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The acquisition of prepositions through gaming

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Declaration of Authorship

I hereby declare that I am the sole author of this BA thesis and that I have listed all sources used in the bibliography and identified as references. I further declare that I have not submitted this thesis at any other institution in order to obtain a degree.

I have no objections to the BA thesis being borrowed and used for study purposes.

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podpis

Abstract

The present study deals with the acquisition of the six most common prepositions in the English language through the employment of a video game specifically designed for this purpose. The thesis features a theoretical overview of the literature relevant to language acquisition, acquisition of function words (more specifically prepositions), game-based acquisition and instruction and its various aspects. The practical part contains a description of the game's design which endeavours to combine the relevant (S)LA theories together with the research on learning through gaming. The game consists of five separate tasks and the mechanics of which are then combined in the final task to elicit the correct responses of the subject. The language used in the game is adjusted for the subjects' level of proficiency, the game is fully voiced and offers a degree of customization. An experiment was conducted on 24 pupils from an elementary school, aged 12-13, who were assessed before and after playing the game. The results revealed that the game did advance the subjects' performance in prepositional structures containing the six most frequent English prepositions at the A1-A2 level of proficiency. Special attention was given to the performance on the preposition *to* compared to its particle counterpart *to*. Results showed the particle *to* to be more challenging to use than the preposition identical in form.

Keywords: language acquisition, game-based learning, educational games, prepositions

Abstrakt

Tato studie se zabývá osvojením si šesti nejběžnějších anglických předložek pomocí videohry speciálně navržené pro tento účel. Práce obsahuje teoretický přehled literatury relevantní pro osvojování jazyka, akvizici funkčních slov (konkrétně předložek), a různé aspekty akvizice a výuky založených na hraní her. Praktická část popisuje design hry, který se pokusil skloubit relevantní (S)LA teorie s výzkumem výuky zprostředkované hraním her. Hra se skládá z pěti samostatných úkolů, jejichž mechanika je skombinovaná v posledním úkolu, s cílem vyvolat u subjektů správné odpovědi. Jazyk použitý ve hře je upraven podle úrovně jazykových schopností subjektů, hra je plně dabovaná a nabízí určitý stupeň customizace. Experimentu se účastnilo 24 žáků základní školy ve věku 12–13 let, kteří byli testováni před a po hraní hry. Z výsledků vyplynulo, že hra zlepšila performance subjektů v předložkových strukturách obsahujících šest nejčastějších anglických předložek na úrovni znalostí A1-A2. Zvláštní pozornost byla věnována výkonu předložky *to* ve porovnání s jejím protějškem – částicí *to*. Výsledky ukázaly, že použití částice *to* bylo pro subjekty náročnější než užití formou identické předložka.

Klíčová slova: akvizice jazyka, výuka na základě hry, didaktické hry, předložky

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List of Abbreviations

BNC	British National Corpus
CALL	Computer-Assisted Language Learning
CEFR	The Common European Framework of Reference for Languages
COCA	Corpus of Contemporary American English
COTS	Commercial Off-The-Shelf (game)
DGBL	Digital Game-Based Learning
EFL	English as a Foreign Language
ERP	Event-Related Potential
GDPR	General Data Protection Regulation
IP	Input Processing theory
LA	Language Acquisition
L1	First (native) Language
L2	Second Language
LT	Language Teaching
NPCs	Non-Player Characters
RPG	Role-Play Game
SLA	Second Language Acquisition
SCT	Sociocultural Theory
TL	Target Language
TBLT	Task-Based Language Teaching
UB	Usage-Based theory
UG	Universal Grammar
ZDP	Zone of Proximal Development

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1 Introduction

The present study aims to explore the relationship between playing video games and the implicit learning of morphosyntactic structures. To specify, the following text deals with the acquisition of the six most frequent English prepositions (*to*, *of*, *in*, *for*, *on*, and *with*) while using a video game as a means of instruction in an EFL environment. For the purpose of this investigation, an educational video game called *Prep for Adventure* was created. The aim of this thesis is to determine whether playing this video game leads to the learning of prepositions. Additionally, this thesis aims to discuss whether video games, in general, are a suitable alternative to the conventional method in teaching English.

The theoretical section of this thesis offers an overview of the main theories regarding (second) language acquisition, which are relevant to the study's objective, more precisely the acquisition of function words with an emphasis on prepositions, and the most prototypical errors Czech L2 learners of English language commit in this area. Furthermore, game-based learning and its important aspects are introduced, and the existing research done in this field is reviewed. Theories and findings relevant to the study are selected and linked to the research question. Educational games, with an emphasis on language learning games, are given their share of attention to lay an empirical foundation for the practical part.

The practical part offers an inside look into the argumentation behind the choices made regarding the game's design and subsequent development as well as provides an account of how the game's design connects to the language acquisition literature. The choice of prepositions as the focus of the study as well as the choice of *to*, *of*, *in*, *for*, *on*, and *with* for the purposes of the game are explained together with the rationale behind the inclusion of a qualitative analysis of the L2 learners performance with the preposition *to* and the particle *to*. The reasoning behind the choice of the experimental subjects is described in detail and the data collection is also reviewed. This part also contains a description of the procedure (preceded by a pilot study on a smaller sample) conducted by the researcher to collect the data. The experiment uses a pre- and re-assessment design on a group of children who played the video game. A report of the results, a statistical analysis of the overall performance and a qualitative analysis of performance in the case of the preposition and particle *to* is presented. The final chapter combines discussion of the results in relation to the theory, and conclusion, which assesses to what extent the study succeeded in its aims.

2 Theoretical background

2.1 Language acquisition theories

Human language is an intricate and intriguing phenomenon which can be observed from many different standpoints; one would commit an act of reductionism by thinking of it as a purely linguistic matter and disregard its interdisciplinary dimensions. While language has been of interest to scholars for centuries, the study of language acquisition is a much more recent addition to the research corpus. It can be challenging to navigate in the terminological framework of this field since there are various approaches to the understanding of its core concepts: To clarify the use of the terminology in the current study it is necessary to define those concepts. There is much debate about the extent of what the term *language acquisition* (LA) encompasses; while some believe it is merely the “initial stage of gaining basic communicative competence in a language” and is followed by “language development” (Tomlinson, 2008, p. 3), others see it as a collective term for the constitutive processes which lead to attainment of language (be it L1 or L2). This study supports the second definition.

Another bone of contention can be found in the antipodal attitudes towards the distinction between LA and *language learning*; when some academics see these as two separate processes, others consider the conscious process of language learning part of LA. When focusing on second language acquisition (SLA), an influential approach known as *monitor theory* proposes an explanation to the difference between LA and ‘language learning’ or ‘language teaching’: (adult) L2 learners seem to possess two independent systems via which they develop their language skills. These systems of “subconscious language acquisition” and “conscious language learning” are interconnected and complementary (Krashen, 1981, p.1). Acquisition can thus happen subconsciously during conscious language learning. There have been many theories and teaching methods over the years, many of which deserve honourable mention when talking about LA. Many of these theories complement each other, overlap in various facets and work together to form a matrix of the currently available LA knowledge, and although they may vary in the foregrounded aspects, only a few of them are mutually exclusive (e.g., behaviourism vs. nativism).

The early LA theories were rooted in psychological theories based on *behaviourism*; language, as any other behaviour, is a skill learned through connecting certain stimuli with correct responses and consequently building a habit; behaviourists argue that the same applies to SLA, since L2 is yet another set of correct responses elicited by stimuli and strengthened by negative and positive reinforcement (Fromkin et al., 2011). Another prominent theory of the

second half of the 20th century was the *nativist approach/universal grammar* (UG); this widely known theory presupposes that every existing language abides by the language-universal laws of UG called “principles” while featuring a set of language-specific rules referred to as “parameters”. Although the ability to learn language is innate and exists prior to LA, L1 and L2 acquisition are seen by many as two separate and vastly different processes; according to the *fundamental difference hypothesis*, “L2ers lack access to the specifically linguistic principles of UG that L1ers have to help them” and are thus often unsuccessful in achieving fluency in their target language (TL) (Fromkin et al., 2011, p. 363). The role of exposure in LA is a matter of intense debate. According to one view, when learners acquire language, they have to do so from a very limited input. Generative linguists argue that there is not enough input for certain phrases to be extracted from the input, and thus when a speaker creates a structure they could not have been exposed to sufficiently, their knowledge of such structure stems from their mind (Cook, 2003).

Cognitive approaches offer an alternative perspective – the human mind is seen as a computer and learning as *information processing*; emphasis is placed on input, feedback and interaction (Pinter, 2011). According to this view, LA can be fully described using exposure. The structures children produce can be predicted faithfully looking at the input they receive. Following the so-called *usage-based theory* (UB) proposed by Tomasello (2009), there is a causative relation between language use and its consequent acquisition. UB suggests that speakers are equipped to learn a language based on their cognitive skills which are not exclusive to linguistic communication but are devised for more general tasks. “Language structure emerges from language use” (Tomasello, 2009, p. 85) and input is thus the best predictor of acquisition.

The *interactionist approach* is another branch of LA research which stands somewhere in the middle of the UG and UB theories – this synthesis between the two extremes makes it possible to accept the innate predisposition for language and recognize the value of input and active use of the language teaching at the same time. Interactionist approach is centred on the input provided mainly by interaction between native and non-native speakers, it maps the “discourse patterns found in native speaker and learner conversations” and modifications native speakers make to accommodate the learners (Mackey et al., 2012, p. 7).

The interactionist approach was fairly influential in the 80s and served as a source of inspiration to research centred on language input and its subsequent processing, one of the most influential concepts being Krashen’s *input hypothesis* (1981) which parallels its predecessor in

the reliance on input and comprehensibility. Following the perspective of this hypothesis, comprehensible and accessible input which is “slightly above the learner’s current level of proficiency” along with “low affective filter” (i.e. getting rid of the negative emotions and feelings of anxiety which are too often connected with L2 learning) are the means of propulsion behind the subconscious LA of a foreign language (Mackey et al., 2012, p. 7). The *input processing theory* (IP) proposed by VanPatten builds on Krashen’s input hypothesis; this theory endeavours to explain the psycholinguistic aspects which shape the L2 learner’s understanding of “formal features” of the input and their connection with “their meanings and functions”. (VanPatten, 2012, p. 269). The IP theory offers a glimpse into some of the learner strategies, such as *primacy of content words*, or *lexical preference principle* which considerably influence the SLA. (VanPatten, 2012). One of the best-known applied interactionist concepts is *task-based language teaching* (TBLT). This approach employs activities (referred to as tasks) which challenge learners to apply their target language (the meaning, rather than grammar, is prioritized) to reach the goal of communication. TBLT utilizes aspects of the interactionist approach in laying emphasis on meaningful input, contextualized production of target language, promoting feedback and collaboration of learners (Mackey et al., 2012).

