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Methodological aspects of online forms of teaching

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Abstract

Aim. The paper presents the results of a questionnaire survey, the aim of which was to find out what are the preferences of English learners regarding different platforms and applications to be used for home schooling.

Methods. To find answers to such questions as to which educational form, school education or home schooling, is more preferred, what are the strengths and weaknesses of home schooling, which skills are being practised via online Zoom lessons, and which skills are being practised via worksheets, a questionnaire survey was carried out. Respondents of the survey were English learners, secondary vocational school students, aged from 16 to 20 years old.

Results and conclusion. Based on the analysis of the data recorded from the learners' responses to the particular questionnaire items, the most significant three weak-

nesses of the home schooling were identified as technical problems, more homework and lack of social contacts, while the main strengths that were found were home comfort, sufficient sleeping time and less dense timetable.

Cognitive value. Quality of education is still more and more dependent on access to the Internet, the right technology, and the skills required to use it. It is too early to judge whether a new hybrid educational system will emerge with both face-to-face and online classes, or the short-term preparation for online learning will result in poor performance and suggest going back to traditional methods. As the situation further progresses and more data on the topic are gathered, it is necessary to process extensive analyses of the larger-scale impact of the pandemic on different aspects of education.

Key words: coronavirus pandemic, online teaching and learning, home schooling, strengths and weaknesses of home schooling, foreign language teaching, English learners

Introduction

The year 2020 will be remembered as the year when social distancing has changed the landscape of education. The coronavirus pandemic with its closures of schools and other learning spaces has dramatically influenced the operation of all kinds of schools and educational institutions, forcing teachers to move to the online delivery of lessons. Most people will agree that schools were unprepared for such a large-scale shift and that, while using technology to support learning can be a new and exciting opportunity, a forced switch without an adequate transition period was stressful and traumatic for everyone, as it has been described by Alena Hašková, Romana Havettová and Zuzana Vogelová (2021). Any predictions we can make about the educational technology trends for the academic year 2021/2022 must consider this issue. The first few months of the year, at least, will be more of the same, but this time, with the added gift of experience. Teachers have learnt a few lessons of their own, they have become aware of the fact that blended learning is the key to manage the educational challenges we are facing and the mistakes made in 2020 should be something to build upon in 2021/2022.

Making education accessible during the coronavirus pandemic has become a big issue that acquired even more nuances than it had before. Currently, accessibility is not only about creating appropriate conditions for students with different kinds of disabilities to be integrated into common teaching anymore. Currently, it is rather about creating appropriate conditions for all students to be integrated into distant and blended learning instruction processes, as distant and blended learning have become new norm arrangements, both of which are carried out at home and school (Tkáčová, Pavlíková, Tvrdoň, & Jenisová, 2021). That is why schools and families do their best to equip themselves for another year of socially distanced learning, and so we can predict that the creation of the technical infrastructure for distant instruction accessible for all will—or at least should—be at the top of each school stakeholders and all decision-makers' to-do list. Following these predictions, one can state that the year

2021, more than any other, will be the year of science, technology, engineering and mathematics, as these will, no doubt, hold the key position in delivering teaching and knowledge to the youth through computers. However, despite all of that, we do need art to stay human.

Use of digital technologies in teaching different subjects

Even before the corona pandemic, a lot of empirical studies have been aimed at the global tendencies to integrate digital technologies into system of education at all levels of schooling (Klement, Dostál, Kubrický, & Bártek, 2017; McKnight et al., 2016; Montrieux, Vanderlinde, Schellens, & De Marez, 2015; Neumajer, Rohlíková, & Zounek, 2015; OECD, 2014; Sangrà, & González-Sanmamed, 2010; Skutil, Maněnová, & Čermáková, 2013). As Jonathan Anderson, Tom van Weert and Charles Duchâteau present (2002), supporting learning and teaching processes by digital means can significantly improve the quality of education by emphasising such skills as critical thinking, decision-making and handling of dynamic situations, working in groups, or communicating effectively (Khonamri et al., 2020; Khonamri, Azizi, & Králik, 2020). However, most of the empirical research focusing on the use of digital didactic resources in teaching at primary and secondary schools has been carried out from the cross-disciplinary point of view, i.e. how these means are used in school teaching across the whole range of school subjects. But, as the results of one of our previous studies show, there are differences in the use of these didactic means by different subject teachers. Differences can be spotted in the purposes for which teachers of different subjects, i.e. subjects of different characters, use the digital means most often in their lessons. According to their character, the school subjects can be divided into five categories:

