

**Eszterházy Károly Catholic University**

**Doctoral School of Education**



**Beck-Zaja Mónika**

Doctoral (PhD) thesis

**Developing financial literacy in secondary education through digital pedagogy:  
a comparative analysis of the effectiveness of different instructional modes**

Supervisors:

**Prof. Dr. Szűts Zoltán, Dr. habil. Balázs László**

Head of the Doctoral School of Education:

**Prof. Dr. Szűts Zoltán**

Programme Director of the Doctoral School of Education:

**Dr. Szőke-Milinte Enikő**

Eger, 2026.

## Table of contents

|                                                                                       |    |
|---------------------------------------------------------------------------------------|----|
| 1. Introduction .....                                                                 | 3  |
| 2. Research aims and objectives.....                                                  | 4  |
| 3. Theoretical framework and research context .....                                   | 5  |
| 3.1. The conceptual framework of financial culture and financial literacy .....       | 5  |
| 3.2. Theoretical foundations of digital pedagogy and instructional modes .....        | 6  |
| 3.3. Pedagogical interpretation of instructional modes and research gaps .....        | 6  |
| 4. Research questions and hypotheses.....                                             | 7  |
| 5. Research methodology .....                                                         | 8  |
| 6. Research results .....                                                             | 10 |
| 6.1. Comparative analysis of the effectiveness of different instructional modes ..... | 10 |
| 6.2. Short- and long-term changes in financial knowledge and financial attitudes..... | 11 |
| 6.3. Differentiating and catch-up effects of the financial education programme .....  | 12 |
| 6.4. Changes in financial attitudes.....                                              | 13 |
| 6.5. Students' financial attitude profiles and pedagogical implications.....          | 14 |
| 6.6. Interpretation of the qualitative findings .....                                 | 15 |
| 6.7. Integrated interpretation of quantitative and qualitative findings .....         | 16 |
| 6.8. Evaluation of the hypotheses .....                                               | 16 |
| 6.9. Limitations of the research .....                                                | 18 |
| 7. Scientific contributions .....                                                     | 19 |
| 8. Conclusions, practical applicability and recommendations .....                     | 20 |
| 8.1. Conclusions .....                                                                | 20 |
| 8.2. Practical implications .....                                                     | 21 |
| 8.3. Further research directions .....                                                | 21 |
| 9. Summary .....                                                                      | 22 |
| 10. Bibliography.....                                                                 | 24 |
| 11. List of publications.....                                                         | 27 |

## 1. Introduction

The 2008 global financial crisis highlighted that financial decisions not only affect individuals' quality of life and economic security, but also have social and economic consequences. As a result, the development of financial literacy has become a priority area in economic policy, education policy and the field of educational science. The aim of financial education is to develop the knowledge, skills and attitudes that form the basis for responsible and informed financial decision-making.

In recent years, digitalisation has fundamentally transformed the financial landscape. The spread of electronic financial services, mobile payments and applications based on artificial intelligence presents young people with new challenges; consequently, the development of financial literacy is becoming increasingly closely linked to digital competence. At the same time, digital pedagogy offers methodological approaches that support the acquisition and practical application of financial knowledge.

Both Hungarian and international literature extensively addresses financial literacy, financial socialisation and financial attitudes. However, there are few known empirical studies that compare the impact of face-to-face, online and hybrid instruction on the development of students' financial knowledge in a secondary education setting, particularly within a longitudinal research design. This research gap formed the basis for the present study.

This dissertation examines the impact of face-to-face, online and hybrid instruction on the development of secondary school students' financial literacy, as well as the short- and long-term changes brought about by financial education as a pedagogical intervention. The research was conducted using a quasi-experimental, longitudinal research design, employing a combination of quantitative and qualitative methods.

***Terminological note.*** Throughout this thesis booklet, three instructional modes are distinguished: face-to-face instruction, online instruction, and hybrid instruction. In the context of this study, face-to-face instruction refers to teacher-directed classroom teaching conducted without the use of ICT tools. Online instruction refers to teaching delivered exclusively through a digital learning environment, whereas hybrid instruction refers to an instructional mode that deliberately combines face-to-face instruction with online instruction. All three instructional modes were implemented within the same school setting, using the same curriculum, delivered by the same teacher, and involving the same sample of students. These terms are used

consistently throughout this thesis booklet in accordance with the definitions adopted for the purposes of this study.

## **2. Research aims and objectives**

Economic and financial education has become one of the key areas for development in education policy in recent years. According to the objectives of the National Core Curriculum, school education must develop the knowledge, skills and attitudes that lay the foundations for informed financial decision-making and responsible economic behaviour. The instructional modes and learning organisation strategies employed play a decisive role in achieving these objectives.

Both Hungarian and international literature primarily addresses financial literacy, financial socialisation and financial attitudes. In contrast, there are only a limited number of empirical findings that compare the roles of face-to-face, online and hybrid instruction in developing students' financial literacy. There are also few known longitudinal studies that track the short- and long-term effects of a financial education programme.

The aim of this dissertation is to investigate the extent to which face-to-face, online and hybrid instruction contributes to the development of secondary school students' financial literacy, and to examine the short- and long-term changes in financial knowledge and financial attitudes resulting from a financial education programme. A key methodological feature of the study is that all participants covered the same curriculum across all three instructional modes, thereby allowing for a comparison of the different instructional modes using the same sample of students.

The research was conducted using a quasi-experimental, longitudinal design, combining quantitative and qualitative methods. Interim assessments were used to compare the different instructional modes, whilst the pre-test, post-test and follow-up enabled an evaluation of the short- and long-term effects of the financial education programme.

The findings provide a basis for the methodological development of economic and financial education, as well as for the more informed application of digital pedagogical solutions. The conclusions drawn can be utilised in curriculum improvement, teacher training and the planning of secondary school economic and financial education programmes.

### **3. Theoretical framework and research context**

#### **3.1. The conceptual framework of financial culture and financial literacy**

Over the past two decades, financial culture and financial literacy have become key areas of research in both Hungarian and international academic literature. Although there is no single, uniform interpretation of these terms, various authors agree that financial literacy is the sum of financial knowledge, skills, attitudes and decision-making competencies that facilitate informed and responsible financial decisions (Huston, 2010; Remund, 2010; OECD, 2020).

Early approaches focused primarily on financial knowledge. However, subsequent research has shown that knowledge alone is insufficient for making sound financial decisions. Contemporary interpretations regard knowledge, skills, attitudes, and behavioural elements as a unified system of competencies (Lusardi & Mitchell, 2014; Atkinson & Messy, 2012; OECD, 2020; Németh, Béres & Huzdik, 2016; Zsótér, 2018). In the Hungarian literature, the term ‘financial culture’ is used in a broader sense, encompassing an individual’s financial knowledge, values, attitudes and behaviour. In this approach, financial literacy supports the development of responsible financial management and financially sustainable behaviour in the long term (Béres, 2013; Németh, Béres & Huzdik, 2016; Zsótér, 2018; OECD, 2020).

