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Thesis

**USING APPS TO IMPROVE ENGLISH LEARNERS'
LISTENING SKILLS**

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Tato stránka bude ve svázané práci Váš původní formulář *Zadáni dipl. práce*
(k vyzvednutí u sekretářky KAN)

Prohlašuji, že jsem práci vypracovala samostatně s použitím uvedené literatury a zdrojů informací.

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ABSTRACT

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The thesis explores the topic of “Using apps to improve English learners’ listening skills” with focus on mobile devices. It summarizes theory related to MALL (Mobile-Assisted Language Learning), teaching of listening, metacognition and game-based learning theory. Furthermore, this theory is applied during an experiment and discussed in results of this thesis. The research part of this thesis is based on two surveys and the experiment related to application of three mobile apps during English classes. The first survey covers students’ opinions related to MALL and the second survey is focused on the evaluation of proposed apps. Analysis of those results is divided into several hypothesis and research questions that are connected into final thoughts and implications. In addition, the limitations of this thesis are covered and some suggestions are offered for the future research.

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I. INTRODUCTION

The aim of this thesis is to find and evaluate mobile apps for developing listening skills and describe the current state related to the use of mobile devices in and outside of the classrooms. Therefore, the most important features of successful mobile apps are identified because they can be used for apps selection by teachers and recommendation of those apps to their learners.

My main motivation for this thesis is the fact that almost all students have their own mobile device usually connected to the Internet. This thesis examines the possibility of application of mobile devices for learning purposes in English classes with focus on listening comprehensions. Both options – the use of students' devices, in the form of BYOD (Bring Your Own Device), as well as the use of schools' devices are considered.

The theoretical part of this thesis includes the topics of Mobile-assisted language learning (MALL), teaching of listening theory, podcasts, metacognition and game-based learning theory. This theoretical knowledge is applied to selected methods and used for building results and commentaries. Moreover, this knowledge is critical for the understanding of the presented experiment and its evaluation.

The practical part of this thesis, including experiment itself, focuses on selection and evaluation of mobile apps for listening that can be used during classes on school's devices or on learners' devices through application of BYOD method. Those selected apps are evaluated and used for the identification of the most important features that lead to their popularity and success.

This thesis covers the following hypothesis and research questions related to the use of mobile devices for education:

- Have all the students got access to the Internet on their mobile devices?
- Are students' devices powerful enough for playing audio and video clips?
- How many students use their mobile devices for education and how many of them use it for English learning?

The research questions and hypotheses related to individual mobile apps and their features that lead to their success:

- Which mobile apps' features are the most significant for one's decision to install an app on private devices?
- Are mobile devices considered more an educational tool rather than a gaming tool?
- In case that mobile apps are carefully selected, will they be used in learners' spare time?

The chapter Pedagogical Implications summarizes the main results of this thesis and their meaning and application for other teachers. Furthermore, the limitations of this research and suggestions for further work in an area related to the use of mobile devices in classrooms is described as well. The last chapter covers summarization of this thesis and its main benefits.

II. THEORETICAL BACKGROUND

Mobile-assisted language learning (MALL)

In this chapter mobile-assisted language learning (MALL) is discussed. Different possibilities, methodic, challenges, based on research papers published in well-recognized journals and conferences, are considered.

Introduction

The long-standing desire to make use of digital technology in language learning has been partly satisfied by the recent development of mobile applications. Language teachers can enrich the learning process with quality materials suitable for different levels of students. On the other hand, there is a need to develop new digital learning tools that address changes in pedagogy and students' needs as they relate to this new platform (Lindaman, 2015). Most researchers agree that the potential of MALL especially as part of second language learning is significant (Jee, 2011).

The New Media Consortium's (NMC) 2016 report (Johnson, 2016) states that BYOD (Bring Your Own Device) approach, along with learning analytics and adaptive learning, are expected to be increasingly adopted by higher education institutions in one year's time or less to make use of mobile learning. Furthermore, they identified tablets and mobile apps as highly valuable near term tools for learning inside and outside the classrooms in their report back in 2013 (Johnson, 2013).

Some frameworks for MALL have been focused on student-centered learning while encouraging a connectivist engagement between the learner and knowledge and between learners themselves. In a constructivist framework, teachers take on the role of facilitator as the students engage in active inquiry with their study. Students are able to access on demand content as well as contextualized learning opportunities. Mobile devices encourage spontaneous and contextualized language learning by creating a rich set of auxiliary between the topics of study (Hoven & Palalas, 2011). The concept of mediation describing the link between mental activity and the symbolic tools was first described in 1986 (Vygotsky, 1986). Well-designed mobile apps operate as mediations by providing and improved learning ecosystem and by relieving the environmental factors that raise negative emotional responses and get in the way of learning (Krashen 1982).

In comparison to a general CALL (Computer-Assisted Language Learning), educators enumerate several advantages of mobile learning including a tendency to be spontaneous, pervasive, personal, portable and contextual. MALL offers opportunities for learning that are integrated and synchronized within daily activities (Kukulska-Hulme, 2009). On the other hand, the concept of mobility itself is problematic within any definition of mobile learning. Pegrum (Pegrum, 2014) provides a helpful way of conceptualizing of these aspects of mobile learning. The researcher suggests that use of mobile apps usually falls into one of the three categories based on mobility of devices, students and their context:

- when the devices are mobile,
- when the learners are mobile,
- when the learning experience is mobile.

In our case, we assume that students and devices are mobile. The learning experience can be mobile or it can be done during school lessons.

History

The history of modern technological tools used by teachers is relatively short because topic of ICT for general population is old about 30 years. First audio-visual materials were used to enhance the learning experience in the second half of 20th century (Towns & Loo, 2012). By 1950s the language lab headsets and the television set were introduced. Later in 1960s first computers were brought into the classrooms or more accurately into the school labs. It was this time when CALL was established (Chapelle, 2001). Afterwards three phases of CALL were established and later revised by (Warschauer, 2000):

- Structural CALL: 1970s to 1980s.
- Communicative CALL: 1980s to 1990s.
- Integrative CALL: 2000 onwards.

Bax (Bax, 2003) saw some issues with these phases and proposed these three phases:

- Restricted CALL – mainly behaviouristic: 1960s to 1980s.

- Open CALL – it means open in terms of feedback given to students, software types and the role of the teachers, including simulations and games: 1980s to 2003.
- Integrated CALL – still to be achieved. Bax argued that at the time of writing language teachers were still in the Open CALL phase, as true integration could only be said to have been achieved when CALL had reached a state of "normalization" therefore when using CALL was as normal as using a pen.

First efforts related to MALL were focused on the use of cell phone via text messaging (Towns, 2012). Further development of smartphones allowed mobile devices to be useful during language learning process through apps and rich media. Moreover, the next milestone was reached in 2010 thanks to new multimedia capable and wifi-connected tablet devices (Webb, 2013).

Challenges

Mobile language learning applications require pedagogical guidance from skilled language teachers and require special preparation for these classes. It costs us some additional time but on the other hand, it definitely worth it. Mobile applications are designed for interactive learning and are well suited for use in and outside of communicative classrooms. Therefore, it can be used as interactive teaching aid that helps teachers to keep students' attention during classes or it can be used by students as part of their self-study and homework.

The development of mobile application projects is relatively low-cost therefore it is manageable even form smaller groups of educators working at relatively small institutions. These projects can be oriented in different ways:

- development of a new mobile application in cooperation with programmers,
- preparation of a new methodology of application existing apps during classes,
- creation of a new study materials for existing apps.

As said before a development of a completely new and innovative application requires collaboration between language teachers with pedagogical insight (Lindaman, 2015) and programmers keeping the technical know-how. Therefore, the joint effort with designers is

absolutely essential for innovative mobile application development. Rarely do individuals possess all required skills like project management, programming, design, graphics art, accessibility and language pedagogy that are required to develop mobile language learning apps.

At present, the majority of apps available to language teachers were designed with lack of language pedagogy therefore it requires special care to use them during language lessons (Lindaman, 2015). Even then we can declare that those mobile applications can be a huge asset for experienced teachers.

On the contrary some mobile applications were developed with the full potential of interdisciplinary and collaborative network. For example, the Mobile Language Learning Group (MLLG) at University of Minnesota Duluth is based on teachers and students with different fields of interest. Currently they have built two apps as support tools for language lessons, the first one for French and the second one for German classes.

MALL clearly offers great promise, but it is also important to consider the limitations of mobile learning applications. For example, price of mobile devices, ongoing need for online status at all times which require contracted mobile Internet connection and tendency towards distraction and procrastination nowadays primary caused by Facebook and YouTube. On the other hand, the YouTube can be a very effective tool for language learning especially by integration with other apps like LyricsTap.

Teaching listening

This diploma thesis is focused on MALL and furthermore oriented on improvement of listening skills. Therefore, we have to explain some basic facts related to listening theory which are used in the next chapters of this thesis.

Listening is probably the least explicit skill, making it the most difficult one to learn. Naturally it is evident that children listen and respond to the language before they learn to talk. In case of EFL (English as Foreign Language) learning the grammar and other basics are taught first, learners are usually older and results are expected in specific amount of

time (course length) and together it makes the listening experience more challenging. There is a number of reasons for this (Ghaderpanahi, 2012):

- Layers of sound - in real-life situations native speakers speak over each other; there are different volumes, speeds, interruptions and external noises.
- Accents - there are many accents in spoken English, therefore it can be challenging for English learners to understand and follow a conversation.
- Intonation.
- Matching written words with spoken ones - many students are bound to the written word.

We can distinguish two types of listening related to EFL teaching:

- extensive listening,
- intensive listening.

Extensive listening usually takes place outside the classroom. The motivation increases dramatically when students choose about what they are going to listen to. The content for extensive listening can be obtained from different sources in both online (Internet, radio) and offline form (CDs) (Harmer, 1991). This content can be prepared by teachers or it can be native authentic material. That refers to resources which are not specifically produced for the purposes of language courses like news, tv shows or advertisements (Bahrani, 2012). Bacon (Bacon, 1990) also states that authentic materials are usually made by native speakers for non-pedagogical purposes.

Intensive listening is used during classes. Many teachers use audio material when they want to practice listening skills of their students. There are number of advantages and disadvantages of this approach (Harmer, 1991):

Advantages

- variety of different voices and characters,
- dialogs during different occasions and situations,
- distributed on CDs and in digital form through the Internet,
- usually there is written form of a dialogues.

Disadvantages

- big classrooms with poor acoustics,
- difficult to ensure that all students can hear equally well,
- everyone has to listen in the same speed,
- students cannot interact with the speakers,
- this activity is very passive and not interactive.

Studies have shown that authentic oral materials are very effective in developing listening comprehension skills (Field, 1998). At first students felt uncomfortable and had difficulty understanding the authentic English. At the end of the course the students found themselves feeling more comfortable than the time they started the class. Therefore, we can declare that after being exposed to authentic materials, the students recognized the difference between school and natural English they watched or listened to in the real world and they were able to handle it (Ghaderpanahi, 2012).

Brown (Brown, 1993) suggests two aspects of authenticity and suggests this breakdown:

1. Task authenticity
 - o simulated - modeled after a real-life,
 - o minimal - checks understanding.
2. Input authenticity
 - o genuine - created only for the realm of real life,
 - o altered - no meaning change, but change in the original,
 - o adapted - created for real life,
 - o simulated - written as if the material is genuine,
 - o minimal - created for the classroom.

Task authenticity is focused on the existence of this listening exercise in the real life, for example understanding of information at the airport or in the underground railway station. This task is part of everyday life of New Yorkers and other big city travelers and therefore it can be considered as simulated task. On the other hand, the listening exercise focused on the meaning of a talk between two persons without external noise can be marked as task with minimal authenticity.

Input authenticity relates to the origin of the information or the audio data. Genuine data were created as part of real life and furthermore they are the bearers of the potentially interesting information. Altered input has the same meaning as original applied on different holder. Adapted input was created for real life and transformed for purposes of the classroom. Simulated input is aimed at emitting the problem in the real world that is used during classroom and minimal input was created specifically for the learning purposes of specific language features.

There are other important techniques that make listening less challenging and increase the level of acceptance from the students. McCaughey (2015) affirmed that an audio should be replayed a few times to ensure that students are successful in the tasks. It could also lower learners' anxiety. Furthermore, she pre-taught vocabulary and gave a synopsis of a story before activity began. In fact, prior knowledge is important for students as they would learn to apply top-down listening strategy which is also supported by another research (Balaban, 2016).

