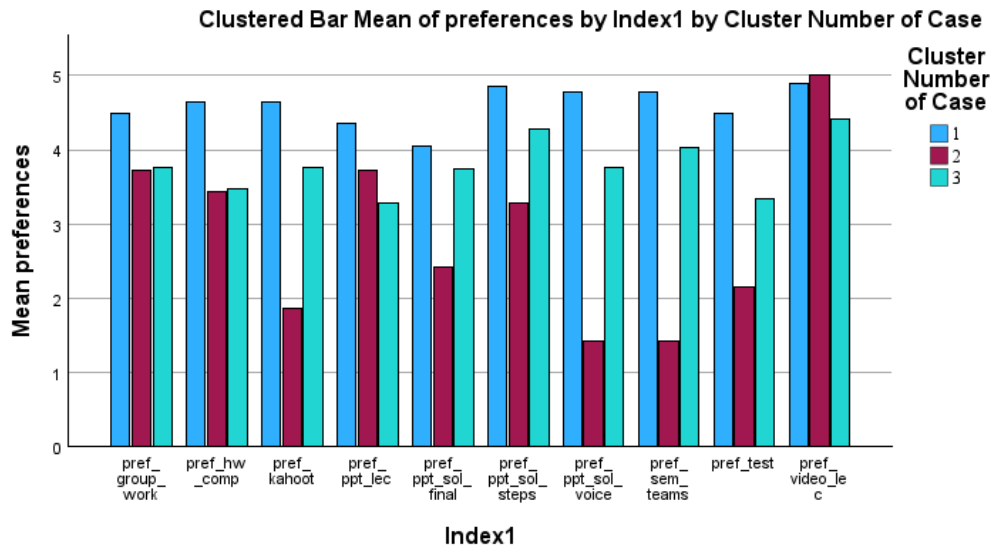
**Cluster analysis of Hungarian-language online (1-3) semesters using two different approaches**



