

Changes in Primary Language Teachers' Digital Integration as a Result of a Period of Online Teaching

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Abstract

This study explores the factors influencing primary school English teachers' integration of digital tools into their classroom practices in Hungary. Building on prior quantitative findings (N=706), this mixed-methods research is primarily based on qualitative interviews with 27 teachers. The study investigates which features of digital tools teachers find most relevant, and how personal beliefs, digital competencies, and contextual conditions affect sustained digital integration. While educators widely adopted digital tools during emergency remote teaching (ERT), the post-pandemic return to in-person instruction revealed varied patterns: some retained selected tools as pedagogical aids, while others reverted to traditional methods. Teachers emphasized the importance of learner autonomy, motivation, and maintaining a balanced role between digital and in-person interaction. The study concludes that sustainable digital integration requires not only technical training but also pedagogical and attitudinal development, underscoring the need for targeted professional development that bridges technology use with evolving conceptions of effective teaching.

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Introduction

Digital educational tools have been in the centre of interest in the last decade but gained more significance during the pandemic. Despite the prevalingly positive attitude towards them, fundamental questions about the effectiveness of digital elements and future paths of foreign language teaching and learning also arise. Digital tools have been proven effective from many aspects: Yanovets et al. (2025) report a higher effectiveness of the hybrid method of teaching a foreign language course compared to a traditional course. Apart from better results in some language areas, the method with digital elements contributed to an increase in motivation among students and satisfaction.

Specifically for EFL education, integrating online games in the learning process resulted in a feeling of development and motivation in students, and a facilitating effect on their learning (Ochoa-Cueva et al., 2024), and supported collaboration and cooperation (Jabbari, 2025). Moreover, it has been argued that digital learning platforms render education more flexible, accessible and personalised (Zou et al., 2025). Nevertheless, problems connected to educational digitalisation are also thematised, e.g. accessibility of technology or the digital divide, resistance to change on educators' side, ethical and security issues, and the varying quality of digital resources.

There is a multitude of studies on digital integration in language teaching, and more recently, also on the strategies applied in the online periods of instruction. Still, most of the research focuses on secondary and higher education (e.g., Backfish et al., 2021; Bećirović et al., 2021; González et al., 2023; Sailer et al., 2021; Schulze-Vorberg, 2021; Yanovets et al., 2025) and predominantly on the practices of language instructors in the online mode. The present paper investigates aspects of the relationship of ERT on in-person language teaching practices on the primary level, similarly to Moorhouse (2023), Moorhouse and Wong (2023), Winter et al. (2021), and Kačdonek-Crnjaković (2022). The setting is primary education in Hungary, as in Horváth (2023), but focuses on digital tool utilisation in the physical classroom. Throughout the paper, the terms 'digital tools' and 'digital elements' refer to digital applications, programs, platforms, and other software running on a digital device.

Further types of research papers include ICT use before the pandemic, strategies and tools to cope with the situation created through ERT and recent insights into digital tool integration from the perspectives of in-service and pre-service teachers as well. An area which does not seem to be well researched is the changes in the physical classroom induced by the online teaching periods.

The present study would like to widen the perspective and connect the explored online practices and digital tools from ERT with the present state of language teaching. One of our aims is to reach beyond listing strategies and methods of digital tool usage during and after ERT and explore the underlying causes and motivations which has led to present digital tool integration in language teaching in Hungary.

Literature Review

Effects of ERT on Digital Practices of In-person Education

As years have passed after the first ERT period, this time should be followed by a shift in research inquiries. Many investigations mention changes to methodology, new strategies and pedagogical development as an effect of the online modality; today, it is also important to ask whether these innovations have found their way into present teaching practices or have been gradually neglected in the physical classroom.

One key aspect for maintaining the use of digital tools is the question of whether they fit in language teachers' existing practices (Moorehouse, 2023, p. 455). It is observed that those digital elements are more likely to become embedded in teachers' everyday methodology that can supplement existing practices, rather than those which require more profound changes. On the other hand, Horváth (2021) claims that successful primary school teachers adopted new strategies during ERT and identifies two distinct models. These resulted in learners' heightened involvement in the process of learning. It remains to be observed whether these new strategies were maintained after the online periods.

As for a basis for future digital integration, Werner and Küplüce (2021) inquired into which competencies teachers found most important for digital language teaching. The respondents mainly focussed on interdisciplinary rather than subject-specific features, i.e. 'the ability to integrate digital tools into language teaching, open-mindedness, frustration tolerance, and the ability to organise and structure workload' (Werner & Küplüce, 2021, p. 299).

In the present study, it is assumed that a certain amount of modification in teachers' methodologies is a prerequisite for successfully integrating digital tools to a greater extent than before. It is therefore observed how the respondents evaluate the changes in their professional beliefs and methods.

Teachers' Readiness for Digital Integration

The paper aims to investigate which features of digital tools are decisive for teachers when it comes to their utilisation. Related to this topic are the factors that influence teachers' willingness for digital integration, which fall into two main categories: (i) teachers' personal pedagogical beliefs and (ii) their digital competences. The latter category does not only comprise technological knowledge but also technological pedagogical knowledge which together with content knowledge leads to the desired Technological Pedagogical Content Knowledge (TPACK), 'the basis of skilled teaching with technology' (Mishra & Koehler, 2006). Many studies underline the importance of TPK (technological pedagogical knowledge) in teacher effectiveness, specifically for language learning Rosyidi et al. (2024), by differentiating instruction, personalised teaching experiences and facilitating collaborative learning beyond the classroom. They also reach the conclusion that single domains of the TPACK framework (e.g., only technological, pedagogical or content knowledge) do not correlate with teacher effectiveness, only a combination of these skills does. Specifically for EFL secondary teachers, Sun et al. (2024, p. 1892) find three competencies directly linked to pedagogical practice significant, i.e. 'Teaching Design Competency (TDC), English Knowledge and Application Competency (EKAC), and Teaching Implementation and Management Competency (TIMC)'.

Another important subjective factor that can predict the quantity and quality of technology integration is its perceived utility-value (Backfisch et al., 2021; Scherer et al., 2021). Apart from the subjective, teacher-centred perspective, external factors, such as a lack of technological equipment and poor internet connection (e.g., Hatlevik et al., 2021), are among the gravest problems hindering digitalization in education. The technology acceptance theoretical framework, or the TAM model (Teo, 2009) explains teachers' choice of ICT adoption as the result of the interplay of attitudes towards technology (ATT), perceived usefulness (PU) and perceived ease of technology use (PEOU).