It is evident that teachers play an important role in a class. Teachers should be alert enough to reduce learners' anxiety. Furthermore, they should provide sufficient scaffolding to help learners succeed and build their confidence, especially for younger and low level learners. Beginners and intermediate learners actually struggle to decode what they hear, so they rely much on bottom-up listening, based on recognizing sound and words. Furthermore, they could hardly apply top-down listening which requires higher cognitive abilities (Graham, 2006). Therefore listening tasks designed for learners of different proficiency should include both low and high order thinking skills of Bloom's taxonomy described on *Figure 1*.

Bloom's taxonomy delineates a hierarchy of cognitive-learning levels ranging from knowledge of specific facts and conventions, to more advanced levels of analysis, synthesis, and evaluation (Bloom, 1984).

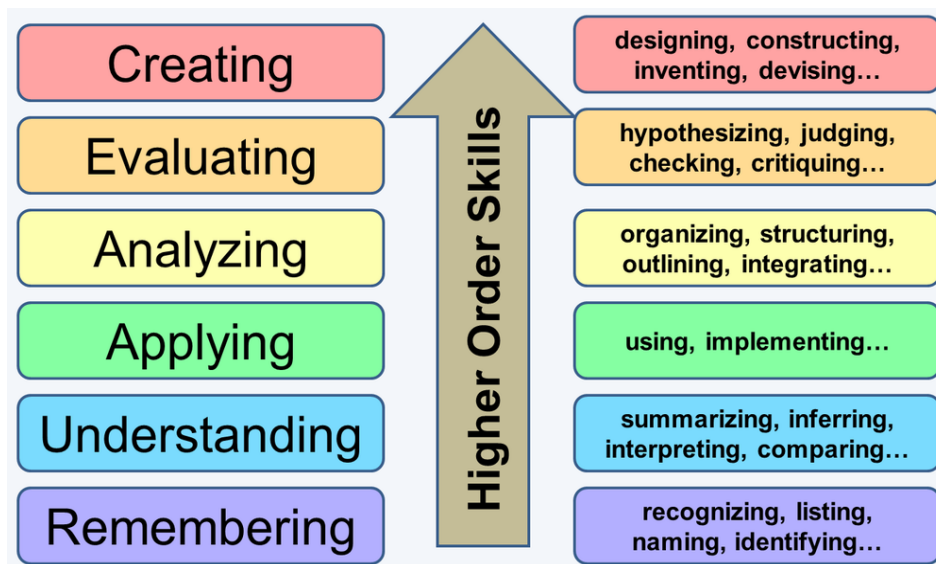


Figure 1 - Bloom's taxonomy (Bloom, 1984)

Rost (2006) also identified strategies that are used by successful listeners and that correspond with Bloom's taxonomy:

- predicting - listeners should think about what they will hear,
- inferring - it is useful to listen between the lines,
- monitoring - it is clear what learner do a don't understand,
- clarifying - effective learners ask questions to the speaker,
- responding - learners react to what they hear,
- evaluating - they check how well they have understood.

Podcasts

Podcast is a term derived from iPod and broadcasting (Berry, 2006), where iPod is a well-known mobile device and broadcasting is a method for global messaging through computer networks and it stands in a meaning of a global unfiltered audience. The inventor of a word podcast is *The Guardian* journalist Ben Hammersley.

With the benefit of hindsight, it all seems quite obvious. MP3 players like Apple's iPod in many pockets, audio production software cheap or free, and weblogging an established part of the internet; all the ingredients are there for a new boom in amateur radio. But how should we call it? Audioblogging? Podcasting? GuerillaMedia? (Hammersley, 2004)

Podcasts were first produced in 2004 and nearly a third of all owners of mp3 players had downloaded at least one (Hegelheimer, 2008). Podcasts are another way of information distribution towards to its listeners through the Internet. Therefore, the current and demanded information is distributed to world-wide audience in real-time for free.

Technologically podcasts require RSS (Really Simple Syndication) feeds to distribute audio content to their users. RSS is a web content syndication format currently described in official RSS 2.0 specification by Berkman Center for Internet & Society at Harvard Law School. RSS is a dialect of XML (Extensible Markup Language). Therefore, all RSS files must conform to the XML 1.0 specification published by W3C (World Wide Web Consortium). There are no issues with these requirements because RSS feeds are usually generated automatically.

Publication of podcasts is quite simple and can be described in five simple steps shown in *Figure 2*:

1. Record audio with mobile app or with the use of external microphone connected to the computer.
2. Edit audio file and clean the noises which is also available through mobile app.
3. Export audio file to mp3 as the most popular and supported audio format.
4. Upload file to a website.
5. Link the new audio file in a podcast.



Figure 2 - Podcasting with Wordpress (Fryer, 2015)

There have been published articles that explore and investigate different types and pedagogical uses of podcasts (Young, 2007) and how best to incorporate podcasts into classes (Schmidt, 2008). Therefore, some specific uses occurs like podcasts created by language learners for the purpose of improving their pronunciation skills (Lord, 2008) and podcasts created by instructors for teaching academic listening skills (Hegelheimer, 2007).

The use of podcast is similar to a playlist but there are some differences. For example, playlist is usually offline and on the other hand, a podcast requires Internet connection for downloading updates and for downloading individual audio files. After the download the podcast works like common playlist with additional description or metadata. However, there is a big difference between playlist and podcast. It rests in possibility of subscribing to podcasts which leads to automatic notification or download when new audio files occur. The most widely used program for such automatic delivery is iTunes. This program is available for all major platforms including mobile devices (McBride, 2009).

Many corporations and organizations post podcasts on regular basis:

- libraries,
- universities,
- radio stations,
- professional journals,
- some periodicals - like *The Economist* and *The New Yorker*,
- individuals - in the form of different commentaries.

Sound files are usually in the mp3 format therefore it can be played directly on Internet connected device or moved to offline mp3 player for example via usb cable or Bluetooth. Furthermore, this feature allows listener to be mobile during listening which is essential for MALL applications. Finally, using podcasts in language lessons has indeed been found to be in itself motivating for many learners (Windham, 2007).

Metacognition

Listening comprehension occurs within milliseconds of hearing and involves an interaction of different cognitive processes. Immediately constructivist process is triggered including top-down and bottom-up elements (YaMada, 2011). Where top-down processes are

concept driven and bottom-up processes are data-driven. The exact relation between top-down and bottom-up processes is argued to depend on the nature of listening task, context and the listener (Yi'an, 1998). Another research adds that sensorial information and previous knowledge is part of the mental processes that leads to creation of final meaning (Vandergrift, 2011).

Teachers have tried to help students with their listening comprehension by applying behavioural approach based on practice and repetition. There is no agreement about the exact steps that should be applied to students when they are training their listening comprehensions (MacWhinney, 2001). Therefore, there is no agreement related to the number of required or recommended steps. Different suggestions follow:

- *a five stage approach* - planning, first verification, second verification, problem solving and evaluation (Vandergrift, 2007).
- *a seven stage approach* - listening with a objective, predicting, listening while predicting, responding, trying to guess the meaning, verifying predictions and asking questions, monitoring of comprehension of second speaker (Yokoyama, 2005).
- *eight dimensions* (and not stages that can be followed) - these dimensions play an important role in a complex process of listening: individual, cross-cultural, social, contextual, strategic, critical, intertextual and affective (Flowerdew, 2005).

In conclusion, there is no general agreement on the exact steps or processes that should be used in training listening comprehension. Therefore, teachers usually integrate cognitive and metacognitive strategies together. However, the application of these methods has positive effect on listening comprehension therefore it should be included in implicitly and explicitly learning frameworks (Grabe, 2013).

Now, we should start with term metacognition. Based on Flavell (Flavell, 1979) it is a knowledge concerning one's own cognitive processes and products or anything related to them. It comes from the root word meta, meaning beyond or behind. Furthermore, it can be specified as "thinking about thinking" or generally as theory of qualifying and examining knowledge or cognition. This is further divided into three aspects:

- person - in the form of cognitive processes,

- task - information and resources related to current task,
- strategies - related strategies to the task.

Person aspect is focused on examining of person's understanding capabilities. This aspect is not always accurate because self-assessments tests are sometimes unreliable, unstable and dependent on the current psychologic state of a person. Task aspect is based on previous experiences with similar tasks from past and their application to the current task. Strategy aspect explores different strategy options that can be applied or adapt to the current problem. These strategies depend on the age, development stage and mental state of the person.

Metacognitive knowledge is used for coordination of top-down and bottom-up processes during listening comprehension. Furthermore, it contains knowledge about listening process and how background information can be used to form hypotheses related to the content. Goh (Goh, 2008) states that successful listening depends upon this metacognitive awareness of the two different types of processes. This knowledge can compensate for incomplete bottom-up processes if the listener is familiar with the context what is being said. On the other hand, effective bottom-up processes can compensate for a lack of knowledge about the topic that is listened to.

In general, the self-regulation of cognitive processes, called metacognition, has been explored consistently in the literature to be a characteristic shared by successful learners. It is clear that metacognitive instruction is used to help students develop and simplify the process of listening comprehension (Bozorgian, 2012).

The metacognitive knowledge and learning strategies is necessary for the students to handle listening comprehension effectively, especially during distance-learning or in a cases where the ratio between amount of contact time with teachers and self-learning time is low (number close to zero). Therefore, it should be included in a MALL app directly and not in instruction document because there is a possibility of skipping. Read (Read, 2016) described four factors that should help students:

1. knowledge of learning process - students should be prepared for the activity. Listening focus should be changed based on their level and notes should be taken if it is appropriate. Finally, repetition, pausing and going back are useful features.
2. suitable level - the complexity of the activity must be challenging for progress

whereas simple enough to build learners confidence.

3. listening activity must be short - for students to keep their attention and be able to cope with cognitive effort required.
4. personalized learning - learner must be able to work his audio skills at his level and there must be a scaffolding to adapt the activity to the learners' level.

Game-based learning theory

The use of game-based learning activities can be exponentially effective (Keyes, 2016) and useful tools. These activities have the potential to add flexibility to the classroom, thereby enabling students to adjust the way which they learn most productively (Moore, 2005), because the success in a game is based on their acquired knowledge. Natural competitiveness between students cause that these mobile apps will be probably used even after end of the lesson.

Haun (Haun, 1985) stated a number of benefits to using games in the classrooms like motivation for learning instead of memorizing and improving confidence thanks to correct answer. Another positive outcome is that involvement and participation in the games makes learning a matter of direct experience, which is the most effective and as example of hands-on method preferred by students (Moore, 2005). With regards on these benefits, game-based activities were successfully adopted in many different disciplines (Childers, 1996). There are several theories why game based activities are so effective:

- sociocultural theory,
- social learning theory,
- theory of law and effect,
- game theory.

We focus on game-based theory as it is used in this diploma thesis. Each game is comprised of the fundamental elements such as choices, rules, goals and different amount of uncertainty. Parameters of these elements are based on proper unfolding of a game which are lead and affected by the game's authors. Game theory defines a main structure of a game by developing various sequences of choices preprogrammed into the gaming

structure. This allows players to progress based upon their actions and sometimes based on their luck with different level of randomness (Salen, 2007).

As the players progress, their interactions, knowledge and skills within the game help them to advance into strategies that maximize the chances to success at predetermined goals (Bjork, 2006). Through these interactions within the game players' skills and knowledge are subsequently constructed and consolidated.

The best games are knowingly or randomly founded in the way that human memory works regarding to information retrieval, persistence and attention. A game which is designed with those in a mind can assist in learning and retention of a studied topic (Templeton, 2013).

This chapter described strengths and challenges of mobile-assisted language learning and the theory related to teaching listening, for example two types of listening in the form of extensive listening outside of a classroom and intensive listening inside of the classroom. Furthermore, podcasts were introduced including their application as part of the authentic listening materials. Metacognition as "knowledge about knowledge" was briefly explained including different approaches and aspects due to their application in next chapters. This concept is important for analysis of the listening process and for extraction of the most important parameters that participates in this process and that are relevant for successful understanding and following extraction of a meaning. The next chapter focuses on these issues in practice application of explained methods.

III. METHODS

This section covers applied research methods, introduces hypothesis and research questions and it connects the theory within its application. Furthermore, this section addresses research parameters, description of an experiment including used mobile apps and research tools used for experiment, its evaluation, data collection and data analysis.