Another LA approach introduced in this chapter is the *sociocultural theory* (SCT); this “neo-Vygotskian” approach has its roots in “Russian cultural historical psychology” and involves “human cognitive, psychological, social and historical development” in correlation to language acquisition. Perhaps the best known and the most frequently utilized construct from this theory is Vygotsky’s *zone of proximal development* (ZPD); defined by Vygotsky as “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (1978, p. 86). The ZPD model serves as a basis for various interpretations and theories, which employ its core principle, and is widely used in research into didactic learning methods and their application as well as in second and foreign LA (Ohta, 2013, p. 648). SCT is one of the youngest additions to the LA field of study; this mixture of linguistics, sociology and psychology offers a unique outlook on LA which is supposedly a result of a dynamic interaction between the individual and their socio-cultural environment consisting of culturally determined routines, a knowledge that cannot be separated from the language itself (Pinter, 2011). According to Lantolf, the process of SLA within the framework of SCT relies on the concepts of mediation (focused on meaning) and internalization (focused on form), which are intertwined – they are perceived separately only due to the nature of research procedures (2006).

Sociolinguistics is the last branch of the investigative work in the (S)LA field mentioned in this by no means comprehensive overview; this “socially oriented” SLA approach is not to be mistaken with the previously discussed SCT. Although both fields engage in the “language-in-context focused research” and consequently overlap in many areas, offering a manifold of paralleling perspectives emphasising the interplay between the social and linguistic dimensions of the speakers’ experience, the branch of sociolinguistics interested in SLA focuses on the “sociological constraints that influence language learning and use” (Veronique, 2013, p. 252). An important concept of the variationist branch of sociolinguistics is the notion of *interlanguage*: this term, coined by Larry Selinker, labels “a learner’s output as he or she attempt[s] to reproduce the L2” in a highly systematic manner, which is attributed to the learners’ ‘latent psychological structures’ which exist as ‘an already formulated arrangement in the brain’”(Thomas, 2013, p. 37).

There are many other notable theories and directions of LA and SLA research, the present study provides merely a short introduction to this sphere of academic investigation.

2.1.1 Function words

Narrowing the scope from the general introduction of LA, this section will provide a closer look at the acquisition of a more specific part of language – function words (with an accent on prepositions). *Function words*, such as conjunctions, articles and prepositions etc., differ from content words not only in carrying little or no lexical meaning and rather defining grammatical relations within sentences/utterances, but also in the way they are stored in the human mind. Studies mapping errors of agrammatic aphasics and people with other language impairments provide a considerable body of evidence suggesting that content words and function words are divided in different sections of the mental dictionary because the errors in functional and content words are distinctly divergent. The processing of function and content words is moreover carried out either in different regions of brain or by “different neural mechanisms”, which lends support to the view which asserts that “both the brain and language are structured in a complex, modular fashion” (Fromkin et al., 2011, p. 10).

Function words are more difficult to grasp for both children and L2 learners alike and thus enter their interlanguage in relatively later stages of LA. Infants are sensitive to the phonological properties of the speech surrounding them and can recognize the rhythmic configuration of their L1 compared to a foreign language very early on (Cilibrasi, 2016). Since free grammatical morphemes are usually unstressed (unless emphasized) and less accentuated by native speakers, both children and L2 learners initially focus on the stressed content words

and do not pay the same amount of attention to the function ones (Gavarró et al., 2011). Function morphemes are, however, backgrounded by children and L2 speakers (either consciously or subconsciously) in comprehension and production not only because they lack in prosody, but also in semantic meaning. The input processing theory (IP) describes the attitude to pay attention to content words and overlook the function ones as the principle of primacy of content words. This economic strategy is employed by inexpert speakers in their earlier stages of LA when “‘good enough for now’ processing” helps them handle input far above their level of proficiency and understanding (VanPatten, 2012, p. 270).

2.1.2 Prepositions

The widely accepted definition of *prepositions* is that of a category of words which are usually used “to express relationships between two entities involving a location” (Fromkin et al., 2011, p. 89); this elegant characterization is, however, not as clear-cut as it might seem. Many prepositions are not purely locational and convey more abstract relations between the pertained segments, making it impossible to define the word class in terms of lexical meaning but rather opting for delineation established on the “syntactic distribution [...] and morphological characteristics” (Fromkin et al., 2011, p. 86). Traditionally, prepositions (as well as other parts of speech) have been considered a word class homogenous in nature – based on the “frequency of acquisition of new members” they are counted among the *closed-class* items (as opposed to the *open classes*, such as nouns, verbs etc.). The widely established understanding of associating closed-class items with function words (also referred to as grammatical words) and open-class items with lexical words (or content words) has by extension put prepositions into the category of grammatical words. The dogmatic treatment of the open vs. closed class distinction, however, does not explain how prepositions, despite their closed-class membership, in certain aspects, resemble lexical items. To illustrate, some prepositions can assign case in the same way verbs can (Martínez-Ferreiro et al., 2019, pp. 497-498): nominative case is assigned to the subject by its finite verb, while accusative case is assigned to the complement by either a preposition or a transitive verb. Another example can be found in constructions containing *of*, such as *a piece of cake*, “where the preposition serves merely to assign case to the embedded nominal” (Froud, 2001, p. 8). This has led many researchers to reconsider their grammatical-words membership and count prepositions into the lexical category, others propose a middle ground of a “semi-lexical” category (Martínez-Ferreiro et al., 2019, p. 498).

Another attempt to solve the puzzling question of preposition classification stands on the prepositions' relative "reduced semanticity" which is a feature common for function words and should thus be evidence enough to attest their membership in the function class. Following this direction of thought, Froud (2001) states that a patient suffering from agrammatic aphasia who has a non-word reading deficit would also exhibit signs of "functional category reading deficit", since "the implicated route is used for both types of stimulus; but this pattern of performance is rarely attested" (p. 10). Grodzinsky (1988) and Bird et al. (2002) attribute this inconsistency to an impairment of selective prepositions based on the degree of "semantic content" they possess within the specific contexts. In other words, an agrammatic aphasic patient can struggle to use a preposition in one context where the preposition serves a mostly grammatical function (e.g., "He doesn't believe IN koalas") yet they may have no difficulties with more semantically charged cases of the identical preposition (e.g., "The koala is IN the hot tub.") (Bird et al., 2002, p. 211).

Recent work seems to conciliate the contrasting views on prepositions, showing that the human brain treats them as both lexical and functional items. A study by Chanturidze et al. (2019) measuring brain electrical activity tested violations of monosyllabic German prepositions in "lexical" (e.g., prepositions of place as in *in a backpack*) and "subcategorized" (e.g., "arbitrarily selected by the verb" as in *pick on someone*) meanings (p. 5). Their result suggests that the violation of prepositions can lead to both semantic and grammatical responses. The study's results show that there is a significant difference in the processing of lexical and subcategorized prepositions; when presented as "contextually unexpected", lexical prepositions elicited "two negative polarity shifts" (N200 and N400) supporting the antecedent that they are processed in an analogical manner to other lexical words (p. 13). On the contrary, the violation of subcategorized prepositions showed "no negative components" and moreover exhibited a "late positive component" (P600) (p. 15), effects of which have been linked to responses in either ungrammatical sentences, or "grammatically correct sentences with a non-preferred syntactic structure". These findings support previous theoretical claims that prepositions are a "hybrid" category on the lexical and function category divide; the lexical/functional distinction of the individual prepositions is context-dependent (p. 16).

Although the definite classification of prepositions remains yet to be completely solved, this debate is not the focus of this thesis. The question of the prepositions' equivocal membership in the lexical/functional classes is worth pointing out but ultimately does not affect the treatment of prepositions as functional words in this thesis.

2.1.3 Acquisition of prepositions and common errors in Czech learners

The developmental milestones of first language acquisition, such as tuning in to the phonological system of one's L1, babbling, and first word production, are relatively universal to every typically developing child (Guasti, 2002). The order in which children acquire lexical items is, however, not as clear-cut; although all children start with content words (such as nouns, verbs etc.). The order in which they acquire function words can vary depending on the language in question. English children learn grammatical morphemes in a fairly consistent order; upon a closer look on the English prepositions, children undergo four developmental stages (Berman, 2009, p. 356):

- “1. Spatial [with Concrete Noun]: in the jar, on the floor, run after the bees
2. Temporal [with Time/Event Noun]: in the morning, on that day, after breakfast
3. Temporal/Causal [with Gerundive]: in running, on waking, after finding it
4. Manner/Cause [with Abstract Noun]: in fun, on his flight, after the discovery”

Second language acquisition is much more difficult to describe; unlike in first language acquisition, L2 onset does not take place at the same point in life for every L2 learner and is influenced by many external factors (learner variables). The EAQUALS guidelines released by the British Council state that L2 learners of English should be familiar with and able to use common prepositions, prepositions of location, and temporal prepositions in simple contexts as early as at the A1 level (North et al., 2010). Mastering English prepositions takes time, and functions that are deeply different from one's native language can pose a problem for many speakers because of a *negative transfer* from their mother tongue. The results of error analysis in Czech learners of English conducted by Klimšová (1999) show that prepositions are the third most frequent cause of errors, making up 14 percent of all learners' errors (Klimšová, 1999). The reason behind this statistic is caused by determinants interfering with the LA process; one of the factors responsible for the hindrances to the attainment of target language (TL) is *language interference*, which takes place when the speaker's knowledge of their L1 (or any other language they are exposed to) affects their understanding and performance in the TL in a negative or positive way. “Negative transfer occurs when the student's grammar clashes with the target grammar” (Gvarishvili, 2013, p. 1566). The insufficient knowledge of the TL can also lead inexperienced learners to systematic errors (Klimšová, 1999). While similarities in Czech and English prepositions can be advantageous to learners (especially in the beginning of the LA process), it is the differences in nearly similar constructions that can take one by surprise

and prove to be difficult to acquire. Czech prepositions indicate the grammatical category of case which cannot always be translated by an English preposition of the same lexical meaning (e.g., Czech *v úterý* could be translated word-for-word as **in Tuesday* – this translation is grammatically incorrect and does not correspond to the English prepositional phrase *on Tuesday*). There are also prepositions in both languages, which are used in fixed phrases or idioms, such as *once in a blue moon*, which can be translated by a paraphrase *jednou za uherský rok*. Different positioning of prepositions is worth noticing; while Czech prepositions are fixed before noun, pronoun, or numeral, English prepositions exhibit a certain degree of mobility – they can be found in postposition (Dušková et al., 2009)

Czech students of English often struggle with English prepositions on multiple levels of the TL. The errors occurring at the “morphological level” can be encountered in structures similar (or even identical in meaning) to their equivalents in Czech; this mismatch produced by literal translation of the Czech sentence along with the preposition which makes sense in Czech but does not necessarily translate well into English results in often humorous instances of Czenglish. As a result of this morphological non-correspondence in expressions containing prepositions, errors such as **a bowl with soup*, **go on a party* or **get in the bus* emerge. Some expressions, moreover, employ prepositions in one language but not in the other, which is the case of the redundant *on* in **surf on the internet*, or the missing *to* in **listen a song* (Klimšová, 1999). The difference in lexical expressions of one language causes problems for learners on a “lexical level”; errors in the lexical area arise from the inaccurately transferred knowledge from Czech to the foreign language (p. 14). *Divergence* is an example of such defective transfer of knowledge; this phenomenon occurs when the amount of expressions denoting one lexical unit in the learner’s target language does not equal the amount of expressions in their native language – the manifold of expressions in L2 can be translated in very few ways to L1. Klimšová illustrates this by using the prepositions “*in front of*” (referring to place), “*before*” (referring to time), and “*ahead of*” (referring to both time and place), all of which can be translated into Czech as “*před*” (p. 59). It can be concluded that Czech learners of English commit errors in prepositions which occur due to the negative transfer either by opting for an incorrect preposition, omitting a preposition, or inserting an unnecessary preposition (Klimšová, 1999).