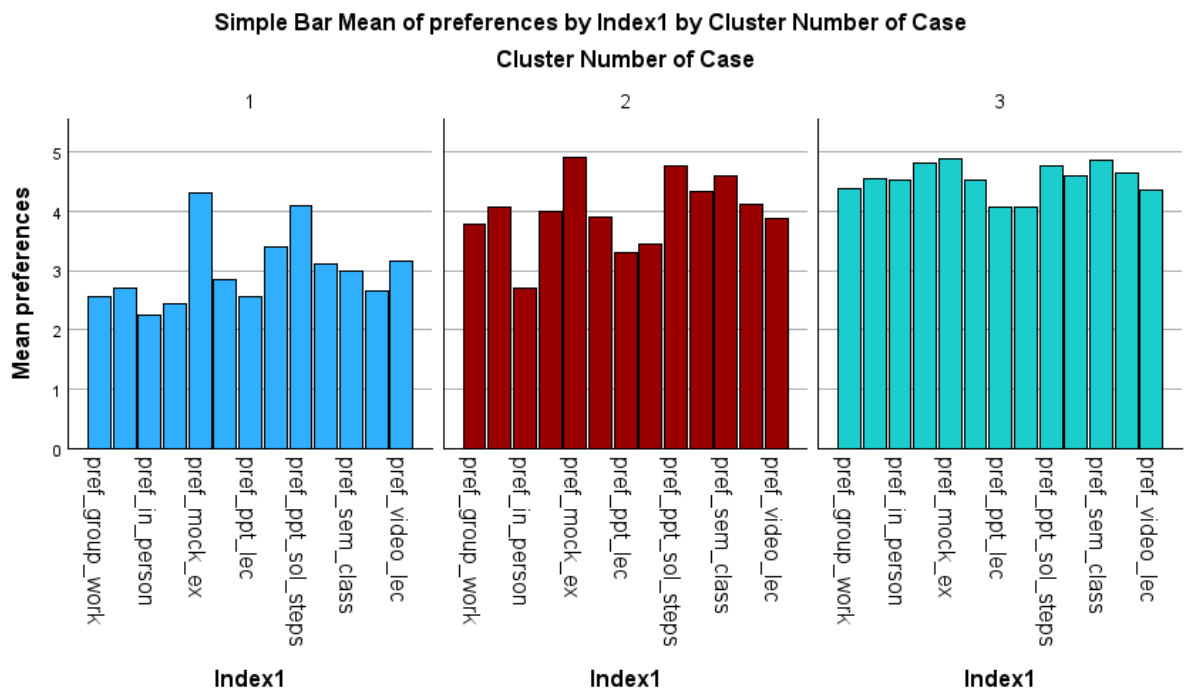
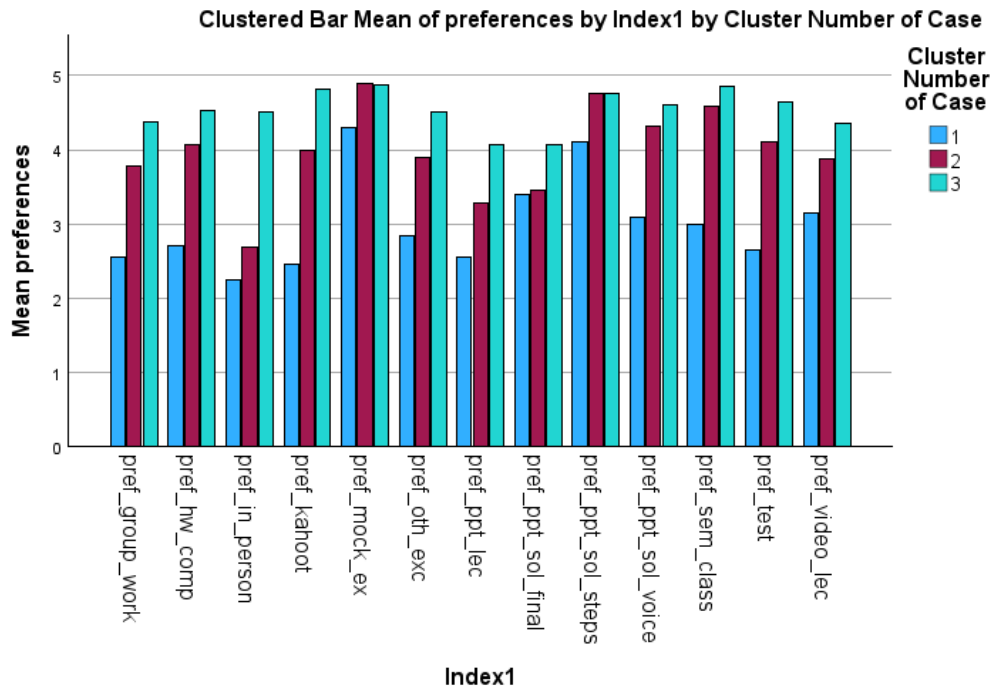
**Cluster analysis of Hungarian-language offline (4-5) semesters using two different approaches**



**Cluster analysis for the English-language online (3rd) semester using two different approaches**



**Cluster analysis for the English-language offline (6-9) semester using two different approaches**



**Detailed characteristics of student clusters based on TPACK dimensions**

<b>Program</b>	<b>Cluster</b>	<b>Short name</b>	<b>Characteristics of students in this cluster</b>	<b>Dominant TPACK dimension</b>	<b>Short explanation</b>	<b>Detailed description</b>
HU – online	1	Video-focused	Students who prefer asynchronous, video-based learning materials	TK	Video-based learning using technological tools	They primarily preferred video-based teaching materials with explanations, but did not require highly interactive or playful elements. They are advocates of asynchronous, structured learning.
	2	passive online survivors	Students showing low commitment to learning	Low level TK/PK	Low engagement, unstructured learning	They were less involved in digital learning and did not actively engage with the course, content, or interaction. They showed limited commitment.
	3	Digitally active	Active learners who widely use digital tools	TK + PK	Interactive, digital pedagogical support	They have taken full advantage of digital learning opportunities, especially structured and instructor-supported materials supplemented with explanations. They are characterized by a high degree of digital learning skills and independence.
HU – offline	1	passive offline survivors	Students who stick to traditional forms of learning and have low digital openness	CK	Low digital openness, content focus	This group was not particularly open to either digital or interactive methods. They probably believe more in traditional lecture-based learning, but even there, they are not very active.
	2	Interactive (full range)	Highly committed students who use digital and in-person elements in an integrated way	TK + PK + CK = TPACK	Highly integrated, multimodal learning	They are open to a wide range of learning support and are active participants in both face-to-face and digital elements. They are adaptive, motivated, and competent learners.