Systematic reviews identify further factors for digital integration, for instance, Bui (2022) 'pedagogical beliefs, digital competence and confidence in technology, availability of resources, opportunities for professional development' and sociocultural context. The possibility of professional development has been proven to correlate with the continued usage of digital elements in face-to-face education ($r=0.247^{**}$) among Hungarian language teachers on primary level (Baloghné & Svraka, 2025, p. 71). It is of importance to overcome both first-order, i.e. technology-related, and second-order barriers to digitalisation, i.e. internal ones, rooted in beliefs (Ertmer, 1999); training should involve professional capacities and not only training in technology.

Degree of Digital Integration

Apart from exploring the facilitating factors behind educators' willingness to ICT utilisation, it is also of importance to assess the degree of its integration. The SAMR framework by Puentedura (2006) (short for Substitution, Augmentation, Modification and Redefinition) describes the degrees of digital integration from substituting traditional elements of teaching to redefining tasks. The effects reach from enhancement to transformation. In the first stage (*Substitution*), digital tools act as direct substitutes, without functional change. In its *augmenting* function, technology still acts as a substitute but improves the original task, resulting in a more engaging learning environment. We reach the *Modification* stage, when digital tools redesign learning tasks, offer collaborative ways of learning, and change how tasks are carried out. Finally, *Redefinition* is achieved when digital tools enable the creation of new tasks, which were inconceivable beforehand (Puentedura, 2006; Nguyen, 2024).

In spite of generally positive attitudes towards digital educational tools, studies reveal a strongly limited scope for its use (e.g. Szyszka et al., 2022). Lu et al. (2025) observe for pre-service teachers that despite being strong digital learners they surface as weak digital teachers, presumably because of the lack of pedagogical experience. However, they demonstrate high competences in digital security and literacy, and assessing digital content critically, which can lead to higher quality in the utilisation of digital tools in their future careers. According to Bui (2022), the two main functions include (i) use of digital tools for teacher-centred purposes, which means that teachers mainly do not exploit their interactive possibilities, but simply reproduce traditional methods such as presentation

of information; (ii) use of digital technologies in different content-specific areas and addressing educational needs, such as skill-based usage, or usage attending to learner motivation and engagement. Although the second function would be desirable, it is stated that the first one is still applied more frequently.

Results of Previous Quantitative Research as a Starting Point

As a precursor to the present study, several quantitative analyses have been carried out based on the questionnaire (N=706) designed by the research group *Supporting the language instruction of young learners with digital tools* (Hungarian Academy of Sciences – Faculty of Primary and Pre-school Education, Eötvös Loránd University). It has been demonstrated (Balogné Nagy & Svraka, 2025) that the feeling of success and regarding the online period as an opportunity for professional development, complemented by other positive experiences made during ERT, will likely result in the continued integration of digital tools. These subjective factors clearly weigh more than external ones (i.e. years of teaching experience, school's location, language(s) taught), for which no correlation could be established. Moreover, negative experience during the online period (e.g. problems related to lesson organisation, technical problems, assessment, communication) had no significant effect on digital tool usage in the future. From these findings, the conclusion has been drawn that it is vital to further promote familiarity with digital tools for language teaching to ensure that educators perceive their application positively.

On the basis of the above, the present study seeks more in-depth answers to digital integration concerning in-person language instruction on the primary level:

RQ1: Which digital tools did language teachers apply to what end during ERT and which of these remain in use in the physical classroom?

RQ2: Which properties of digital tools do teachers see as relevant when they determine their utilisation?

Methodology

A mixed methods study is attempted to include relevant quantitative data from a questionnaire, but mainly focussing on the qualitative results from interviews conducted approx. 6-7 months later. The online questionnaire, comprising 20 close-ended (multiple choice, Likert-scale) and 6 open-ended questions apart from the demographic ones, was completed by 706 teachers in the spring of 2022. Both the survey and the interview included questions about the pandemic period and the return to face-to-face teaching.

Participants

For the first phase of the larger study, 709 primary language teachers from all over Hungary completed an anonymous online questionnaire (for detailed data see Balogné Nagy & Svraka, 2025). Of these, 30 teachers were invited to participate in semi-structured interviews with researchers of the research group, after they expressed their informed consent to it in the survey. This study draws mainly on 27 interview accounts, which

proved to be complete and suitable for analysis. The interviews were carried out in Hungarian, in the native language of the teachers; generative AI has been utilized as assistance to translate the citations appearing in the paper. Table 1 provides a summary of the demographic information for the participating teacher interviewees.

Table 1

Demographic Information of Participants of the Interviews

location (N)	capital city: 9 big city: 4 medium city: 8 small town: 2 village: 4
Years of Teaching Experience	Mean: 22.85; Standard Deviation: 8.63 (min = 8, max = 40 years)
Languages Taught (N)	English: 24 German: 1 English and German: 1 Slovakian: 1

Data Collection Process

The research group conducted semistructured interviews with the participating teachers, which were conducted via video conferencing software. The interviews lasted between 40–90 minutes; they took place in November and December of 2022, whereas the questionnaires were filled out in spring 2022. The interviews were videorecorded and automatically transcribed verbatim; the automatic transcriptions were corrected manually. The interview guide included 12 groups of questions, with subquestions and examples as clarification for the respondents and as a help for the interviewer. The questions were piloted with six experienced teachers, four of them also working as tutors in teacher training.

Data Analysis

The relevant answers from the interviews were collected in excel tables and underwent inductive thematic analysis (Braun & Clarke, 2006). Mainly conventional content analysis has been applied as the main method, i.e. codes and themes emerged from the data (Riazi et al., 2023, p. 31). In the closing part of the Findings section, a summative content analysis is also performed to obtain an overall picture of the topics mentioned by the respondents.

In accordance with the aims of the present paper, answers to four question groups have been selected from the interviews, analysed and compared: (1) utilisation of digital tools before, during and after ERT; (2) how teachers rate the effects of ERT on their methodology; (3) learners' perceived attitudes and changes of attitude during ERT; (4) availability of digital equipment in schools. Apart from presenting detailed data on group (1) and (2), and comparing it with the results of the questionnaire, the overarching topic would be to extract categories that teachers use for describing the affordances and

negative aspects of utilizing digital tools. Through this, it is hoped that a deeper understanding of teachers' beliefs regarding digital integration is reached.

Findings

Frequency and Quality of Digital Tool Utilisation

In the course of the interview, two questions were inserted to gain information about digital tool usage before, during and after the distance education during the pandemic. We will review the answers to these three subquestions, comparing the results with the quantitative data gained from the questionnaire, when available.