There are four categories of hypothesis and research questions that are used as part of this research. These categories are marked from A to D based on their time sequence and source of data:

- Category A - is based on the first survey that was distributed before any experiment for analysis of the first test-group.
- Category B - is based on my observation of the experiment in the form of life use of different mobile apps by students.
- Category C - is based on the second survey that was distributed right after the experiment with mobile apps. This survey contains attitudes and opinions of students based on their own experience.
- Category D - conclusions and observations based on the information from multiple previous categories.

The following text contains abbreviations “H” for hypothesis and “Q” for research question to distinguish between those two kinds of analysis methods.

The list of hypothesis and research questions from category A:

- A1 - H: All learners have smartphone or tablet with Internet connection, therefore BYOD method is applicable during learning process.
- A2 - H: All the learners are able to watch videos on their mobile devices.
- A3 - H: At least half of the learners use their mobile device for educational purposes.
- A4 - H: At least 25% of learners have an application for learning English on their mobile devices.

List of hypothesis and research questions from category B:

- B1 - R: Which mobile apps are the most enjoyable for the learners?

List of hypothesis and research questions from category C:

- C1 - Q: Which features of mobile apps are the most significant for the learners?
- C2 - Q: Which mobile apps' features are the most significant for decision to install app on private devices?

List of hypothesis and research questions from category D:

- D1 - Q: Mobile devices are considered more an educational tool rather than a gaming tool?
- D2 - Q: In case that mobile apps are carefully selected, will they be used in learners' spare time?

Research parameters

The experiments were applied to several groups of students from higher primary school during their English language or ICT lessons. The experiment was realized on school's mobile devices (iPads), because private mobile devices are not allowed to connect to school's wifi. Therefore, BYOD was not applicable, but the use of school devices was quite advantageous, because there were no issues with used devices. Two groups were part of this research:

- group A - respondents of survey no. 1,
- group B - students that were part of the experiment and who took the survey no. 2

Moreover, group B is a subgroup of A. Main quantification parameters of this research are shown in *Table 1*.

Number of respondents for survey no. 1 (Male/Female)	62 (26/36)
Number of students for experiment and respondents of survey no. 2	45
Age of respondents	12 - 15 years
Date of experiments	21/04/2017 - 28/04/2017
Length of experiment (working with apps) including survey 2	2 lessons (45 minute each)
Place	22. základní škola Plzeň

Table 1 - Main parameters of conducted experiments

Experiment

The experiment was realized in a class with school's iPads equipped with pre-installed apps from iTunes. Those iPads were connected to the Internet through proprietary school wifi. Therefore, there was no need to apply BYOD method and use students' devices. Research parameters like the number and age of students were described in previous section therefore further sections is focused on experiment itself.

The following mobile apps, see *Figure 3*, were used during experiment:

- Lyriko,
- Voscreen,
- ESL Listening Quizzes.



Lyriko



Voscreen



ESL Listening Quizzes

Figure 3 - Application's icons from iTunes (iOS store)

Lyriko is an application based on listening quizzes. Furthermore, it is an interactive game when learners listen to an audio and solves quizzes at the same time. There are four types of tasks:

- 1) learning of new vocabularies,
- 2) match word with an image – see *Figure 4*,
- 3) mark incorrect expressions in a text,
- 4) and add missing words into phrases.

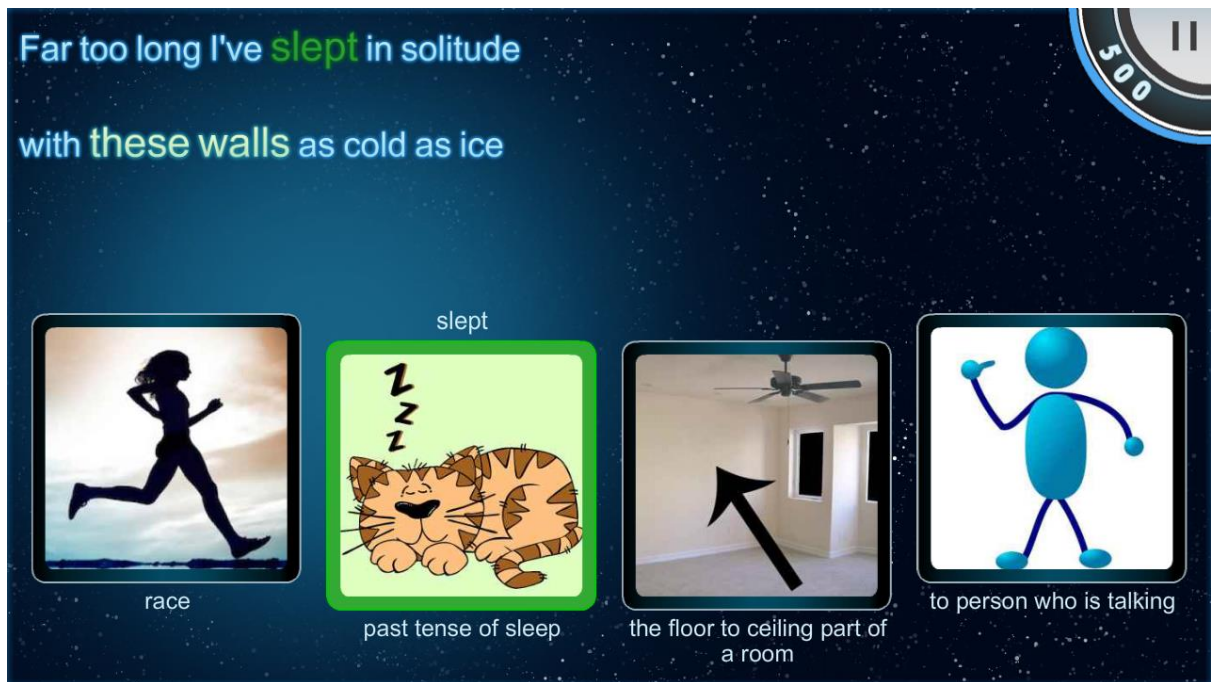


Figure 4 - Lyriko - match word with an image

Lyriko is based on matching and marking words or short phrases that are kind of extension and adaptation based on matching sound with written form of a word as described in the previous chapter Theoretical background section MALL challenges (Ghaderpanahi, 2012).

Voscreen is an application based on video podcasts that were introduced in the previous chapter, with interactive game-powered quizzes. Those quizzes are always based on a short video clip which comes from TV series, movies, songs or YouTube channels. Learners choose whether they want to see English subtitles or not. The aim of this game is to choose the correct paraphrase of spoken information – see Figure 5. Learners score points for every correct answer and move on to the next clip in the series. The clips can be played as many times as necessary.

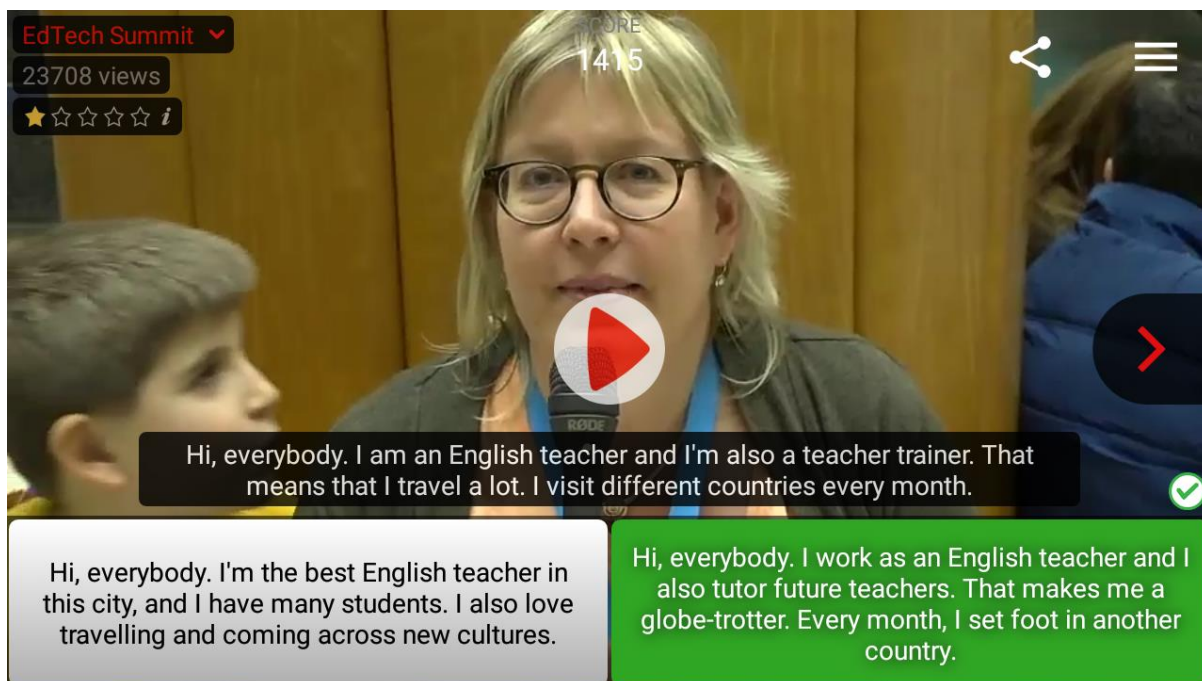


Figure 5 - Voscreen - showing subtitles and correct answer

Therefore, bottom-up processes, presented in previous chapter, have to be applied. Moreover, the visual part of the video can trigger top-bottom processes that can lead to correct answer. But the video is usually relatively short and therefore the information from listening component of a video and its understanding has to be used. Moreover, the reading capability based on knowledge of grammar, vocabulary and their meaning is combined in those two relatively similar paraphrases.

As said before, there is only a one type of a task but you can choose from different modes and levels of difficulty:

- *voscreen life* - random video from application's database without any selected parameters.
- *voKido* - kids' friendly mode, but not very appropriate for young learners because the grammar and vocabulary do not reflect the level of their knowledge.
- *voStep* - this mode is focused on selection of learner's level of knowledge. This mode is very useful especially for beginners that are assured that selected quizzes are on appropriate level.
- *voRhythm* - this mode allows to choose from different lengths of spoken text usually from 3 to 13 words plus. Shorter sentences are very useful for quick interactive activities during the class.

- *voStructure* - this mode is suitable for practice of different grammar topics like tenses, modals, prepositions, conjunctions and so on.

ESL Listening Quizzes is an application for practicing listening comprehension through listening to short stories used for transfer of information that is verified through interactive quizzes as shown on *Figure 6* (right). The gathered knowledge and skills can be applied during different exams like TOEIC, IELTS and TOEFL. Therefore, these quizzes are good enough to use them during the language lessons. In addition, this app allows users to show transcription of the spoken text and explanation of selected uncommon words - see *Figure 6* (left).

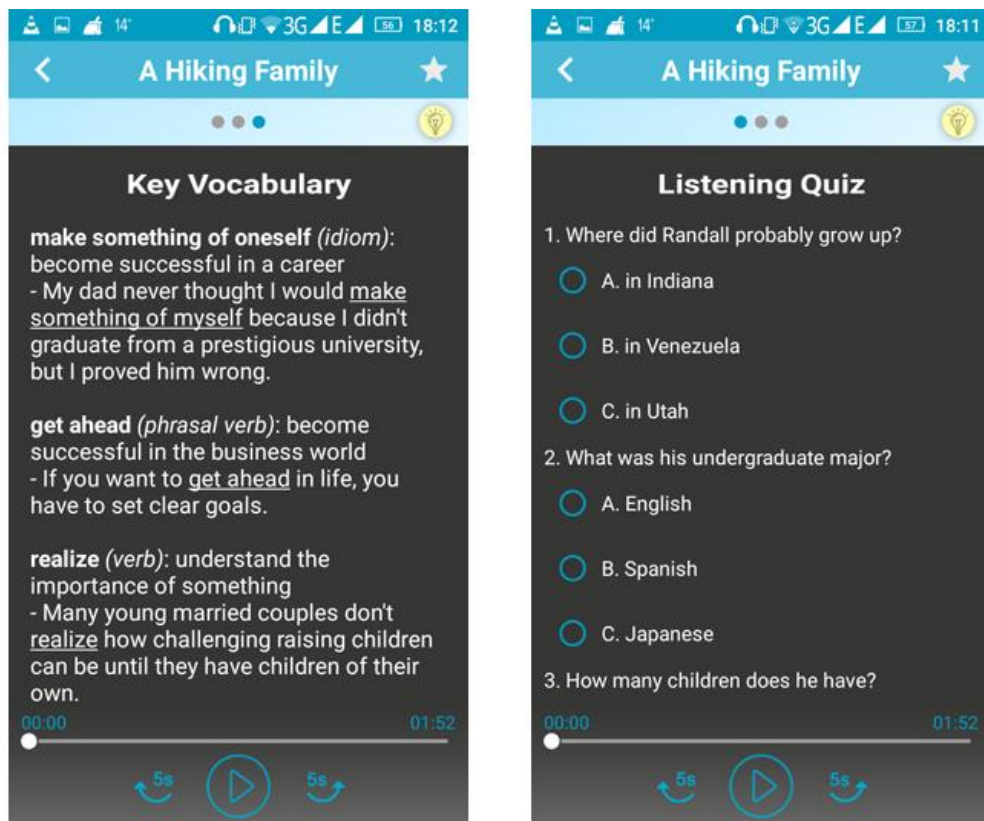


Figure 6 - ESL Lis. Quizzes - vocabulary (left) and quiz (right)

The following *Table 2* compares main features of these apps that were evaluated through Survey 2. Each of the selected features is present at least in one of the tested apps.