	3	Builders on stable support	Students with digitally supported, balanced learning preferences	TK + PK	Learning that combines digital and content resources	Students with stable learning habits responded well to supportive digital materials, but did not seek out highly interactive tools. Effective, but rather conventional learners.
EN – online	1	Fully active	Highly digital, performance-oriented students	TK + PK + CK = TPACK	Fully active students	They are very open to all kinds of learning resources, especially technology-supported and interactive elements. They are truly ‘digitally engaged’, active learners who appreciate a diverse, learner-centered approach.
	2	Restrained	Students who prefer asynchronous learning and are open to digital support	TK + PK	Build on digital tools, with pedagogical support	They were less committed or followed a more passive learning style. Supported but not overly interactive content (videos, homework assignments) is still acceptable to them.
	3	Balanced selectors	Moderately interactive learners who require a structured learning environment	PK + CK	Teacher-directed and content-based learning	Balanced learning preferences – they consciously chose between learning tools and primarily value those that guide them step by step and offer interaction. They do not prefer less structured learning materials.
EN – offline	1	Silent followers	Students with low engagement with digital and face-to-face resources	CK	Traditional, content-focused learning	They are cautious about both physical and digital elements, and base their learning primarily on recorded material that can be processed independently.
	2	Balanced	Balanced students requiring structured classroom teaching	PK + CK	Structured classroom learning with teacher support	They value structured classroom teaching, a moderately digital environment, and synchronous support—balanced students who thrive on teacher presence.

	3	Digitally supported active	Active learners with multimodal learning preferences	TK + PK + CK = TPACK	Complex, technology-supported active learning	They are confident in the classroom environment, but also find digital support extremely useful. Interactive, active, reflective learning style.
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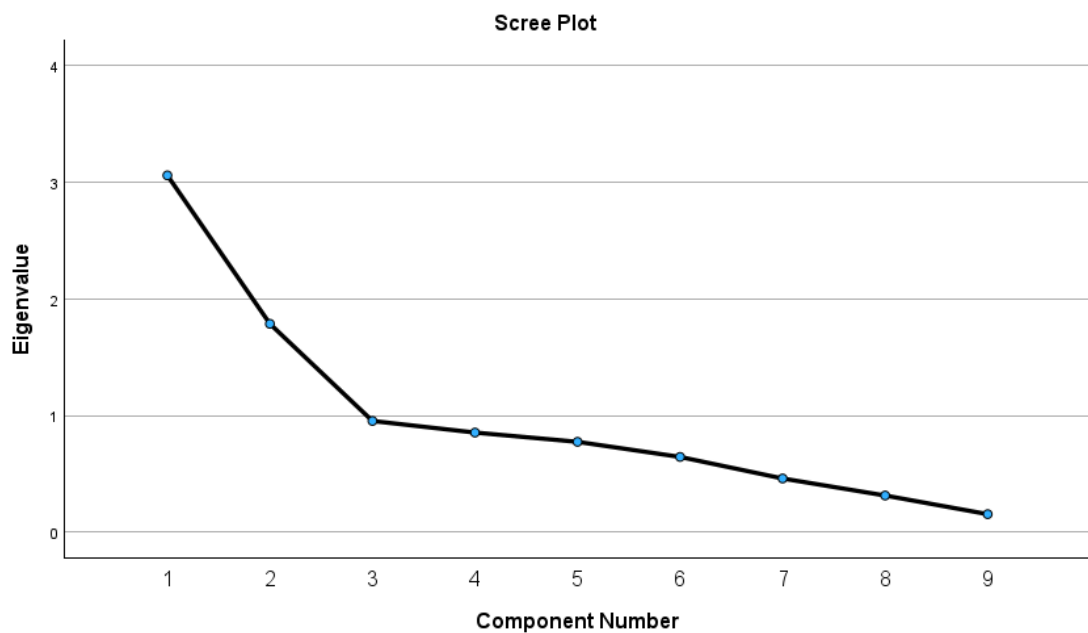
*Source: own editing based on the responses in the survey*

