PRIMARY SCHOOL EFL TEACHERS' PRACTICES AND VIEWS OF TECHNOLOGY-ENHANCED DIFFERENTIATED INSTRUCTION: A PILOT INTERVIEW STUDY

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Abstract: Recent years have seen a growing interest in the concept of technology-enhanced differentiated instruction (TEDI). Yet, to date, little is known about how TEDI may be used in the teaching of English as a foreign language (EFL). The present small-scale qualitative study sought to address this research gap by developing and piloting an interview schedule suitable for use in exploring EFL teachers' self-reported practices and views of TEDI. Furthermore, the study aimed to gain an initial understanding of the collected data. Five primary school EFL teachers who use technology on a frequent basis were interviewed, and following two rounds of adjustments, the questions were deemed capable of eliciting sufficient information. The results emerging from the thematic analysis of the data show that technology may be used in various ways to differentiate the content, the process, and the product of teaching. TEDI also offers benefits both for students and teachers, such as the enhancement of self-paced learning and formative assessment. Although the participants voiced a few concerns too, they expressed an overall positive attitude towards TEDI. The results confirm that technology may be suitable for supporting differentiation in the EFL class and call for a more in-depth examination of TEDI practices.

Keywords: technology-enhanced differentiated instruction, EFL, ICT, pilot study, interview study

1 Introduction

The past decades have seen a growing interest in the concept of differentiated instruction (DI), a teaching approach aimed at offering learners "different avenues to acquiring content, to processing or making sense of ideas, and to developing products so that each student can learn effectively" (Tomlinson, 2001, p. 1). Rooted in a constructivist understanding of the learning process, the concept of differentiation is based on the presumption that meaningful learning takes place if students are given opportunities to create their own knowledge and understanding by building on what they already know (Smith & Throne, 2007). DI bears relevance to teachers of English as a foreign language (EFL) too, as, more than ever before, EFL learners come to class with different cultural and educational experiences. Students often vary greatly in their target language proficiency, learning styles, motivation, and interests, which calls for greater responsivity to students' needs and preferences in the classroom (Benson, 2012).

Recent research (e.g., Chien, 2015; Gülsen, 2018; Öveges & Csizér, 2018; Sougari & Mavroudi, 2019; Tzanni, 2018; Zólyomi, 2022) indicates that EFL teachers perceive the concept of differentiation as important, but their beliefs are not or only moderately reflected in their day-to-day teaching practice, which may be traced back to issues such as the additional planning time required for DI and the challenges of managing the "workshop-style environment" (Blaz, 2016, p. 160) of differentiated classrooms.

Consequently, researching ways DI could be made more feasible for teachers seems to be of crucial importance. One area which has been proposed to be of assistance in this respect is Information and Communications Technology (ICT), which, as Blaz (2016) points out, is "changing the face of differentiation" (p. 1). ICT tools are thought to have some inherent features, such as the facilitation of autonomous and multisensory learning, which could enhance the implementation of DI (Benjamin, 2005; Stanford et al., 2010). The concept of technology-enhanced differentiated instruction (TEDI) is already being used in the professional discourse (e.g., Haymon & Wilson, 2020; Ritter, 2018), and the potential affordances of ICT for DI are highlighted in the Hungarian National Core Curriculum too, as the policy document refers to "modern, 21st century tools" as "indispensable" elements of a personalized approach to teaching (Government of Hungary, 2020, p. 314).

To date only a few studies have investigated how ICT may be used for DI in the teaching of English as a foreign language (TEFL) (e.g., Hustinx et al., 2019; Rapti, 2018; Vargas-Parra et al., 2018). Most of them adopted an experimental or action research design and examined the use of specific applications (apps) and their effects on students' learning outcomes and motivation. Little is known, however, of how practitioners of TEDI describe their practices and what benefits and challenges they see in this type of instruction. Such an investigation would be warranted in order to gain a closer understanding of teachers' lived experiences of TEDI and to identify some themes that unite practitioners of this novel approach.

The present pilot interview study sought to address this research gap by exploring how five primary school EFL teachers describe and view their practices of TEDI. More specifically, the study strove to achieve one methodological and two content-related aims: firstly, to determine how appropriate the newly developed interview schedule was in terms of generating data about participants' self-reported practices and views of TEDI, and, secondly, to explore what elements of DI the participants found possible to support with the use of technology and what benefits and challenges they saw in using TEDI. It is hoped that the insights gained into participants' experiences may add to our understanding of how technology could be used for DI in the EFL class and reveal some factors to consider if one wishes to implement TEDI.

2 Literature review

2.1 Differentiated instruction

The concept of differentiation emerged around the 1970s along with the theoretical changes in education and pedagogy of the time (Marks et al., 2021). These shifts were rooted in a constructivist understanding of the learning process which holds that meaningful learning takes place when students create their own knowledge and understanding by building on what they already know (Smith & Throne, 2007). Originally, differentiation centered around gifted students, then, in the following decades its scope extended and students with special educational needs were also included in its focus. Eventually, around the millennium came the realization that differentiation can and, in fact, should concern all students in the classroom (Blaz, 2016; Furcsa, 2020).

The most widely acknowledged definition of DI to date was given by Tomlinson (2001). In her understanding, DI is an instructional approach aimed at offering learners "different avenues to acquiring content, to processing or making sense of ideas, and to developing products so that each student can learn effectively" (Tomlinson, 2001, p. 1).