Feature	Lyriko	Voscreen	ELS Lis. Quizzes
replay of audio	no (repeat task)	yes	yes (5s slots)
different levels of difficulty	yes	yes	yes
correction and feedback	yes correct/incorrect	yes correct/incorrect	yes correct/incorrect
replay of the task	yes	no	yes
topic diversity	yes	yes	yes
written transcription	yes	yes	yes
working offline	yes, after downloading the song	no	yes, after downloading the audio
web version of application	no	yes	yes
task diversity	yes	no	no
rewards - points, medals	yes, stars	yes, points	no

Table 2- Comparison of main features of selected apps

Research tools

Three kinds of research tools were used:

- mobile apps that were used as part of the experiment,
- software for surveys - Google Forms, see *Figure 7*,
- software for data analysis - Google Tables and MS Excel.

Google forms were used as software for taking the surveys. This software is free and easy to use for both data collection and evaluation. For example on *Figure 7* we can see the possible answers for question “authenticity of recordings” for selected apps on Czech five grade scale from 1 to 5, where 1 is the best and 5 is the worst.

	1	2	3	4	5
VOSCREEN	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
LYRIKO	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
ESL Listening Quizzes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 7 - Example of a question from Google Forms

Microsoft Office was used as a main software for data analysis and evaluation. Secondary, the Google docs and tables were used for first data analysis. MS Excel was used for charts generation and statistical analysis because this software is often used in other researches for these tasks.

This chapter stated research questions and hypotheses for further analysis. Moreover, it covered research parameters related to the experiment, mobile apps used in experiment itself and research tools used for the surveys and data analysis. The next chapter focuses on results of proposed methods, their implications and challenges. Moreover, it interprets analyzed data including their strengths, weaknesses and limitations.

IV. RESULTS AND COMMENTARIES

This chapter describes results of this research and comments outputs as well as conclusions. Furthermore, it covers recommendations for teachers related to the use of mobile devices in teaching a foreign language, which are mainly focused on the issue of listening comprehensions. These recommendations are combined with conclusions as part of hypotheses and research questions analysis. Overall pedagogical implications are discussed in the next chapter. This chapter is divided into subchapters based on the phase of student's testing:

- prior state to the experiment - this section covers previous student's attitude to mobile devices and their use for learning;
- experiment - this section covers the selection of mobile apps for learning listening that are used for real life testing and my observations of an experiment;
- post experiment state - this section is focused on current students' attitudes and opinions related to the selected apps and their features;
- overall evaluation - this section covers final results, evaluation and commentaries of this research.

Prior state to the experiment

Following paragraphs describes prior knowledge of students before experiment and without any influencing related to this topic. Moreover, the results from this section are evaluated with hypothesis from category A selected in Methods chapter.

A1 - All students have smartphone or tablet with Internet connection, therefore BYOD method is applicable during learning process.

There are two prerequisites for this hypothesis:

- 1) Everybody has a mobile device with Internet connection capability.
- 2) There is Wi-Fi hotspot available for students at school because it cannot be assumed that everybody has a generous mobile-data plan that meets relatively big requirements of mobile applications due to video playback.

Number two can be accomplished by school with relatively small investment and therefore, this requirement is not analysed further. Now the requirement number one that is focused on learners is discussed.

Total number of students for Survey 1	62
Number of students with mobile device	62 (100%)
Number of students with smartphone	61 (98%)
Number of students that use Internet from mobile device	62 (100%)
Number of students with some “smart” device	62 (100%)

Table 3 - Basic aggregation data from Survey 1

Based on the Survey 1, see Appendix A and *Table 3*, it was identified that:

- All students have some kind of a mobile device.
- Almost all students have a smartphone; especially 61 from 62 students have smartphone.
- One student without a smartphone has a tablet. Therefore, all students have some kind of a “smart” device with Internet connection accessibility.
- All students use their mobile device to connect the Internet. Furthermore, the average is 4,54 out of 5 points which means that the majority group of students use Internet several times a day and other minority group use Internet mostly a few times a week.

BYOD method usually requires that all students have a modern mobile device with Internet connection capability. Therefore, we can declare, that based on previous results from Survey 1, these requirements were met and this hypothesis is true.

A2 - All the learners are able to watch videos on their mobile devices.

This hypothesis is important for further research questions therefore we have to examine the features of students’ devices related to multimedia content. These features are not examinable directly by teachers and students are not aware of those exact features. We have to examine it indirectly with question related to their everyday use of those devices. The summarized results related to this hypothesis are in *Table 4*. Nowadays all popular learning apps are at least partly based on modern visual graphics. On the other hand, we do not need to distinguish between animated or video type of multimedia content because both are considered and manipulated by mobile device as general video.

Several times a day	26 (42%)
At least once a day	11 (18%)
At least four times a week	12 (19%)
Not use mobile device for watching videos	2 (1 men, 1 female)
Use mobile device for watching videos regularly	49 (79%)
Are able to watch video on mobile device	60 (97%)

Table 4 - Number of students related to the frequency of watching videos

This hypothesis is false because it cannot be stated that all learners are able to watch videos on their mobile devices, but it can be declared that the majority (97%) is able to use mobile device for this purpose. Two students do not use mobile device for this purpose at all and therefore, it cannot be assumed that those devices are able to satisfactorily play videos or there is another issue, for example related to the missing appropriate data plan for Internet connection.

A3 - At least half of the learners use their mobile device for educational purposes.

This hypothesis is focused on students' attitude related to the educational apps and general use of mobile devices as educational tools. The summarized results related to this hypothesis are in *Table 5*.

Number of students who use mobile device at least sometimes for education	46 (74%)
Number of students who use device for education at least once a week	35 (56%)
Number of students with some English learning app installed	13 (21%)
Number of students with digital dictionary	46 (74%)

Table 5 - Results related to educational purposes of mobile devices

As it can be seen from *Table 5* the students use their mobile devices for education at least once a week in 56%, but on the other hand only 21% of students have some mobile app for English learning. 19% of students have installed the worldwide most popular language learning app Duolingo, which is based on game theory and motivational awards.

Overall this hypothesis is true but only in a general educational point of view like use of Internet for searching sources for homework. It is false in case of specialised mobile apps for learning.

A4 - At least 25% of learners have an application for learning English on their mobile devices.

This hypothesis is relatively general and therefore it has to be specified further as:

- Only English learning apps are considered because those are installed with English learning in mind.
- Dictionary is not considered because nowadays it is preinstalled on some devices. On the other hand, it is considered as supporting tool in the following hypotheses.
- Games and other free time apps are not considered because it is hard to say how much they are involved in English learning process. Moreover, it is almost impossible for young learners to distinguish between common game and game that evolves English knowledge and understanding.
- Web apps with support for mobile devices are not considered because those apps are not directly installable to the mobile device.

Number of students with some English learning app installed	13 (21%)
Number of students with digital dictionary	46 (74%)

Table 6 - Mobile app for learning English

This hypothesis is false in case when the digital dictionary is not marked as English learning app, but otherwise it is true. Therefore, it can be stated that English learners do not use English learning apps very often and they are more focused on direct learning during classes.

Experiment

This section is focused on research questions related to the observation of the experiment and the experiment itself. This observation also includes results from discussion with students and contains information that was not possible to cover in the surveys.

B1 - Which mobile apps are the most enjoyable for the learners?

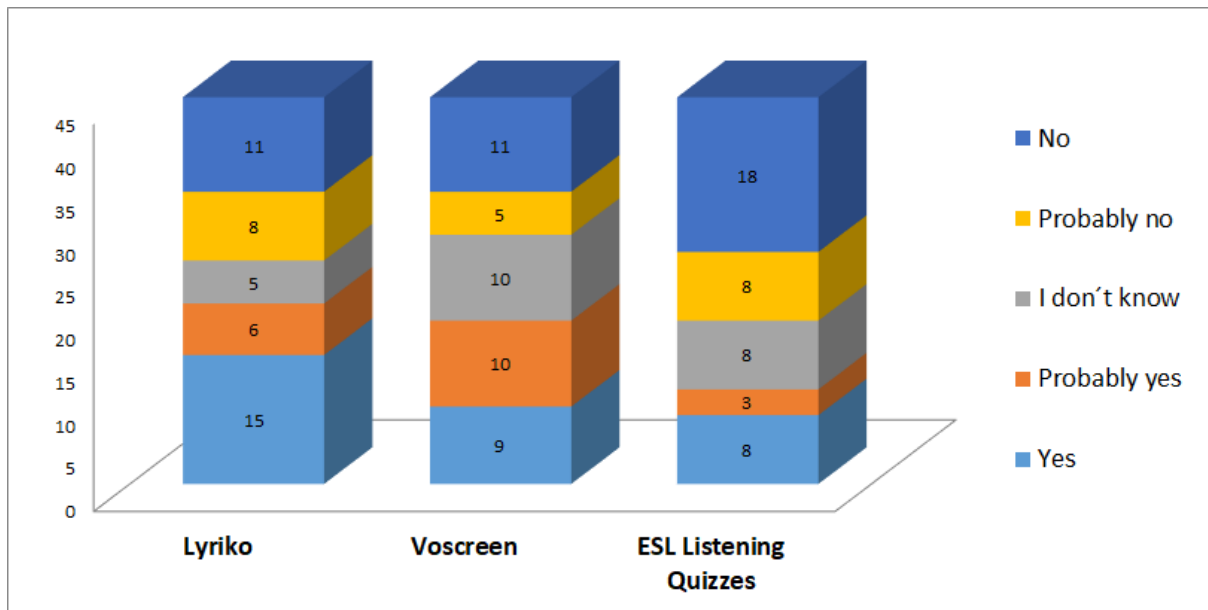
This research question is relatively tricky because the “enjoyable” of the app is based on many direct and indirect aspects. For example, direct aspects include:

- Number of installation of presented apps by students after the experiment. Moreover, we have to consider full scale from yes through maybe to no. It is impossible to check students’ devices for presence of those apps manually and furthermore, it is not legal.
- Survey 2 directly contains question related to the enjoyability of the apps but it cannot be used directly as a result of this research question because it has to be distinguished between two versions of “enjoyability”:
 - Real enjoyability - it is based on real feelings related to the use of an app.
 - Apparent enjoyability - it is based on current and temporary “wow effect” based on current and time limited experience from the new mobile application.

Indirect factors include:

- Activity speed - shorter activities are more popular among students.
- Quick activities in the form of choose answer in a short time window are more popular than more thoughtful activities that require complicated cognitive processes.
- Type of answers - A-B questions or “select one” questions are further more popular than A-B-C-D or “open text” answers. There are usually some issues in evaluating “open text” answers and therefore, they are not used so often.
- Video and visual content is very important for learners. Plain audio content is not attractive enough for young group of students because they are used to using advanced technologies that contain lots of interactive and graphically well-crafted content.
- Game based theory – the application of game based theory is crucial for the success of learning apps among younger students. Because the game itself including fun is much more important than acquiring knowledge for them.
- Other factors - it includes performance of the mobile device, free space, permissions for installation of new apps and so on. Especially those limiting factors occurred during discussion with student and they were not considered in surveys but they have significant influence on learners’ decision.

Further analysis starts from number of installations; see *Graph 1*, of each app by students after the experiment. It can be seen that there is relatively big part related to “probably” and “don’t know” answers. Approximately only 50% of students were able to give Yes - No answer.