Regarding the period before emergency remote teaching (ERT), 14 respondents reported that they made extensive use of digital tools and digital devices, which was expressed in two ways: they either emphasised the frequency of usage (regularly, on a daily basis, very frequently) or the variety of applied tools (website, interactive applications and digital devices, such as smartboards, tablets, laptops and mobile phones). Two of them also attended in-service-training to enhance their digital skills. 12 teachers applied digital tools less frequently or in a lesser variety before ERT; lack of digital skills and the creation of digital tasks as time-consuming are given as reasons by some. Unexpectedly, only one respondent reported to have not used any digital tools before the pandemic.

During remote teaching, educators listed a great variety of digital tools and platforms for several pedagogical purposes (see Table 2), some of which are of didactic nature e.g. introduction of a new topic, practice or form of assessment, while others are general pedagogical aims, e.g. differentiation, motivation or supporting social competence. Apart from digital coursebooks, they fall into the categories of most commonly applied tools (Moorehouse, 2023, p. 445): (1) learning management systems; (2) digital noticeboards; (3) interactive digital worksheets and quizzes; and (4) interactive presentation software.

Table 2

Digital Tools and their purposes for Use in the Online Period (Data from the Interviews)

Purpose	Tools Used
Delivering Lessons And Content	Google Classroom, Zoom, Google Meet, recorded video lessons, PowerPoint, YouTube, digital coursebooks
Practice	LearningApps, Live Worksheets, Wordwall, Moodle, digital coursebooks
Assessment and Feedback	Redmenta, Google Forms, photographed assignments, video submissions
Student Motivation	Kahoot, Quizlet, Bamboozle, creating short videos, gamified tests
Maintaining Social Interaction	Messenger, Zoom, interactive discussions, international projects
Fostering Learner Independence	at-home problem sets, project work, presentations
Enhancing Learners' Digital Skills	Teams, online dictionaries, learner-made digital tasks

It might be revealing to look at extracted data from Q24-Q28 from the questionnaire, multiple-choice questions to learn for which purposes which digital tools were used. Each question contained a final option, i.e. 'I did not use digital tools for this purpose'. These

answers have been presented below in Table 1. The high percentage of collaborative tasks and the fact that this category has been mentioned only once in the interviews point to the fact that it is a less exploited area in primary language teaching in Hungary.

Table 3

Purposes for which no Digital Tools were Used during ERT (Data from the Questionnaire, Percent)

Purpose	Used no Digital Tools for this Purpose (Percentage out of 709 Respondents)
Collaborative Tasks	41%
Content Creation, Presentation	10,9%
Testing And Assessment	9,4%
Online Coursebooks	5,3%
Practice	1,4%

The methodological changes in the third phase, i.e. returning to in-person teaching and present practices, are looked at from two points of view: First, respondents were asked to reflect on their present integration of digital tools; second, they were asked to list digital tools utilised during ERT that they no longer use in the physical classroom.

Table 4

Purposes of Using Digital Tools in In-Person Teaching

Purpose	Tools Used
Communication and Autonomous Learning	Microsoft Teams, Google Classroom, Moodle, blog posts, sharing videos and extra resources for absentees, online dictionaries
Instructional Support and Visual Aid	interactive textbooks, Smartboard materials, Bitable, BookrClass, YouTube videos, animation tools (Genially, Voki.com), National Geographic Kids, BBC Learning English
Practice	language-specific games, listening tasks with songs and videos, LearningApps, Wordwall, Kahoot, Quizlet, Live Worksheets
Student Motivation	gamified quizzes (Kahoot, Quizlet), animated videos, student projects and videos
Learner-Created Content	learner-made games, videos and presentations
Assessment	Kahoot, Google Forms for quizzes

The names of applications and platforms mentioned in the interviews were also frequently mentioned in Q32 of the questionnaire inquiring which digital tools educators have kept in the physical classroom. In the top ten (see Table 4), we find digital task creator sites, testing applications, LMSs and Youtube as a learning content provider site.

The questionnaire contained a similar question, with a multi-select option, about the purposes for which digital elements are utilised in on-site education. Although the categories were given and the respondents could only mark the purposes, most of them match one of the above functions spelt out by the interviewees. Autonomous learning was

not listed in the questionnaire but mentioned in the interviews. Here, again, collaborative tasks seem to be a neglected area, a possible challenge not only for remote teaching.

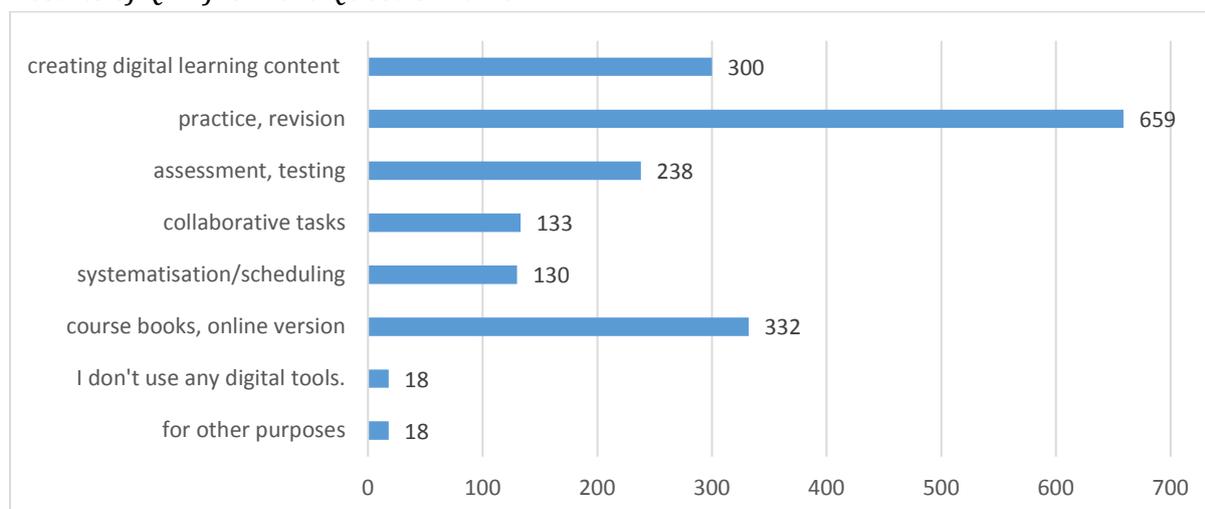
Table 5

Websites and Digital Applications that Teachers have Continued to Use after the Online Period (Data from the Questionnaire, N)