- natural science subjects,
- languages (mother tongue and foreign languages),
- social science subjects,
- artwork and educational subjects,
- professional (vocational) subjects.

Table 1 shows the most frequent purposes (see the presented relative frequencies for different subject categories) for which teachers of the given groups of the subjects use digital technologies in their teaching.

Results presented in Table 1 prove significant differences in the main purposes for which the teachers of different subjects use digital means and interactive activities in their lessons to increase the efficiency of the educational processes. Language, artwork and educational subject teachers use the digital means in teaching mostly to elicit higher motivation of learners to learn, followed by their use for explanation and exemplification of a new subject matter to their students. The opposite is the case of natural science and social science subject teachers. These two groups use digital means in teaching their sub-

jects most frequently to explain and exemplify new subject matter to students and the second reason for which they use these means quite frequently is to elicit higher motivation of learners to learn. The obtained results show, as a special case, teaching professional/vocational subjects. In teaching these subjects, teachers use digital means mainly for the consolidation of the new subject matter, and one can say that almost as often they use these means to motivate their students to learn more.

Table 1
Relative frequencies of the purposes (a-e) for which different subject teachers use digital technologies in teaching their subjects

	Relative frequencies for different purposes stated by the subject teachers of:				
Purpose of the use of digital technologies:	natural sciences	social sciences	lang.	artwork, educ. sub.	profess., voc.sub.
a – to elicit higher motivation to learn	39.85	30.56	44.86	60.00	33.33
b – to explain and exemplify new subject matter	50.38	43.56	28.97	17.00	16.67
c – to consolidate new subject matter	4.51	15.74	15.89	15.00	38.89
d – to apply acquired knowledge	3.76	9.26	9.35	6.00	11.11
e – to diagnose and grade students	1.50	0.93	0.93	2.00	0.00

Source: Záhorec, Nagyová, & Hašková (2019).

As to the category of the taught subjects, technology is usually incorporated into the group of subjects known as STEM – natural science subjects, technology and maths. From this point of view, there are surprising significant differences between the results of the group of natural science subject teachers and the group of professional/vocational subject teachers (see e.g., the finding that natural science teachers use digital means to consolidate new subject matter very rarely while in the case of professional/vocational subject teachers this is the most frequent purpose). Another surprising finding in the case of technical subject teachers (professional/vocational subject teachers) is that in contrast to other subject groups of teachers, they do not use the digital means in their teaching identically as others do. The relative frequencies (33.33 – 16.67 – 38.89 – 11.11) in Table 1 show technology teachers incorporate digital means and interactive activities into their teaching quite frequently for four purposes instead of only two, which is the case of other subject teachers. Moreover, from these four purposes, frequency of two and them are always quite close to each other (purpose *a* with purpose *c*, and purpose *b* with *d*) – a little bit more frequent purposes for which the technical subject teachers incorporate digital means in their lessons are to consolidate new subject matter and to elicit higher motivation to learn and a little bit less frequently they do it to explain and exemplify new subject matter and to apply acquired knowledge.

Before the coronavirus pandemic, digital technologies in education (at primary and secondary schools) were used dominantly to support the teaching process, its different aspects and in this way, to increase students' learning achievements (see the presented above purposes for which the teachers of the particular subjects used these means). The coronavirus pandemic has changed the situation. It has caused a strong shift towards the use of digital technologies – a shift from their dominant use for increasing teaching efficiency to their dominant use for delivering education to the target groups of learners. In conditions of isolation, quarantines and lockdowns, technology became the main means of learner-teacher connection and communication, as well as an essential tool to maintain educational possibilities of learners. Teachers were required to teach remotely and learners needed to adjust themselves to the new teaching and learning techniques.