Contrary to popular belief, the creation of these "different avenues" does not mean that teachers need to provide each learner with tailor-made tasks; instead, DI is concerned with "setting up resources and processes that allow learners to tailor-make tasks […] for themselves" (Benson, 2012, p. 34). This way, students participate in constructing their knowledge and the responsibility for learning is shared between the teacher and the learner (Tomlinson, 2001).

In order to offer guidance for teachers on how to implement DI in practice, Tomlinson (1999) developed a model which has been considered to be "one of the most widely known and valued" conceptualizations of the term to date (Erickson, 2010, p. 1). The model has two dimensions: the curricular elements to be differentiated and the learner differences along which differentiation can be applied. In terms of the first one, Tomlinson specifies the content (what students learn), the process (how learners make sense of the content), and the product (how learners demonstrate and extend what they have learned). In terms of the second aspect, she identifies learners' readiness (proximity to specified learning goals), interests (passions and affinities that motivate learning), and learning profiles (preferred approaches to learning) (Tomlinson, 1999; Tomlinson & Moon, 2013).

Blaz (2016) offers a clear-cut explanation of how the scenarios outlined in Tomlinson's model (1999) may be realized in the foreign language (FL) classroom. The content, for example, can be differentiated by interest if students choose a reading and then work in small groups to share and compare what they found. A readiness-based content differentiation entails giving learners similar texts but pitched at different complexity of vocabulary or support. The differentiation of the learning process involves using a variety of activities and questioning techniques to explore the concepts in the unit. Finally, the differentiation of the product means giving students choices for how to demonstrate their mastery of the content by assigning them projects of varying complexity or different modes of delivery. Differentiated products activate critical and creative thinking so that students apply what they have learned and create their own meanings. The products are usually presented and then reflected on by all members of the group as well as the teacher (Blaz, 2016).

2.2 Differentiated instruction in TEFL: The teachers' stance

Findings on the DI-related beliefs and practices of FL teachers (e.g., Öveges & Csizér, 2018) in general and of EFL teachers in particular (e.g., Chien, 2015; Gülsen, 2018; Sougari & Mavroudi, 2019; Tzanni, 2018; Zólyomi, 2022) suggest that teachers acknowledge the importance of differentiation, but they use the approach less frequently than their positive beliefs would indicate.

The discrepancy between beliefs and practices has been traced back to various reasons. Firstly, some teachers may be reluctant to use DI due to their lack of training on how to do so (Chien, 2015; Tzanni, 2018) and their low self-efficacy beliefs regarding DI (Zólyomi, 2022). Besides, many teachers believe that planning differentiated activities increases preparation time considerably and places additional burden on their already limited time (Gülsen, 2018; Tzanni, 2018; Zólyomi, 2022). Moreover, some teachers do not feel comfortable with working in the "workshop-style environment" (Blaz, 2016, p. 160) of differentiated classrooms, and fear that letting students work on different tasks will cause discipline issues (Sougari & Mavroudi, 2019).

The problems outlined above may explain why EFL teachers' beliefs about DI are not

or only partly translated into practice, and, as Tzanni (2018) argues, they call for research into ways of making the everyday implementation of DI more feasible for teachers.

2.3 Technology-enhanced differentiated instruction

The challenges of implementation have led to an increased interest in how practices of DI could be enhanced. One area which has been proposed for investigation is Information and Communications Technology (ICT) (Smith & Throne, 2007; Tzanni, 2018). In the past years there has been growing attention directed towards the use of "hardware, software and web resources that support […] teaching and learning while meeting the learning needs and styles of individual students" (Primary Professional Development Service, n.d., p. 19), and the term 'technology-enhanced differentiated instruction' (TEDI) has already entered the professional discourse (e.g., Haymon & Wilson, 2020; Ritter, 2018).

ICT tools have some inherent characteristics that may help teachers to "think and work 'smarter' […] rather than trying to work harder" when catering to individual needs (Stanford et al., 2010, p. 2). Firstly, ICT tools can provide a learner-centered environment by allowing students to have control over their learning process (Larsen-Freeman & Anderson, 2011; Zeng, 2020). As Zeng (2020) points out, technology allows students to "make choices of when, what, and how to learn based on their own proficiency levels, goals and learning styles" with the "affordance of the time to think and the possibility for feedback" (p. 26). Besides, technology has the potential to cater for students' different learning styles by facilitating auditory, visual, and social learning (Benjamin, 2005; Zeng, 2020). Finally, the motivational power of ICT tools may be an additional benefit worth considering (Benjamin, 2005; Karatza, 2019; Smith & Throne, 2007).

The significance of DI in FL teaching and the potential affordances of ICT for DI are highlighted in the Hungarian National Core Curriculum too. The text argues that the use of 21st century tools is indispensable for individualized teaching (Government of Hungary, 2020, p. 314) and that the content of language learning should be planned "in line with students' needs, bearing in mind 21st century opportunities with special regard to ICT tools and modern language teaching technologies" (Government of Hungary, 2020, p. 316).

On the other hand, authors such as Benjamin (2005) stress the importance of a principled approach towards using technology for DI purposes. She contends that "When it comes to DI, we don't want to put kids on computers just to keep them occupied while we work with other groups. We want computers to enhance instruction, not just parallel it" (p. 4). How ICT may enhance instruction in differentiated EFL classrooms is a topic scarcely researched to date; the following section gives a brief overview of some recent studies conducted in the field.