Graph 1 - Number of installations of each app after experiment

The features of selected apps were discussed in Methods chapter and they are used for further “enjoyment analysis”. It can be seen in *Graph 1*, that ESL Listening Quizzes has the lowest number of installation. This is caused by missing motivation factors, game based theory, and activity length and by the different orientation of this app. Because this app is oriented on the preparation for international English exams and therefore, previous mentioned factors were not probably considered.

As a result, it can be stated that previously mentioned factors have important role in the overall decision. Therefore, based on my observation and discussion with students, it was discovered that girls prefer Lyriko because of their music enjoyment and boys usually prefer Voscreen because of authenticity of visual content that originates from movies and TV series. Moreover, some students are sometimes so interested in those featured movies that lead to taking notes for their “to-watch” list. Lyriko is not so popular among boys because of missing current and most popular nowadays songs or their favourite rock, rap or

metal songs. That is caused by Lyriko features that require songs specifically suitable for this app. Not all songs can be transformed into Lyriko's content.

Post-experiment state

This section is focused on analyzation of results from the Survey 2 that took place right after the experiment. These results are used in a following section Overall evaluation that link chapters Results, Methods and Theoretical background together.

C1 - Which features of mobile apps are the most significant for the learners?

The aim of this research question is to generally analyze the importance of different mobile app's features that shapes the final impression of the language learner. These identified features can be used for apps selections that are used during classes. Extensive listening and other spare-time use of apps are discussed in following research questions and in a following chapter Pedagogical implications.

For further analysis, the previous relevant hypotheses as well as data from Survey 2 are used. Furthermore, direct and indirect factors, as introduced in B1 hypotheses, are used as well.

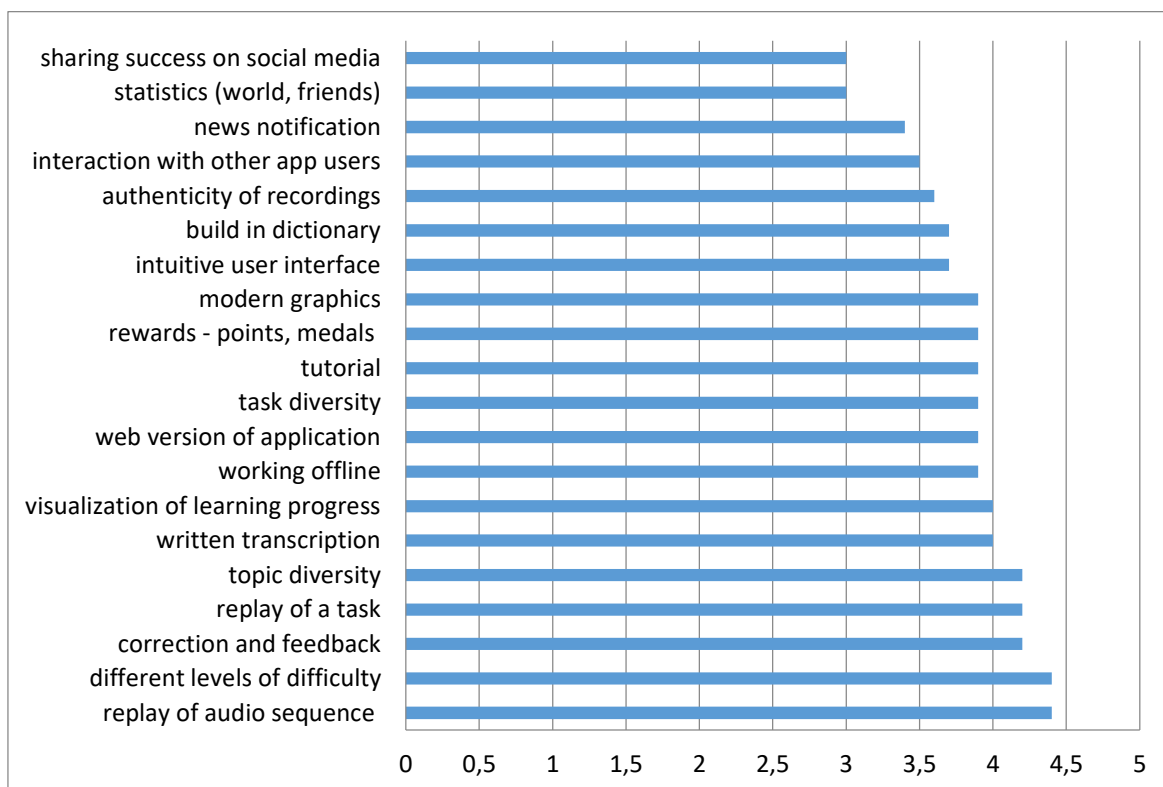
Now the analysis starts with data collected from Survey 2. The average measure in points from 5 to 1, where the 5 is the most important, is shown in *Graph 2* (data collected from Survey 2). It can be proclaimed that the two most important features based on direct questions are:

- Replay of audio / video - learners can replay the multimedia content for more times.
- Different levels of difficulty - learners can choose from different levels that fit to their knowledge of language.

On the other hand, there is a number of indirect factors that were examined in hypothesis B1:

- Motivation factors - points, medals, sharing of rating through social networks, statistics among friends usually through social networks and global statistics through app.
- Game based learning theory - the success in a game is based on students' acquired knowledge as previously mentioned in chapter Theoretical background.

- Activity length - shorter dynamic and interactive activities are preferred. Usually A-B/Yes-No answers are the most popular among students.



Graph 2 - Importance of mobile app's features

Finally, the target group of users has to be considered including their sex and age. As previously said in B1, girls usually prefer music apps and boys prefer video-based apps. The great visual features like modern graphics and multimedia content are the foundation for successful apps.

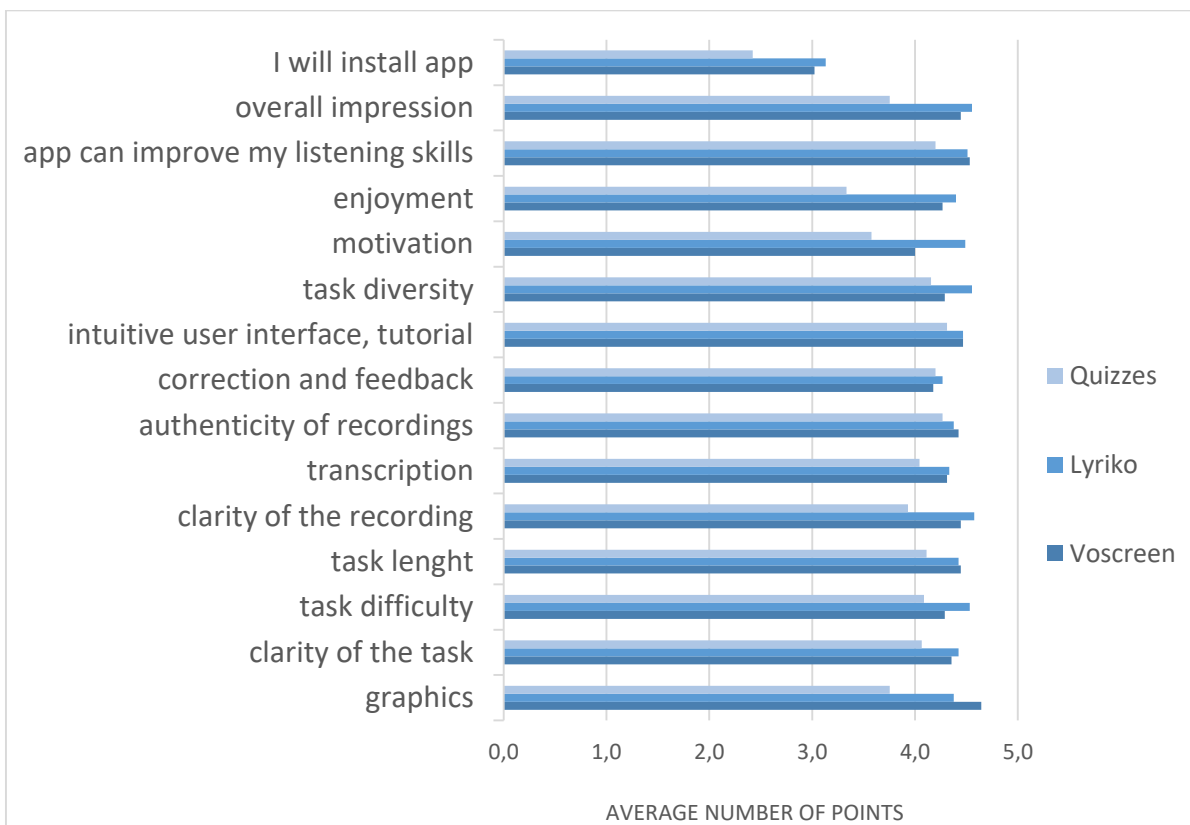
C2 - Which mobile apps' features are the most significant for decision to install app on private devices?

The previous section C1 was focused on features that good mobile apps should have and therefore, they lead to success among target learner group. This is useful in a case when teachers are looking for an app which can be used during classes. On the other hand, C1 does not solve the question related to app installation to the learners' devices. Now this section covers the dependency between mobile apps features, its overall rating and the decision to install or not install to learners' devices. As data source is used Survey 2 and results and implications from previous hypotheses and research questions.

The first step of this analysis is to visualise the average number of points for selected apps. The aim of this visualisation is to discover some correlation between significantly good or

bad apps and their features. As it can be seen in *Graph 1*, the ESL Listening Quizzes has the worst results in all questions. But statistically the difference between the points among features is not very significant. Therefore, some other, probably indirect, features have to be considered. It is supposed that correlation between features and overall decision to install app stays hidden because of high amount of different research questions and statistically low number of respondents which are not statistically significant to answer this question. It can be predicted that features identified in previous hypotheses as the most important can be discussed as potential candidates. Furthermore, it was used as a starting point for discussion with learners. It was discovered that following features have the biggest influence on their final decision for app installation:

- task length - shorter tasks are preferred,
- motivation - stats, challenges among friends,
- topic and task diversity,
- indirect factors - for example free space on mobile device and size of an app.



Graph 3 - Features of selected apps

The following research question D2 covers the installation problematic with more focus on detail based on features of selected apps. The current research question is considered as partly solved because of a low amount of data.

Overall evaluation of final hypothesis (cat. D)

This chapter focuses on summarization hypothesis from category D that link previous categories (A-C) together and applies theory on results from real-life world. The previous information from chapters Methods and Theoretical background is used and connected together through results of following hypotheses. Main conclusions obtained from this research are introduced in the following chapter Pedagogical implications in a shorter and quickly understandable way.

D1 - Mobile devices are considered more an educational tool rather than a gaming tool?

This research question is relatively hard to analyse because of its complexity. Therefore, it is divided into smaller parts which some of them were analyzed in a previous hypothesis. First prerequisites have to be considered to be sure that all students have the same initial assumptions for this hypothesis. For example: Do all students have a mobile device with Internet connection? Result is yes because hypothesis A1 is true.

Now it has to be examined if students use their mobile devices for fun. Obtained results can be seen in *Table 7*. Based on results from *Table 7* it can be answered: yes, at least 61 of 62 respondents use their mobile device for fun.

Question	Source	Result
How many students use mobile device for playing games?	Survey 1	74%
How many students are able to watch videos on mobile device?	Hypothesis A2	97%
How many students use social networks on mobile device?	Survey 1	87%
How many of students listen audio on their mobile device?	Survey 1	68%

How many students doesn't use mobile device for social networks, listen audio or watch videos either?	Survey 1	1,6% (1 of 62)
How many students use device for social networks, audio or video?	Previous question	98,4%

Table 7 - How many students use their devices for entertainment?

The following *Table 8* shows results related to students' opinions about using their devices as education tools.

Question	Source	Result
How many students use device for education sometimes?	A3 (Survey 1)	46 (74%)
How many students use a digital dictionary?	A3 (Survey 1)	46 (74%)
How many students have some English learning app installed?	A3 (Survey 1)	13 (21%)

Table 8 - How many students use their devices for education?

Based on my opinion the result of this research question is quite straightforward - 98,4% of students use their devices for fun and only 74% use it for educational purposes. This result was anticipated because enjoyable measure of activities was involved. It is human nature to prefer fun instead of education among young population in Europe. On the other hand, I think in some countries like China would the results seem to be opposite because of their socio-economic situation.

D2 - In case that mobile apps are carefully selected, will they be used in learners' spare time?