The aim of economic and financial education is to develop competences that support informed economic thinking and the development of responsible financial behaviour. The OECD’s recommendations, the European Union’s education policy documents and the National Core Curriculum all emphasise that it is advisable to begin developing these competences during a child’s school years (OECD, 2020; OECD, 2023; European Commission, 2022; NAT, 2020). At the same time, the development of financial literacy is also shaped by the family, peer groups, the media and the digital financial environment; therefore, schools – as a key arena for secondary socialisation – play a prominent role in shaping financial attitudes (Bandura, 1986; Lusardi & Mitchell, 2014; OECD, 2020; Németh, Béres & Huzdik, 2016).

Based on the literature reviewed, this study conceptualises financial literacy as a complex construct comprising two interrelated dimensions: financial competence and financial attitudes. Financial competence encompasses financial knowledge and the ability to apply it in practical situations, whereas financial attitudes comprise the affective, cognitive and conative components that influence financial decision-making and behaviour. The development of these two dimensions is shaped by both financial socialisation and pedagogical factors, including the learning environment and the instructional mode employed. This conceptual framework

underpins the present research and provides the theoretical basis for the formulation of the research questions, the selection of the measurement instruments, and the interpretation of the findings.

### **3.2. Theoretical foundations of digital pedagogy and instructional modes**

The effectiveness of economic and financial education is influenced not only by the content of the curriculum, but also by the instructional modes used, the organisation of learning and the learning environment. The development of digital technologies has created new learning environments that have transformed the organisation of learning and the role of the teacher. At the same time, they create opportunities to support self-directed learning, provide continuous feedback, foster collaboration and personalise the learning process (Szűts, 2020; Komenczi, 2009; Molnár, 2011; Ollé, 2013).

The theoretical framework of this research is based on constructivist and connectivist learning theories. Their common starting point is that learning is a process of knowledge construction, during which learners develop new knowledge by building on their prior knowledge, experiences and the information sources available to them. The digital learning environment facilitates this by supporting independent learning, collaboration, problem-solving and the critical evaluation of information (Nahalka, 2002; Komenczi, 2009; Siemens, 2005; Downes, 2012; Szűts, 2020). This is particularly important in economic and financial education, as an increasing proportion of financial decisions are made in a digital environment.

The key models of digital pedagogy – the digital interpretation of Bloom’s taxonomy, the SAMR model and the DigCompEdu framework – approach the learning process from different perspectives; however, their common principle is that the pedagogical value of digital technologies is determined by their conscious application. These models promote higher-order thinking skills, the development of digital competences and the implementation of active learning, all of which play a decisive role in the practical application of financial literacy (Bloom, 1956; Anderson & Krathwohl, 2001; Churches, 2008; PuenteDura, 2014; Redecker, 2017; Carretero Gomez et al., 2017).

### **3.3. Pedagogical interpretation of instructional modes and research gaps**

The literature agrees that the development of financial literacy is a complex process in which the learning environment, learner activity and the pedagogical methods employed all play a decisive role (OECD, 2020; Lusardi & Mitchell, 2014; Nahalka, 2002; Komenczi, 2009).

With the development of digital technologies, online and hybrid learning environments have come to play an increasingly significant role alongside traditional classroom-based teaching. However, the literature also highlights that the use of digital technologies alone does not guarantee effective learning; its success is primarily determined by the pedagogical methods employed and the careful planning of the learning process (Puentedura, 2014; Redecker, 2017; Komenczi, 2009; Ollé, 2013; Szűts, 2020).

A review of the literature reveals a research gap which formed the starting point for this dissertation. On the one hand, there are only a limited number of empirical studies comparing the effects of face-to-face, online and hybrid instruction within the same secondary school setting. On the other hand, in the field of economic and financial education, longitudinal studies that examine both the short- and long-term effects of a financial education programme and changes in financial knowledge and financial attitudes are rare (Means et al., 2013; Bernard et al., 2014; Atkinson & Messy, 2012; Lusardi & Mitchell, 2014; OECD, 2020; OECD, 2023). The research gap identified thus defined the focus of the study and served as the basis for formulating the research questions and hypotheses.

#### **4. Research questions and hypotheses**

Based on the research gap identified during the review of the literature, the aim of this dissertation was to conduct a comparative analysis of face-to-face, online and hybrid instructional modes used in the teaching of financial and entrepreneurial literacy, and to evaluate the short- and long-term effects of the pedagogical intervention. The study examined changes in students' financial knowledge, the development of their financial attitudes, the retention of the knowledge acquired, and the conclusions that can be drawn from the quantitative and qualitative results regarding the development of financial literacy.

Based on the research objectives, the following research questions were formulated.

**Q1.** Which instructional mode (face-to-face, online or hybrid) proves to be the most effective in developing students' financial knowledge, competences and financial attitudes over the course of the one-year programme?

**Q2.** Can a significant short-term change be demonstrated in students' financial knowledge and the dimensions of their financial attitudes based on a comparison of the pre-test and post-test measurements?

**Q3.** Does the longitudinal follow-up assessment confirm that the financial knowledge acquired during the programme and the changes in financial attitudes have been sustained, or is a decline in these observable following the conclusion of the programme?

**Q4.** Are the quantitative results of the learner and teacher questionnaires consistent with the qualitative analysis of the open-ended questions, and, based on these, is the development of financial literacy a short- or long-term pedagogical task?

Seven hypotheses were used to address the research questions. The hypotheses focused on comparing instructional modes, examining the short- and long-term effects of the pedagogical intervention, and analysing the consistency between quantitative and qualitative findings.

**H1.** By the end of the study, students receiving hybrid instruction will achieve significantly higher levels of financial knowledge than students receiving face-to-face instruction, online instruction, or the control group.

**H2.** Following the educational intervention, students' level of financial and economic knowledge will be significantly higher than at the time of the pre-test.

**H3.** The longer-term post-test will show a lower level of knowledge compared with the immediate post-test, as the lack of regular reinforcement reduces the retention of knowledge.

**H4.** Following the educational intervention, changes of varying degrees but generally positive in nature can be observed in certain dimensions of students' financial attitudes.

**H5.** Of the three attitude dimensions, the most significant positive shift is expected on the 'impulsive' (reversed) scale.

**H6.** Qualitative feedback from teachers and students is consistent with the quantitative results, and they rate hybrid instruction as the most effective in terms of motivation, understanding and support for independent learning.

**H7.** A pedagogical intervention aimed at developing financial literacy simultaneously brings about favourable changes in students' financial knowledge and financial attitudes.

## **5. Research methodology**

### **Research paradigm**

The study adopted an embedded mixed-methods approach with a quantitative focus, in which quantitative data collection was complemented by a qualitative analysis of responses to the open-ended questions in the structured questionnaires. The qualitative component primarily served to support the interpretation and pedagogical explanation of the quantitative findings (Creswell & Plano Clark, 2018).