2.4 Technology-enhanced differentiated instruction in TEFL: Empirical studies

Only few empirical studies have attempted to explore how technology may be used for differentiation purposes in the EFL class. Most of them are experiments (Rapti, 2018), action research (Vargas-Parra et al., 2018) or interview studies (Hustinx et al., 2019) that aimed at testing if and how the hypothesized affordances of ICT for DI can be implemented in practice with the help of certain apps (e.g., Audacity, Moodle, EdPuzzle, and Prezi). The results of these studies showed that the apps investigated had the capacity to attend to various individual

differences, such as learners' readiness levels and learning styles, as well as demonstrating that their use resulted in improved learning outcomes (Rapti, 2018) or increased motivation and engagement (Hustinx et al., 2019; Vargas-Parra et al., 2018).

The scholarly merits of the above studies in identifying some innovative examples of TEDI in TEFL are beyond dispute. However, at present, little is known about what EFL teachers who use technology for DI purposes think about their own practices of TEDI and what benefits and challenges they associate with this relatively new type of instruction. As Wright (2012) argues, to better understand the effects of innovation in language pedagogy, "research in and on classrooms" needs to focus more on "change and innovation as they are experienced in the classroom itself" (p. 66). Examining EFL teachers' perspectives and identifying themes that unite practitioners of this recent approach could provide a more in-depth understanding of how technology may be used for DI purposes. The present study sought to address this research gap by developing and piloting an interview schedule suitable for use in exploring EFL teachers' self-reported practices and views of TEDI and by gaining an initial understanding of the collected data.

3 Method

The study adopted a qualitative, exploratory approach with the aim of investigating primary school EFL teachers' self-reported practices and views of TEDI. The qualitative one-to-one interview was deemed to be the most suitable research method for this purpose, as it offers "descriptions of the life world of the interviewee with respect to interpreting the meaning of the described phenomena" (Kvale, 1996, pp. 5-6). The interviews followed a semi-structured format, which facilitated the use of broad questions without limiting the depth and breadth of the respondent's story with ready-made response categories (Dörnyei, 2007).

The purpose of the study was twofold. Firstly, it aimed to pilot an interview schedule to test if the questions yielded sufficient data needed for the investigation. Secondly, based on the obtained data, it also sought to gain an initial understanding of the interviewees' self-reported practices and views of TEDI, more specifically, to investigate what elements of differentiation the participants found possible to support with the use of technology, and to explore the benefits and challenges they associated with TEDI. In line with these aims, the study sought to answer one methodological and two content-related research questions:

(1) How appropriate is the interview schedule in terms of generating data about participants' self-reported practices and views of technology-enhanced differentiated instruction?
(2) What elements of differentiated instruction do primary school EFL teachers find possible to support with the use of technology?
(3) What benefits and challenges do primary school EFL teachers see in using technology for differentiated instruction?

3.1 Participants and setting

The study aimed to explore the self-reported practices and views of Hungarian primary school EFL teachers who use technology for differentiation in their classes. The participants were selected using a combination of purposive and convenience sampling (Dörnyei, 2007):

five primary school EFL teachers, who were former colleagues of the researcher and met the inclusion criteria were contacted and agreed to take part in the interview. The participants' background data are summarized in Table 1.

Name	Gender	Age	Years of teaching experience
Bea	female	25	1
Dalma	female	28	5
Kata	female	26	2
Rebeka	female	30	6
Vanda	female	26	2

Table 1. Overview of the participants' background data

In this study, the pseudonyms Bea, Dalma, Kata, Rebeka and Vanda are used for the participants. All of them are Hungarian, and the interviews were conducted in their mother tongue. There is an age gap of 5 years between the youngest and the oldest participant. All of them hold a degree in TEFL. Bea has another major in teaching history, Dalma has a major in teaching Hungarian language and literature and Kata has a major in teaching Physical Education. The participants' teaching experience ranges from 1 to 6 years. All of them have experience in teaching in a language school, and one of the participants has taught in a secondary school, too. At the time of the interviews Kata and Vanda were teaching in lower grades (students aged 6-10), Bea was teaching in upper grades (students aged 11-14), and Dalma and Rebeka were teaching both in lower and upper grades.

The institution where the participants work is a private primary school in Budapest. All classrooms are equipped with a personal computer (PC) and a smartboard, and the school has 30 tablets which can be booked by the teachers for each group once or twice a week. Besides, each English group has their lesson in the ICT room once a week, where a PC is provided for each student. All participants reported using ICT tools in their English lessons on a daily basis.

3.2 The instrument

The interview schedule was developed following the guidelines proposed by Dörnyei (2007), Prescott (2011), and Richards (2003). First, a literature review was conducted to identify the main dimensions of the interview, which resulted in the emergence of four topics: (a) attitudes towards individual differences in the EFL classroom and the concept of DI; (b) attitudes towards the use of ICT; (c) practices of TEDI; and (d) perceived benefits and challenges of TEDI. Next, the interview questions were put together in accordance with Dörnyei's (2007) guidelines, i.e., the schedule started with an introduction and a few questions about the participants' professional background, which was followed by the content questions and a final closing question. The content questions were organized around the four topics and contained three to five grand tour questions with corresponding follow-up questions. The first content section examined how participants perceived and attended to individual differences in their lessons in general (e.g., "What individual differences do you attend to in your lessons?"). The second section included questions about participants' attitudes towards using ICT tools in the English lessons (e.g., "What ICT tools do you prefer

to use in your English lessons?"). The third and fourth sections asked about teachers' self-reported practices of TEDI (e.g., "In your experience, what ICT tools can be used to differentiate the content of the lesson?") and their views of the benefits and challenges of using technology for differentiation purposes (e.g., "In your opinion, what effects does TEDI have on your students?").