Name of Digital Application	Number of Mentions
Wordwall	293
LearningApps	256
Kahoot	193
Quizlet	157
Liveworksheets	106
Google Classroom	106
Redmenta	84
ISL Collective	71
Youtube	56
Microsoft Teams	42
Qizizz	29
PowerPoint	28
Kréta (the Official Hungarian School Administration System)	20
Padlet	20
Agenda Web	19
Google Forms	18
Bamboozle	18
Genially	17
Online Resources of Coursebooks	16
Sutori	12
others (98 other Apps Mentioned)	207
Nothing	46

Figure 1

Results of Q33 from the Questionnaire



'For which purposes do you use digital tools in in-person education?' (N)

When answering the above interview question about digital integration in the conventional classroom, many reasons were included as well, which can be grouped into the following categories: Reasons for keeping certain tools after the online phase include learner satisfaction (*'Pupils got to like Kahoot and LearningApps'*, Interview21/henceforth abbreviated to: Int21), perceived usefulness for pedagogical and methodological purposes (for practice, visualisation, digital skills development etc.), and educators' personal preferences.

One teacher claimed not to include any digital tools in presence education, only for individual study, because of their perceived unusefulness on the long run. Often, tools gain a new function in the physical classroom: for instance, Google Classroom and Teams continue to be used as instructional support for sharing information for absentees and for communication outside the classroom, i.e. it seems that 'tools enabling asynchronous communication' (Moorhouse, 2023, p. 314) have gained significance.

Turning to the second question, i.e. discontinued use of digital apps, testing was mentioned by seven respondents as a purpose for which they no longer use digital tools, as they are unnecessary in the physical classroom. Two respondents mentioned financial accessibility problems in connection with certain applications which resulted in discontinuing their usage. Three respondents said that they do not need certain digital tools anymore and named an LMS software. One teacher believes that digital tasks are not to be integrated in the physical classroom, but may be used for additional practice, outside class.

Changes in Language Teachers' Methodologies

In the questionnaire, a multiple-choice question with multi-select options has been posed (Q30) to inquire about possible changes in language teachers' methods as a result of ERT. From these results, it is clearly visible that most of the 706 respondents selected multiple answers, i.e. a great amount of modifications to former practices can be expected in the detailed interviews.

Moreover, the results of a metaphor analysis, which was included as the last question of the questionnaire, are also in line with the above findings: 'Most of the respondents claimed that they had undergone a massive professional transformation triggered by the ERT mode' (Árva et al., 2024, p. 90).

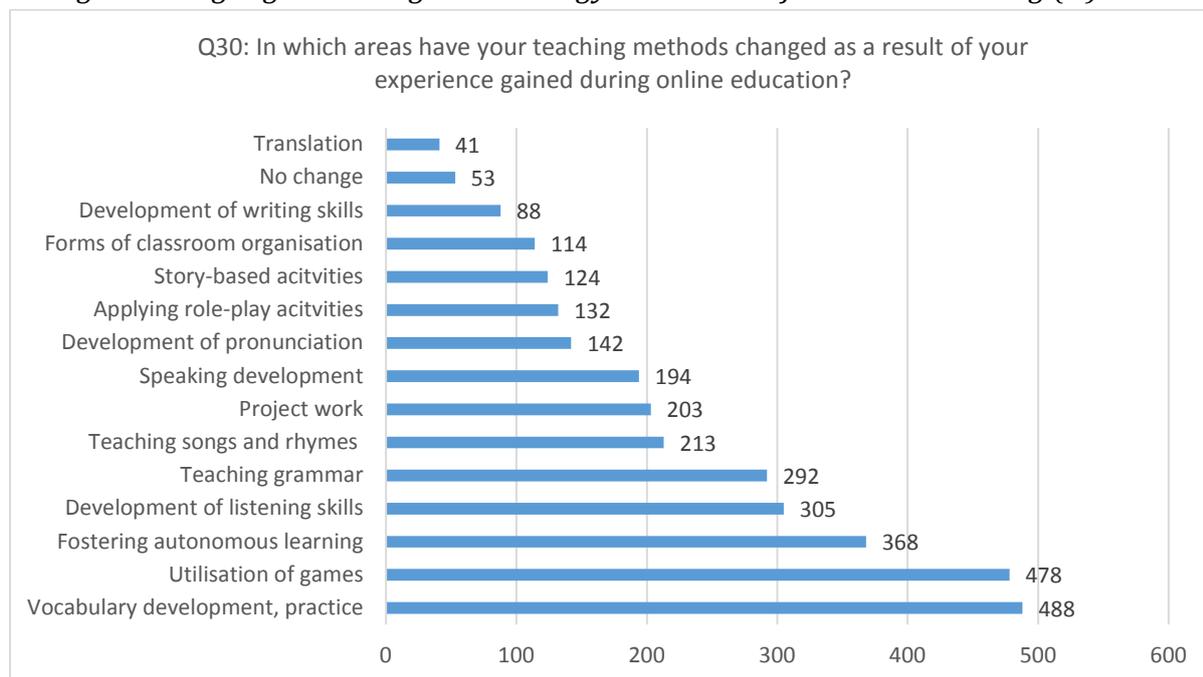
However, the answers to the interview question 11 (*'Could you please explain whether and how your in-person language teaching methods have changed as a result of the online period?'*) are less clear-cut as to the degree of change. The answers can be grouped into three categories, which will be characterized below:

- yes, to a greater extent – 5 answers;
- yes, to a minor extent – 17 answers;

- no, my methodology has not changed at all – 5 answers.

Figure 2

Changes in Language Teaching Methodology as a Result of Distance Teaching (N)



First, the respondents reporting considerable changes to their methods regard the online period as an opportunity for self-development. Many educators noted that while such techniques had already been part of their teaching, the pandemic period prompted a more deliberate application. Several claimed that digitalisation is now a natural part of education in general, and that the enhancement of learners' digital skills is vital in our age. Here and in the second group as well, many mentioned that using digital tools, i.e. LMS systems is an effective way of promoting autonomous learning. Moreover, learners' preferences and demand for gamification and digital applications is a significant factor in this group.

Second, all educators who have experienced only a slighter modification of their methods emphasised that using the right amount of digital elements in a lesson is very important. Two out of the 17 answers claimed that the change involved moving away from digital practices back to traditional methods, whereas the others mentioned increased exploitation of digital opportunities. They opted for moderate integration, mostly as a useful supplement to traditional methods, e.g. as a means of motivation, visualisation, gamification or as a means of practice. They have retained the use of digital resources (websites, applications and the digital materials of their current coursebook) as a result of the online period, and many describe these as a great help for lesson planning. One very insightful comment included that there has been a change in the degree of digital tool utilisation from the beginning of the post-pandemic, in-person education until the

time of the interview (approx. half year later): This language teacher observed a decline in the frequency and variety of digital tool usage over this period.