2.2 Learning through gaming

The link between playing and acquisition of new skills and knowledge has been pointed out by psychologists, pedagogists and teachers alike; the concept of “Learning Through Play”

has been around for ages and has been subjected to thorough research regarding the appropriate levels of play, suitable materials, etc. (Kahn & Wright, 1980, pp. 111-112). While games have been enjoyed as a pastime activity since the beginning of time, video games are a much more recent medium, and have been gaining popularity in the past few decades. In recent years, video games have become more popular than ever, shaping the current generation of ‘digital natives’ and preparing them for a life closely intertwined with technology for day-to-day life tasks; terms like “new media literacy” and “in-game literacy” go hand in hand with the individual’s successful adjustment to this rapidly changing environment. These literacies allow people to become more versatile and able to decipher different rule structures, transfer the newly gained knowledge and re-apply them on a different task while solving either a related or completely independent problem. (Sandford & Williamson, 2006, p. 14).

Thanks to their teaching potential, games have found their way into education; their undisputable appeal lies in the embodiment of various deep-rooted learning models and principles, combined with their interactive and immersive nature, offering a vast range of various stimuli which together facilitate the learning process. This claim is supported by a large research corpus in the field of *digital game-based learning* (DGBL – more in chapter 2.2.1); DGBL has been proven to advance “general educational skills such as spelling and reading; domain-specific learning outcomes in physics, health, biology, mathematics, medicine, and computer science; and a wide range of cognitive abilities including spatial visualization, divided attention, and knowledge mapping” (Van Eck, 2015, p. 16). The impact of games on learning has been investigated in multiple meta-analyses synthesizing results of already existing studies about the effects of digital games. The results of the meta-analysis conducted by Vogel et al. (2006) show a correlation between playing games (and simulations) and higher cognitive and attitudinal outcomes in contrast with the traditional instruction. Sitzmann’s findings (2011) suggest that subjects who received instruction via a game exhibited significantly higher levels of self-efficacy, declarative and procedural knowledge, and retention than the control group. A meta-analysis of digital games conducted by Clark et. al (2016) confirmed Vogel’s and Sitzmann’s findings; digital games were “associated with a 0.33 standard deviation improvement relative to nongame comparison conditions”, making them more effective in instruction than the “nongame instructional conditions included in those comparisons” (p. 108). Many of the skills which have been shown to improve by playing video games represent either necessary conditions for second language acquisition (SLA) or help with the learning process.

2.2.1 Important aspects of educational games

In recent years, *educational games* have become increasingly popular as teaching material in various classes. There are two scientific fields which ought to be mentioned when discussing the use of games in *language teaching* (LT) and their subsequent effect on SLA. *Computer-assisted language learning* (CALL) as defined by Beatty (2003, p. 7) is “any process in which a learner uses a computer and, as a result, improves his or her language”. This broad definition encompasses a wide range of tasks performed on computer, such as reading, listening and watching videos, which are now commonly used in language classes (pp. 13-15). Video games are a much less common addition to the traditional instructional design as they are often considered a past-time activity by teachers and learners alike. Whereas CALL considers video games to be one of many computer-based mediums which *assist* LT, DGBL sees games as the central or (where possible) the main medium of instruction (Eskelinen, 2012).

In order to explain DGBL, sometimes called “serious games”, “educational games”, etc. (Eskelinen, 2012, p. 6), it is imperative to understand the core aspect of this learning technique and to define digital games. A *digital game* is “any electronic program that allows players to interact with it for entertainment purposes” (Setiadi, 2018, p. 190). DGBL is thus a process of learning through integration of the game directly into the curriculum either as the main source of instruction, or as a secondary tool providing much-needed practice of the newly acquired knowledge in an engaging way. There is, of course, an overlap within DGBL and CALL theories and research since they both study similar domains of learning; this study thus takes into account findings from both fields and combines them to utilize all the information available and relevant to the research question.

There is a general consensus among theoreticians who investigate the effect of video games on language acquisition that language learners can greatly benefit from playing video games. The majority of researchers agree that, opposed to traditional instruction, video games enhance learning by drawing the player in by the means of visual content, voice acting, captivating storylines, and decisions influencing the game’s context, providing “a very comprehensive set of extra stimuli that help involve players in the language they are exposed to through gameplay” (Rudis & Pošćić, 2018, p. 118). It has been suggested that LA through gaming provides the player with an “immersive exolingual environment” which could be likened to instantly transporting learners to the country where their target language is spoken (e.g., to England for the EFL students) (Young et al., 2012, p. 75). This type of acquisition even leads to native-like brain activation: A review of the *event-related potential* (ERP) literature in

connection to gaming put together by R.V. Reichle (2012, p. 139) shows that in a controlled experimental environment, “computer games have already been used to train language learners to the point where they exhibit native-like brain signatures of morphosyntactic processing”.

Gaming occurs naturally and stems from the gamer’s situational needs – the acquisition happens organically, making it a good example of “naturalistic learning”. There are various terms employed to describe this type of learning in the SLA research, for example “naturalistic language learning, self-directed naturalistic learning, [...] out-of-class learning, [...] unintentional learning, and when focus is specifically on the acquisition of vocabulary, incidental learning” (Sundqvist & Sylvén, 2012, pp. 192-193); all these terms can be summarized under an umbrella term suggested by Sundqvist’s “extramural language learning” (Sundqvist, 2009, p. 24).

Language games specially designed to promote LA, SLA, composition skills and language arts are considered “the most effective use of educational computer gaming to date”. Moreover, many researchers have reported that game-based language instruction is perceived more positively than other game-based “teaching methodologies, thus making it not only functional but also preferable” (Young et al., 2012, p. 74). Furthermore, games seem to be a much more suitable medium for language acquisition than they are for other domains of learning; a study conducted by Din and Calao (2001), which tested the effects of gaming on mathematic and language skills (reading), registered an increase of reading proficiency in a group of kindergarteners’ who played educational games compared to a control group using conventional means of instruction – the same development, however, wasn’t registered in the mathematic skills, the level of which neither surpassed nor fell behind the control group. The benefits of gaming in connection to language learning can be utilized not only by the players themselves, but also extended to their audience – by merely watching a gameplay, by-standers can, in some cases, profit even more than the actual players, especially in the enrichment of vocabulary. Young et al. (2012) postulates that this effect may be caused by the “increased cognitive load” on the player as actively playing the game might pose a greater demand on the concentration than passively observing the gameplay, and this “split of attentional resources” could consequently lessen the impact on the player’s learning curve as compared to an onlooker (p. 75).

2.2.2 What makes a game ‘good’

While it has been established that games have an impact on learning, it must be noted that the strength of DGBL lies within the actual game’s design. An educational game has to be

‘good’ to utilize its full potential. The main advantage of gaming and learning is the variety of engagement (voice acting, reading, reacting, visual information, storyline). James Paul Gee (2005) proposed a ‘check list’ of learning principles that make a good game. His characteristics include 16 features that any good game should possess: A good game gives the player a new “identity” to make them accountable for their progress and immerse them in the gameplay. The gameplay is rich in “interaction” and the player takes part in the “production” of the story and in the overall context of the game. Unlike at school, “risk-taking” is a valuable part of the process and it’s even encouraged by the game’s design. “Customization” helps the player to get invested more into the gameplay, while “agency” prompts feelings of purpose. Problems that the player encounters throughout their gameplay are ordered according to their difficulty, providing “challenge and consolidation”. The information needed to face the arising challenges comes “‘just-in-time’ and ‘on-demand’”, providing a “situated meaning” to the newly acquired knowledge. The game is “pleasantly frustrating”, which gives the player the drive to find new ways of solving the problems at hand, which strengthens their “system thinking” and urges the player to “explore, think laterally, [and] rethink goals”. “Smart Tools [...] Distributed Knowledge” and “Cross-Functional Teams” are characteristics that concern multi-player games, in which the player specializes in one aspect, while the other players supply other talents needed in a versatile team. Lastly, the concept of “Performance Before Competence” allows the player to try things before mastering them, so that acquisition happens spontaneously and is not hindered by exhaustive instruction. By building on Gee’s suggestions, elaborating on them and combining them with DGBL literature, the following section lists a set of features that games which enrich the players irrefutably share.

Identity and commitment to a goal

To initiate the learning of a new set of specialised skills, the learner first identifies the challenge and sets their goal (Baxter, 2015). The learner must assume a new identity (either by becoming a “strongly formed and appealing character” – for instance, Geralt of Rivia in *Witcher* – or by building their own, completely customized character from scratch – e.g., a custom character in *World of Warcraft*). With this, the players become committed and “act through their commitment to their new identity” anchored in the virtual reality (Gee, 2005, p. 34). Gee points out that along with setting goals for oneself, games teach their players another invaluable lesson; instead of following the straight line from point A to B, players are encouraged to “explore thoroughly” before moving to the next task, to think “laterally and not just linearly”,

and to readjust their goals when confronted with new information in conflict with their approach leading up to the present moment (Gee, 2005, p. 36).

Customization and participation

The customization of the whole gaming experience is one of the most attractive features in gaming; not only can the player choose their appearance, origin story, and skillset – they can also pace the game according to their needs by opting for a different level of difficulty. Their actions and conscious decisions set things into motion; the interactivity of games is manifested by their dependence on the player to make the first step. The player participates in creating a context within which they subsequently act according to their intent; “in a good game, words and deeds are all placed in the context of an interactive relationship between the player and the world”. The advantage of lowered “consequences of failure” in games lies in the fact that the player can retrace their steps and start over from their last saved file. Unlike in the school setting, the player can learn from their past mistakes without any fear of risking their grades (Gee, 2005, p. 35).