The validation process of the interview schedule comprised several steps. Firstly, when the initial draft was completed, I reviewed the questions and refined them in two rounds. Next, the schedule was subjected to peer review and expert judgement, based on which a few ambiguous questions were reworded and some grand tour and follow-up questions were reorganized to make their structuring more logical. Upon the expert's advice, a new closing question ("Can you recall an occasion when supporting your instruction with technology brought you a sense of achievement?") was added to ensure that the end of the interview was steered towards positive experiences (Dörnyei, 2007). The schedule was modified after the first and the third pilot interview, the experiences of which are summarized under Section 4.1. The English translation of the final version of the schedule is attached in Appendix A.

3.3 Data collection and data analysis

Prior to the interviews, participants were informed about the research topic and were assured that their names would not be mentioned in any report or publication ensuing from the study. Three of the interviews were conducted in person, face-to-face, while the other two interviews were conducted online, with an average length of 43 minutes. The interviews were audio-recorded with the consent of the participants and transcribed verbatim, which resulted in a dataset of 21,581 words. The recordings and transcripts are accessible only to the researcher and are stored in a safe place.

The collected data were subjected to thematic analysis in Atlas.ti. 8.4.3 following Braun and Clarke's guidelines (2006). The analytical process comprised of the steps of generating initial codes, collapsing them into refined codes and merging them under potential themes and subthemes, which were then reviewed and refined in a recursive manner. The initial coding of the text resulted in 40 codes which were then revised and collapsed into 18 codes and grouped under 3 themes and 7 subthemes. The final thematic map is attached in Appendix B.

4 Results and discussion

4.1 Results of the piloting process

Each pilot interview was followed by a reflective phase when I listened to the recordings and analyzed the participants' responses in light of the two main evaluation criteria of qualitative interviews: the flow of the conversation and the breadth and depth of the collected data (Dörnyei, 2007). Most changes were implemented after the first pilot and concerned the reordering, deletion and broadening of some questions.

Firstly, regarding the flow of the conversation, the order of the topics needed to be changed. During the interview it became evident that starting with the discussion of DI practices, then moving on to the topic of ICT and then jumping back to DI caused logical leaps in the conversation. Therefore, I decided to switch the order of the first two sets of questions in the hope that the mental schemata activated within the new sequence would facilitate a smoother transition between the topics. The subsequent interviews confirmed that

making this change was a reasonable decision: when the topic of TEDI was brought up, the participants had just shared some of their general differentiation practices and were then eager to go into more detail and discuss their experiences with respect to the use of technology.

Secondly, I decided to delete a grand tour question from the first set of general questions on ICT use ("What do you think of the role of ICT in language teaching?). My main concern about this question was that although it generated a lengthy response, it slightly diverted the focus of the discussion. It turned out to be partly redundant, too, as it re-emerged implicitly at later stages of the interview, with specific regard to TEDI. Deleting the general version of the question and letting it arise at a strategically more important stage later in the conversation proved to be useful as participants of the subsequent interviews provided answers which were richer in detail and more relevant in terms of the research questions.

Finally, a question that invited the participant to describe her practices of process based TEDI ("Can you recall an activity when students used ICT tools while processing the same material in different ways?") was left unanswered. While one explanation of this could be that the participant had no experience to share, what seemed to be equally plausible is that the question was too specific to answer. Therefore, I decided to rephrase it in the following way: "In your experience, what ICT tools can be used when students work on the same content but process it in different ways?" In the subsequent interviews, the revised question yielded detailed responses and thus proved to be more effective in eliciting meaningful data.

After the interview schedule was adjusted along the considerations outlined above, a second and third round of piloting took place. The flow of these interviews proved to be satisfactory, and the overall ratio of the general and specific sections was balanced. Nevertheless, there was one aspect that I still found necessary to modify. Not until the third pilot interview had been conducted and I started to analyze the data did I realize a slightly leading tone in the introduction to the last questions. The sentence, which invited participants to share their views of "the benefits and challenges of using ICT for differentiation", prompted all participants to start with the discussion of the challenges, and only move on to the benefits afterwards. One explanation of this could be that they considered the challenges to be more significant than the benefits, but the emphasis on the former aspect also could have been generated by my word choice, i.e., putting the word "challenges" in the focus. This latter explanation is supported by the fact that the benefits mentioned by the participants in fact outnumbered the challenges. Therefore, I decided to reword the introduction in a way that would be less directing: "In the last part of our conversation, I would like to ask you about your views of using ICT tools for differentiation purposes." The responses given in the fourth and fifth interviews showed that the reformulated introduction facilitated a more natural emergence of views as participants were free to decide on the aspects that they wished to elaborate on first.

The final version of the interview schedule was tested with two further interviewees. The questions were found to be effective in eliciting information about the participants' thinking and practice concerning the use of TEDI, and no further adjustments were deemed necessary.

Following the piloting of the instrument, the collected data were analyzed to gain an initial understanding of how the participants see the potential of technology for DI and what benefits and challenges they associate with the implementation of TEDI. Sections 4.2, 4.3 and 4.4 present and discuss the main themes identified in the responses.