The third group reporting no ERT-related change in their methodologies emphasised the importance of physical presence, real-life oral communication, activities involving movement and young learners' experience with physical books rather than with digital learning materials. One respondent uses digital materials as a natural part of lesson planning, as they did before the pandemic, but claimed not to have encountered new digital tools during the online teaching periods.

Reasons for the Variation of Data in Comparison with the Quantitative Results of the Questionnaire

It must be repeated that temporal factors might have played a significant role in differences detected between the qualitative and quantitative data. The questionnaire was sent out a few months after the return to in-person teaching, whereas the interviews were carried out half a year later. Thus, the results might reflect the changes that took place in the meantime. On the one hand, divergencies could signal the short-lasting nature of some effects of remote teaching, as also reported by some respondents in the qualitative study, e.g. in the absence of forced circumstances, keeping only a small set of digital applications from the great array encountered during ERT; with time, the practical usage of less frequently used tools was gradually forgotten, which hindered their re-introduction into the physical class.

Learners' Attitudes and their Changes during ERT

Two main directions have been identified in the teachers' view of their pupils' attitudes to learning in the online period. One group emphasises the change in attitude from the first to the second close-down: attitudes shifted from curiosity to fatigue, with emotional, social, and technical challenges playing major roles. The others reported that they are not able to generalize, the individual learner's personality determined how they responded to the situation. Half of the respondents mentioned parents' supportive attitude as a decisive factor; three teachers reported that students exhibited notable developmental delays upon their return. No correlations can be detected with digital readiness or methodological change.

Availability of Digital Equipment

Apart from one person, all respondents reported that they have access to Wi-Fi and a variety of digital devices in their institution: smartboards, tablets and laptops were mentioned, and mobile phones in some cases, as well, for learners who do not own one. Many schools have a computer room which can be used on demand. The one respondent who did not describe their school's digital equipment as satisfactory said only tablets are available, however they cannot connect to the Wi-Fi network; additionally, the school has a strict policy regarding mobile phones due to cases of former misuse.

Factors Influencing Digital Tool Choice

In this section it is attempted to identify the factors that influence the integration of digital applications by identifying the main categories and themes that emerged during the analysis of the interviews. As many questions are interconnected with one another, I will view the interviews as a whole in the discussion, as similar topics were brought up in many cases in answers to different questions, therefore analysing the groups of questions separately would not lead to a unified view of the results. Below, the results of this summative content analysis are presented as Table 6. The features brought into connection with digital tools are ordered into categories; in most of the cases it seems reasonable to differentiate between a positive and negative aspect, as both have been mentioned by interviewees.

Table 6*Main Categories of the Interviews and their Descriptions*

Category	Positive Aspects	Negative Aspects
perceived usefulness	methodologically useful	dispensable in the physical classroom; no long-lasting effects on learning
time efficacy	saves time (reuse of earlier materials; digital testing; using templates), great help for Ts	time-consuming to create
degree of integration	increased use after the online period; indispensable part of everyday teaching; a helpful supplement	in moderation; decreased use; only as a supplement to traditional face-to-face methods; only for visualisation
motivational engagement	factor/ motivating, interesting, provides variety; gamification; fun	becomes easily boring
learners' demand	Ls increased demand for digital tasks and tools	Ls prefer traditional methods in the physical classroom
relation to physical activity	promotes physical activity in class	a barrier to physical activity
relation to speaking skills	enables access to native speech and correct pronunciation	speaking can only be practised in person
autonomous learning	promotes autonomous learning (optional tasks, extra practice, self-correction)	-
learners' digital literacy	Ls digital skills development is vital to enhance in school	Ls need less digital media exposure, not needed in school; emphasising social skills instead
teachers' digital skills	familiarising with digital resources; wide variety; a form of self-development	no long-lasting effects of the digital period; many resources but difference in quality
technical accessibility	easy	problematic
digital learning management	information for absentees; dissemination of materials; submission of assignments	not needed in face-to-face instruction

The above categories (Table 6) have been identified and counted in the answers to the selected questions to see how frequently they came up as a decisive factor in digital media usage.

Table 7*Categories from the Interviews Describing Digital Tools with the Number of their Mentions (N)*

Category	Number of Mentions
A. perceived methodological usefulness	
1. methodologically useful	9
2. dispensable in the physical classroom	1
B. time efficacy	
1. saves time	6
2. time-consuming to create	2
C. degree of integration	
1. increased use, integration	8
2. use in moderation	7
D. motivational factor/engagement	
1. motivating, provides variation, gamification	11
2. becomes easily boring	1
E. learners' demand	
1. Ls increased demand for digital tasks	5
2. Ls prefer traditional methods	2
F. relation to physical activity	
1. promotes physical activity	3
2. barrier to physical activity	2
G. relation to speaking skills	
1. enables access to native speech	4
2. speaking is best practised in person	3
H. autonomous learning	
1. promotes autonomous learning	9
2. --	
I. learners' digital literacy	
1. vital to enhance in school	7
2. less media exposure in school	2
J. teachers' digital skills	
1. self-development; digital resources	8
2. no long-lasting effects	2
K. technical accessibility	
1. easy, manageable	5
2. problematic	2
L. digital learning management	
1. for dissemination of information, extra tasks	10
2. not needed in in-person education	3

The most frequently mentioned affordances are motivation, sharing learning materials, enhancement of autonomous learning and methodological practicality. The most controversial topics, where we find a similar number of negative and positive mentions, include the degree of integration, relation to speaking skills and to physical activity. In the latter case ('physical movement, action'), working with digital tools is associated with lack of movement on the one hand; on the other hand, it is seen as a method to mobilise learners in the physical classroom (getting up, moving tiles on the smartboard etc.), i.e. to escape the routines of traditional book-based teaching. This demonstrates that one's own way of utilisation can influence educators' subjective views on a topic.

Discussion

From the above, it is possible to identify the following overarching themes: methodological value of digital tools, pedagogical relevance, and the optimal degree of digital integration. Most of the positive sides of categories refer to affordances of digital tools for teachers and/or learners: (i) overall utility-value, and connected to it, usefulness in specific fields, e.g. for practice, speaking and pronunciation; (ii) pedagogical value, such as enabling more independent work and engagement on the learners' side, and enhancing their digital skills.