Challenge and automatization

The process of becoming a professional (in any domain) involves five stages: “Novice, Advanced Beginner, Competent, Proficient, and Expert”. Baxter states that, in order to accelerate the knowledge transfer, the information exchange should happen “at one to two levels below the expertise level” of the player, since it is the most effective way of learning (Baxter, 2015, p. 1467). Games are similar in their build; they often involve levels of proficiency that the player has to master over time by the means of repetitive action. Games function as scaffolding, offering the safety of training wheels to the player while simultaneously pushing their limits; they lead the player from simple to more difficult tasks, gradually increasing the level of challenge. They employ the strategy called “Cycle of Expertise”: the player is presented with a new challenge that they have to undergo to progress in the game. They learn and automatize the newly acquired knowledge and master it over time, only to be challenged again by a more complex task that builds on the previously mastered skill (Gee, 2007, p. 37).

Information “Just in Time” - an ideal setting for language acquisition

Unlike in many textbooks, the information presented to the player is usually useful and applicable straight away in the game; “information and tools to solve the problems presented to the player are available immediately, which is a key component to the games progress in

most genres” (Theodorsen, 2015 in Rudis & Poštić, 2018, p. 117). Furthermore, the information is always set within the game’s context which the player has helped to create by their actions, dialogue choices, etc.; this direct participation “allows players to be emotionally invested in the story and thus acquire the language even better” (p. 117). The new information is immediately situated within the context of personal experience, which helps to situate the meaning. People can familiarize themselves with the meaning of new words when they “hook them to the sorts of experiences they refer to—that is, to the sorts of actions, images, or dialogues the words relate to” (Gee, 2005, p. 36). Researchers refer to this learning which takes place in purposeful and appropriate contexts as “situated cognition” which has been proven to have results superior to learning which doesn’t utilize these contexts meaningfully, as seems to be very common in the conventional means of instruction (Van Eck, 2006, p. 4). Video games connect multiple sensory responses together forming a disparate framework in which the experience takes place. Associating language through “visual, auditory cues as well as interactive [...] representation of an object inside the game world” boosts the learning of the new word; this phenomenon is subsumed under the concept of “interconnection of visual and word” (Rudis & Poštić, 2018, p. 117).

Specialization, teamwork and community

Specialization (interconnected with customization) helps the player to engage in the game more actively; this can be seen especially in multi-player games, where groups of players (guilds or parties) benefit from having members with different talents and specializations in their party (unlike schools that promote uniformity in their curricula). “Players must each master their own specialty (function) but understand enough of each other’s specializations to integrate and coordinate with them (cross functional understanding)” (Gee, 2005, p. 37). Players can participate in actions above their level of competence and receive help either from the game itself (many games are designed to give feedback to the player and offer tips to improve the player’s performance), their real-life friends, online team-mates, or various forums where they can reach out to ask for help. Crucially, they actively contribute to the development of an “international community, which allows non-native speakers of English to interact with native-speakers” (da Silva, 2014, p. 164)

2.2.3 The advantages and drawbacks of gaming instruction and gamification

There are many successful projects which have resulted in the creation of serious games of high quality, namely an internet portal *Arcademics.com* which makes multiplayer educational games for children to practice various domains, such as mathematics, language arts

and many more. Another example is MIT's project *Education Arcade* which also makes predominantly multiplayer games, such as *Radix Endeavor* – a game specialized to promote STEM learning. Some specialise in language: The British Council website, for example, offers a multitude of mini games to practice English. Finally, *CodeSpells*, developed by Multi-Dimensional Games, teaches children to code in a very engaging, hands-on way. With the increasing use of smartphones as gaming devices, it comes as no surprise that there are many educational mobile games and applications available on both the Google Play Store and Apple Store (e.g., *Khan Academy Kids: Free educational games & books*, *Lingokids – The playlearning™ app in English*, and many more). Not all serious games, however, turn out as well as the ones mentioned above; the realm of DGBL game development is filled with failed attempts to utilize the gaming potential resulting in “poor examples of edutainment in which neither the learning nor the game is effective or engaging” (Van Eck, 2006, p. 6).

Games have a lot to offer when it comes to modernisation of the old educational structures, especially in language, history and physical education classes (Young et al., 2012). Most schools already have at least one IT classroom and games can, therefore, be at least partially integrated into the syllabus of a few selected courses. Because the positive effects of gaming (on language) are beneficial, even when the gaming is merely passively observed (as discussed in 2.2.1), their utilization in “traditional classrooms with interactive whiteboards or other large screen displays” seems well within the capabilities of most educational institutions. The practical advantages of watching rather than playing make the inclusion of games in the curriculum more accessible, since games can be enjoyed without the financial burden of having one gaming device per student. (Young et al. 2012, p. 75). Game-based instruction is not limited to classroom education; programs varying in success have been introduced to implement gaming in the professional training of medical workers, military personnel (Young et al., 2012), delivery services and chain restaurant employees, etc. The subsequent *gamification* (“the use of game design elements in non-game contexts”, such as school, workplace, internet websites, mobile apps etc.) has become a subject of heated debate in the recent years (Hyrynsalmi et al., 2017, p. 96). On the one hand, a great body of research on gamification shows improvements in the players’ (students’, users’, employees’, or customers’) skills, productivity, motivation, and sense of accomplishment. On the other hand, various studies have warned against the dangers of incorrectly executed gamification and of the limits of its application; concerns have been raised over the idea that gamification could “replace internal motivation with pursuit of extrinsic rewards”, ultimately sabotaging its original purpose (p. 99). The ethical dimensions of gamification are also worth mentioning, especially in connection to its applications within

the workplace; the questions of bringing “potentially addictive gaming elements into the design of everyday things” (p. 97) or even taking “unfair advantage of workers” (p. 99) by making their work environment more competitive in order to increase their productivity are valid concerns which should be investigated further.

3 Materials and Methods

3.1 Materials

The practical part of this thesis carries out an experiment to determine the degree of influence of gaming on the acquisition of prepositions. The gaming effect was tested on children aged 10 - 13 with an educational game designed specifically for the present study. The game called *Prep for Adventure* was created in the RPG Maker MV engine by the researcher (RPG stands for *role-playing game*, which is a genre of a game in which the player adopts a role/roles of a fictional character/characters in a (partly or fully) invented setting). RPG Maker MV is a program that allows its users to develop a game without an extensive knowledge of programming. The program offers a variety of pre-programmed events, sample graphics, and even audio. In some sections, the default resources were not sufficient for creating a game that would satisfy the needs of the present study; in those sections, the lack of advanced functions was remedied by plug-ins and scripts, and the deficient audio-visual data were complemented by the resources provided by the RPG Maker community. The game was developed with respect to various SLA approaches. The language level used in the game was adjusted for learners within the A1-A2 range of proficiency (based on English Vocabulary Profile). The game consisted of five tasks and one final task combining all the preceding tasks, purposed to elicit acquisition of prepositional structures (and in a limited measure of structures containing a particle *to* – more in chapter 3.1.2) without explicit instruction. All tasks were based on the gap-filling type of exercise where subjects had to complete a sentence with a missing word, either by typing it in or via different kinds of multiple-choice formats. The children’s language levels were pre-assessed by a gap-filling written test that featured sentences from the game. Children then proceeded to play the game at school instead of their usual English lesson under the supervision of their English teacher and the researcher. They were re-assessed two days later (in the following English lesson) by a test identical to the pre-assessment one followed by a questionnaire to provide feedback regarding their overall experience with the game.

3.1.1 The choice of prepositions

There are two reasons behind the decisions to focus this study on prepositions; from the didactic point of view, prepositions are a problematic area to master for most Czech learners of

English. From the empirical viewpoint, prepositions are a productive element of grammar, which renders them a scientifically interesting area to be further explored. To avoid artificiality of input in case of choosing prepositions within an artificially created frame (as is the case in many overly structured text books, which subcategorize all aspects of grammar to conveniently compact and thematized units, e.g., prepositions of time) the prepositions featured in the game were chosen with respect to frequency of their occurrence in the English language. Sources consulted in the search for the most frequent prepositions in English were COCA (Davies, 2008-), BNC 2001 (Leech et al., 2014, p. 294), and Oxford English corpus (Sketch Engine – Kilgarriff, 2014). The reasoning behind the choice of prepositions is simply to avoid idiosyncratic forms and anomalies and to focus on highly productive grammar by making the game more accessible to the intended audience – children. Wordlists of the ten most common prepositions were generated from three sources and compared against each other. All sources provided nearly identical information; there were, however, a few words in which they differed. The sources were thus combined and narrowed down only to those prepositions which were present in all three sources (Table 1). The choice of the overlapping six most frequent prepositions is thus consistent with all three sources. These prepositions were deemed suitable for the game’s input: *to*, *of*, *in*, *for*, *on*, and *with*.

Table 1 The six most frequent English prepositions

	BNC (2001)	Sketch Engine	COCA
1	of	of	of
2	in	in	in
3	to	for	to
4	for	to	for
5	with	on	with
6	on	with	on

3.1.2 The case of the word *to*

While the word *to* is not the only one out of the selected prepositions to have a multiple word class membership (*for* is a preposition and a fairly old-fashioned conjunction, *on* is a preposition and an adverb, and *in*, with its astonishing four word class memberships, can be a preposition, adverb, adjective and a noun (Hornby & Cowie, 1995), it is the only chosen word which is used less frequently as a preposition than as its identical form bearing a different

meaning – a particle. According to the frequency wordlists provided by the Sketch Engine’s English Web 2015 (enTenTen15) corpus, the lemma *to* is the fifth most frequent word in English (preceded only by *the*, *be*, *and* and *of*), with the count of 428,400,642 results. Upon a closer examination of the contexts the lemma appears in, it has been observed that the preposition *to* makes up only 39.118 percent of the absolute frequency (167,583,858 results), while the auxiliary particle makes up 60.880 percent (260,812,323 results) (Kilgarriff, 2014). In order to stay true to the experiment’s design, which strives to be as representative of reality as possible within its resources, it has been decided that the word *to* should appear in the game as both the preposition and the more frequently used particle. While the particle *to* is incorporated with no observable distinction from its prepositional counterpart in the game as well as in the data collection, it is treated separately in the data analysis and not included in the analysis of prepositions. Its inclusion serves to compare the performance of *to* as a particle as opposed to the prepositional *to* in the answers of the subjects.