This research question is focused on selected apps used during experiment. The experiment involved following apps with different types of activities:

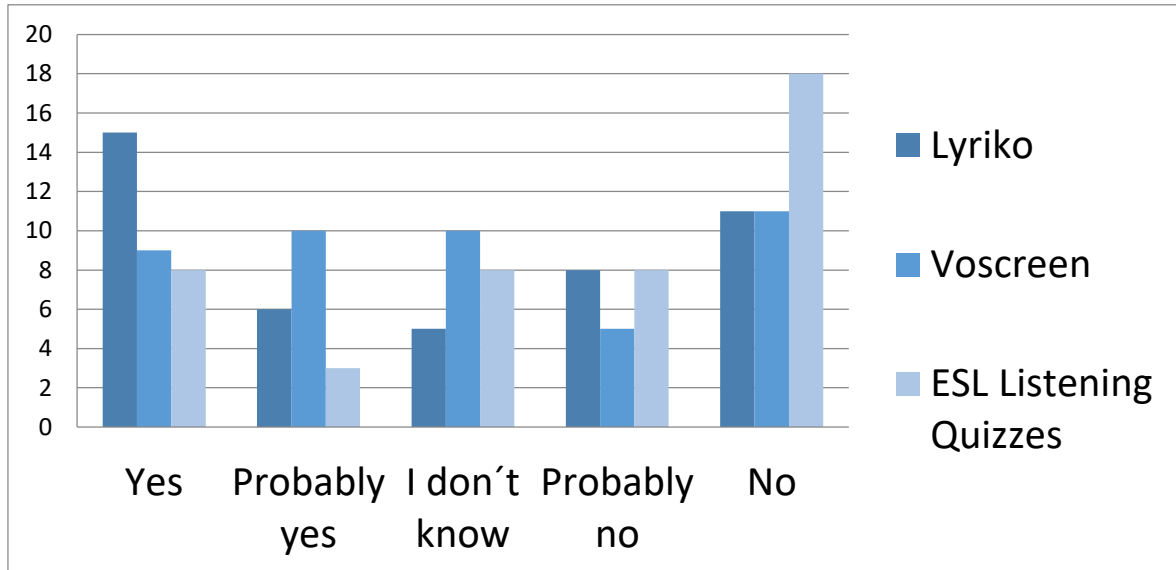
- ESL Listening Quizzes,
- Lyriko,
- Voscreen.

Based on the previous research question B1 the following features were selected as the most important for success of mobile apps among students:

- Motivation factors - points, medals, and stars.
- Game based learning theory - the success in a game is based on students' acquired knowledge as previously mentioned in chapter Theoretical background.
- Activity length - shorter dynamic and interactive activities are preferred. Usually A-B/Yes-No answers are the most popular among students.

Lyriko and Voscreen implements all of those features and therefore they should be more successful than ESL Listening Quizzes. This presumption is true based on the following *Graph 4*.

It was identified that biggest problems related to ESL Listening Quizzes are the length of its activities, missing visual content and difficulty of the tasks. Therefore, this app should be considered for use during classes even though enjoyment of this app is lower than two other apps. ESL Listening Quizzes are considered as preparation app for international English exams and therefore, it is very suitable for extensive listening activities inside or outside of classrooms.



Graph 4 - Number of installation of selected apps

The results from *Graph 1* follows: Lyriko is clearly the most popular among tested group because of number direct “Yes, I will install app” answers. But in case that answers Yes and Probably yes is considered as well, the Voscreen ended with almost equally good results. Therefore, those apps are analyzed further through following measures:

- Dependency between overall rating and number of installation of an app.
 - It was discovered based on Survey 2, that overall rating is dependent on rating of selected features.
- Dependency between answer “If there was application that would definitely improve my language skills, would I install it?” and installation of an app.
 - Based on Survey 1: 37 learners answered Yes and 35 answered Probably yes, together it's 72% of students.

As seen from summary data in *Table 9* from Survey 2, there is a dependency between overall rating of an app and decision to install or not to install it. Furthermore, after data analysis from Survey 2 it can be seen, that only a low number of applications is definitely installed (value Yes) in case of grade worse than 2.

App	Number of grade 1	Grade 1 & Yes (will install)	Number of grade 2	Grade 2 & Yes (will install)
Lyriko	28	14	15	0
Voscreen	26	7	14	2
ESL List. Quizzes	11	3	20	3

Table 9 - Dependency between installation and overall impression

Obviously there is some hidden dependency between overall rating of an app and rating of most important features of an app, but it is very individual and differs among different group of students. Measured data were used as starting point for discussion with learners. Based on this discussion it was discovered that the strongest features that leads to installation of an app are:

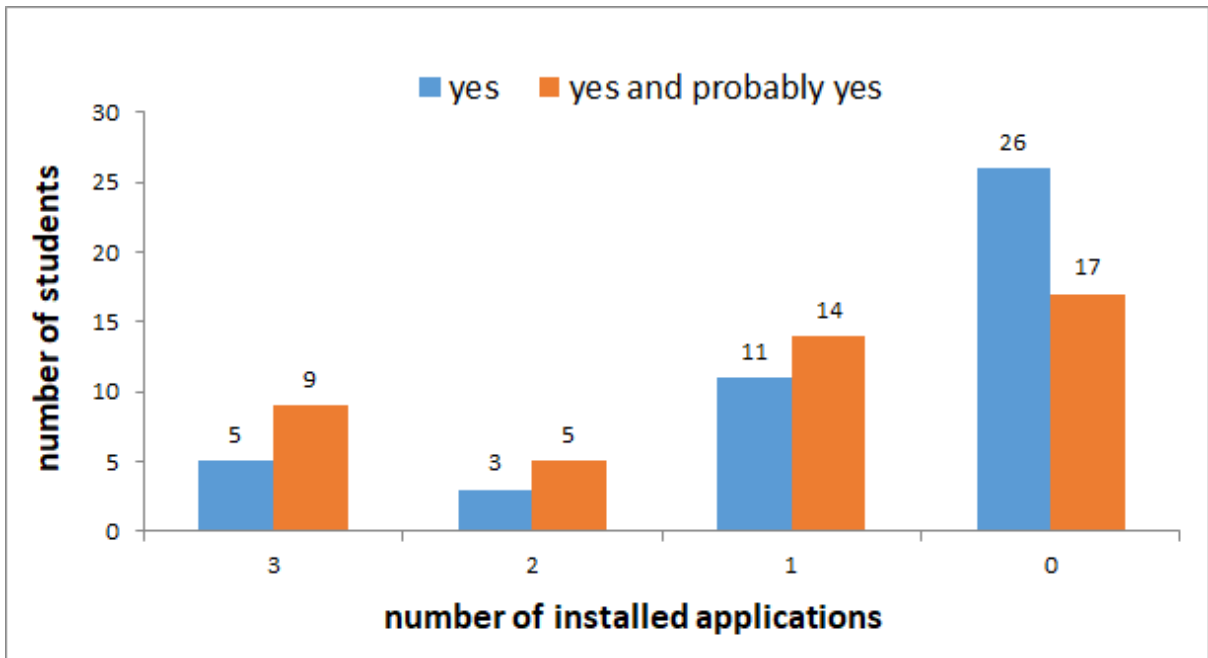
- overall impression including enjoyment,
- modern graphics,
- motivation - stats, challenges among friends,
- task length - shorter tasks are preferred.

Now the analysis related to the individual students follows. First it has to be examined how many apps will be installed by individual students. It was discovered that:

- 25 students will install at least 1 app,
- 17 students will not install any app.

Moreover, those 28 students, that will install at least 1 app, are analyzed further with *Graph 5*, where

- all 3 apps will be installed together by $9 + 5 = 14$ students,
- 2 apps will be installed by $5 + 3 = 8$ students,
- 1 app will be installed by $14 + 11 = 25$ students.



Graph 5 - Number of installed apps among students

Therefore, it can be stated that at least one app will install 25 from 45 that corresponds with 56% of all students. As previously discovered in the hypothesis B1 there are other indirect reasons that lead to decision to not install any app. Those reasons include low performance of mobile devices, not enough free space, permissions for installation of new apps and so on.

As conclusion it can be declared that mobile apps will be used in learners' spare time in case that they are carefully selected.

V. PEDAGOGICAL IMPLICATIONS

This chapter focuses on application of the discovered information and its implementation in classes with the main focus on listening activities.

The main results of this research include following findings:

- Students want to use mobile devices during classes.
- Learners are more motivated thanks to mobile devices but only in a case when appropriate app is used.
- Mobile app selection is critical for successful use in learning inside and outside the classroom.
- The most important features for learning apps were identified. Those features are divided into following categories:
 - Features for in-class learning.
 - Features for out-class learning.
 - General features - features required for both categories.

Features for in-class learning include short, clear and quickly understandable tasks. Based on B1 and C1 other features include different levels of difficulty for different students, replay of audio or a whole task in a case of disruption during work or misunderstanding. Good quality headphones are important especially for listening activities. Therefore, the wifi is required for selected apps without offline mode.

Important features for out-class learning include different kinds of rewards like medals and trophies, statistics and result sharing among friends or in a form of global statistics. Teachers should be helpful with app selection for individual students based on their knowledge with respect of their personality, as described in Metacognition theory.

General features - features required for both previous categories include:

- Application of game-based learning theory.
- Good visual appearance of an app and individual activities.
- Multimedia content including videos and visual effects.
- Short, quick and interactive activities. It includes quick answer in a form yes-no or A-B.

- Non-specified features related to metacognition theory. Apps should be chosen with respect of individual students and their needs:
 - Person - with respect to individual capabilities.
 - Task - slower students should choose known type of tasks.
 - Strategies - students work with app under teachers' supervision and unsuccessful students are moved to another tasks or more appropriate apps.

The following are recommendations on mobile applications to enhance listening comprehension. Some apps are more popular among different sex - for example Lyriko is usually more popular among girls and on the other hand, Voscreen is more popular among boys thanks to its movies clips. Following apps were used for experiment and evaluated during this thesis:

- Lyriko - usually is more suitable for girls thanks to their music popularity.
- Voscreen - usually for boys thanks to clips from popular movies. This app applies top-down processes, as described in section Teaching of listening.
 - ESL Listening Quizzes - this is a great app, based on my opinion, for enhancing of listening comprehensions. But on the other hand, it is suitable for older and more conscious children with respect to their listening skills. This app has many limitations like missing game-based theory, missing multimedia content and so on, but it was specifically developed as preparation for international English listening exams.

Limitation of the research

This section covers known limitations of research described in this thesis. These limitations are based on social, economic and geolocation features or they are derived from character of this research. Limitations of the research include, but are not limited to:

- Relatively low number of test subjects:
 - 62 subjects for Survey 1,
 - 45 subjects for Survey 2.
- School location and origin of students - research took place in school in Pilsen and students are also from Pilsen or its surroundings.
- Students' socio-economic situation - all students have some kind of "smart" mobile device. The situation would be very different in poorer region of a country.

- Time period of this research is also restrictive because it was limited only on particular groups of learners from just one school.

Based on previous findings this research is applicable generally in case of MALL application during classes but the current local situation has to be checked before introducing MALL as tool for additional education outside of classrooms.

Suggestions for further research

Main suggestions for further research include removal of restrictive factors like:

- The low number of test subjects - more subjects have to participate in experiment,
- Only one social group - include different kind of schools with different social groups of students from different socio-economic situations,
- Only one location - include different locations across whole country. The best results would be obtained based on international research with same baseline and set of methodic and questions. It is important to be able to compare experiments from different countries.

Possible expansion of this research can be focused on application of different affordable ICT tools that can be used for better learning experience. It can include special teaching tools as well as standard ICT equipment that can be transformed into learning tools just by its different application. For example, trackball and 3Dconnexion wireless SpaceMouse are currently almost unknown and relatively cheap tools that can be relatively easily transformed into a learning tools with some innovative desktop or mobile app.

Furthermore, in a case focused on mobile apps the research can include apps from different kinds of learning areas like:

- Reading - understanding of written text,
- Speaking - mobile-assisted speaking enhanced apps,
- Analyzing - analysis of spoken or seen information that leads to conclusions based on deductive approach.
- Choose or match - activities based on building mind maps and networks by learning using different alternative learning methods.

VI. CONCLUSION

The aim of this thesis was to find and evaluate mobile apps for learning listening skills. This goal has been met and moreover, the whole area related to the use of mobile devices in and outside of classrooms was explored.

The theoretical part of this thesis includes Mobile-assisted language learning (MALL), teaching of listening theory, podcasts, metacognition and game-based learning theory. Those theoretical sections were applied to selected methods and linked within chapter Results and commentaries. Therefore, the selected mobile apps were evaluated using the theory introduced in the theoretical part of this thesis.