### **Research design**

The study employed a quasi-experimental, longitudinal research design. Data collection commenced during the 2022–2023 academic year and concluded with a longitudinal follow-up conducted in the autumn of 2025. The design enabled the comparison of students' financial knowledge across three instructional modes and the examination of the short- and long-term effects of the pedagogical intervention on financial knowledge and financial attitudes. The three experimental groups experienced face-to-face, online and hybrid instruction in three successive instructional periods on a rotational basis, ensuring that all students completed the same curriculum while experiencing each mode of instruction.

### **Research setting and participants**

The research was carried out at KMASZC Dr. Szepesi László Mezőgazdasági Technikum, Szakképző Iskola és Kollégium, a Hungarian vocational secondary school specialising in agricultural and forestry education. The participants were 72 second-year students (aged 15–16 years, approximately equivalent to Grade 10 in many education systems) enrolled in agricultural and forestry vocational programmes. The study involved three experimental groups and one control group.

### **Measurement instruments**

Three assessment instruments were used for data collection.

Financial knowledge was assessed using a 30-item multiple-choice test based on the structure of the Econventio financial literacy test. The instrument covered six financial literacy domains, each represented by five items. Four items assessed financial knowledge, while the fifth evaluated the application of numeracy skills (Kovács et al., 2021).

Financial attitudes were assessed using a 27-item questionnaire based on a five-point Likert scale. The attitude scale was based on the three-dimensional framework proposed by Zsótér et al. (2016), which integrates the OECD/INFE (2015) concept of financial literacy. Accordingly, three financial attitude dimensions were assessed: anxious–unsatisfied, satisfied–conscious, and moderately anxious–unconsidered. Items representing the moderately anxious–unconsidered dimension were reverse-coded; consequently, higher scores indicated more favourable attitudes across all three dimensions. Internal consistency of the scales was satisfactory (Cronbach's  $\alpha = 0.78$ – $0.86$ ).

The third component of data collection was a structured questionnaire completed by both students and teachers. It contained both closed and open-ended questions. Thematic content analysis of the open-ended responses supported the pedagogical interpretation of the quantitative findings and contributed to analytical triangulation.

## **Data analysis**

Quantitative data were analysed using IBM SPSS Statistics 20 and Python 3.12.

The analyses included descriptive statistics, normality tests, paired-samples t-tests, analysis of variance (ANOVA), Pearson's correlation analysis, effect size calculations (Cohen's  $d$  and partial  $\eta^2$ ), cluster analysis, and longitudinal comparative analyses.

Open-ended responses were analysed using thematic content analysis. The integration of quantitative and qualitative findings provided a comprehensive interpretation of the results, supporting both the comparison of instructional modes in terms of students' financial knowledge and the evaluation of the short- and long-term effects of the pedagogical intervention.

## **6. Research results**

### **6.1. Comparative analysis of the effectiveness of different instructional modes**

The primary aim of the research was to determine which of the three instructional modes – face-to-face, online and hybrid – most effectively supports the development of students' financial knowledge. The quasi-experimental research design made it possible to compare the impact of

the different instructional modes within the same school environment and using the same curriculum content.

To compare the instructional modes, the results of the three interim assessments were aggregated by teaching method and then analysed using one-way analysis of variance. The analysis confirmed a significant difference between the instructional modes examined ( $F(3,67) = 16.26$ ;  $p < 0.001$ ; partial  $\eta^2 = 0.40$ ). The large effect size indicates that the difference is significant not only statistically but also in practical terms.

Based on the Tukey HSD post hoc comparison, the performance of the group studying in the hybrid learning environment significantly exceeded the results of both face-to-face and online instruction. This suggests that a deliberate combination of face-to-face and digital learning environments supports the acquisition of financial and economic knowledge more effectively than either exclusively traditional or exclusively digital learning arrangements.

Based on the results, the use of digital technologies alone does not lead to higher student performance. Better results were achieved in learning situations where the use of digital tools was combined with deliberate learning organisation, continuous teacher support and active student participation. In this context, hybrid instruction can be understood not merely as a technological solution, but as a learning organisation model that integrates the advantages of face-to-face and digital learning.

Based on the comparative analysis, it can be concluded that the success of financial literacy development was primarily influenced by the learning organisation strategies employed rather than by the technology itself. Among the instructional modes examined, hybrid instruction yielded the greatest improvement in students' financial knowledge.

## **6.2. Short- and long-term changes in financial knowledge and financial attitudes**

The second aim of the study was to investigate the extent to which the educational intervention contributed to the development of students' financial literacy, and the extent to which the knowledge acquired was retained following the conclusion of the programme. The short-term impact was assessed through the baseline (2022) and end-of-school-year (2023) assessments, whilst long-term changes were evaluated through the longitudinal follow-up conducted in 2025.

A comparison of the pre-test and post-test results confirmed a significant increase in knowledge. The average score of the 44 students included in the longitudinal analysis was 14.9 points at the pre-test and 20.2 points at the end of the school year, representing an increase of 5.3 points. The

paired t-test revealed a significant difference between the two measurement points ( $t(43) = -6.24$ ;  $p < 0.001$ ), confirming the short-term effectiveness of the pedagogical intervention.

However, the longitudinal follow-up showed that the level of knowledge declined following the conclusion of the training. The mean score at the post-test was 11.7 points, which proved to be significantly lower than the result of the immediate outcome measurement ( $t(43) = -2.55$ ;  $p = 0.015$ ). This change suggests that, in the absence of regular revision and reinforcement, some of the financial knowledge acquired diminishes over time. Based on a combined interpretation of the short- and long-term results, it can be concluded that economic and financial education in schools effectively develops students' financial literacy; however, continuous reinforcement and opportunities for repeated learning are required to ensure that this knowledge is retained. The longitudinal follow-up highlighted that the effectiveness of economic and financial education cannot be assessed solely on the basis of immediate learning outcomes; its evaluation must also take into account the long-term retention of the knowledge acquired.

### **6.3. Differentiating and catch-up effects of the financial education programme**

The study also examined whether the impact of the economic and financial education programme was equally evident across all students, or whether progress was influenced by certain background factors. To this end, we analysed the correlations between socio-demographic characteristics, initial knowledge levels and the extent of progress.

Based on the analyses, the background variables examined – students' gender, parents' educational attainment and the frequency of discussions about money within the family – showed no significant correlation with the extent of progress. This suggests that the development programme supported students from different social backgrounds with similar effectiveness.

In contrast, a significant, moderately strong negative correlation was found between the initial level of knowledge and progress (Spearman's  $\rho = -0.45$ ;  $p = 0.002$ ). Students who started with a lower level of knowledge made greater progress, whilst those who began with a higher initial level of knowledge showed a smaller degree of change.

The impact of the programme is further reinforced by the fact that both students' perceived financial knowledge ( $t = -4.68$ ;  $p < 0.001$ ) and their actual financial literacy ( $t = -2.92$ ;  $p = 0.005$ ) both showed significant improvement. This indicates that the programme not only contributed to an expansion of knowledge but also increased students' confidence in their own financial preparedness.