The category 'relation to speaking skills' appears as one of the controversial ones: digital resources and platforms can provide direct contact to native speech and native speakers and through the latter, foster natural communication in the target language. However, a heightened focus on oral language skills has emerged, with educators stressing the importance of real-time, spontaneous communication, which they felt as marginalized in the online format. Clearly, the assessment of this category heavily depends on the functions digital tools served for the respondents and leads to further questions of the degree and modes of integration and instructors' technical pedagogical skills.

Time efficacy appears as an affordance for teachers when they referred to repeated application of self-created tasks, or to relying on resources that had been collected in the course of the online period. Presumably, this category stands in connection with perceived self-development: in four cases, the respondents mentioned both topics in their answers. Interestingly, this factor surfaces as a disadvantage, as well: Implementing new technology often requires time for planning and troubleshooting. According to two respondents, investing time into creating digital materials is not always worth the effort. It is notable that, when giving reasons for the discontinued usage of certain digital tools, no respondent mentioned lack of technical equipment in the school. This is in line with former findings of our quantitative research, which stated that subjective aspects have a greater influence on digital readiness than external factors (Baloghné Nagy & Svraka, 2025), for which no correlation was detected. Two teachers stopped using certain, originally free applications which has become available for a fee.

Closely connected to personal pedagogical beliefs is the question of using the right amount of digital tools. Those teachers who mentioned this, all gave a pedagogical explanation for their concept. By some, it is meant as finding the balance between physical and digital activities; others expressed it as not overusing digital tools which might have an effect on learners' social competences, which are valued more than digital skills – these respondents claim that learners have enough encounters with digital media elsewhere, thus the school has to provide a 'safe haven' from this aspect (Int2, below). These are the teachers who typically claimed to use digital tools less frequently than before and rather concentrate on personal teaching methods.

'I definitely do bring it in sometimes as motivation, but I don't assign or use as much of it — I incorporate it differently. Because I believe that there's already too much information going into the kids' heads as it is. They've become too dehumanized. I'm sorry, but I just have to say it — in this whole online teaching system, children need to be educated, not just taught. If, even in person, their only task is to stare at the screen, then social connections become even less likely to form.' (Int2)

On the other hand, a number of educators emphasise the necessity of developing digital literacy in the classroom, i.e. apart from integrating online features, they also pay attention to digital skills development, such as making learners acquainted with online dictionaries, platforms and applications (Int20).

'So my conviction even before (ERT) [...] that school cannot afford to ignore the technological developments of the 21st century. However, this wasn't something that appeared so prominently or consciously in my daily practice before. Now, I increasingly believe that if we don't incorporate these opportunities into the classroom, it can actually have a harmful effect on children's learning processes, because they won't be able to use these tools to support the expansion of their own knowledge.' (Int20)

Another novel pedagogical concept, autonomous learning, clearly emerges from the data, as the most cited advantage of digital elements after being motivating and entertaining for learners. This insight is also the main reason for maintaining learning management systems after ERT: either for sharing information with absentees, too, and providing a space for additional tasks and practice in a manageable way. Another major affordance of LMS platforms, i.e. enabling collaboration, is less typical in the setting of our study. When utilised for group projects, the participants produced higher quality work and demonstrated deeper engagement with the learning material (Zou et al., 2025, p. 6). Our results also show a preference for maintaining LMS systems, which is a clear effect of the online teaching period, however, only for the purpose of learning management, material distribution and individual study, and the collaborative facet of their application does not surface in the interviews.

One respondent addressed the issue of changing teacher roles as a result of changing modes of education. In Hassan and Mirza (2020) for instance, the shift from teacher-centredness to student-centredness is thematised, along with adaptability as a crucial feature of teachers in the digital era. Furthermore, being a facilitator and resource provider for – digitally supported and autonomous – learning is gaining ever more relevance in connection with learner-centred language learning (Ly, 2024). It is clear from the citation, that the respondent is struggling with the redefinition of their teacher role:

'You can make really great little videos with these funny characters [...], and the kids loved it. With just a little explanation from me, they were able to learn it [=the specific grammar] really, well, completely on their own. I actually use this quite often. What's strange about it is that if I bring this explanatory video into class and start playing it, I almost become unnecessary — it's really interesting, actually, really interesting.' (Int4)

The topic is to be addressed how long-lasting the effects of the pandemic-induced learning situation are going to be. Many interviewed educators already admitted that they are now able to choose from a greater array of digital resources than before ERT; however, they integrate fewer digital tools than during ERT. The opinion below also reflects this problem. It is thus an important task for future research to identify the features that language educators find decisive in maintaining the use of a specific digital tool.

'The only problem is that it wasn't lasting, because now, for example, I can't even remember which app I used to make these games, and I think I should look into it, but I really don't feel like it—and I think that's why I'm not doing it with the kids.' (Int13)

On the other hand, three respondents who reported only a slight change in their post-pandemic methodology, actually listed a considerable number of applications for a variety of educational purposes (Int1, Int7, Int 27). This phenomenon may point to the direction of an emerging digital normalisation (Bax, 2011), i.e. the respondents have already interiorised the digitally induced alternations in their teaching, and they now perceive them as 'normal'.

Applying the levels of digital tool utilisation according to the SAMR framework (Puentedura, 2006), it is possible to assess the quality of digital integration in language teaching in our present setting. First, the *Substitution* stage is represented by sharing content online, using online versions of textbooks for presentation. A number of functions applied by the respondents can be described as *Augmentation*, the digital tool acting as a substitute but improving the task: presenting online videos, including native speech in the lesson via online tools, digital tools as instructional support and visual aid to understanding, and online worksheets. The third stage, *Modification* (changes in how the task is carried out, offering collaborative ways of learning) is represented by interactive tasks and gamification for practice and motivation, and escape rooms for practice and assessment. Finally, examples for the *Redefinition* stage are scarce but could be found. To mention some: real-time communication with native speakers; introducing digitally-enhanced project work with creative results, such as videos and presentations created by learners.

Conclusion

Primary language teachers mostly experienced professional development during the online periods, which led to a general willingness to continue digital tool utilisation, yet the degree and quality of digital integration into language teaching varies. Several digital practices acquired during remote teaching have been retained as supplementary elements in face-to-face education or integrated into everyday classroom practice. Thus, it seems that normalisation, i.e., a stage where educational technology is invisible and fully integrated (Bax, 2011), is on its way in Hungarian primary language teaching. However, in order to exploit digital teaching tools fully, not only technological proficiency is needed but the enhancement of pedagogical knowledge and familiarisation with the concepts of 21st century education.