The practical part of this thesis, including the experiment itself, was focused on the selection and evaluation of mobile apps that can be used during classes on school's devices or on learners' devices through application of BYOD method. Beyond the assignment of this thesis the most important features of mobile apps were identified and guidelines for mobile app selection for learning purposes was introduced based on mobile app's features.

Three high quality mobile apps for learning listening were identified for different groups of students and different types of activities during classes:

- Lyriko,
- Voscreen,
- ESL Listening Quizzes.

Those mobile apps are very useful tools for both intensive and extensive listening and they are very beneficial for learners in area of improving their English listening skills.

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APPENDIX A – SURVEY 1 – QUESTIONS (EN)

1. Age

12 13 14 15 16

2. Sex

Male

Female

3. I own a mobile device

Yes

No

4. If yes, what mobile device do you own (use).

- Basic phone
- Smartphone
- Tablet

5. I use mobile device to

- Few times a day / 5
- At least once a day / 4
- At least 4 times a week / 3
- At least once a week / 2
- At least once a month / 1
- Less or never / 0

a) Making calls

b) Sending texts

c) Social media

d) Internet

e) Watching videos

f) Listening to audio

g) Playing games

h) Taking videos

i) Taking photographs

j) Taking notes

k) Dictionary

l) Reading (books, documents)

m) Education

6. I think that mobile devices can be used for educational purposes during lessons.

definitely yes

rather yes

don't know

rather no

definitely no

7. I think using mobile devices in class is better than using a computer.

definitely yes rather yes don't know rather no definitely no

8. I would be more motivated if mobile devices were more involved during the lessons.

definitely yes rather yes don't know rather no definitely no

9. I think I learn more when I can use mobile devices in class.

definitely yes rather yes don't know rather no definitely no

10. I think mobile devices cannot be adequately controlled by the teacher during the lesson.

definitely yes rather yes don't know rather no definitely no

11. I think that mobile devices can interfere during the lessons, such as distracting attention.

definitely yes rather yes don't know rather no definitely no

12. I would appreciate if the teacher and classmates could share materials for lessons through mobile devices.

definitely yes rather yes don't know rather no definitely no

13. If I found someone or recommended me an application, which would certainly improve my knowledge and skills, I would use it regularly?

definitely yes rather yes don't know rather no definitely no

14. Do you have an app for learning English on your mobile device?

Yes No

15. If yes, which one?

APPENDIX B – SURVEY 1 – QUESTIONS (CZ)

1. Věk

12 13 14 15 16

2. Pohlaví

Muž

3. Vlastním mobilní zařízení

Ano Ne

4. Pokud ano, jaké mobilní zařízení vlastníš (využíváš).

- Tlačítkový mobilní telefon
- Smartphone
- Tablet

5. Mobilní zařízení používám pro

- Několikrát denně / 5
- Alespoň jednou denně / 4
- Alespoň 4 dny v týdnu / 3
- Alespoň 1 za týden / 2
- Alespoň jednou za měsíc / 1
- Méně nebo vůbec / 0

a) Volání

b) Textové zprávy

c) Sociální sítě (Facebook,...)

d) Přístup na internet

e) Sledování videí

f) Poslech audionahrávek

g) Hraní her

h) Natáčení videí

i) Pořizování fotografií

j) Zapisování poznámek

k) Slovník

l) Čtení (knihy, dokumenty)

m) Vzdělávání

6. Myslím si, že mobilní zařízení mohou být používány pro výuku v průběhu vyučovacích hodin.

rozhodně ano

spíše ano

nevím

spíše ne

rozhodně ne

7. Myslím si, že využití mobilních zařízení při vyučování je lepší než využití počítače.
rozhodně ano spíše ano nevím spíše ne rozhodně ne

8. Byl bych více motivován, kdyby do výuky byly více zapojovány mobilní zařízení.
rozhodně ano spíše ano nevím spíše ne rozhodně ne

9. Myslím, že se naučím více, když budu moci při vyučování používat mobilní zařízení.
rozhodně ano spíše ano nevím spíše ne rozhodně ne

10. Myslím si, že mobilní zařízení nemohou být dostatečně kontrolovány vyučujícím v průběhu vyučovací hodiny.
rozhodně ano spíše ano nevím spíše ne rozhodně ne

11. Myslím si, že mobilní zařízení mohou při vyučování působit rušivě, např. odvádět pozornost.
rozhodně ano spíše ano nevím spíše ne rozhodně ne

12. Ocenil bych, kdyby učitel a spolužáci mohli sdílet materiály pro vyučování prostřednictvím mobilních zařízení.
rozhodně ano spíše ano nevím spíše ne rozhodně ne

13. Kdybych našel nebo mi někdo doporučil aplikaci, která by jistě zlepšila mé znalosti a dovednosti, začal bych ji pravidelně používat?
rozhodně ano spíše ano nevím spíše ne rozhodně ne

14. Máš na mobilním zařízení aplikaci na výuku angličtiny?
Ano Ne

15. Pokud ano, jakou?

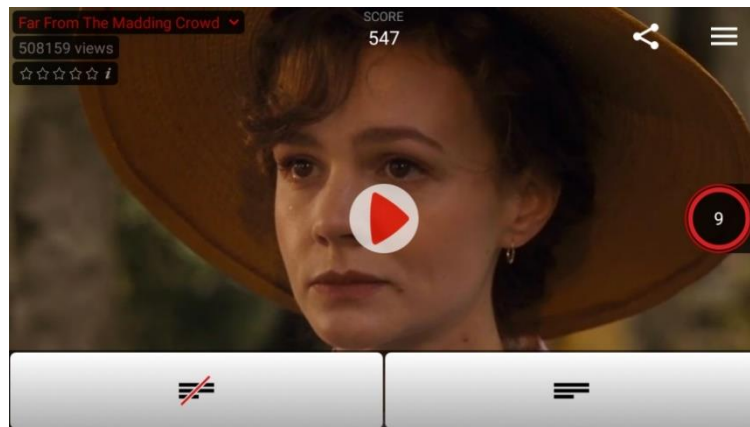
APPENDIX C – SURVEY 2 – QUESTIONS (EN)

1. Evaluate the properties of mobile applications that focus on the development of listening skills in terms of personal importance.

- very important / 5
- rather important / 4
- sometimes yes, sometimes no / 3
- rather unimportant / 2
- very unimportant / 1

- a) modern graphics
- b) build in dictionary
- c) written transcription
- d) topic diversity
- e) authenticity of recordings
- f) task diversity
- g) working offline
- h) correction and feedback
- i) news notification
- j) intuitive user interface
- k) different levels of difficulty
- l) replay of audio sequence
- m) replay of a task
- n) rewards - points, medals
- o) visualization of learning progress
- p) interaction with other app users
- q) sharing success on social media
- r) statistics (world, friends)
- s) tutorial
- t) web version of application

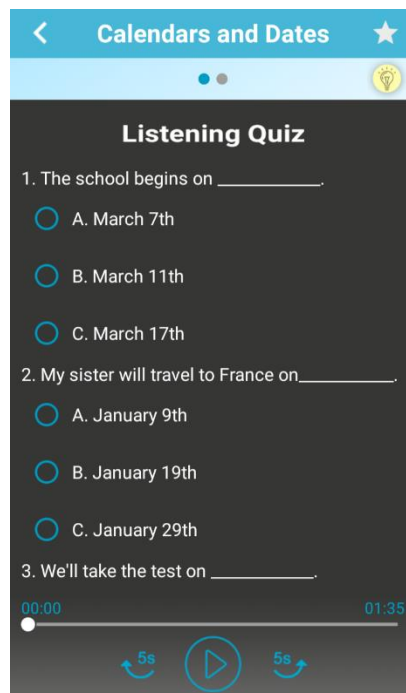
Voscreen



Lyriko



ESL Listening Quizzes



Rate tested mobile apps in the following categories

Mark 1 - 5 (as in school: 1 - best, 5 - worst)

2. graphics

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

3. clarity of the task

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

4. task difficulty

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

5. task length

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

6. clarity of the recording

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

7. transcription

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

8. authenticity of recordings

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

9. correction and feedback

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

10. intuitive user interface, tutorial

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

11. task diversity

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

12. motivation

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

13. enjoyment

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

14. app can improve my listening skills

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

15. overall impression

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

16. I will download and use app on my mobile device.

VOSCREEN	Yes	Probably yes	I don't know	Probably no	No
LYRIKO	Yes	Probably yes	I don't know	Probably no	No
ESL Listening Quizzes	Yes	Probably yes	I don't know	Probably no	No

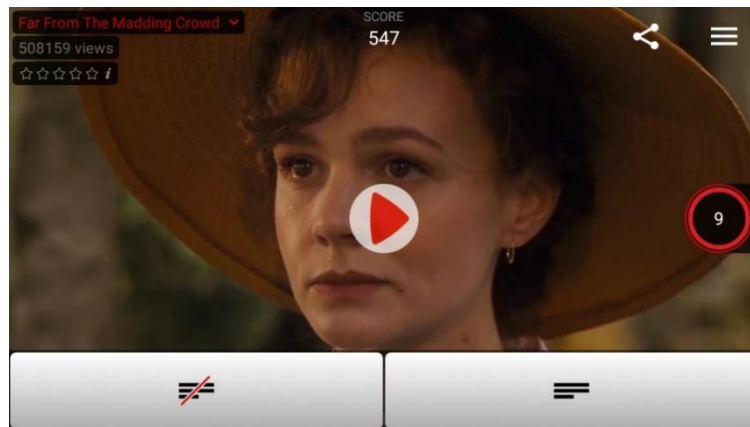
APPENDIX D – SURVEY 2 – QUESTIONS (CZ)

1. Ohodnoťte vlastnosti mobilních aplikací zaměřených na rozvoj poslechových dovedností z hlediska osobní důležitosti.

- velmi důležité / 5
- spíše důležité / 4
- někdy ano, jindy ne / 3
- spíše nedůležité / 2
- velmi nedůležité / 1

- a) aplikace má moderní grafiku
- b) obsahuje vestavěný slovník
- c) možnost zobrazení přepisu mluveného textu
- d) obsahuje širokou nabídku témat
- e) nahrávky jsou autentické (skutečné situace)
- f) jednotlivé úkoly jsou různorodé
- g) možnost práce offline
- h) zpětná vazba - oprava úkolů a vysvětlení správného řešení
- i) aplikace upozorňuje na novinky
- j) aplikace má intuitivní ovládání
- k) možnost nastavení obtížnosti
- l) možnost opakování nahrávky
- m) možnost opakování celého úkolu
- n) obsahuje motivační systém odměn (medaile, body)
- o) možnost zobrazení studijního pokroku
- p) možnost interakce s ostatními uživateli aplikace
- q) možnost sdílení úspěchů na sociálních sítích (Facebook, ...)
- r) umístění ve statistikách (mezi přáteli, celosvětově)
- s) obsahuje úvodní herní tutoriál (návod)
- t) aplikace má webovou verzi

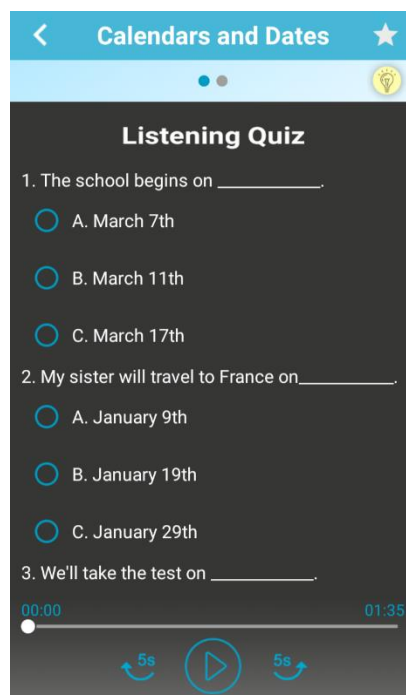
Voscreen



Lyriko



ESL Listening Quizzes



Ohodnoťte vyzkoušené mobilní aplikace v následujících kategoriích známkou 1 - 5 (jako ve škole: 1 - nejlepší, 5 - nejhorší)

2. Atraktivita uživatelského prostředí (grafika)

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

3. Srozumitelnost zadání jednotlivých úkolů

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

4. Úroveň obtížnosti jednotlivých úkolů

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

5. Délka jednotlivých úkolů

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

6. Srozumitelnost nahrávky

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

7. Dostatečná podpora přepisování mluveného textu, práce s neznámými slovy

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

8. Autentičnost nahrávek

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

9. Srozumitelná oprava chyb, zpětná vazba

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

10. Intuitivnost ovládnání, návod

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

11. Různorodost jednotlivých úkolů

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

12. Motivační prvky hry, odměny

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

13. Zábavnost

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

14. Aplikace mi pomůže se zlepšit mé poslechové dovednosti

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

15. Celkový dojem

VOSCREEN	1	2	3	4	5
LYRIKO	1	2	3	4	5
ESL Listening Quizzes	1	2	3	4	5

16. Aplikaci si nainstaluji na své mobilní zařízení a budu ji nadále využívat.

VOSCREEN	Ano	Spíše ano	Nevím	Spíše ne	Ne
LYRIKO	Ano	Spíše ano	Nevím	Spíše ne	Ne
ESL Listening Quizzes	Ano	Spíše ano	Nevím	Spíše ne	Ne

APPENDIX E – SURVEY 1 – ANSWERS

Results of Survey 1 – before experiment. For full data see attached CD.