4.2 Elements of technology-enhanced differentiated instruction

The first content-related research question attempted to explore what elements of DI the participants found possible to support with the use of technology. Three distinct themes were identified in this respect: the differentiation of the content, of the process and of the product, i.e., the curriculum areas of differentiation identified by Tomlinson (1999). The themes are summarized in Table 2 and discussed in detail in the following subsections.

Differentiating the content	Differentiating the process	Differentiating the product
reading apps	grammar quests	presentation software
	vocabulary apps	comic strip creators

Table 2. Elements of technology-enhanced differentiated instruction

4.2.1 Differentiating the content

One of the most distinct themes identified in the participants' answers pertained to the differentiation of the content, i.e., the information and ideas learners need to grasp and be able to use (Tomlinson, 1999). More specifically, all participants reported providing students with a selection of differentiated texts using online reading apps such as Kids A-Z and BookR. These apps are accessed by students individually on a tablet or a PC, and once students are logged in to their accounts, they can read and listen to texts at various levels of difficulty, do comprehension activities, and collect points upon the completion of the activities. Vanda, who teaches in lower grades, highlighted how such apps may be used even at very early stages when students are just learning how to read:

> We have students who can follow the text while listening, and students who only listen to the recording […] and students who are up for the challenge can read the whole text again alone without listening, so I think we can differentiate with this superbly. (Vanda)

Vanda's positive views were shared by Rebeka too, who pointed out that these apps facilitate the introduction of the very same topic at different levels of difficulty and support, so it "can be discussed in different degrees of depth" in line with the differences in students' levels of English. Based on the above, these apps may be looked upon as resources of easily accessible, ready-to-use differentiated reading passages that are "pitched at different reading levels, complexity of vocabulary or support" (Blaz, 2016, p. 10) and as such, they constitute a viable alternative to paper-based content differentiation.

4.2.2 Differentiating the process

Participants' answers revealed two areas where technology may be used to enhance the differentiation of the learning process, i.e., the activities that help students make sense out of the content (Tomlinson, 1999). These included the teaching of new words through vocabulary apps and gamifying grammar practice in the form of online quests.

As participants pointed out, vocabulary apps such as Quizlet and Educandy facilitate the quick creation of vocabulary banks which can be then learned and revised by students in multiple ways. For example, as Bea explained, when using Quizlet, students may memorize the words by matching them to pictures, by listening to the words and then typing them, or by typing the words based on their definitions or Hungarian equivalents. As the different modes of practice offered by these apps differ in terms of the learning styles they tap into as well as the challenge and difficulty they pose for students, they may be considered as examples of how technology can cater for students' different readiness levels and learning profiles, a proposition put forward by several authors in the field (Benjamin, 2005; Stanford et al., 2010; Zeng, 2020).

Online grammar "quests" (Rebeka) or "collection of tasks" (Kata) that students can complete individually on a PC or tablet were another practice mentioned by the participants. As Rebeka explained, these quests are basically a collection of links compiled by the teacher that direct students to grammar activities of varying levels of difficulty and complexity. The participants share the links with the students on an online learning management platform such as Google Classroom, or using other online resources, such as Genially, an interactive content creation tool or Classcraft, a gamification platform. While in some cases the activities are sequenced in an order of gradual difficulty and students need to proceed with the activities in a linear fashion, in other cases they are given freedom to decide which tasks they would like to complete. As Rebeka pointed out, when students work on these quests,

> Everyone has a sense of achievement, because in 40 minutes some students will complete three stations and others will complete five, but nobody is bored. They get points for their activities and at the end of the lesson, everyone is happy. (Rebeka)

The above practice may be looked upon as a digital version of the tic tac toe, one of the most well-known activities traditionally used in DI (Blaz, 2016). The underlying idea of this activity is to give students a menu of choices, and it is frequently used in process differentiation, as it may contain different types of instruction such as direct instruction, concrete examples, worksheet practice, or more complex activities that all help students to make sense of the information they need to grasp and be able to use (Blaz, 2016).

4.2.3 Differentiating the product

When asked about their practices of product differentiation, i.e., differentiating the ways in which students demonstrate and extend what they have learned (Tomlinson, 1999), participants mentioned two main ICT tools that proved to be useful for them. Firstly, in Dalma, Bea and Rebeka's classes, students are often asked to create presentations either individually or in groups using software such as PowerPoint. As they explained, these tasks do not only help students to develop their research and presentation skills, but also let them engage with topics that they are interested in and to present their findings to their peers.

Rebeka revealed another practice of hers is to ask students to create short stories in the form of a comic strip using a website called Pixton.com. As she put it, these tasks require "a great extent of creativity" as students can change the appearance and the position of the characters as well as the background while they are creating stories centered around a given topic or grammatical structure. The app can be used in collaborative mode too, which means that students can work on the same comic strip but focus on different aspects: the visuals, the texts, or the storyline. The final products can be shared with the other students too.

In both examples above, giving students the chance to create something new by applying what they have learnt and to share their creation with their peers, which are two principles of product differentiation mentioned in the literature (Benjamin, 2005; Blaz, 2016; Tomlinson, 1999), seem to be of crucial importance. As Benjamin (2005) put it, endeavors of TEDI need to focus on "uses of technology that are truly constructivist, where students engage in higher level thinking, meaningful communication, creation of original work, and problem solving in nonlinear ways" (p. 4). Inviting students to work in groups, do research, and create and share their presentations or comic strips may be ways of drawing on these uses of technology.