Use of online forms in teaching and learning processes

In the new conditions in which the schools and various educational institutions are operating due to the corona pandemic, online forms of teaching present an appropriate solution to ensure learning continuity of the youth during the time of school closures. The term "online form of teaching" may refer to a variety of class arrangements and a mixture of various technological tools is necessary in order to provide such education to learners. Robert Blake (2011) presents as possible examples a web-facilitated class, a blended or hybrid course and a fully virtual or online course. Thus, online courses can differ not only in their formats, but also in terms of their use of particular technological tools and pedagogies (Blake, Wilson, Pardo Ballester, & Cetto, 2008; Valentová & Brečka, 2020). But in each case, entrance into the space of online forms of teaching and learning requires a fusion of different methodologies, mainly the following ones:

- blended/hybrid teaching and learning methodology,
- connectivist teaching and learning methodology,
- constructivist teaching and learning methodology,
- content-based teaching and learning methodology,
- participatory teaching and learning methodology,
- problem-based teaching and learning methodology,
- project-based teaching and learning methodology,
- styles and strategies-based teaching and learning methodology,
- web-based teaching and learning methodology.

Blended/hybrid teaching and learning methodology is the fusion of the face-to-face and online teaching and learning process. According to Pete Sharma and Barney Barret (2007), it combines a face-to-face classroom component with appropriate use of technology, such as the Internet, CD-ROMs and interactive whiteboards.

Connectivist teaching and learning methodology is based on a paradigm in which both teaching and learning processes can reside outside of ourselves (within an organisation or a database) and are focused on connecting specialised information sets. Consequently, the connections enable us to learn more and more important pieces of information than our current state of knowing is (Siemens, 2005). Having established networks and modes of teaching and learning instances, the processes occur via such networks with the help of facilitating teachers.

Constructivist teaching and learning methodology follows the principle that learners construct their own version of reality, and therefore multiple contrasting ways of knowing and describing are equally legitimate (Brown, 2001). Based on prior knowledge and interacting with new knowledge, new things are learned. Similarly, according to Mustafa Kurt (2015), the best way of learning or knowledge construction is discovered by individuals who perform related actions.

Content-based teaching and learning methodology is focused on the use of planned, purposeful, and academically based activities that target thinking skills and engage learners in meaningful and authentic information and knowledge processing (Kasper, Babbitt, Mlynarczyk, Brinton, & Rosenthal, 2000).

Participatory teaching and learning methodology directly involves learners in the process of learning containing authentic real-life task materials as well as learners feeling responsible for the events they participate in. In this way, real life is brought into the class and the content of the lesson is taken outside the class (Larsen-Freeman, 2008).

Solving problems in real-life situations is related to problem-based teaching and learning methodology that is based on solving problems, practice and improvement of learners' knowledge and abilities simultaneously. In problem-based methodology, students learn content, strategies, and self-directed learning skills through collaboratively solving problems, reflecting on their experiences, and engaging in self-directed inquiry (Hmelo-Silver, Duncan, & Chinn, 2007).

Project-based teaching and learning methodology includes completion of projects structured according topics, tasks and problems to be completed with the necessary collaboration of peers, teachers and experts in a particular field. According to Thom Markham, John Larmer and Jason Ravitz (2003), projects often emerge out of an authentic context, addressing controversial or significant issues in the society and unfold in unexpected ways.

According to Andrew Cohen (2011), styles and strategies-based teaching and learning methodology aims to assist learners in finding the available strategies, understanding how to structure and use them efficiently and transfer them to new contexts with their learning-style preferences.

Internet accessibility gives a possibility to educators and learners to use web-based teaching and learning methodology. It is a methodology that involves the use of the web and exploits web materials, resources, applications or tools (Son, 2007).