#	1	2	3	4	5a	5b	5c	5d	5e	5f	5g	5h	5i	5j	5k	5l	5m	6	7	8	9	10	11	12	13	14	15	
1	14	muž	Ano	Smartphone	5	5	5	5	5	4	5	2	2	1	3	0	3	4	2	3	3	2	2	2	2	Ne		
2	13	žena	Ano	Smartphone	4	5	5	5	4	2	2	1	4	2	2	0	2	4	3	2	2	2	4	2	5	Ne		
3	14	muž	Ano	Smartphone, Tablet	4	5	5	5	4	3	2	0	2	0	1	0	0	5	4	5	5	4	4	4	4	Ano	Duolingo	
4	14	žena	Ano	Smartphone	5	4	5	5	3	0	0	5	5	4	4	1	3	2	4	5	5	3	5	5	4	Ne		
5	14	žena	Ano	Smartphone, Tablet	4	5	4	5	0	5	0	4	5	5	4	5	5	1	1	1	1	1	5	3	5	Ano	94% Akinator	
6	13	žena	Ano	Smartphone, Tablet	2	4	5	5	4	0	2	0	2	3	4	0	2	5	4	3	3	5	2	5	4	Ano	Duolingo	
7	14	žena	Ano	Smartphone, Tablet	4	0	4	5	4	3	4	0	2	2	4	1	2	4	4	4	4	3	2	5	4	Ne		
8	14	žena	Ano	Smartphone	5	5	5	5	4	0	0	1	5	4	4	1	2	2	3	5	5	4	4	5	4	Ne		
9	13	muž	Ano	Smartphone	2	4	2	3	5	2	4	0	0	1	2	2	1	4	2	1	1	4	5	2	4	Ano		
10	15	muž	Ano	Smartphone	1	0	5	4	1	5	4	2	2	0	2	0	0	3	2	3	3	3	2	3	3	Ne		
11	13	žena	Ano	Smartphone, Tablet	4	5	5	5	3	3	1	0	2	4	3	4	4	4	4	2	2	2	2	5	5	5	Ano	Duolingo

12	13	muž	Ano	Smartphone	5	4	1	5	5	2	4	0	3	2	3	0	2	5	2	5	5	3	4	5	4	Ano	DIC-o Anglicko- Český , Color Verbs ,Nepravý
13	15	muž	Ano	Smartphone	3	2	4	5	3	5	5	3	4	4	4	2	1	4	3	4	4	4	3	5	4	Ne	
14	14	muž	Ano	Smartphone, Tablet	2	0	0	5	0	0	3	0	0	0	0	1	5	4	5	5	5	5	5	5	2	Ne	
15	14	žena	Ano	Smartphone, Tablet	3	4	0	2	2	0	5	2	3	0	4	2	3	4	4	3	3	3	3	3	5	Ne	
16	15	muž	Ano	Smartphone	2	2	0	2	1	1	2	1	2	1	2	2	2	4	2	4	4	4	5	4	4	Ne	
17	13	žena	Ano	Smartphone, Tablet	5	5	5	5	3	0	0	3	3	2	2	1	2	2	2	4	4	3	4	3	4	Ne	
18	14	muž	Ano	Smartphone	1	0	0	5	5	1	5	1	1	0	1	0	1	2	4	1	1	2	5	3	3	Ne	
19	14	žena	Ano	Tlačítkový mobilní telefon, Tablet	5	5	3	2	2	5	2	0	3	1	3	0	2	4	3	3	3	4	4	5	4	Ne	
20	13	muž	Ano	Smartphone	5	4	5	5	5	0	5	1	1	1	0	0	1	2	1	4	4	3	2	5	4	Ne	
21	13	muž	Ano	Smartphone	5	5	5	5	5	0	5	0	5	0	0	1	4	5	5	5	5	5	1	5	5	Ano	Slovník
22	13	muž	Ano	Smartphone	3	4	3	4	4	3	3	2	2	2	4	0	2	5	5	4	4	3	3	4	3	Ne	
23	13	žena	Ano	Smartphone	5	5	5	4	4	0	0	2	5	5	0	0	0	5	5	5	5	5	1	5	5	Ano	Slovník
24	13	žena	Ano	Smartphone	5	5	5	5	5	0	1	2	5	3	3	0	3	5	5	5	5	5	1	5	4	Ano	

25	13	žena	Ano	Smartphone	5	0	5	5	3	5	0	0	3	1	0	0	0	5	3	5	5	3	4	5	3	Ne	
26	12	žena	Ano	Smartphone	4	5	5	5	5	5	2	3	5	0	2	0	0	5	4	4	4	4	2	4	3	Ne	
27	13	muž	Ano	Smartphone	5	4	4	2	4	0	0	0	0	0	0	0	5	5	4	4	3	2	5	5	Ne		
28	14	žena	Ano	Smartphone	4	5	5	5	5	5	2	0	4	1	3	0	0	3	4	4	4	3	3	4	3	Ne	
29	13	muž	Ano	Smartphone, Tablet	5	3	3	5	3	4	2	1	3	1	2	0	1	2	5	5	5	3	5	4	4	Ano	
30	13	žena	Ano	Smartphone	4	3	4	5	2	0	3	1	5	3	4	0	4	5	2	5	5	3	4	4	5	Ano	Slovníky
31	13	žena	Ano	Smartphone	5	5	5	5	2	0	0	0	4	2	0	0	0	3	4	4	4	3	2	5	5	Ne	
32	14	muž	Ano	Smartphone	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	Ne	Žádnou
33	14	muž	Ano	Smartphone	5	5	5	5	5	5	5	1	4	0	4	0	0	3	3	3	3	3	3	3	3	Ne	
34	14	žena	Ano	Smartphone	5	5	4	4	2	4	0	1	5	2	1	4	5	2	3	2	2	1	4	4	4	Ano	duolingo
35	14	muž	Ano	Smartphone	4	5	5	5	5	5	4	1	2	0	0	0	1	4	2	4	4	5	4	3	2	Ne	
36	14	žena	Ano	Smartphone	4	3	3	3	3	0	0	0	1	1	0	0	2	2	1	1	1	1	5	2	3	Ne	
37	14	žena	Ano	Smartphone	5	4	4	4	2	2	0	0	3	0	5	3	0	5	3	5	5	2	3	5	4	Ne	
38	15	muž	Ano	Smartphone	4	5	5	5	5	4	5	1	4	3	2	1	2	4	2	5	5	4	3	4	4	Ne	
39	15	muž	Ano	Smartphone	2	2	5	5	5	5	2	3	3	2	2	0	1	5	1	5	5	5	5	4	5	Ne	
40	14	žena	Ano	Smartphone	3	5	5	5	5	5	2	2	4	4	4	1	3	2	1	3	3	1	5	4	5	Ne	

41	14	žena	Ano	Smartphone	5	4	4	5	1	5	0	2	3	3	4	0	4	3	4	3	3	2	4	4	4	Ano	slovník angličtiny
42	14	žena	Ano	Smartphone	5	5	5	5	5	5	0	4	5	0	2	0	3	1	4	5	5	5	2	5	5	Ano	Duolingo
43	14	žena	Ano	Smartphone	4	5	5	5	4	0	0	2	3	2	0	0	1	2	5	2	2	4	5	4	5	Ne	
44	13	žena	Ano	Smartphone	4	5	5	5	4	5	4	3	5	4	5	4	4	1	3	3	3	2	5	2	4	Ne	
45	14	žena	Ano	Smartphone, Tablet	5	4	5	5	3	4	0	5	5	3	4	1	4	5	5	4	4	4	1	5	5	Ano	duolingo
46	14	muž	Ano	Smartphone	4	2	4	5	5	3	5	0	1	0	0	0	0	3	1	4	4	3	4	5	4	Ano	Duolingo
47	14	žena	Ano	Smartphone	2	3	5	5	3	4	4	1	4	3	5	0	3	4	4	3	3	3	3	4	5	Ano	Duolingo
48	12	žena	Ano	Smartphone, Tablet	5	4	5	5	5	0	5	2	3	0	1	2	2	5	5	5	5	5	1	5	3	Ne	
49	12	muž	Ano	Smartphone	3	1	0	4	3	4	1	1	2	0	0	0	1	4	3	4	4	3	5	3	5	Ne	
50	12	žena	Ano	Smartphone	5	5	0	3	3	5	5	2	4	0	0	2	4	1	2	2	2	1	5	2	4	Ne	nemám aplikaci
51	14	žena	Ano	Smartphone	4	4	5	5	5	0	1	2	3	3	3	4	1	5	4	3	3	2	3	3	4	Ne	
52	14	žena	Ano	Smartphone, Tablet	3	4	0	2	2	0	5	2	3	0	4	2	3	4	4	3	3	3	3	3	5	Ne	
53	14	žena	Ano	Smartphone	4	5	5	5	5	5	2	0	4	1	3	0	0	3	4	4	4	3	3	4	3	Ne	
54	12	muž	Ano	Smartphone	4	1	4	5	5	2	2	1	3	0	0	0	0	5	2	3	3	3	4	2	3	Ne	
55	12	muž	Ano	Smartphone	4	1	4	5	5	1	2	1	3	0	0	0	0	4	2	3	3	2	4	3	3	Ne	
56	12	muž	Ano	Smartphone	4	2	5	5	5	0	5	3	2	2	0	0	2	5	4	5	5	2	2	4	5	Ne	

57	12	muž	Ano	Smartphone	4	2	4	4	4	0	4	3	3	1	1	0	0	5	4	5	5	2	4	4	5	Ne	
58	13	muž	Ano	Smartphone, Tablet	5	5	0	5	2	3	5	2	3	0	3	0	0	5	3	4	4	3	2	4	3	Ano	Překladatel
59	14	žena	Ano	Smartphone	4	4	5	5	5	5	5	4	4	4	3	0	4	4	4	4	4	3	5	5	5	Ano	Slovník
60	14	žena	Ano	Smartphone, Tablet	4	4	5	5	5	4	3	0	4	4	4	3	3	4	3	4	4	3	2	4	3	Ne	
61	14	žena	Ano	Smartphone	4	4	5	5	5	5	5	4	4	4	3	0	4	4	4	4	4	3	5	5	5	Ano	Slovník
62	14	žena	Ano	Smartphone, Tablet	5	4	5	5	3	2	0	5	5	3	4	0	2	5	5	5	5	5	1	5	5	Ano	duolingo

SHRNUTÍ

Tématem diplomové práce je Využití aplikací ke zlepšení poslechových dovedností studentů angličtiny. Toto téma je zaměřeno speciálně na mobilní zařízení a jejich využití v hodinách angličtiny. Využití mobilních technologií při výuce je velmi aktuální a diskutované téma, které je hlouběji rozebíráno v teoretické části práce. Hlavním důvodem je popularita mobilních zařízení mezi mladou generací, což v kombinaci s hravou formou výuky pozitivně ovlivňuje jejich vztah ke vzdělávání. Součástí výzkumné části práce je vlastní experiment, v rámci kterého došlo k otestování třech vybraných mobilních aplikací na několika skupinách studentů základní školy. V rámci analytické části práce pak byly využity dva dotazníky a závěrečná diskuze se studenty, které sloužily jako zdroj dat. Hlavními výsledky této práce je pak sada hypotéz, výzkumných otázek a doporučení v oblasti efektivního použití mobilních zařízení v hodinách angličtiny. Na závěr práce doporučuje témata k dalšímu výzkumu a upozorňuje na potenciálně problematické oblasti.