3.2 The game’s design

The first step in the choice of the game to be used in the present study was to decide whether the experiment would use an already existing program – a “commercial off-the-shelf (COTS) game” – or feature a completely new (DGBL) game made from scratch by the researcher. The advantages of COTS games are immense, the most important one being the accessibility of the product made by the fusion of professional programmers and artists who can flawlessly write the script, program the tasks, model the graphics, record the audio and run wide-range beta-testing in a comparatively shorter period than the amateurish researcher. COTS games, however, cannot compete with DGBL games in incorporating the curriculum; their content is created primarily to entertain the player, learning being a by-product of their design. An approach known as the “Holy Grail” approach to DGBL states that DGBL games should conceivably accommodate both entertainment and learning in equal measure. These educational games are arguably the future of the DGBL approach, since they can be designed to match the respective needs of specific phases in learning. (Van Eck, 2006, p. 6).

Another aspect to consider is the Czech scene of serious gaming; most games available in the Czech Republic are meant for beginner level and often do not have any story (e.g., games provided by the *English Time* internet portal – a project funded by the European Social Fund and the state budget of the Czech Republic). After careful consideration, a decision was made to create a new game based on SLA and DGBL principles and focusing on the acquisition of English prepositions, which would endeavour to be entertaining and educative at the same time.

Prep for Adventure is modelled on various SLA principles, and is particularly bound to the tenets of the usage-based theory (discussed in 2.1). By exposing players to as much input as possible (consisting in uses of the items, tasks to assess their understanding, together with an infinite amount of corrections), the present study tries to find out the effect of video game exposure on the language acquisition process.

Prep for Adventure is a single-player game comprised of five separate tasks, the final task combining the four preceding tasks in order to recapitulate the previously elicited responses. Each task consists of a minimum of twelve stimulus sentences with a gap in the place of the corresponding preposition to elicit each preposition approximately twice per task (with the exception of the preposition and particle *to* – these are each elicited roughly once a task in order to prevent the subject from opting for *to* at random due to its higher frequency). The subject (also referred to as player) fills in a gap in the presented sentence by choosing the correct preposition out of the offered options. The meaning of the sentence completed with the correct word is in alignment with the situational context. The player cannot proceed in their playthrough without choosing the correct answer; this strategy presents the player with the same sentence until they ‘get it right’ at last, creating a potentially ‘infinite input’ as a result. Although research indicates that more playing sessions generate better outcomes of learning (Clark et. al, 2016), the present study does not have the means to secure more than one playing session. The length of one average playthrough is approximately 30-45 minutes, allowing the game to be finished in one sitting.

It is generally agreed upon that listening to input is an imperative part of first and second language acquisition alike. Connecting audial information with a corresponding visual can enhance the learning experience; Burgoon (1994) described the listener’s tendency to “rely more on non-verbal than verbal cues when interpreting spoken texts”, such as tone, body language, gestures etc. The presence of “situation visuals”, such as the location of the communication, the mimics and gestures of its participants and the visual representation of the discussed events, can improve the listener’s comprehension and better capture their attention (Wagner, 2010, p. 494). All dialogues in *Prep for Adventure* thus include voice acting done by native speakers (with American accents), accompanied by visual and other discourse cues (cut scenes, facial expression tile-sets, shaking text etc.). Voice acting done by native speakers provides a semi-authentic material, consistently with the interactionist approach (more precisely the *communicative language teaching* methodology). Additionally, the whole game’s script (see Appendix 2) was proofread and reviewed by the native speakers which adds to the

authenticity of the input. The game's tasks can be seen as components of task-based language teaching. From the TBLT point of view, the video game becomes a learning tool which pushes the player to be more active "within the world which provides a huge amount of linguistic input with corresponding visuals, auditory stimuli and context." (Rudis & Poštić, 2018, p. 117). Listening to native speakers also helps the learners develop a native-like accent, attainment of which is conditioned by the age of learner, since there is a "clear effect of age of onset in ultimate pronunciation attainment" (Pinter, 2011, p. 59). All of the interactive NPCs (non-player characters) and most of the stimulus sentences are recorded to enhance the effect of the gameplay. The player's character does not have a voiceover to allow the player to choose whichever gender they prefer for their playthrough (recordings of both male and female voices of the protagonist character would not only confine the player's character in binary gender terms, it would also greatly enlarge the game's size).

Motivation is an important learner variable which helps the learner to stay focused on and interested in the process of SLA. As Al-Jifri & Elyas (2017) note in their case study, "the acquisition of the language via video games is natural due to the fact that motivation is stemming from within the gamers themselves and not being gained from an external incentive" (p. 32). Games motivate their players to complete the playthrough by various means (achievements, level-up screens etc.); a good game provides an interesting storyline on top of other elements (shooting, crafting, etc). Studies have shown that a more intricate story does not always grant better results; a meta-analysis conducted by Clark et. al (2016), inspecting the impact of various factors influencing the learning process through gaming, suggests that games with a less-relevant and less extensive story promote learning more significantly than games with dense storylines (although it must be pointed out that not many studies actually tested more story-driven games). Nevertheless, a storyline should still be considered essential to the role-playing games (RPGs) and should be given credit to solely on the basis of it being appealing to the player and motivating them to play on their own accord (the gaming does not become a chore). The story in *Prep for Adventure* is therefore fairly simple:

The Grammar School of Witchcraft has been taken over by the Evil Preposition Magician and the player is trying to win their school back alongside with a young witch named Morphologina (the player's guide). Such a simple and linear narrative is not just easy to follow for children, but it also gives them a sense of purpose in completing the game. What is more, Morphologina – the source of instruction and an equal to the player's character – proposes an

alternative to formal instruction when completing the tasks; such informal instruction is not intimidating, for the player and Morphologina are making sense of the tasks ‘together’.

Other characteristic RPG features, such as character’s creation, levelling up (Figure 1), and making decisions in dialogues, are also included in the game. These features work in alignment with the interactionist SLA approach; as noted by Gass and Mackey (2007) “it is now commonly accepted within the SLA literature that there is a robust connection between interaction and learning” (p. 176). Consequently, the game was designed to be as interactive as possible within its capacities; the dialogue options urge the player to understand the context to be able to answer in a way consistent with how they want their character to act. The decisions in this particular game are restricted due to the size of the game (in a few cases, they become ‘false dichotomy’ in not being mutually exclusive – in order to keep the story simple, the player does not really decide what happens next).

Figure 1 Level-up screen to motivate the player



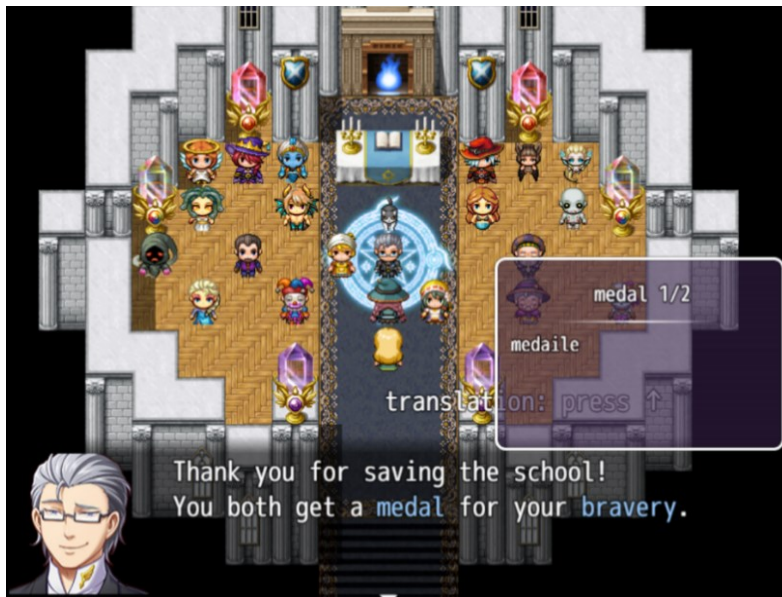
The language presented in the game was modified to be more accessible to children. The entire script was reviewed by four native speakers (of American descent) to check for any grammatical errors and to guarantee the standard use of language. All possible options for completing the stimulus sentences were also consulted to secure that each sentence could be filled in by just one preposition (or the particle *to*) offered. Prepositions which could also correctly complement the sentence were ruled out to prevent any confusion or ambiguities. The interactionist approach builds on the basis of giving learners “ample opportunities to receive meaningful input, produce the target language in context, and receive feedback on their efforts by working collaboratively on a task” (Ellis, 2003, 2009; Long, 2000; Samuda and Bygate, 2008 in Mackey et al., 2012, p. 14). This view was criticised by Swain and White, who claim that although comprehensible input is important for successful language acquisition, it is not

adequate on its own. Swain's *output hypothesis* demands the learner's participation in creating meaning (Mackey et al., 2012). Hence the collaboration, which would be possible in a multi-player game (creation of which was above this study's capacities), is, to an extent, emulated by the character of Morphologina. While drawing inspiration from the *interaction hypothesis* (Long, 2000) and simplifying the game's language, the game's design also makes adjustments for its criticism and thus involves the learner in the creation of meaning (Mackey et al., 2012). In the case of *Prep for Adventure*, the learner does so by choosing out of dialogue options and completing the tasks. Schmidt argues for the importance of "noticing" which can be promoted through interaction and feedback (Schmidt in Mackey et al., 2012, p. 14); *Prep for Adventure* offers plenty of feedback by pointing out player's mistakes immediately. It provides, in other words, correction 'online'.

3.2.1 Tasks

As aforementioned, the game consists of five tasks that are connected together by transitions which offer a broader context to anchor the tasks within the story and present them in a meaningful way in accordance with TBLT (as means of overcoming an obstacle to progress in the story, not just as unrelated grammar exercises appearing at random). The difficulty of the tasks varies throughout the game, beginning at the easy level and then oscillating between more and less challenging tasks to help the player stay motivated. None of the tasks are timed in order to avoid cognitive overexertion of the player, which could decrease the effect of gaming on LA (as mentioned in 2.2.1). The transitions, moreover, give the player an opportunity to 'catch one's breath' before another task occurs; the ratio of 80 stimulus sentences within approximately 40 minutes of gameplay thus provides a steady level of active engagement that boosts language acquisition and at the same time does not overwhelm the player. The first transition passage follows right after the introductory scene where Morphologina introduces herself and draws the player into the game's story – the player is ordered around by Morphologina's mum to learn the mechanics of the game. The second transition takes place when Morphologina meets the player's customized character and takes a shortcut to school; the character is introduced and makes their first dialogue decisions. The third transition includes flying on a broom; its main purpose is to amuse the player by using a different vehicle to move around at high speed. The fourth transition takes place before school and serves mainly to advance the story. The last transition is the final scene of the game which is supposed to leave the player with a feeling of accomplishment in completing the playthrough (Figure 2).

Figure 2 Happy Ending – the game’s epilogue



Jumping Puzzle

The first task of the game lies in the quest to cross a river by jumping from one pillar to another (Figure 3). The player is instructed to use the Spacebar to jump and before each leap they need to fill in the gap of a stimulus sentence. The difficulty of the first task is low in order to motivate the player; there is no penalty for answering incorrectly and the player has an infinite number of attempts. There is a total of 16 sentences and the player can choose the right answer out of four prepositions displayed as dialogue options. This task has a full voiceover.