Survey of the use of online forms in foreign language teaching

Survey background

Due to home schooling in the Slovak Republic, online lessons are taught via various applications and cloud platforms. One of them is Zoom, which provides video and audio conferencing for teachers and learners, the possibility of chatting during the lesson as well as webinars. Another one is the platform EduPage. EduPage is a cloud based on school management system which is a space of communication among teachers, learners and their parents within one educational institution. It offers a large variety of activities, e.g. texting within the whole community of participants, sharing curriculum, issuing announcements and timetables, administrating attendance of learners, booking rooms, assigning and attaching homework in e-learning, taking tests, and so on. Moreover, the application Microsoft Teams is used in a similar way in order to organise online lessons, meetings, assignments, share files and texts among the participants, make announcements, attach homework, etc. Further, additionally used platforms are Facebook Messenger and WhatsApp Messenger. Facebook Messenger is a platform used for online learning where teachers and learners can text, share photos, videos, stickers, audio, files, interact with each other, create multiple accounts, play games and use voice and video calling. Whats--App Messenger, a freeware multi-platform application for texting and voice over IP service, gives a possibility to text, make audio and video calls, share pictures, files, location and other media in the educational process. Another online space for online education provides Youtube, the largest worldwide system of sharing video files on the Internet, which is used by a few teachers with IT skills to upload lessons.

During the home schooling period in autumn 2020, a survey was conducted in order to find out what are the preferences of English learners regarding different platforms and applications used for home schooling.

Survey methodology and survey sample

The survey sample consisted of 52 English learners (45 girls and 7 boys) of the Secondary Vocational School of Business and Services in Zlaté Moravce. The respondents' age was ranging from 16 to 20 years old.

Data collecting was done using an online questionnaire for English learners. The questionnaire items were focused on the following areas:

- which educational form, school education or home schooling, is more preferred by English learners,
- which educational tool, online Zoom lessons or worksheets, is more preferred by English learners,
- which foreign language skills are being practised via online Zoom lesson, in English learners' opinion,
- which foreign language skills are being practised via worksheets, in English learners' opinion,

- which hi-tech technologies have been used during the home schooling period in autumn 2020,
- which mobile applications have been used so that English learners could enlarge their vocabulary range,
- what are the strengths and weaknesses of home schooling, in English learners' opinion, and what are their suggestions for improvement of such education in the future.

Survey results and discussion

The findings from the questionnaire survey imply that the majority of the respondents, English learners, use a laptop/PC (59.62%) or a smart mobile phone (59.54%), while some learners use both of the devices. There has been no use of other electronic devices such as tablets, iPods, TV sets with Internet access, etc. From the teacher's point of view, we can state that a disadvantage of smart mobile phone use is the absence of video connection with learners as long as study materials are shared via Messenger application or WhatsApp application.

In Table 2, an overview of preferences of the questionnaire respondents related to different types of instructions is presented (each respondent could state their preference for more than one type). On the basis of the respondents' answers, it can be concluded that the highest level of preference was recorded for school education (71.15% of the participating English learners). On the other hand, home schooling is comfortable only for about a quarter of the respondents (28.85%). Among the reasons why school education is preferred, the majority of the English learners stated the ability to better understand and remember topics (direct visual contact with the teacher), better concentration at school and less homework. On the other hand, the minority of the English learners who prefer home schooling mentioned as the reason of their preference the possibility of later waking-up time, more spare time for hobbies, interests as well as doing part-time jobs.

Table 2
English learners' preferences for different types of instructions

	Absolute frequencies	Relative frequencies
School education	37	71.15%
Home schooling	15	28.85%
Online Zoom lessons	25	48.08%
Worksheets	28	51.92%

Source: own research.

Home schooling education at the above mentioned secondary vocational school has involved four online Zoom lessons a day, following the online timetable, plus worksheets for selected subjects. Therefore, our interest

was focused on the indicated educational tools and their effectiveness. The majority of the English learners (51.92%) prefer completing worksheets to participating in online Zoom lessons (48.08%). The worksheet preferences of learners follow from longer time limits to complete tasks, flexibility, the possibility of using various sources to find the information and technical problems connected with the Internet accessibility to join the lessons. Surprisingly, less than a half of the English learners think that online Zoom lessons provide a better explanation of the topic thanks to the direct online contact with the teacher.