Based on the overall results, the economic and financial education programme has been shown to have both a differentiating and a catch-up effect. The extent of improvement was primarily influenced by the initial level of knowledge, whilst the role of the background variables examined did not prove to be decisive. The programme particularly supported the progress of students with initially lower levels of knowledge, thereby contributing to the reduction of knowledge gaps between students and the strengthening of educational equality.

#### **6.4. Changes in financial attitudes**

In addition to changes in financial knowledge, the study also examined changes in students' financial attitudes. Financial literacy does not merely involve the expansion of knowledge, but also the development of attitudes, decision-making patterns and behavioural tendencies relating to finance. Accordingly, we compared the results of the 27-item financial attitude scale at the measurement points for the baseline, post-intervention and longitudinal follow-up. Based on the analyses, students' attitudes changed for the better following the economic and financial education programme. A comparison of the pre- and post-programme assessments revealed an increase in the mean score on the attitude scale, indicating the development of a more informed and responsible approach to financial matters. The paired t-test confirmed a significant positive change ( $t = 14.54$ ;  $p < 0.001$ ).

However, the extent of the change in attitude was more moderate than the improvement in financial knowledge, and for some attitude items it did not reach the level of statistical significance. This suggests that shaping a financial mindset is a process requiring a longer period of time, the effects of which unfold gradually.

The most favourable changes were observed in attitudes relating to informed financial decision-making, responsible financial management and long-term financial planning. By contrast, attitudes reflecting a general interest in finance and financial confidence changed to a lesser extent.

The results of the longitudinal follow-up showed that the positive changes remained detectable in both the medium and long term. This suggests that the impact of the development programme was not limited to an increase in financial knowledge, but also contributed to the more lasting shaping of students' financial attitudes.

Based on the results, the economic and financial education programme supported the development of both the cognitive and affective components of financial competence. The

programme was therefore not merely aimed at expanding knowledge, but also contributed to the development of financial literacy, responsible decision-making and financial behaviour.

### **6.5. Students' financial attitude profiles and pedagogical implications**

To complement the quantitative analyses, a cluster analysis was carried out to explore the characteristic patterns into which students' financial attitudes are organised, and what conclusions these allow us to draw from the perspective of economic and financial education. The analysis was based on data from the longitudinal follow-up survey.

The k-means cluster analysis identified two distinct student profiles. Students in the first cluster achieved more favourable scores across all the attitude dimensions examined; they were characterised by conscious financial decision-making, forward-looking planning and financial self-control. The second cluster comprised students exhibiting more impulsive and uncertain financial behaviour, who achieved lower attitude scores.

The cluster structure was also supported by the average silhouette value (0.319), which indicates moderate separation. The nearly equal size of the two clusters suggests that both attitude profiles were present in significant proportions within the sample under study.

The longitudinal analysis showed a positive trend across all three attitude dimensions examined. The greatest improvement was observed in the 'impulsive' (reversely coded) dimension, which suggests a reduction in impulsive financial decisions and an increase in financial self-control. In addition, the scores for the 'satisfied-conscious' and 'anxious-unsatisfied' attitude dimensions also improved.

The findings of the cluster analysis were also corroborated by a qualitative analysis of the open-ended questions answered by students and teachers. According to the responses, students reported more conscious financial planning, a more thrifty mindset and more responsible spending, whilst teachers highlighted more independent thinking, more active participation and more conscious decision-making.

The results of the cluster analysis indicate that students' financial attitudes are organised along clearly distinguishable profiles. This justifies the use of differentiated development strategies which, by aligning with the various attitude profiles, are capable of supporting the further development of financial literacy.

## **6.6. Interpretation of the qualitative findings**

The interpretation of the quantitative analyses was supplemented by a thematic content analysis of the responses to the open-ended questions in the structured questionnaires for students and teachers. The aim of the qualitative analysis was to explore how participants assessed the instructional modes used, what learning experiences they gained during the economic and financial education programme, and how they perceived the development of their financial literacy. The analysis was based on the thematic analysis method developed by Braun and Clarke (2006), using a combination of deductive and inductive coding.

The teachers' responses clearly highlighted the benefits of hybrid instruction. In their view, this form of learning organisation strikes the best balance between personal teacher support and the flexibility of the digital learning environment. Recurring themes included increased student motivation, the promotion of independent learning, the importance of continuous feedback, and the conscious use of digital tools. At the same time, they also drew attention to the fact that implementing hybrid instruction requires greater methodological preparation and organisational effort.

The students' responses centred on four key themes: the importance of practice-oriented learning, the role of visual and digital illustrations, the importance of the teacher's explanations, and a positive view of cooperative learning. According to the students, financial literacy only became truly comprehensible when they were able to process it through tasks and decision-making situations related to their own life circumstances. Digital learning materials proved to be insufficient on their own; however, when supplemented by teacher guidance and personal support, they significantly aided understanding and helped maintain motivation. Feedback from both teachers and students confirmed that the impact of economic and financial education is shaped not solely by the amount of knowledge imparted, but by a combination of the way learning is organised, the quality of teacher support and the characteristics of the learning environment. Learning situations based on experiential learning, tackling real-world problems, collaboration and reflective thinking proved to be of outstanding importance.

The qualitative analysis confirmed the trends emerging from the quantitative results. Feedback from participants supported the positive impact of hybrid instruction, the increase in student motivation and the development of financial literacy. At the same time, they also highlighted that the long-term acquisition of financial literacy is most effectively supported by learning situations based on active participation, practical application and ongoing teacher support.

### **6.7. Integrated interpretation of quantitative and qualitative findings**

One of the methodological features of the research was the integrated use of quantitative and qualitative data sources. The aim of this triangulation was to supplement the findings of the statistical analyses with a thematic analysis of the responses given by teachers and students to open-ended questions, thereby providing a more nuanced picture of the mechanisms through which economic and financial education takes effect.

The integrated analysis yielded further insights in three areas.

Firstly, in the comparison of instructional modes. According to the quantitative results, hybrid instruction yielded the best learning outcomes, whilst the qualitative data also explained the pedagogical reasons behind these findings. The participants consistently reported that the effectiveness of hybrid instruction stemmed from the combination of teacher support and the flexibility of the digital learning environment. This combination enhanced understanding, encouraged independent learning, and helped maintain student motivation.

Secondly, the interpretation of financial attitudes became more comprehensive. Longitudinal measurements showed a positive change in attitudes, which was also confirmed by the students' open-ended responses. According to their accounts, their approach to saving, financial planning and day-to-day financial decisions became more conscious, in line with the results of the questionnaire-based attitude scales.

Thirdly, the interpretation of the teacher's role has broadened. The qualitative analysis showed that, in a digital learning environment, the teacher's role is increasingly focused not only on imparting knowledge but also on organising, supporting and facilitating the learning process. This is consistent with the constructivist pedagogical approach presented in the theoretical section of this thesis, and at the same time provides an explanation for the favourable performance of hybrid instruction.