**Correlation between student activity and final grades – Results of the factor analysis performed as a first step using SPSS**

**Total Variance Explained**

Component	Total	Initial Eigenvalues		Rotation Sums of Squared Loadings		
		% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,059	33,991	33,991	2,450	27,219	27,219
2	1,786	19,848	53,840	2,396	26,621	53,840
3	,953	10,593	64,433			
4	,854	9,487	73,919			
5	,774	8,604	82,524			
6	,645	7,165	89,689			
7	,460	5,112	94,800			
8	,314	3,489	98,289			
9	,154	1,711	100,000			

Extraction Method: Principal Component Analysis.



**Component Matrix<sup>a</sup>**

a. 2 components extracted.

**Correlation between student activity and final grades – examining the impact of factors on final grades**

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,607	,036		100,306	<,001
	REGR factor score 1 for analysis 1	,546	,036	,410	15,170	<,001
	REGR factor score 2 for analysis 1	,215	,036	,162	5,989	<,001

a. Dependent Variable: grade

**The interview questions were as follows:**

Topic 1 – basic data – Goal: to map out the interviewee's experiences in education. Furthermore, to determine how “important” the subject of Foundations of Accounting is to the instructor, by which I mean how significant this subject is in terms of the number of hours taught. For now, I feel that this is necessary to provide an introduction to the interview and to put the conversation into context, but the data obtained may also be used later to explore other connections (E.g., is there a difference in the opinions formed about the development of online methodologies between colleagues who have been working in the field for a long time and those who have been working for a shorter time? Is there a significant difference in the experiences of colleagues who have led only 1-2 seminars or more? Is there a difference between the opinions of colleagues who have taught in all three semesters and those who have taught in only one or two semesters? Is there a significant difference in opinion between the experiences gained in the spring semester of 2019/20, when online teaching started suddenly and without any precedent, and the attitudes of teachers in subsequent semesters? etc.)

- How many years have you been teaching Foundations of Accounting at CUB? How many years have you been teaching in total during your career?
- Full-time? Part-time? As a doctoral student? Did you participate in teaching accounting fundamentals as an external lecturer?
- In English or Hungarian?
- In which semester (spring semester of the 2019/20 academic year, fall and spring semesters of the 2020/21 academic year) did you teach?
- How many seminar groups did you have in these semesters? (English-Hungarian?)
- How does this compare to the other subjects you taught (based on the number of hours)?
- What was your most memorable moment while teaching this subject in the last 3 semesters?

Topic 2 – online teaching material development – Goal: Obtain information on how online teaching material development differs from the development of teaching materials for classroom instruction. Did teachers use this opportunity to develop more modern teaching materials that are better suited to the needs of students? What does modern teaching material mean to you?

- If you could walk into a store where you could buy ANYTHING, what would you buy to make accounting an enjoyable experience for your students?
- Have you participated in offline course development? In what way?
- Have you participated in online course development, and if so, what type?
- Which did you like better? Why?
- And if you ignore the stress factor of time, what would your answer be?

- Which did you find more effective in terms of student learning? Why?
- How did you decide exactly what kind of curriculum development to do? Both offline (if applicable) and online (if applicable)
- What was the goal of each development?
- Can you give an example of what goal you wanted to achieve with each curriculum development?
- What differences have you noticed between developing online and offline teaching materials?
  - o Most significant difference?
  - o In terms of time?
  - o In terms of mindset?
  - o In terms of technical preparedness?
  - o Is one characterized by teamwork and the other by independent work?
  - o Can a distinction be made between the teaching competencies required for the two types of development?
- What do you think constitutes modern teaching materials today? Why?
- What do you think are the most important differences between modern and non-modern teaching materials?
- How modern do you feel the teaching materials developed for online education are during the pandemic? Why?
- Do you see any differences between subjects taught in English and those taught in Hungarian? What are they?