Figure 3 The first task – Jumping Puzzle



Cooking

The second task is the cooking of a preposition soup with an old witch (Figure 4). The witch instructs the player to pass her three ingredients and then adds them into the soup. There is a total of 12 sentences and the player has to choose the right answer out of four options displayed as tiles. The player then proceeds to mix the soup (a mixing minigame is triggered). There is no punishment for an incorrect answer (other than the “Try again, dear.” phrase which sends the player at the beginning of the looped stimulus sentence they have to complete). The penalty for failing the minigame is a red screen, and the player is then forced to replay the minigame. This task has a full voiceover.

Figure 4 - The second task - Cooking



Town Maze

The third task takes place in Preposition Town (Figure 5). When the player enters through the gates, they have to get through the town by choosing the right path. They step on the grass tile which triggers the stimulus sentence with a gap popping up on the screen. The player then chooses out of three possible answers, each written on the ground of the corresponding path. There is no punishment for an incorrect answer other than a disapproving audio playing while the player is sent back from the incorrectly chosen path. There is a total of 12 sentences in this task. This task is only partially voice acted.

Figure 5 - The third task - Town Maze



Lightning the Goblets

The player enters a dark cave where they encounter the ghosts of lost travellers (Figure 6). The souls instruct the player to light goblets and thus reveal a symbol on the ground. To light a goblet, the player needs to type in the correct preposition (or particle *to*) missing from the sentence presented. When all goblets are lit, the player steps on the symbol, frees the ghosts and opens a massive door at the back of the cave. There is no penalty for an incorrect answer other than the repetition of the task and the inability to proceed without having the task completed. There is a total of 12 sentences in the task. This task has a full voiceover.

Figure 6 The fourth task - Lighting the Goblets



Banter with Classmates

When the player finally enters the Grammar School of Witchcraft and endeavours to confront the Evil Preposition Magician, they are stopped by an ogre blocking the entrance into the library – the villain’s base (Figure 7). They must engage with their classmates and talk them into joining in the fight; the player leads a short dialogue with each of the classmates. There is a gap in each dialogue sequence which the player is required to fill by choosing one out of the three dialogue options presented. The penalty for the task is ‘awkward silence’ marked by three dots, and the player has to opt for a different answer to complete the dialogue. There is a total of 12 sentences in the task. The task has a full voiceover.

Figure 7 The fifth task - Banter with Classmates



Final Fight

The intention behind the final task is to build upon the already encountered strategies; this recapitulation is essential for the retention of the newly acquired knowledge. According to the information processing approach, the new information needs to be transferred from the “short-term memory store” into the “long-term store” for the learner to automatize its retrieval. The automatization can happen if the information is “interpreted meaningfully or deeply” and the particular link is strengthened by practice. “Automatization [...] helps speakers retrieve huge chunks of language from their long-term memory store without having to consciously think about the separate constituent parts. This allows speakers to develop fluency in a second language” (Pinter, 2011, p. 22). After confronting the Evil Preposition Magician, the player is teleported to the final game area (Figure 8). The final task is a combination of all the preceding tasks; each task consists of four gap sentences, giving a total of 16 sentences the player has to

complete by employing one of the previously introduced mechanics (jumping, cooking, choosing the right path, and lighting the goblets). This task has a full voiceover.

Figure 8 The four tasks featured in the Final Fight



3.2.2 Example sentences

There was a total of 80 stimulus sentences presented throughout the entire game. The stimulus sentences were created in respect to the proficiency level of the tested subjects (A1-A2) with the help of the English Vocabulary Profile to determine the contexts and vocabulary learners should know at the A2 level (see Appendix 1). Setting the threshold to the A2 level was in agreement with the concept of the ZDP (zone of proximal development) strategy proposed by Vygotsky; the provided input was mostly based on the child's presumed "level of current ability" (A1) overreaching into the zone of potential ability (A2) with the game serving as the means of careful assistance (Pinter, 2011). In other words, the input was both challenging and within the grasp of the subjects considering the subjects chosen for the study were between an A1 and A2 level of proficiency. The expressions above the A2 level proficiency were

translated into L1 (Czech) – the player could access the translation by pressing the Up-arrow key which triggers a pop-up window with the otherwise hidden translation.

Gap-filling format (sometimes called “cloze”) was employed as the most productive strategy in completing the stimulus sentences. The targeted preposition was “deleted rationally” from the text according to a “specific purpose” (McCray & Brunfaut, 2018, p. 52): the targeted word was meant to be reconstructed by the player. The gap-filling sentences offered a multiple-choice for the player to choose from; the choices were revised to allow for only one correct answer per gap. Considering the repetitive contexts of prepositions known at the A2 level and the limited vocabulary, gap-filling was considered an instance of “rereading”. This technique commonly employed in second language teaching has been proven to be one of the most effective ways to learn new vocabulary (Dunlosky et al., 2013). The effect of rereading was strengthened by the derivative content of the stimulus sentences; they mostly described what had already been said in the dialogues prior to the task (they were primed by the previous utterances), or were descriptive of the surrounding events. The game was purposefully designed to utilize “repetition priming” to its fullest potential by employing dialogues as *repetition primes* to elicit the correct response in the gap-filling tasks. Sentences preceding the gap-filling task were formulated to directly prime the target preposition/particle *to* (Table 2) when the priming was possible. The “lexical representation” of the preposition was left in “a state of increased accessibility” (Forster & Davis, 1984, p. 680) and was thus more likely to be triggered in the player’s mind as the suitable response to the already experienced context.

Table 2 Examples of priming and stimulus sentences

Priming sentence(s)	Targeted preposition (or particle <i>to</i>)	Stimulus sentences	Offered choices
“...you’ll miss the bus <i>to</i> school.”	TO	I’m going ___ school.	a) to b) with c) on d) in
“Everybody, get <i>on</i> the bus.” “We didn’t get <i>on</i> the bus ...”	ON	We didn’t get ___ the bus.	a) in b) on c) with d) of
“Thank you <i>for</i> your help.”	FOR	We thank you ___ your help.	a) to b) for c) with d) on e) in f) of
<i>no prime</i>	WITH	She’s mixing the soup ___ a spoon.	a) in b) to c) of d) with

3.3 Methods (data collection)

All grammatical areas appearing in the game were compared with the “international standard for language teaching and learning” (North et al., 2010, p. 6); the CEFR core inventory provided by the British Council was adopted as a guideline to determine the age of the experimental group. The level of proficiency was chosen to be “elementary” (p. 7), ranging from A1 to A2. The “Mapping Language Content” section of the EAQUALS referential guide suggests that children at this level should be able to understand all of the core exponents of language content corresponding to their level of proficiency (the degree of use varies). For A1 and A2, these include: simple and progressive present and past tenses, simple discourse markers (*and, but* etc.), simple verb forms, simple question forms, future forms (present progressive, *will & going to* forms), modals (*can, have to, must, should*), nouns and pronouns, possessive adjectives and pronouns, common prepositions, prepositional phrases (time, place and movement), articles, determiners, common and demonstrative adjectives, the adjectival gradation (comparatives and superlatives), simple adverbs (frequency, time, place, manner) and basic intensifiers (North et al., 2010). The user’s guidelines section of the EAQUALS booklet warns against treating the Core Inventory as a set of rules to be obeyed at all costs – the inventory is intended to be used merely as a reference. For this reason, the suggestions to include more complex language structures, such as present perfect, into the assumed competence of A1-A2 learners were deliberately disregarded after consulting the elementary school teacher whose class was subjected to the experiment.

3.3.1 Subjects

Firstly, to assure the representativeness of the subjects, it was decided to opt for a population of public elementary school pupils. Taking into account the literature concerning SLA stages in children, it was determined that children suitable for the experiment should have already gone through the third developmental stage (7-11 years of age) in accordance with Piaget’s *theory of child development*. That meant the children would be capable of “operational thought”, competent use of analogy, and “symbolic thought” (Pinter, 2011, p. 9). Based on the Eurostat data from 2017, a clear majority of primary education pupils in the Czech Republic opt for English as their second language (76,3 %) and even more pupils do so in their lower secondary education (97,9 %) (European Union, 2020).

The sample group was determined to be a class of elementary school students – the subjects were thus selected by the means of *probabilistic cluster sampling* (Martínez-Mesa et al., 2016). After a consultation with the English teacher from the elementary school chosen for this study,

a pre-assessment was conducted in three classes to determine the suitable age group; the classes assessed were the fifth, sixth and seventh year of elementary school. The results ruled out the fifth graders since the level of English required in the game for understanding was beyond their current capabilities (their results are, therefore, not included in the present study). Students of the sixth and seventh grade proved to be at a similar level. Consequently, it was decided that a group of subjects aged 11-13 years old (including both sixth and seventh graders) would be optimal for participating in the project. Their level of proficiency was estimated to be on the boundary of A1-A2. The sixth and seventh graders were used in the pilot study. The actual experiment, however, featured only seventh graders as there were limitations to the number of lessons in which the experiment could be conducted within the time constraints of the thesis' timeframe. This study is part of the research project Core Syntax in Bilingual Children (csbc.ff.cuni.cz), directed by Dr Cilibrasi. The project was submitted for approval to the Charles University Ethics Committee and it received favourable opinion. Parents were provided with an information sheet and a consent form, and only children with a signed consent are included in this thesis.

3.3.2 Pilot experiment

To make sure that the actual experiment would go smoothly, a pilot experiment was conducted on a group of children aged 10-13. The data collected from the pilotage is significantly limited due to the fact that only four children returned the GDPR forms. In the pilot experiment, children completed a pre-assessment test in class. They then proceeded to play the game at home and their playthrough was followed by a re-assessment test upon their return to school. The pre-assessment test was composed of 12 gap-fill sentences (prepositions *in*, *on*, *of*, *with*, and *for* were tested twice in unambiguous contexts, preposition *to* and particle *to* were each tested once to avoid the excessive frequency of the word *to* as an answer) and four unrelated filler questions. Children completed the test in class (although there was no time limit, neither of the children exceeded ten minutes) and then received a short training to help them understand how to operate the game (to eliminate the possibility that children did not know what to do and thus could not finish the game on their own). Children were given a link to Google Drive to download a zip file of the game at home and complete it as many times as they liked. The Google Drive included additional material to help children download and run the game. The subjects then played the game at home over the Christmas holidays. When they returned to school after the Christmas holidays, they were re-assessed by the same test to compare the results (Table 3).