Based on the integrated analysis, it can be concluded that the quantitative and qualitative results mutually reinforced one another. Triangulation not only enhanced the reliability of the study's main conclusions but also provided a deeper understanding of the changes occurring during economic and financial education.

### **6.8. Evaluation of the hypotheses**

The evaluation of the hypotheses formulated during the research was based on an integrated analysis of the quantitative and qualitative results. The empirical studies supported all the

hypotheses; however, the individual assumptions contributed to the interpretation of the effectiveness of economic and financial education from different perspectives.

**H1 – The effect of instructional modes.** A one-way analysis of variance revealed a significant difference between the instructional modes ( $F(3,67) = 16.26$ ;  $p < 0.001$ ;  $\eta^2 = 0.40$ ). Based on post hoc comparisons, hybrid instruction resulted in the highest level of financial knowledge, thus confirming the first hypothesis.

**H2 – Short-term increase in knowledge.** A comparison of the pre-test and immediate post-test scores revealed a significant increase in knowledge ( $t(43) = -6.24$ ;  $p < 0.001$ ), confirming that the pedagogical intervention successfully improved students' financial and economic knowledge in the short term. The hypothesis was confirmed.

**H3 – Long-term decline in knowledge.** According to the results of the longitudinal follow-up, the level of knowledge decreased significantly compared with the immediate post-test ( $t(43) = -2.55$ ;  $p = 0.015$ ). This supports the view that regular reinforcement is necessary for the long-term retention of acquired knowledge. The hypothesis was confirmed.

**H4 – Positive change in attitude.** The longitudinal analysis revealed a favourable change across all three dimensions of financial attitude. The students' approach to financial matters became more conscious, more planned and more responsible; thus, the fourth hypothesis was also confirmed.

**H5 – Change in the impulsive attitude dimension.** Of the three dimensions examined, the greatest positive shift occurred in the impulsive (reversely coded) dimension, indicating a reduction in impulsive financial decisions and a strengthening of financial self-control. The hypothesis was confirmed.

**H6 – Consistency between quantitative and qualitative results.** A thematic analysis of teachers' and students' responses to open-ended questions confirmed the findings of the statistical analyses. Both data sources highlighted the positive impact of hybrid instruction, the increase in student motivation, and the importance of a practice-oriented, student-centred learning environment. The hypothesis was confirmed.

**H7 – The dual effect of the pedagogical intervention.** The research findings confirmed that the pedagogical intervention simultaneously contributed to an increase in financial knowledge and a positive change in financial attitudes. The quantitative results were supported by the qualitative analysis, confirming that the cognitive and affective dimensions of economic and

financial education contribute to the development of financial literacy in a mutually reinforcing manner.

Overall, the seven hypotheses were empirically validated. The results confirmed that the economic and financial education programme effectively developed students' financial knowledge and attitudes, whilst highlighting the outstanding effectiveness of hybrid instruction and the need for regular reinforcement to ensure the long-term retention of knowledge. The combined interpretation of the quantitative and qualitative results provided a more nuanced picture of how the pedagogical intervention worked and reinforced the main conclusions of the research.

### **6.9. Limitations of the research**

Several methodological limitations must be taken into account when interpreting and generalising the results. The study covered technical college students at a single institution; therefore, the findings apply primarily to the sample and institutional context under investigation. The dropout rate during the longitudinal follow-up also reduced the statistical reliability of the long-term analyses.

The quasi-experimental research design allowed for a comparison of different instructional modes, but did not ensure complete control over all background factors. The results may have been influenced by the teachers' methodological expertise, the characteristics of the student groups, and the institutional environment.

Qualitative data collection was based on a thematic analysis of the responses to the open-ended questions in the structured questionnaires. Although the research plan also included interviews, these did not take place due to a lack of voluntary participation; consequently, the qualitative conclusions are based solely on the questionnaire responses.

Despite the limitations outlined above, the methodological structure of the research – the quasi-experimental, longitudinal design, the integrated use of quantitative and qualitative methods, and the inclusion of cluster analysis – enabled a multi-faceted assessment of economic and financial education. The results provide a sound basis for further research involving a larger sample and a wider range of institutions.

## **7. Scientific contributions**

The theoretical and empirical findings of the thesis enrich the literature on economic and financial education, as well as on the educational application of digital technologies, in several respects. The most important scientific contributions of the research can be summarised as follows.

### **1. Empirical evidence of the effectiveness of hybrid instruction for financial knowledge development**

According to the results of the quasi-experimental study, hybrid instruction was more effective in supporting the development of financial literacy among technical college students than either classroom-based or online teaching. The results indicate that a digital learning environment alone is not sufficient to improve learning outcomes; the positive effect stems from the combined use of digital tools and deliberate pedagogical support.

### **2. A longitudinal analysis of financial knowledge and financial attitudes**

The longitudinal follow-up study showed that financial knowledge and financial attitudes follow different developmental trajectories. Whilst the knowledge acquired declined to some extent following the completion of the training, the positive changes in financial attitudes persisted in the longer term. This highlights the fact that assessing the effectiveness of financial education requires a combined examination of cognitive and affective factors.

### **3. Exploring the pedagogical significance of students' financial attitude profiles**

Cluster analysis identified two distinct financial attitude profiles, which represent different financial outlooks and decision-making patterns. The results suggest that students' financial attitudes cannot be regarded as homogeneous; therefore, it is justified to apply differentiated development strategies tailored to the various attitude profiles in economic and financial education.

### **4. Demonstration of the applicability of the embedded mixed-methods research design**

The research was conducted using an embedded mixed-methods design, in which quantitative analyses were supplemented by thematic content analysis of open-ended questions. Triangulation enabled a deeper interpretation of the statistical results and confirmed that the integrated application of quantitative and qualitative methods provides a more nuanced picture of the process and mechanisms of economic and financial education.

Overall, the study's principal scientific contribution lies in interpreting the development of financial literacy as a pedagogical process shaped jointly by students' financial knowledge, financial attitudes, pedagogical support and the learning environment. The findings also demonstrated that the pedagogical intervention was particularly effective in supporting the progress of students with lower initial levels of financial knowledge, indicating its compensatory effect. Furthermore, the longitudinal findings revealed that financial knowledge and financial attitudes follow different developmental trajectories, offering a new perspective on the pedagogical interpretation of economic and financial education.

## **8. Conclusions, practical applicability and recommendations**

### **8.1. Conclusions**

The aim of the thesis was, on the one hand, to compare the impact of face-to-face, online and hybrid instruction on financial literacy and, on the other hand, to explore the short- and long-term effects of pedagogical intervention on financial literacy and financial attitudes. The quasi-experimental, longitudinal, embedded mixed-methods research design enabled the integrated analysis of different data sources and a multi-faceted interpretation of the results.

Based on the comparison of instructional modes, hybrid instruction proved to be the most effective in developing financial knowledge. The deliberate combination of face-to-face teaching and a digital learning environment resulted in better learning outcomes than either classroom-based or online teaching alone.