Results of the part of the survey focused on foreign language skills practised during home schooling are presented in Table 3. The results show that English learners practice all four foreign language skills via online Zoom lessons, mainly speaking (42.31%) and reading comprehension (40.38%), whereas listening comprehension and writing are developed less frequently (26.92% and 15.38% respectively). On the other hand, worksheet completion enhances the development of only 2 foreign language skills – reading comprehension (51.92%) and writing (40.38 %). Predictably, listening comprehension and speaking are not practised at all. Therefore, during home schooling we recommend using both educational tools – Zoom lessons and worksheets simultaneously – so that all four foreign language skills are practised.

Table 3
The practice of foreign language skills during home schooling

	Online Zoom lessons		Worksheets	
Foreign language skills	Absolute frequency	Relative frequency	Absolute frequency	Relative frequency
Reading comprehension	21	40.38%	27	51.92%
Listening comprehension	14	26.92%	0	0.00%
Writing	8	15.38%	21	40.38%
Speaking	22	42.31%	0	0.00%

Source: own research.

The increase of the learners' vocabulary range was another aspect of the foreign language teaching during the home schooling, on which the emphasis was placed (Baghana, Bondarenko, Voloshina, Khasanov, & Novakova, 2020). Table 4 displays various kinds of media being used with the aim to enlarge the range of English learners' vocabulary. Google translator (30.77%) and social networking (19.23%) definitely belong to the most widely used media, followed by Duolingo (5.77%) and playing computer games in English (5.77%). Some of the English learners watched also Youtube videos or used Wattpad. These two applications are both very rarely used media, with the equal achieved score of the relative frequency 3.85%.

Table 4
Media used to enlarge English language vocabulary range

	Absolute frequency	Relative frequency
Google Translator	16	30.77%
Social networking (Facebook, Instagram, Twitter, etc.)	10	19.23%
Duolingo	3	5.77%
PC Games	3	5.77%
Youtube	2	3.85%
Wattpad	2	3.85%
Discord (English, Russian)	1	1.92%
Music and stream services	1	1.92%
DIC-o on the IOS operating system	1	1.92%
Speaky	1	1.92%
Vocabulary Games	1	1.92%
CD-ROM	1	1.92%
Screen Translator	1	1.92%
Grammarly	1	1.92%
Movies in English	1	1.92%

Source: own research.

Based on the analysis of the data recorded from the learners' responses to the particular questionnaire items, home schooling strengths and weaknesses were identified, an overview of which is presented in Table 5 and Table 6.

Home comfort (38.46%) and sufficient sleeping time (36.54%) belong to the top home schooling strengths, followed by less dense timetable (19.23%), more spare time (17.31%), no need to use public transport (15.38%), longer breaks (20 minutes) in between the online Zoom lessons (11.54%), less homework (9.62%), reduced sociability in order to protect themselves (9.62%), flexibility (7.69%), no transport costs (5.78%), and more materials for studying (5.78%). A few of English learners also appreciated not wearing face masks (3.85%), practising speaking in English (3.85%), learning more topics (3.85%), achieving better assessment results (3.85%), having a better explanation of the topic (3.85 %), possibility to communicate with the teacher (3.85%) and own responsibility (1.92%), and searching information with Google (1.92 %) during home schooling.

Table 5
Overview of the frequency of the identified home schooling strengths

	Absolute frequency	Relative frequency
Home comfort	20	38.46%
Sufficient sleeping time	19	36.54%
Less dense timetable	10	19.23%
More spare time	9	17.31%

	Absolute frequency	Relative frequency
No need to use public transport	8	15.38%
Longer breaks	6	11.54%
Less homework	5	9.62%
Reduced sociability	5	9.62%
Flexibility	4	7.69%
More cost-effective (no transport costs)	3	5.78%
More materials for studying	3	5.78%
No need to wear face masks	2	3.85%
Practice of speaking in English	2	3.85%
More topics learnt (efficiency)	2	3.85%
Better assessment	2	3.85%
Better topic explanation	2	3.85%
Communication with the teacher	2	3.85%
English learners' responsibility	1	1.92%
Google information search	1	1.92%

Source: own research.