Table 3 The results of the pilot study

ID	grade	finished	attempts to finish	pre-assessment		re-assessment	
				correct prep	prep : part <i>to</i>	correct prep	prep : part <i>to</i>
P1	7	Y	3	6/11	1:0	6/11	1:0
P2	7	N	2	8/11	1:1	9/11	1:1
P3	7	N	1	6/11	1:1	9/11	1:1
P4	5	N	4	1/11	0:0	1/11	0:0

The analysis of the results provides much-needed feedback about how to improve the experiment's design and correct a few fundamental errors in the overall organisation. To begin with the basics: The character of the experiment calls for a group of at least 20 subjects to provide a degree of representativeness. The size of the sample group (caused by the lack of GDPR forms) is far from being representative making the results unreliable – any correlation between the game and the test results is practically accidental. The mortality of sample subjects was immense due to the unfortunate timing of the experiment.

The four subjects are not within the same age group (they are students of fifth and seventh grade) which undermines the comparison of their results. Only one out of four players completed the game, and they did so three times. Other subjects have attempted to finish the game, some even on multiple occasions, and since the game takes approximately 30-45 minutes to finish, the number of attempts leads the researcher to believe that the players did not know how to save their progress which hindered them from completing the playthrough. Although the unsatisfactory size of the sample renders the comparison of the number of correct answers before and after playing the game inconclusive, there is a tendency towards better results after the playthrough; two out of the four players have improved at least by one point. The others did not see any change in their performance. The comparison of the preposition *to* and the particle *to* is likewise not based on sufficient data, but there is, nonetheless, a slight difference in performance which should be further examined on a larger scale in the actual experiment. This data, due to its limited size, should be taken merely as a preliminary prognosis regarding the following research (see chapter 3.3.3).

Furthermore, there was a substantial time gap between the pre-assessment, the actual playthrough, and the re-assessment, and the results do not reflect the possible effects of gaming

directly after the playthrough. According to the theories of memory, in order to be able to store new information in long-term memory, one has to transfer it from their short-term memory. To assure that the newly acquired knowledge is not weakened over time, the subject should engage in a three-step process of “rehearsal, organisation and elaboration” (Pinter, 2011, p. 27); this scenario, however, could have taken place only in the case of one player (P1) who finished the game multiple times. The home setting offered two advantages: 1) the option of replaying the game multiple times (thus supplying plenty of rehearsal), and 2) no time limit pressuring the player to complete the playthrough. However, the downside of the home setting is that all possible progress could be lost over the Christmas holidays if the subject played the game only once. The dissimilar home setting conditions of each participant should also be considered; subjects probably had different time options, which could greatly influence the outcome of their playthrough.

Thus, the pilot study results, most importantly, show that the game should be played in class as opposed to the home setting, to make sure all children download the game and play it. Playing the game during class gives the researcher an opportunity to control the environmental factors, to instruct children whenever they encounter a problem that would otherwise discourage and demotivate them, and to re-assess the gained knowledge right after the playthrough. It also gives an idea as to how long on average it takes a child to complete a playthrough (which is important since the game was specifically designed for children but beta-tested by adults). The re-assessment immediately after the playthrough limits the negative effects of the memory retention span and although playing the game multiple times over a longer period of time could strengthen the acquired knowledge and automatize it by supplying the required practice, one has to take into account personal factors and individual variation in home schedules, which could negatively affect the quality of the data.

3.3.3 Experiment

The experiment largely benefited from and built upon the insights gained from its pilot study. The criteria for employable subjects were narrowed down to pupils from the seventh grade in a conventional elementary school, and the age was thus settled on 12-13 years old. Such reduction in the age range (from 10-13 to 12-13 years of age) makes it easier to compare the subjects’ results, for they should be on the same level of cognitive maturity, they have most probably been formally instructed in English for the same amount of time, and the difference in their level of English should thus be commensurable. In the Czech Republic, classes are typically split into smaller groups during language lessons to avoid the prevalence of the frontal

method of teaching and to assume a more individual approach towards the students. Due to the small size of these groups, the testing had to be done in two groups of seventh graders on different dates; the procedure, however, remained the same. The pre-assessment was nearly identical to the pilot pre-assessment in form; it consisted of 12 gap-fill sentences (and one particle *to*) taken directly from the game, and four unrelated filler sentences featuring random areas of English grammar (pronouns, simple past tense, simple present and continuous verb forms). Testing took place at school during the English lesson one day before the actual experiment. The experiment was conducted one day later in the IT classroom, again during an English lesson. All subjects had access to their own computers and headsets. They were instructed and assisted in operating the game. As mentioned earlier, the estimated game time of one playthrough was approximately 30-45 minutes; some of the subjects had trouble finishing the game in time, however, and were offered to finish it in the following lesson (before completing the re-assessment). The re-assessment took place two days after playing the game. Neither the pre-assessment, nor the re-assessment tests were timed, but they took around 10 minutes to complete. The re-assessment test was followed by a questionnaire mapping the player's experience and some additional information about the players themselves, such as the age in which they began their formal learning of English and other languages.

It must be noted that due to some technical difficulties (the IT classroom was equipped with extremely old computers, some of which froze and the game had to be turned off without the possibility of saving progress) a few players were forced to share one computer in pairs and cooperate in playing the game. This turn of events posed a previously unconsidered scenario since no such problems were encountered during the game's beta testing. This involuntary cooperation was at first perceived negatively by the researcher. However, after having witnessed its positive effects (such as faster progression in the playthrough) during the testing, and after consulting literature regarding co-operative games, it was regretted that *Prep for Adventure* is a single-player and not a cooperative game. There are benefits to the "peer assistance" in L2 learning; a collaboration in production of the output provides support for the learners and although one learner can sometimes unknowingly "mislead" the other due to the lack of knowledge (Pinter, 2011, p. 20), games, such as *Prep for Adventure*, provide sufficient feedback which sheds light on any misinformation and reinforces the correct answer. There are two types of cooperative games; the more known ones usually need servers for the players to play together on separate devices. The second type are offline local cooperative multiplayer which can be played by two players on one device at the same time. The cooperative version of *Prep for Adventure* could have avoided the need for any servers by implementing the same

controller system, as featured in some computer games. For example, *Brothers: A Tale of Two Sons*, by Starbreeze Studios AB, allows two players to play on one computer at once: One player uses arrows for movement and the other one uses WASD keys. If the same mechanics eventually found its way into *Prep for Adventure*, one player would thus be able to control Morphologina, while the other would control the custom character. The potential of such configuration needs to be explored further in a different research context.

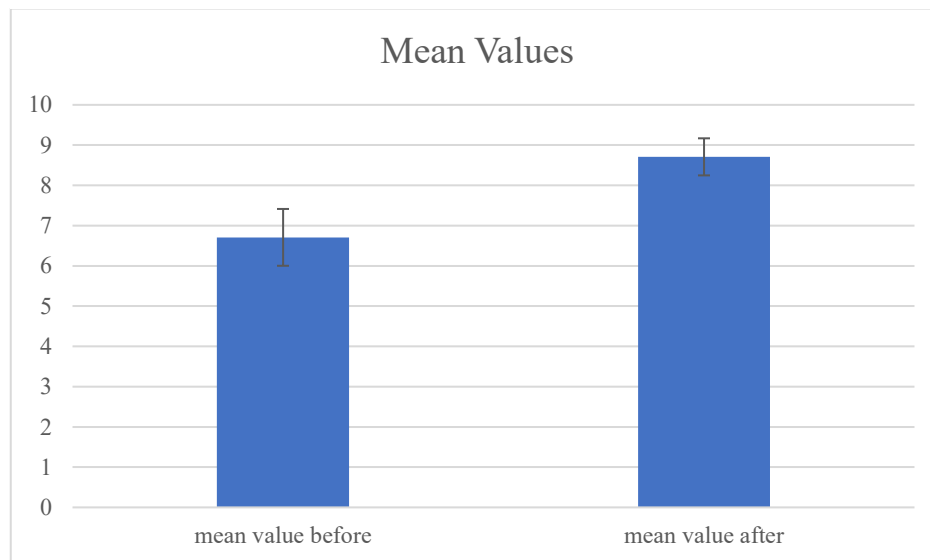
4 Analysis

The results of pre-assessment and re-assessment (Table 6 in Appendix 3) were compared and a t-test was used to calculate their significance (Table 4). The mean values (calculated from the numbers of correct answers in both conditions) were compared and complemented by standard error bars (Figure 9). As previously mentioned, the performance in completing sentences with prepositions and the particle *to* were treated separately, and only data from *to* as a preposition were included in the main analysis:

Table 4 t-test: Paired Two Sample for Means

	<i>Variable 1</i>	<i>Variable 2</i>
Mean	6.708	8.708
Variance	11.954	5.085
Observations	24	24
Pearson Correlation	0.813	
Hypothesized Mean Difference	0	
df	23	
t Stat	-4.698	
P(T<=t) one-tail	p < .001	
t Critical one-tail	1.713	
P(T<=t) two-tail	p < .001	
t Critical two-tail	2.068	

Figure 9 Mean values with standard errors



The analysis shows that the mean values differ: the mean score before playing the game is lower (6.708 points) than the repeated measure after the playthrough (8.708 points). Both the one-tail and two-tail hypotheses are significant, $P < .0001$, which means that whether or not one makes a specific prediction about the effect of the game, the data demonstrates that the game is beneficial for learning. These P values offer strong evidence and the null hypothesis – i.e. that there is no effect of gaming on learning – can, therefore, be rejected. The Pearson Correlation coefficient between the two variables is very high (0.814). This finding shows that there is a linear correlation between the two variables. This means that subjects were behaving consistently in the two assessments: those that did better in the pre-assessment are also those that did better in the post-assessment. This finding suggests that the whole group drives the significant P values and not just a smaller number of participants. This claim can be confirmed looking at the raw values (Table 6 in Appendix 3). These values show that only one of the participants performed worse in the post-assessment, and only four subjects performed in the same way in the pre- and post-assessment. The remaining 20 participants showed an improvement (though with varying degrees).

Regarding the performance of the word *to* as a particle and as a preposition, the results from the pre- and re-assessment show that subjects are familiar with the preposition to a high degree (95.83 % of them – all but one subject – were able to answer correctly in both pre- and re-assessment) while approximately half of them struggled with the particle (54.167 % answered correctly in the pre-assessment and 62.5 % in the re-assessment). There is an improvement in performance of two participants (ID 01 and 06), who seem to be the only ones

driving the trend considering the performance of the other subjects neither decreased nor improved. Thus, while the game did cause an overall improvement of performance, it did not have such an effect on *to*: The preposition *to* was at the ceiling already in the pre-assessment, and as a consequence no improvement was observed after playing the game; the particle *to*, instead, showed negligible improvement, which was observed in only two subjects.