The pedagogical intervention led to significant improvements in students' financial literacy and financial attitudes. However, the longitudinal follow-up also highlighted that some of the financial knowledge acquired diminishes over time, whilst the positive changes in financial attitudes proved to be more enduring. All this suggests that, in developing financial literacy, shaping attitudes plays a key role alongside expanding knowledge; at the same time, regular reinforcement and opportunities for repeated learning are necessary for the long-term retention of knowledge.

The results of the cluster analysis confirmed that students' financial attitudes are organised into distinct profiles. This underpins the need to apply differentiated development approaches tailored to students' varying attitudinal characteristics and learning styles.

A combined interpretation of the quantitative and qualitative findings confirmed that digital technologies alone do not guarantee an improvement in learning performance. Positive changes occurred in those learning environments where the use of digital tools was combined with deliberate learning organisation, active student participation and continuous teacher support.

## **8.2. Practical implications**

The findings of this thesis are primarily applicable to technical college education, where economic and financial education forms an integral part of vocational training. Based on the findings, a hybrid approach to learning organisation can be an effective tool for developing financial literacy, particularly when the use of a digital learning environment is combined with deliberate pedagogical planning.

The study also draws attention to the fact that the development of financial literacy is not solely the responsibility of vocational education. Based on the results, it seems professionally justified to consider giving financial education a more prominent role in upper secondary education.

The findings of this study can also be utilised in teacher training and continuing professional development. The effective use of digital learning environments requires methodological expertise; therefore, greater emphasis should be placed on preparing teachers to use digital instructional modes effectively and on the cross-curricular integration of economic and financial education.

The longitudinal results suggest that the long-term retention of financial knowledge requires regular revision and continuous reinforcement.

## **8.3. Further research directions**

The study raised several questions that require further investigation.

It would be worthwhile to replicate the study using a larger and more heterogeneous sample, involving more technical colleges and grammar schools. This would provide an opportunity to analyse the extent to which school type, age-related characteristics and socio-cultural background influence the development of financial literacy and financial attitudes.

A further area for research could be the examination of the use of digital teaching tools, learning support systems based on artificial intelligence, and adaptive learning environments in economic and financial education. It is also worth analysing how these solutions might contribute to the personalised development of students and the long-term retention of financial literacy. There is also a need for longer-term longitudinal studies to investigate the extent to

which the financial knowledge and attitudes developed in secondary school are reflected in young adults' subsequent financial decisions and money management practices.

## **9. Summary**

This thesis examined the development of financial literacy among technical college students in the context of the use of digital instructional modes. The quasi-experimental, longitudinal, embedded mixed-methods research design enabled a comparison of the effects of different instructional modes on financial knowledge, as well as an assessment of the short- and long-term effects of the pedagogical intervention on financial knowledge and financial attitudes.

Based on the empirical studies, hybrid instruction was found to be the most effective in promoting the development of financial knowledge. A deliberate combination of face-to-face and a digital learning environment resulted in better learning outcomes than either face-to-face or online teaching alone. However, the longitudinal follow-up also indicated that the financial knowledge acquired may decline to some extent in the longer term; therefore, regular reinforcement and revision sessions are required to maintain it. In contrast, positive changes in financial attitudes proved to be more enduring.

Cluster analysis and qualitative research further enriched the interpretation of the quantitative results. Both the varying financial attitude profiles of students and the experiences of teachers and students suggest that the success of financial literacy development is shaped by a combination of the quality of teaching organisation, teacher support and development approaches tailored to students' individual characteristics.

The findings of this thesis are primarily applicable to vocational education, though they can also be applied in other areas of general education. The study underpins the importance of developing financial literacy in technical college education, whilst also raising the professional consideration that financial education should feature more prominently in grammar school education. Furthermore, it offers valuable insights for teacher training and continuing professional development regarding the methodological integration of digital learning environments with economic and financial education.

Overall, the findings of the thesis confirm that the development of financial literacy can be effectively supported through the deliberate application of digital pedagogical methods. The research contributes to the Hungarian literature on economic and financial education and

provides empirical findings that can serve as a basis for the further development of financial education methodology and for future research in this field.

## 10. Bibliography

- Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. Longman.
- Atkinson, A., & Messy, F.-A. (2012). *Measuring financial literacy: Results of the OECD/International Network on Financial Education (INFE) pilot study* (OECD Working Papers on Finance, Insurance and Private Pensions No. 15). OECD Publishing.  
<https://doi.org/10.1787/5k9csfs90fr4-en>
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall.
- Bernard, R. M., Borokhovski, E., Schmid, R. F., Tamim, R. M., & Abrami, P. C. (2014). A meta-analysis of hybrid instruction and technology use in higher education: From the general to the applied. *Journal of Computing in Higher Education*, 26(1), 87–122.  
<https://doi.org/10.1007/s12528-013-9077-3>
- Béres, D., & Huzdik, K. (2013). A pénzügyi kultúra megjelenése makrogazdasági összefüggésekben. *Pénzügyi Szemle*, 58(3), 342–358.
- Bloom, B. S. (1956). *Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain*. David McKay.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Carretero Gomez, S., Vuorikari, R., & Punie, Y. (2017). *DigComp 2.1: The digital competence framework for citizens with eight proficiency levels and examples of use* (EUR 28558 EN). Publications Office of the European Union. <https://doi.org/10.2760/38842>
- Churches, A. (2008). *Bloom's digital taxonomy*. [https://www.celt.iastate.edu/wp-content/uploads/2020/07/Churches\\_2008\\_DigitalBloomsTaxonomyGuide.pdf](https://www.celt.iastate.edu/wp-content/uploads/2020/07/Churches_2008_DigitalBloomsTaxonomyGuide.pdf)
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE.
- Downes, S. (2012). *Connectivism and connective knowledge: Essays on meaning and learning networks*. National Research Council Canada.  
[https://www.downes.ca/files/books/Connective\\_Knowledge-19May2012.pdf](https://www.downes.ca/files/books/Connective_Knowledge-19May2012.pdf)
- Európai Bizottság & OECD/INFE. (2022). *Financial competence framework for adults in the European Union*. [https://finance.ec.europa.eu/system/files/2022-01/220111-financial-competence-framework-adults\\_en.pdf](https://finance.ec.europa.eu/system/files/2022-01/220111-financial-competence-framework-adults_en.pdf)