4.3 The benefits of technology-enhanced differentiated instruction

Several benefits were identified in the participants' accounts. Most of these pertain to the students' perspective, but some benefits related to the teachers' point of view were also found. The results are summarized in Table 3 and are discussed in the following subsections.

Student-related benefits of TEDI	Teacher-related benefits of TEDI
choice	quick diagnostic assessment
self-paced learning	keeping track of students' activities
motivation	enjoyment
privacy	
development of ICT skills	

Table 3. Benefits of technology-enhanced differentiated instruction

4.3.1 Student-related benefits

One of the most apparent benefits identified in the participants' answers with respect to TEDI was the great degree of student choice offered in this type of instruction. As the teachers pointed out, when students use apps such as BookR, Educandy or Quizlet on a PC or a tablet, they can choose from multiple activities based on "the challenge they wish to face" (Vanda). Involving students in the decision-making process and encouraging them to take responsibility for their learning is a core component of DI (Tomlinson, 2001), and the choice that the above-mentioned apps offer for students seems to feed well into this principle.

Another benefit mentioned by the participants was the opportunity for students to proceed at their own pace. As Bea explained, "there are many apps, plenty, actually, where students see the results right away and then we don't need to check them together". This makes it possible for students to get instant feedback and know if they chose the correct answer "at the click of a button" (Kata). The participants' accounts are in line with earlier literature, which identified the themes of choice and self-paced learning as important benefits of technology-enhanced language teaching and learning (Larsen-Freeman & Anderson, 2011; Zeng, 2020).

A further advantage that all participants mentioned was the motivational effect of ICT tools. There was unanimous agreement among the participants that letting students use apps has an "enormous" (Dalma) and "amazing" (Kata) motivational power. As Bea pointed out, "by default, students are more enthusiastic about the activity" if it involves the use of ICT tools and Vanda was of the opinion that "for today's children it is a huge bonus if they can use

a PC or a tablet in the lesson". Kata explained the advantage, for example, of assigning grammar exercises to students using the website Wordwall.com as follows:

> It jazzes up traditional grammar exercises and thus children comprehend them in a completely different way. They do the exact same exercise [as they would on paper], but with much more enjoyment. They are extremely enthusiastic. We do not even need to motivate the students as the tool itself motivates them. (Kata)

Enthusiasm and enjoyment were keywords mentioned by Bea too. As she explained, "students are enjoying the whole thing more, they keep asking me when we are going to use these tools again, so you can really tell that they are more enthusiastic and excited". The participants' perceptions of their students' higher levels of motivation echo previous findings on the motivational power of ICT tools (Benjamin, 2005; Hustinx et al., 2019; Karatza, 2019; Smith & Throne, 2007; Vargas-Parra et al., 2018).

Another benefit emerging from the responses was the protection of students' privacy. As Vanda explained, "the students do not even see it, but everyone is actually doing something different, they are working in different ways, learning in different ways", and, as Kata pointed it out, "they do not have to be accountable to their peers for what they are doing". Bea's opinion was in accordance with Vanda's and Kata's impressions:

> The way I see it, students do not really perceive the differences. I mean, everyone is focusing on their own task, and I haven't heard them say 'Hey, why is she/he working on a more difficult task?' And I think it is great that it is not so direct. I mean, whenever I distribute paper-based task sheets then students do see that those are different. […] So, I believe differentiation can work much better [with these apps]. (Bea)

The points raised by Vanda, Bea and Kata are in line with what Benjamin (2005) referred to as ensuring privacy, i.e., protecting "the self esteem of the student who is working on the least sophisticated task" (p. 5). As she pointed out, this is "a thorny problem in DI" (p. 5) but computer work can help to a great extent to afford privacy.

Finally, participants believed that letting students use ICT tools in the EFL lesson does not only facilitate differentiation practices but also develops students' ICT skills, which is "very important […] as this is the future" (Vanda). As Rebeka explained, students play a lot of online games at home, but when they use ICT tools at school "they realize that they do not yet know everything" and it is good "that they see how important IT lessons are". Dalma was of the same opinion:

> It is great that […] students' ICT skills are also being developed in the EFL lessons, and we basically integrate language learning and ICT skills development […] And it's good that children do not only use these tools to play but also to learn and they can see that these tools can be used for learning purposes. (Dalma)

The above reasoning echoes the words of Benjamin (2005), who recommended that teachers look at computers holistically and regard them as "environments for communication and learning, for work and play" (p. 4). By considering the development of ICT skills as an additional benefit of TEDI, the participants seem to advocate Benjamin's (2005) line of thought.

4.3.2 Teacher-related benefits

Two benefits were identified with respect to how teachers see themselves and their work while implementing TEDI. These included the enhancement of formative assessment and the feeling of enjoyment over students' increased motivation.

Firstly, what appeared to be a benefit seen by all participants was the enhancement of formative assessment practices, which included two aspects: quick diagnostic assessment and keeping track of students' activities. Participants pointed out that when students do tasks individually on websites such as TeacherMade.com, teachers can retrieve a detailed report of each student's performance upon the completion of the tasks. As Dalma put it, this can help teachers to "conclude how much further practice is needed" for each student, and as such, can be a quick and convenient alternative to paper-based needs analysis. This seems to be an aspect that is especially important from the point of view of DI, since having a constant understanding of where students are at a particular time is a prerequisite of differentiation (Blaz, 2016).