As a result of thematic analysis, it has been proven that subjective factors weigh more than external ones regarding the willingness to continue to use digital tools in the physical classroom. Furthermore, it can be deduced from the data that certain evolution in pedagogical concepts, widening of perspectives is presumably on its way. For instance, increased focus on independent learning manifested itself through maintained use of LMS systems even in on-site teaching. This is definitely an advancement that was reinforced by the online periods and had longer-lasting effects. Other concepts, e.g. supporting cooperative learning, which was perceived as difficult to achieve in online settings, remained as an area yet to be developed in language teaching in Hungary. Some researchers (Bećirović et al., 2021; Mullen, 2025) emphasize the teacher's guiding role in learners' 'self-directed learning' (SDL) – maintaining LMS systems in face-to-face education is a significant step towards promoting learner autonomy and supporting learners on their way to SDL by providing learning resources and strategies.

Moreover, it has been perceived and expressed by the respondents that digital integration brings with itself a shift in teachers' roles, and new modes of education emerge; certain tasks belonging formerly to teachers might also be taken over by digital applications – teachers need strategies and support to adapt to these appropriately.

It follows from the above that targeted in-service training needs to attend to the above issues as well (Schulze-Vorberg et al., 2021). In addition to enhancing technological and pedagogical knowledge, it seems also vital to address interdisciplinary skills, together with typical beliefs for and against utilising digital tools, e.g. its relation to autonomous learning, learners' physical activity or social skills. Similarly, on the basis of an EU-wide survey on the future of language education affected by the pandemic, Rüschoff (2023, p. 48) observes that in order to exploit digitally enhanced learning, not only practical skills have to be fostered 'but also the theoretical and pedagogical mindset at all levels'. In-service and pre-service training must foster educators' digital literacy also as part of their professional responsibility to their students (Mullen, 2025).

Another urgent task concerns the question how to preserve the positive developments of digitalisation in the physical classroom, as some of the results point to the risk of returning to former practices without integrating these newly acquired innovations. The aim would be, through the improvement of personal methodologies and pedagogical mindsets, to establish long-lasting innovations in language teaching as a system.

This study faces certain limitations. As described in the methods, the interviewed teachers formerly gave their consent to further cooperation after completing the online survey, which might mean that most of them are more interested in digital integration than the average. Nevertheless, there were several respondents who expressed adverse views on the topic. Additional quantitative studies would be needed to accurately measure the quality and quantity of teachers' actual ICT integration in the classroom, as in Nguyen (2024). Despite its limitations, the findings of the paper and the research group provide notable insights into the state of digital integration in language teaching for future research and for policy development. Further research may expand sample size and duration of the research, include longitudinal investigations to gain more refined results about the long-lasting nature of the effects of ERT. Comparative studies with other regions would also be consequential.

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Gizella Baloghné Nagy: Conceptualisation, Data Curation, Investigation, Methodology, Resources, Visualisation, Writing (Original Draft, Review & Editing)

Generative AI Use Disclosure Statement

The author declares she has used Artificial Intelligence (AI) tools for the translation of citations from the interviews from Hungarian to English. These citations are located in the *Results* and *Discussion* sections.

Ethics Declarations

World Medical Association (WMA) Declaration of Helsinki–Ethical Principles for Medical Research Involving Human Participants

Ethical standards were maintained in the research process; an ethical license from the Research Committee of the Faculty of Primary and Pre-school Education, Eötvös Loránd University has been obtained (reference number: KE 2022/005.; date: 31.03.2023). The questionnaire was designed to be anonymous; it did not collect respondents' personal identifiable information. The interviewees consented to a data protection statement at the beginning of the interview, which is documented in writing in the transcripts of the interviews. Furthermore, participation in the study was voluntary, and the participants were informed that they can freely discontinue completing the survey or the interview at any time. This study was carried out in accordance with the recommendations of the World Medical Association (WMA) Declaration of Helsinki.

Competing Interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data Availability

The dataset analysed during the current study is available upon request from the corresponding author.

References

- Árva, V., Medgyes, P., & Trentinné Benkő, É. (2024). A silver lining: Metaphors suggesting professional development through emergency online language teaching in primary education. *Language Teaching Research Quarterly*, 40, 80-93. <https://doi.org/10.32038/ltrq.2024.40.05>
- Backfisch, I., Lachner, A., Stürmer, K., & Scheiter, K. (2021). Variability of teachers' technology integration in the classroom: A matter of utility! *Computers & Education*, 166, Article 104159. <https://doi.org/10.1016/j.compedu.2021.104159>
- Baloghné Nagy, G., & Svraka, B. (2025). The effects of emergency remote teaching on language teachers' digital tool integration in traditional classrooms. *International Journal of Instruction*, 18(1), 61-76. <https://doi.org/10.29333/iji.2025.1814a>
- Bax, S. (2011). Normalisation revisited: The effective use of technology in language education. *International Journal of Computer Assisted Language Learning and Teaching (IJCALLT)*, 1.2, 1-15. <https://doi.org/10.4018/ijcallt.2011040101>
- Bećirović, S., Brdarević-Čeljo, A., & Delić, H. (2021). The use of digital technology in foreign language learning. *SN Social Sciences*, 1, 246. <https://doi.org/10.1007/s43545-021-00254-y>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Bui, T. H. (2022). English teachers' integration of digital technologies in the classroom. *International Journal of Educational Research Open*, 3, Article 100204. <https://doi.org/10.1016/j.ijedro.2022.100204>