- Huston, S. J. (2010). Measuring financial literacy. *Journal of Consumer Affairs*, 44(2), 296–316.  
<https://doi.org/10.1111/j.1745-6606.2010.01170.x>
- Komenczi, B. (2009). *Elektronikus tanulási környezetek*. Gondolat Kiadó.
- Kovács, P., Kuruczleki, É., Rácz, T. A., & Lipták, L. (2021). A magyar középiskolások pénzügyi kultúrájának vizsgálata az elmúlt 10 évben az Econventio-teszt alapján. *Pénzügyi Szemle*, 66(2), 179–198. [https://doi.org/10.35551/PSZ\\_2021\\_2\\_1](https://doi.org/10.35551/PSZ_2021_2_1)
- Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature*, 52(1), 5–44. <https://doi.org/10.1257/jel.52.1.5>
- Means, B., Toyama, Y., Murphy, R., & Bakia, M. (2013). The effectiveness of online and hybrid instruction: A meta-analysis of the empirical literature. *Teachers College Record*, 115(3), 1–47. <https://doi.org/10.1177/016146811311500307>
- Molnár, G. (2011). *Technológia-alapú mérés-értékelés az oktatásban*. Gondolat Kiadó.
- Nahalka, I. (2002). *Hogyan alakul ki a tudás a gyerekekben? Konstruktivizmus és pedagógia*. Nemzeti Tankönyvkiadó.
- NAT. (2020). 5/2020. (I. 31.) Korm. rendelet a Nemzeti alaptanterv kiadásáról, bevezetéséről és alkalmazásáról szóló 110/2012. (VI. 4.) Korm. rendelet módosításáról. *Magyar Közlöny*, 2020(17), 290–446.
- Németh, E., Béres, D., Huzdik, K., & Zsótér, B. (2016). Pénzügyi személyiségtípusok Magyarországon: Kutatási módszerek és primer eredmények. *Hitelintézeti Szemle*, 15(2), 153–172.
- OECD. (2020). *PISA 2018 results (Volume IV): Are students smart about money?* OECD Publishing. <https://doi.org/10.1787/48ebd1ba-en>
- OECD. (2023). *OECD/INFE toolkit for measuring digital financial literacy*. OECD Publishing.
- OECD/INFE. (2015). *National strategies for financial education: OECD/INFE policy handbook*. OECD Publishing. <https://doi.org/10.1787/9789264239125-en>
- Ollé, J. (2013). *Virtuális környezet, virtuális oktatás*. ELTE Eötvös Kiadó.
- Puente-dura, R. R. (2014). *Learning, technology, and the SAMR model: Goals, processes, and practice* [Presentation slides]. Hippasus.  
<https://www.hippasus.com/rrpweblog/archives/2014/06/29/LearningTechnologySAMRModel.pdf>
- Redecker, C. (2017). *European framework for the digital competence of educators: DigCompEdu* (EUR 28775 EN). Publications Office of the European Union. <https://doi.org/10.2760/159770>

- Remund, D. L. (2010). Financial literacy explicated: The case for a clearer definition in an increasingly complex economy. *Journal of Consumer Affairs*, 44(2), 276–295.  
<https://doi.org/10.1111/j.1745-6606.2010.01169.x>
- Siemens, G. (2005). Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology and Distance Learning*, 2(1), 3–10.  
[http://www.itdl.org/Journal/Jan\\_05/article01.htm](http://www.itdl.org/Journal/Jan_05/article01.htm)
- Szűts, Z. (2020). *A digitális pedagógia elmélete*. Akadémiai Kiadó.
- Zsótér, B. (2018). A fiatal felnőttek pénzügyi kultúrájának vizsgálata. *Pénzügyi Szemle*, 63(1), 39–54.

## 11. List of publications

Beck-Zaja, Monika

The Search for Identity and Financial Socialisation

In: Parapatics, Andrea (ed.) The Present and Future of Identity Rooted in the Past

Veszprém, Hungary: Tinta, Pannon University, Faculty of Humanities, Institute of Hungarian and Applied Linguistics (2025) 448 pp., pp. 221–232, 12 pp.

Book chapter (Excerpt) | Academic [36244514]

Beck-Zaja, Mónika; Zaja, Roland

The introduction and results of the positive psychology programme for children with learning difficulties

In: Medovarszki, István (ed.) A kaleidoscope of subject-specific pedagogy: 2022 – Pedagogical and methodological studies from the world of education

Eger, Hungary: Líceum Publishing (2023) pp. 177–192, 16 p.

Specialist study (Book excerpt) | Academic [34427843]

Török, Ildikó; Beck-Zaja, Mónika

Digital equality: Robot-assisted therapies in the development of children with special educational needs In: Egri, Tímea (ed.) Collection of papers from the 14th National Teaching and Learning Conference: special needs teacher

Miskolc, Hungary: Miskolc University Press (2023) 109 pp., pp. 5–10, 6 pp.

Full text Academic article (Book excerpt) | Scholarly [34835076] [Public]

Nagy, Katalin; Beck-Zaja, Mónika

A re-evaluation of teachers' roles in the light of digital pedagogy

In: K. Nagy, Emese; Zagyváné, Szűcs Ida (eds.) Reflections on the latest issues in educational sciences: A selection from the works of members of the Pedagogical Committee. Miskolc Regional Committee of the Hungarian Academy of Sciences; Eger, Hungary: Eszterházy Károly Catholic University, Líceum Publishing House (2022) 131 pp. pp. 21–36. Publication: 33605983 Public Source Cited Book Excerpt (Scholarly Article) Scientific DOI: 10.46403/Reflexiok.2022.21

Beck-Zaja, Mónika

Financial literacy can be taught and learnt

In: K., Emese Nagy; Tímea Egri; Mária Jaskóné Gácsi (eds.) ‘Value Creation – Challenges in Pedagogy, Special Education and Teacher Training’: COLLECTION OF PAPERS FROM THE 13TH NATIONAL TEACHING AND LEARNING CONFERENCE; Miskolc, Hungary: University of Miskolc Press (2022) 652 pp., pp. 420–430, 11 pp.

Publication: 33604581 Public Source Book Excerpt (Specialist Study) Academic

Beck-Zaja, Mónika; Zaja, Roland

Moral education and character development at a vocational training centre in Budapest

In: Medovarszki, István (ed.) A kaleidoscope of subject pedagogy: 2021 – Studies in pedagogy, educational science and subject methodology

Békéscsaba, Hungary: Privately published (2021) 242 pp. pp. 189–202, 14 pp. EKE IPR

Publication ID: 32750862 Public Source Book Excerpt (Specialist Study) Academic

Beck-Zaja, Mónika

Digital Equality: Robot-Assisted Therapies in the Development of Children with Special Educational Needs

ARTIFICIAL INTELLIGENCE 5: 2, pp. 65–74, 10 pp. (2023)

Publication: 34527390 Journal article (Scholarly article) Scientific DOI:  
10.35406/MI.2023.2.65

Beck-Zaja, Mónika

Applied Digital Wellbeing Programme in the library

MAGYAR GERONTOLÓGIA 16: 43 pp. 118–144, 27 p. (2024)

Publication: 36469114 Journal article (Specialist article) Scientific DOI:  
10.47225/mg/16/43/15979

Szűts, Zoltán; Nagy, Róbert; Turós, Mátyás; Zaja, Mónika (Compiled by); Esztelecki, Péter  
(Compiled by)

Young people's literacy of the everyday use of artificial intelligence, with particular regard to  
digital media content, 38 p. (2024)

Full text Publication: 35716579 Other (Research report (published)) Academic

Beck-Zaja, Mónika

Recherche d'identité et socialisation financière

International interdisciplinary conference

Presentation (2023) The present and future of identity rooted in the past, Pannon University,  
Faculty of Modern Philology and Social Sciences, Veszprém, Uncategorised (Other) | Academic  
[34105902] [Public]