Another benefit related to formative assessment concerned the opportunity for teachers to keep track of their students' activities on a gamification platform such as ClassDojo (Vanda, Kata) or Classcraft (Dalma, Rebeka). These platforms can be used to reward students with points for "being active in class, completing tasks, reading at home, doing extra tasks, practically for anything" (Kata) "at the click of a button" (Vanda). As such, they can function as electronic logbooks of student activities and serve as a basis for teachers to give feedback in an ongoing fashion, a practice that constitutes a key element of differentiation (Tomlinson, 2001).

Moreover, all participants agreed that seeing their students being motivated by the ICT tools has a positive effect on them too. The participants said that they are "glad" (Rebeka) and "feeling good" (Dalma, Kata) when their students are engaged. As Bea put it, it makes the job "much easier" because she can see that "it is good for the kids" and that "they are not bored in the lessons". This is in line with previous research which showed that teachers' satisfaction and enjoyment is strongly connected to their students' enjoyment, motivation, and progress made in class (Piasecka, 2016).

4.4 The challenges of technology-enhanced differentiated instruction

Besides pointing out the benefits of TEDI, participants mentioned a few challenges too. While these were fewer in number than the positive aspects, they shed light on important issues that may need to be considered when using technology for DI purposes. The main challenges are summarized in Table 4.

Student-related challenges of TEDI	Teacher-related challenges of TEDI
getting addicted to ICT tools	finding the right balance for using technology
learning how to use ICT tools	learning how to use ICT tools
	coping with internet problems

Table 4. Challenges of technology-enhanced differentiated instruction

Firstly, all participants mentioned that finding the right balance for using technology poses a challenge both for them and for their students. As Rebeka pointed out, "knowing how much time children spend with playing video games, it is a big dilemma for teachers to decide whether this addiction should be further strengthened by putting ICT tools into students' hands and placing them into the online sphere." Dalma, Bea, Kata and Rebeka mentioned this problem too, and said that they try not to overuse technology but rather implement it when and where it can add real value to the learning process. These views are in line with Benjamin's (2005) argument that "technology […] should fulfil a need that a nontech or low-tech tool will not fill" (p. 4) and indicate that the participants have a principled approach towards the use of technology.

Learning how to use the various ICT tools may sometimes also be challenging, both for teachers and students. Participants mentioned that teachers "need to test the apps before bringing them into class" (Vanda) and they should be prepared that "students will have difficulties" too (Rebeka). Nevertheless, the participants acknowledged that these issues arise only at the early stages of adopting new tools and they do not constitute a considerable hindrance in day-to-day teaching.

Finally, several participants touched upon the difficulties posed by internet problems. As they explained, there is always a degree of uncertainty as teachers don't know for sure whether the internet connection will be stable in the classroom. Because of that, as Rebeka put it, when teachers devise a lesson plan based on online activities, "there always has to be a plan B" in case the connection gets lost. A solution to this problem would be the provision of reliable broadband connection at schools, the importance of which has been highlighted in previous studies too (e.g., Öveges & Csizér, 2018).

5 Conclusion

The present pilot interview study aimed to gain an initial insight into the self-reported practices and views of primary school EFL teachers who use TEDI in their day-to-day teaching. More specifically, the study strove to fulfil one methodological and two content-related aims: firstly, to determine how appropriate the newly developed interview schedule was in terms of generating sufficient data, and, secondly, to explore what elements of DI the participants found possible to support with the use of technology and what benefits and challenges they saw in using TEDI.

As regards the appropriateness of the interview schedule, the questions proved to be effective in eliciting information about the interviewees' practices and views of TEDI. Following some adjustments aimed at improving the flow of communication, the interview schedule is now deemed capable of yielding data with the necessary richness to answer the research questions. Nevertheless, as Prescott points out (2011), the success of qualitative interviews is inherently defined by the human factor of interaction, i.e., with other interviewees the questions might still not be entirely effective in generating sufficient data. Therefore, being open to some additional fine-tuning of the instrument and tracking all the alterations made necessary by the variability of the research context will be important in further strengthening the dependability of the collected data (Jensen, 2008).

The analysis of the participants' responses revealed several themes. Firstly, data suggest that there are multiple areas where technology may be used for differentiation

purposes. Reading apps may facilitate the differentiation of the content, while grammar quests and vocabulary apps can be used to support the differentiation of the process. Meanwhile, product differentiation may be enhanced by the use of presentation software and comic strip creators. These results point to the conclusion that ICT tools may indeed be suitable for enhancing differentiation in various ways, and further research into these TEDI practices appear to be warranted.

Furthermore, the views that the participants expressed in connection with their practices suggest that they see several benefits as well as some challenges in using TEDI. The main benefits of TEDI for students include a greater degree of choice in the learning process, the enhancement of self-paced learning, the motivational effect of ICT tools, the protection of privacy, and the chance to develop ICT skills in general, all of which are in line with the benefits of TEDI pointed out in earlier literature (e.g., Benjamin, 2005; Smith & Throne, 2007; Stanford et al., 2010). Some benefits related to the teachers' perspective were also identified, such as the opportunity for quick diagnostic testing enhanced by the report function of certain websites (e.g., TeacherMade.com) and the possibility of keeping track of students' various activities on gamification platforms (e.g., Classcraft, ClassDojo). As ongoing assessment is a cornerstone of DI (Blaz, 2016; Tomlinson, 2001), the potential assistance that technology has to offer in this respect could be looked upon as a significant benefit and one that may need to be investigated in more detail in the future.