Topic 3 – online teaching – Goal: to learn about the colleagues' experiences with online education. Within this, their perceptions of synchronous and asynchronous teaching methods are examined. Can they identify parts of the curriculum or areas of learning/teaching that are more appropriate (easier from the teacher's point of view or more effective from the student's point of view) to teach synchronously or asynchronously, and why?

- What is the ideal lesson for you in synchronous teaching? What is your role? What is the role of the students? What is the script? Where does it take place? Who does what? How do you feel?
- And what is it like in the offline world? –'
- What changes did you make to the curriculum after your first experiences?
- What changes in student reactions did you notice in relation to the modified teaching materials?
- If, from next semester, the subject could only be taught online for at least five years, what further developments do you think would be worth implementing and why?
- Would you change the method or order of teaching the curriculum in this online world?
- Can you identify parts of the curriculum or areas of learning/teaching that would be more practical (easier for the instructor or more effective for the student) to teach/cover synchronously or asynchronously, and why?

- We are still in the online world: can you identify any factors in education that suggest that, in such cases, curriculum developers should consider synchronous or asynchronous teaching methods? Why?
- Do you see any differences between subjects taught in English and those taught in Hungarian? What are they?
- Please tell me what your best experience was while teaching the basics of accounting! Why?
- And what was your worst? Why?

Topic 4 – online teaching materials to be kept for classroom teaching – Goal: to learn about the direct perceptions of teachers regarding which methodological elements they believe are worth preserving in face-to-face teaching and why.

- If we return to face-to-face teaching completely from the next semester, which elements of the curriculum would you recommend retaining and why?
- In your opinion, what would be a healthy balance between face-to-face teaching, synchronous online teaching, and asynchronous online teaching in the teaching of this subject?
- How do you think the same desired training outcomes can be achieved through online teaching as through face-to-face teaching?
- Based on your experience with online teaching, what further curriculum developments would you recommend and why?

Topic 5 – end of interview – Goal: thank the interviewee for their time and attention, and find out if there is any information/experience/results related to the topic of the interview that they would like to share in order to make the research more comprehensive

- Do you have any other experiences, information, or observations you would like to share regarding the topic of this research?
- Thank you very much for your time and attention!

Characteristics of interviewees					Appendix 9		
	Gender	No. of years of teaching	Position	Part-time or full-time?	No. of semesters teaching Foundations of Accounting	Number of Foundations of Accounting groups 2019-20/2 - 2020-21/2 (three semesters)	The proportion of Foundations of Accounting among all subjects taught
Instructor 1	Man	13	Assistant Lecturer	Part time	2	4	60%
Instructor 2	Woman	17	Assistant Professor	Part time	34	5	100%
Instructor 3	Woman	34	Assistant Lecturer	Full time	68	5	75%
Instructor 4	Woman	29	Associate Professor	Full time	40	4	25%
Instructor 5	Man	37	Assistant Lecturer	Part time	16	5	50%
Instructor 6	Man	21	Associate Professor	Full time	42	3	50%
Instructor 7	Man	39	Assistant Professor	Full time	78	4	50%
Instructor 8	Man	3	PhD Student	Part time	6	2	50%
Instructor 9	Man	5	PhD Student	Part time	1	2	100%
Instructor 10	Woman	23	Assistant Professor	Full time	46	5	33%
Instructor 11	Man	5	Senior Lecturer I.	Part time	10	6	40%
Instructor 12	Woman	34	Assistant Professor	Full time	68	9	30%
Instructor 13	Woman	1,5	Senior Lecturer I.	Part time	3	6	75%
Instructor 14	Woman	29	Assistant Professor	Full time	58	3	20%
Instructor 15	Man	1	PhD Student	Part time	1	3	100%
Instructor 16	Man	39	Associate Professor	Full time	22	5	33%
Instructor 17	Man	38	Full Professor	Full time	76	3	10%
Instructor 18	Man	33	Assistant Lecturer	Full time	66	5	30%
Instructor 19	Man	4	Senior Lecturer II.	Full time	8	4	40%
Instructor 20	Man	17	Associate Professor	Full time	12	3	16%