- Ertmer, P. A. (1999). Addressing first- and second-order barriers to change: Strategies for technology integration. *Educational Technology Research and Development*, 47(4), 47–61. <http://www.jstor.org/stable/30221096>
- González, C., Ponce, D., & Fernández, V. (2023). Teachers' experiences of teaching online during COVID-19: Implications for postpandemic professional development. *Education Technology Research and Development*, 71, 55–78. <https://doi.org/10.1007/s11423-023-10200-9>
- Hassan, M., & Mirza, T. (2020). Impact of ICT in changing the role of a teacher: an overview. *Gedrag & Organisatie Review*, 33(3), 441–449. <https://doi.org/10.37896/gor33.03/440>
- Hatlevik, O. E., Radtke, I., & Utgård, K. (2021). Exploring educators' perceived possibilities and obstacles related to access and use of ICT: Revealing the digital divide in Norwegian Adult Education centres. *Nordic Journal of Digital Literacy*, 18(1), 8–22. <https://doi.org/10.18261/njdl.18.1.2>
- Horváth, L. (2023). Adaptive pedagogical strategies responding to emergency remote teaching – immediate responses of Hungarian primary school teachers. *Research in Learning Technology*, 31, Article 2978. <https://doi.org/10.25304/rlt.v31.2978>
- Jabbari, N., Es'haghi, S., & Zarrinabadi, N. (2025). Motivation and affect in digital game-based language learning and teaching. In L. McCallum & D. Tafazoli (Eds.), *The Palgrave encyclopedia of computer-assisted language learning* (pp. 1-6). Springer. https://doi.org/10.1007/978-3-031-51447-0_133-2
- Kaldonek-Crnjaković, A. (2022). Impact of emergency remote teaching on young foreign language learners in Poland. *Electronic Journal of Foreign Language Teaching [e-FLT]*, 19(2), 177–190. <https://doi.org/10.56040/kacr1925>
- Lu, C., Lee, J. C., & Gu, M. M. (2025). Integrating digital technologies into teaching: A study on pre-service language teachers' perceptions and practice. *Education and Information Technologies*, 30, 19537–19557. <https://doi.org/10.1007/s10639-025-13511-x>
- Ly, C. K. (2024). Teachers' roles on English language teaching for promoting learner-centered language learning: a theoretical review. *International Journal of TESOL & Education*, 4(2), 78-98. <https://doi.org/10.54855/ijte.24425>
- Mishra, P., & Koehler, M. J. (2006). Technological Pedagogical Content Knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017–1054. DOI: 10.1111/j.1467-9620.2006.00684.x
- Moorhouse, B. L. (2023). Teachers' digital technology use after a period of online teaching. *ELT Journal*, 77(4), 445-457. <https://doi.org/10.1093/elt/ccac050>
- Moorhouse, B. L., & Wong, K. M. (2023). Teaching with technology in the post-pandemic digital age: technological normalisation and AI-induced disruptions. *RELC Journal*, 54(2), 311–320. <https://doi.org/10.1177/00336882231176929>
- Mullen, M. (2025). Equipping language teachers with the digital literacy to support student learning in and beyond classrooms. *International Journal of TESOL Studies*, 7(3), 106-129. <https://doi.org/10.58304/ijts.250715>
- Nguyen, H. H. (2024). Developing and validating a questionnaire on EFL teachers' actual integration of ICT into their classes at Vietnamese higher education. *Language Teaching Research Quarterly*, 42, 1-20. <https://doi.org/10.32038/ltrq.2024.42.01>
- Puente dura, R. R. (2006). Transformation, technology, and education. Hippasus. http://hippasus.com/resources/tte/puente_dura_tte.pdf
- Riazi, A. M., Ghanbar, H., & Rezvani, R. (2023). Qualitative data coding and analysis: A systematic review of the papers published in the Journal of Second Language Writing. *Iranian Journal of Language Teaching Research*, 11(1), 25-47.
- Rosyidi, A., Setyosari, P., Kuswandi, D., & Praherdhiono, H. (2024). A structural correlation model of EFL teachers' technological pedagogical content knowledge and their teaching effectiveness. *Language Teaching Research Quarterly*, 40, 147-160. <https://doi.org/10.32038/ltrq.2024.40.09>
- Rüschhoff, B. (2023). The impact of the Covid pandemic on the future of digitally enhanced language education. In R. Rossner, & F. Heyworth (Eds.), *Rethinking language education after the experience of Covid: Final report* (pp. 41-49). European Centre For Modern Languages of the Council of Europe.
- Sailer, M., Murbock, J., & Fischer, F. (2021). Digital learning in schools: What does it take beyond digital technology? *Teaching and Teacher Education*, 103, Article 103346. <https://doi.org/10.1016/j.tate.2021.103346>
- Scherer, R., Siddiq, F., & Teo, T. (2015). Becoming more specific: Measuring and modeling teachers' perceived usefulness of ICT in the context of teaching and learning. *Computers and Education*, 88, 202-214. <https://doi.org/10.1016/j.compedu.2015.05.005>
- Schulze-Vorberg, L., Krille, C., Fabriz, S., & Horz, H. (2021). Hinweise und Empfehlungen für die Konzeption von Lehrkräftefortbildungen zu digitalen Medien. *Zeitschrift für Erziehungswissenschaft (ZfE)*, 24, 1113–1142. <https://doi.org/10.1007/s11618-021-01046-z>

- Sun, Q., Qu, P., Huang, K., & Sihes, A. (2024). Unlocking vital professional skills of EFL educators to cultivate student English core competencies in the digital era. *Journal of Electrical Systems*, 20, 1885-1896. [10.52783/jes.1636](https://doi.org/10.52783/jes.1636)
- Szyszkka, M., Tomczyk, Ł., & Kochanowicz, A. M. (2022). Digitalisation of schools from the perspective of teachers' opinions and experiences: The frequency of ICT use in education, attitudes towards new media, and support from management. *Sustainability*, 14, 8339. <https://doi.org/10.3390/su14148339>
- Teo, T. (2009). The impact of subjective norm and facilitating conditions on pre-service teachers' attitude toward computer use: A structural equation modeling of an extended technology acceptance model. *Journal of Educational Computing Research*, 40(1), 89-109. <https://doi.org/10.2190/EC.40.1.d>
- Werner, S., & Küplüce, C. (2021). Digital language teaching after COVID-19: What can we learn from the crisis? In N. Zoghلامي, C. Bruderermann, C. Sarré, M. Grosbois, L. Bradley, & S. Thouèsny (Eds.), *CALL and professionalisation - short papers from EUROCALL 2021* (pp. 296-301). Research-publishing.net. <https://doi.org/10.14705/rpnet.2021.54.1349>
- Winter, E., Costello, A., O'Brien, M., & Hickey, G. (2021). Teachers' use of technology and the impact of Covid-19. *Irish Educational Studies*, 40(2), 235-246. <https://doi.org/10.1080/03323315.2021.1916559>
- Yanovets, A., Bondar, T., Kozak, A., Knysh, T., Shevchuk A., & Voitenko, I. (2025). Digital transformations in learning: New approaches to teaching foreign languages in the modern educational environment. *Premier Journal of Science*, 13, Article 100098. <https://doi.org/10.70389/PJS.100098>
- Zou, Y., Kuek, F., Feng, W., & Cheng, X. (2025). Digital learning in the 21st century: trends, challenges, and innovations in technology integration. *Frontiers in Education*, 10, Article 1562391. <https://doi.org/10.3389/feduc.2025.1562391>