The most apparent challenges of TEDI pertained to the difficulties of finding the right balance for using technology, learning how to use ICT tools as well as having to devise a plan B in case there is no internet access in the classroom. Overall, the results suggest that participants have dominantly positive views about TEDI, but they also demonstrate awareness of the potential pitfalls of technology (over)use, which is indicative of a principled approach towards the affordances of technology.

To conclude, the participants' accounts of their practices shed light on some examples of how technology may be used for DI purposes in the EFL class as well as on some of the benefits and challenges that may need to be considered if teachers wish to implement TEDI in their day-to-day teaching. It must be noted, however, that the present interview study focused on what participants reported to be using as opposed to their actual practices, which is in fact one of the limitations of the study. To gain a more in-depth understanding of how these practices are implemented, interview data will need to be triangulated in the future with observations and student questionnaires. A further limitation of the study pertains to its small sample size ($N = 5$) and the fact that all participants work at the same institution and belong to the same age group, which means that the results may only have limited transferability. Nevertheless, it is hoped that the initial insights gained by the present small-scale study could serve as a starting point to explore how the potential of technology may be harnessed to cater for students' diverse needs in the EFL classroom.

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APPENDIX A

The English translation of the interview schedule

Dear _____,
Thank you for your participation in this study. My name is Annamária Kótay-Nagy, I am a PhD student in the Language Pedagogy and English Applied Linguistics PhD programme at Eötvös Loránd University. I am conducting research on the use of technology for differentiation purposes in the EFL classroom, and the goal of this interview is to gain insight into teachers' practices and views with respect to this topic.
Your participation in this study is voluntary and can be withdrawn at any time. You will remain unidentified during the research process, and your name will not be mentioned in any report or publication ensuing from the study. The interview will last for about 45-50 minutes. There are no right or wrong answers, I am interested in your personal views. Do you consent to my recording of this conversation? Thank you.

First, I would like to ask you a few biographical questions.

1. When were you born?
2. What kind of teaching qualifications do you have and when did you get these?
3. How long have you been teaching? How long have you been teaching English?
4. Where did you teach prior to your current position?
5. Do you teach other subjects besides English? If yes, what are these subjects?
6. In what grades do you teach English this term? How old are your students?

Now I would like to ask some questions about your experiences and views of using ICT tools.

1. Tell me a little bit about the ICT facilities in the classrooms.
    a. What ICT tools are available in the classrooms?
    b. Do you have internet access in these classrooms?
2. What ICT tools do you prefer to use in your English lessons?
    a. How often do you use these tools?
    b. Why do you like them?
3. What are some ICT tools that you don't like for some reason?
    a. Why don't you like using them?

Thank you. Now we'll proceed with some questions about your English groups.

4. How many students are there in your groups?
    a. How were these groups formed?
    b. To what extent do you find these group sizes to be optimal?
5. To what extent do students' levels of English differ in your groups?
    a. How do you know?
6. What other significant individual differences do you see in your groups?
    a. Why do you consider these differences to be significant?
7. What individual differences do you attend to in your lessons?
    a. Can you tell me an example when you tailored a task to your students' individual differences? What were your experiences with this task?
8. Can you think of any situations when you cannot take your students' individual differences into consideration? What are the reasons for that?

Thank you. We have talked about the individual differences in your groups as well as some ways in which you attend to these differences during lesson planning and lesson delivery, i.e.,

the ways in which you differentiate in your lessons. Now I would like to know more about how you use technology for differentiation purposes.

9. In your experience, what ICT tools can be used to differentiate the content of the lesson?
    a. How do you think these tools can help to cater for students' individual differences?
10. In your experience, what ICT tools can be used when students work on the same content but process it in different ways?
    a. How do you think these tools can help to cater for students' individual differences?
11. What ICT tools do your students use for individual work? What ICT tools do your student use for pair work/group work?
    a. How do you decide about the work formats?
    b. How do you decide about the ICT tools to be used?
    c. To what extent do you find it important or not important for the students to choose the work format and the ICT tools for themselves?
12. Let us now move on to assessment. What ICT tools do you use for assessment?
    a. What ICT tools do you use for summative assessment?
    b. What ICT tools do you use for formative assessment?
    c. Can you recall an occasion when students demonstrated what they have learned in the form of a product, and they used ICT tools to accomplish the task?

In the last part of our conversation, I would like to ask you about your views of using ICT tools for differentiation purposes.

13. In your opinion, what effects does technology-enhanced differentiation have on your students?
    a. How motivated are they? How do you know?
    b. How self-confident are they? How do you know?
    c. What do you think are your students' favorite ICT tools? What might be the reasons for that?
14. How do you feel when you use technology for differentiation purposes?
    a. How motivated are you?
    b. How self-confident are you?
15. What difficulties do you experience when you use technology for differentiation purposes?
    a. What technical difficulties do you experience?
    b. What difficulties do you experience when you plan and deliver your lessons?
16. What are some aspects of technology-enhanced differentiated instruction that you find easy to implement?
    a. What do you think are the reasons for that?
17. Finally, I would like to ask you one more question. Can you recall an occasion when supporting your instruction with technology brought you a sense of achievement?
    a. What do you think were the reasons for that?

We have arrived at the end of our conversation. Is there anything else that we did not discuss during the interview, but you would consider it important to talk about?

Thank you very much for participating in this interview.

APPENDIX B

Thematic map