Table 6
Overview of the frequency of the identified home schooling weaknesses

	Absolute frequency	Relative frequency
Zoom app and the Internet connection problems	20	38.46%
More homework	11	21.15%
Lack of social contacts	9	17.31%
No practical education (no skills development)	4	7.69%
Worse topic/subject matter explanation	3	5.77%
Incomprehension/misunderstanding of the topic	3	5.77%
No possibility of home practice	3	5.77%
Less knowledge	2	3.85%
Inadequate Maturita exam preparation	2	3.85%
Lack of information	2	3.85%
Less dense timetable	2	3.85%
Issues with concentration	1	1.92%
More e-mails	1	1.92%
Power cut	1	1.92%
Lack of spare time	1	1.92%
Lack of movement	1	1.92%
More stress	1	1.92%
Cheating possibilities	1	1.92%

Source: own research.

The top home schooling weaknesses identified by English learners (Table 6) are related to technical problems with the Zoom application and the Internet access (38.46%), followed by a large amount of obligatory homework (21.15%) and a lack of social contacts (17.31%). During the pandemic, practical education in the secondary vocational school has also been organised via online lessons, which means the personal skills of students have not been sufficiently developed and improved (7.69%). Moreover, some of them (5.77%) stated that they misunderstood lesson topics, i.e. they used to be explained better at school, and they had no possibility of home practice. A very small part of English learners (3.85%) assessed home schooling as the educational process with a less dense timetable, inadequate Maturita exam preparation, along with less knowledge and information gained. There were also some English learners who identified such home schooling weaknesses as lack of movement, lack of spare time and difficulties with concentration because of other family members being at home too. Furthermore, they also faced stress as a result of their overflowing e-mail boxes, and cheating and copying tasks were their way to escape stress.

Comparison of the results presented in Table 5 and Table 6, regarding the identified home schooling strengths and weaknesses, leads to some contradicting findings. One of them is that 9.62% of learners thought they are given less homework, whereas 21.15% stated they are given more homework. Another such finding is that 19.23% of learners found a less dense timetable to be the advantage, in comparison to 3.85% who thought it to be the disadvantage. Less sociability (9.62%) and limited mobility (15.38%) due to health protection were once considered to be the strength, but some learners found a lack of social contacts (17.31%) and lack of movement (1.92%) to be disadvantages of home schooling.

Conclusion

Although the school closures initially caused a disruption in education, over time they also prompted examples of innovation in education. There are some signals suggesting the crisis can have a lasting impact on the trajectory of learning innovation and digitisation. In the survey, we have emphasised our focus on English learners' perception of home schooling organisation, educational tools, practised foreign language skills, hi-tech technologies and applications to develop vocabulary. We completely agree with the representatives of the World Economic Forum in the opinion that future changes in education will be registered in three aspects (European Data Portal, 2020). The first aspect is that the coronavirus crisis will influence different innovations within education; more precisely, it will accelerate the innovations. Following the experience gained during the school closures, new digital learning possibilities (educational applications, platforms, resources) will be created by educational institutions to stimulate the efficiency of the lessons (Bánesz, Lukáčová, & Tomková, 2019). The second aspect is that public-private edu-

cational partnerships will have, with a high probability, growing importance. The coronavirus pandemic could become a starting point for a large-scale, cross-industry cooperation around a common educational goal. And the third aspect is that the quality of education is still more and more dependent on access to the Internet, the right technology, and the required skills to use it. It is too early to judge whether a new hybrid educational system will emerge with both face-to-face and online classes, or the short-term preparation for online learning will result in poor performance and suggest going back to traditional methods. As the situation further progresses and more data on the topic are gathered, it is necessary to process extensive analyses of the larger-scale impact of the pandemic on different aspects of education, including foreign language teaching.

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