Beck-Zaja, Mónika

The role of education in financial socialisation

Presentation (2023) Conference on the Sustainable Economics of the Future, International  
Academic Conference, University of Dunaújváros, Institute of Social Sciences, Dunaújváros,  
Unclassified (Other) | Unclassified [34829333] [Public]

Beck-Zaja, Mónika

Digital Equality: robot-assisted therapies in the development of children with special educational needs

Presentation (2023) 8th International Interdisciplinary Conference, Reference: 33728005  
Public Source Other (Unclassified) Unclassified

Beck-Zaja, Mónika

Developing digital competence in old age: presentation (2025)

Presentation (2025) 16th Taní-tani Online International Scientific Conference. Education and Society, Section I, University of Miskolc, Faculty of Humanities and Social Sciences, Hungarian Pedagogical Society, New Research and Research Trends in Pedagogy and Special Education, Abstract: 35926832 Public Source Other (Unclassified) Academic

Beck-Zaja, Mónika

Applied Digital Wellbeing Programme

Presentation (2024) Gerontology Days 2024 International Scientific Conference, University of Debrecen, Faculty of Health Sciences, 10 October 2024, Publication No.: 35482346 Public Source Other (Unclassified) Academic

Beck-Zaja, Mónika

Financial socialisation in secondary education

Presentation (2024) The Pedagogy of the Future, 15th Taní-tani Online International Scientific Conference, University of Miskolc, Faculty of Humanities and Social Sciences, Hungarian Pedagogical Society,

Publication ID: 34829415 Public Source Other (Unclassified) Unclassified

Beck-Zaja, Mónika

The role of education in the context of financial socialisation

Presentation (2023) Changes in Pedagogy – The Changing Face of Pedagogy V, Academic Conference, Pázmány Péter Catholic University, Faculty of Humanities and Social Sciences, Vitéz János Teacher Training Centre, Department of Nursery and Primary Teacher Training, Esztergom, Johanneum,

Beck-Zaja, Mónika

Digital equality of opportunity: Robot-assisted therapies in the development of children with special educational needs

Presentation (2023) 14th Taní-tani Online International Scientific Conference, 3 February 2023, Miskolc, Publication No.: 33789074 Public Source Other (Unclassified) Scientific

Beck-Zaja, Mónika

The role of digital pedagogy in financial education

Presentation (2022) 14th International Nyíregyháza Doctoral and Postdoctoral Conference, Faculty of Health Sciences, University of Debrecen, St Athanasius Greek Catholic Theological College, University of Nyíregyháza, 9 December 2022

Publication: 33604742 Public Source Other (Unclassified) Academic

Beck-Zaja, Mónika

The role of digital pedagogy in social equality

Lecture (2022) University of Debrecen, Faculty of Health Sciences, 6–7 October 2022, Gerontology Days 2022 International Scientific Conference,

Publication: 33604626 Public Source Other (Unclassified) Unclassified

Beck-Zaja, Mónika

Digital pedagogy as an ‘extended classroom’ in financial education

Lecture (2022) Pázmány Péter Catholic University, Faculty of Humanities and Social Sciences, Vitéz János Teacher Training Centre, Department of Nursery and Primary Teacher Training, Esztergom, Iohanneum, 25 November 2022,

Publication No.: 33604716 Public Source Other (Unclassified) Academic

Beck-Zaja, Mónika

The Parable of the Prodigal Son in the Context of Conscious Financial Planning

Presentation (2022) 8th Conference on Christian Educational Sciences, Vác, Vilmos Apólos Catholic College,

Publication No.: 32823117 Public Source Other (Unclassified) Academic

Beck-Zaja, Mónika; Török, Ildikó

Digital equality in the development of children with special educational needs

Presentation (2022) CREATIVITY – THEORY AND PRACTICE (2022), International Interdisciplinary Online Conference, 9 December 2022, IAL Toscana (IT) K+F Stúdió Kft. (HU) Kocka Kör Talent Development Cultural Association (HU), Constantine the Philosopher University, Nitra, Faculty of Central European Studies (SK) Partium Christian University (RO) University of Novi Sad, Faculty of Teacher Training in Hungarian, Subotica (RS),

Publication: 33604755 Public Source Other (Unclassified) Academic

Beck-Zaja, Mónika

Developing digital competence in old age

Presentation (2022) International Interdisciplinary Conference on Learning and Society, Eger, 10 November 2022, Reference: 33604779 Public Source Other (Unclassified) Academic

Beck-Zaja, Mónika

Digital education: in the light of teachers' roles and students' perceptions

Presentation (2022) Education – Computer Science – Pedagogy Conference 2022, Debrecen,  
Publication: 32823137 Public Source Other (Unclassified) Academic

Beck-Zaja, Mónika; Zaja, Roland

The Blue Danube Waltz in the Light of Positive Psychology and Decision-Making

Presentation (2022) 8th Conference on Christian Educational Sciences, Vác, 27 April 2022,  
Vilmos Apor Catholic College,

Publication: 32823127 Public Source Other (Unclassified) Academic

Beck-Zaja, Mónika

Financial education: financial literacy can be learnt and taught

Presentation (2022) 13th Taní-tani Online Conference 4 February 2022, Miskolc,

Publication: 32823141 Public Source Other (Unclassified) Academic

Beck-Zaja, Mónika

Developing digital competence in the context of gerontology (2024)

Excellence at Károly Eszterházy Catholic University – Conference on the achievements of our  
ÚNKP scholarship holders, Károly Eszterházy Catholic University, Eger,

Publication No.: 34881025 Public Source Other (Unclassified) Academic

Beck-Zaja, Mónika

Digital Pedagogy: Older Adults as ICT Learners

TRAMBULIN – Conference of Doctoral Students in Educational Sciences (2023)

Publication: 33813517 | Public Source | Other (Unclassified) | Academic | manually added

Beck-Zaja, Mónika

Digital pedagogical tools and methods for fostering financial literacy in a secondary school setting: presentation (2022)

Hungarian Science Festival – 2022, Pedagogy 2.0: Digital Innovation in Education, Károly Eszterházy Catholic University – Institute of Digital Technology, Publication No.: 33604663  
Public Source Other (Unclassified) Academic

Beck-Zaja, Mónika

Financial literacy can be learnt and taught: lecture (2021)

Károly Eszterházy Catholic University Psychology Days 2021, Eger,

Publication No.: 32823147 Public Source Other (Unclassified) Academic

Beck-Zaja, Mónika

Financial Socialisation in the Education of Secondary School Students

E-poster (2024) 9th International Interdisciplinary Conference, Debrecen, 3 May 2024,

Publication ID: 34835073 Public Source Other (Unclassified) Unclassified

MTMT ID: 10081022

MTMT publication profile:

<https://m2.mtmt.hu/gui2/?type=authors&mode=browse&sel=10081022>