5 Discussion and Conclusion

This thesis investigated the effects of gaming on acquisition of the six most common English prepositions *to*, *on*, *in*, *on*, *with*, and *for*. The objective of the thesis was to determine whether playing the educational video game, *Prep for Adventure*, improves the subjects' (players') performance. The theoretical part anchored *Prep for Adventure*, a game specially created for this project to accommodate its specific needs and to employ as many (S)LA concepts as possible in addition to the features that 'good' games inherently possess in the research conducted within the field of game-based learning. The experiment carried out in the practical part of the thesis established that *Prep for Adventure* offers an appropriate alternative to conventional instruction. The results showed that the study subjects reacted positively to the game-based instruction, which was reflected in the increased performance in using the correct prepositions, rising their score of the pre-assessment by approximately two points in the re-assessment. The performance in completing sentences with the preposition *to* was compared to the performance with the particle *to* and it was assessed that the clear majority of subjects did not struggle with the preposition but approximately a half of them were unable to use the particle in the pre-assessment (their performance improved almost negligibly in the re-assessment). The particle *to*, which serves as an infinitive marker in English, is absent in Czech: On these grounds, the researcher has concluded that this imbalance in performances with the preposition and particle *to* may be caused by negative transfer (discussed in 2.1.3 in connection to common errors in prepositions), or even by the insufficient knowledge of English at the subjects' current level of proficiency.

These findings are consistent with some theories of language acquisition examined in 2.1. To illustrate, regarding the role of exposure in LA, it was decided to base the instruction in the game on the cognitive approaches, more precisely the usage-based theory, rather than on the generative approach. The exposure was considered to be the driving force behind LA, the input and feedback (provided by the 'infinite input' (introduced in chapter 3.2) and mediated through the game's dialogue as well as the stimulus sentences) were seen as essential parts of the process. While input has a role in generative theory to fix the parameters of universal

grammar, the role of correction is seen as secondary and not particularly useful to the learner (contrary to UB). Instead, in accordance with UB, *Prep for Adventure* relies heavily on correction and the experiment results suggest that this can have a positive effect.

The interaction, crucial for the UB and the interactionist approach alike, was determined to be one of the main characteristics and appeals of gaming in general and it was thus esteemed that the experimental game administered enough reciprocal action by default. In order to boost the interactivity of the game and utilize it to its full potential, however, the researcher endeavoured to include as many interactive elements in the game's design as possible within the limitations of their abilities and the time devoted to creating the game. Krashen's input hypothesis (1981) together with Vygotsky's zone of proximal development (1978) were taken into account and the input was modelled to be both accessible to the subjects' current level of proficiency (A1) and challenging at the same time (A2); the game, as an informal instruction, moreover, lowered the affective filter. The game supplied the subjects with comprehensible 'semi-authentic' input (in the form of simplified sentences utilizing the ZPD, which were reviewed and voice-acted by native speakers), which exceeded the amount of input that any teacher would be able to provide individually when teaching more students at once (although the level of interaction obviously cannot compete with actual one-to-one tutoring). The guidance mentioned in ZPD was manifested in the player's guide, Morphologina, the pop-up window translations of words above the A2 proficiency level, and the researcher's presence during the playthrough. The sociocultural theory, which values the interaction between the learners and their environment was connected to the "immersive exolingual environment" games provide (mentioned by Young et al., 2012, p. 75 in chapter 2.2.1).

Despite the employment of the LA theories as guides and despite the promising findings of the experiment, some issues deserve attention and will be informative for any future research building on the current work:

The game *Prep for Adventure* was developed by the researcher of the current study throughout the duration of a year. The game was constructed in the RPG maker MV engine with both default materials and materials supplied by the RPG maker community. The community also provided the researcher with much needed and appreciated advice on how to operate the engine and how to implement certain tasks. The researcher's abilities considerably limited the game's content as well as the availability on platforms other than computer. The tasks are all based on the gap-fill method as the only way of eliciting knowledge and, although

the mechanics of nearly all tasks are unique, different means of elicitation would provide more diversity of the actions taken by the player.

The game was supposed to be uploaded online for anybody to access instantly; However, due to technical difficulties, another approach had to be employed – the zip file containing the game had to be downloaded, extracted and the game had to be installed. This proved to be a drawback which impacted the pilot study since the subjects had to play the game at home on their own since the game was not accessible from school at that time. Following this limitation in the pilot study, the actual data collection was completed in school. This choice of environment was more successful in providing the players with simple access to the game – it took place in school during normal teaching hours, the game having been installed on 20 computers in the IT classroom prior to the testing. The game was also not supported by the Mac OS at the time of the pilot study, which could have contributed to the mortality of the study subjects (as discussed in chapter 3.3.2). In the era of smartphones, tablets and gaming consoles, computers are an old-fashioned gaming device. One of the greatest appeals of mobile gaming is that it is accessible anywhere, even on the bus to school/work. The potential of short intervals of gaming offers a new possibility of ELT, and the design of *Prep for Adventure* was thus missing that component. Due to the researcher's limited abilities and lack of time, the touch-screen input was not implemented, causing the game to be available only on computers and making it less appealing to a large portion of the subjects.

Looking back to the aims of the present thesis, the results of the experiment speak in favour of the game *Prep for Adventure* as an alternative teaching material; the majority of subjects have improved in the re-assessment and had a positive reaction to the medium of instruction (based on their answers from the anonymous questionnaire). Time constraints, however, did not allow for the testing of a control group, and as such the results cannot be used to make bold claims, since the present study is unable to establish whether the game works better than traditional grammar instruction. As Hyrynsalmi et al. (2017) rightfully points out, there are limits to gamification and not every aspect of learning should be gamified. *Prep for Adventure* was never intended to substitute the entire curriculum, it aimed to be, and succeeded at being, a practical tool for teaching prepositions. *Prep for Adventure* can thus be viable teaching material either for larger classes, or for learners who strive to learn a language on their own, offering a way to at least partially enhance the immersive environment favourable to the process of (S)LA.

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Resumé

Úvod

Tato bakalářská práce se zabývá osvojováním šesti nejfrekventovanějších anglických předložek prostřednictvím didaktické videohry *Prep for Adventure*, která byla speciálně navržena autorkou tohoto projektu. Cílem práce bylo zjistit pomocí experimentu, zda tato hra, jejíž design zohledňuje vybrané teorie akvizice jazyka a rovněž staví na existujícím výzkumu didaktických her, nabízí vhodnou alternativu konvenčních výukových materiálů. Úvodní kapitola představuje problematiku a zároveň načrtává strukturu textu.

Teoretická část

Teoretická část je rozdělena do dvou celků (2.1 a 2.2), každý z nichž je dále členěn do podkapitol, které nabízejí detailnější náhled do probíraných oddílů. Kapitola 2.1 nejprve velmi stručně pojednává o vybraných směrech zkoumání osvojování jazyka, které jsou relevantní pro zvolené téma: tato část slouží k představení důležitých konceptů a myšlenek jednotlivých teorií, o které se opírá praktická část práce. Mezi důležité teorie, jež jsou zmíněny v 2.1, patří Tomasellova teorie UB (usage-based theory), interakční lingvistika, Krashenova vstupní hypotéza, VanPattenova teorie IP (input processing theory), Vygotského ZPD (zone of proximal development) a aspekty sociokulturní teorie a sociolingvistiky. V podkapitolách 2.1.1, 2.1.2 a 2.1.3 jsou probírána funkční slova, přesněji předložky, jejich akvizice, a chyby, jichž se často dopouštějí čeští studenti anglického jazyka.

Druhá polovina teoretické části (kapitola 2.2) se věnuje výuce pomocí her. Hry jsou prezentovány jako učební materiál, podkapitola 2.2.1 shrnuje dosavadní výzkum v odvětvích DGBL a CALL spolu s příklady studií, které připravují základy pro praktickou část. Podkapitola 2.2.2 se zaměřuje na důležité aspekty her, které z nich dělají interaktivní médium výuky (nejen) jazyka. 2.2.3 je poslední podkapitolou teoretické části, která prezentuje jak výhody, tak nedostatky a limity výuky založené na hraní. Tato kapitola nabízí důležitý kontrast pro předchozí kapitoly, které se věnují hlavně pozitivům her – jako každé médium výuky, i hry mají svá úskalí a limitace, které je důležité zohlednit.

Praktická část

Praktická část je rozdělena do tří oddílů (3.1, 3.2 a 3.3), které se dále dělí do příslušných podkapitol. První část (3.1 a její podkapitoly 3.1.1 a 3.1.2) představuje materiály, z nichž vychází experimentální oddíl práce: v podkapitole 3.1.1 je odůvodněn výběr šesti nejfrekventovanějších předložek porovnáním frekvenčních listů předložek vygenerovaných z

třech korpusů (BNC, COCA a Oxford English corpus). Podkapitola 3.1.2 se zabývá slovem *to*, jemuž je věnována pozornost vzhledem k jeho výrazně častějšímu užití jako částice – frekvencovanost užití částice *to* je reflektována v designu experimentu a performance částice je porovnávána s předložkou *to* shodnou ve formě.

Druhá část praktické sekce práce (3.2) popisuje design hry *Prep for Adventure* a jak se její prvky vážou na teoretické pozadí obsažené v kapitolách 2.1 a 2.2 (a jejich podkapitolách). Jedná se o zpřístupnění jazyka subjektům pomocí ZDP tak, aby byly vystaveny přísunu anglického jazyka, který je pro ně na jejich úrovni jazyka (A1) pochopitelný a zároveň představuje výzvu v rámci jejich možností. Podkapitola 3.1.2. nabízí podrobný popis úkolů hry inspirovaných metodikou TBLT (task-based language teaching): jedná se o pět samostatných úkolů a jednoho finálního úkolu kombinujícího mechaniky předešlých úkolů, které musí subjekt (hráč) splnit, aby hru úspěšně dokončil. Všechny úkoly jsou opatřeny ilustračními snímky obrazovky, aby byla adresována i vizuální stránka popisu hry. Podkapitola 3.2.2 se soustřeďuje na to, jak a podle jakých kritérií byly tvořeny věty sloužící jako podněty pro akvizici předložek ve hře, zmíněna je rovněž kognitivní strategie priming, která je užitá před představením stimulace (pokud je to v daném případě možné).

Třetí část praktické části (3.3 a její podkapitoly) podrobně popisuje metody sběru dat od výběru subjektů vhodných pro experiment, přes pilotáž předcházející experimentu, až po popis průběhu experimentu. Podkapitola 3.3.1 vysvětluje, jaká kritéria byla následována při výběru populace a následovně samotné skupiny 24 subjektů ve věkovém rozmezí 12-13 let. Podkapitola 3.3.2 detailně líčí průběh pilotáže, která proběhla přes vánoční prázdniny 2019 a jejíž poznatky byly implementovány v opravdovém experimentu na jaře 2020. Jednalo se zejména o volbu prostředí vhodného pro hraní hry jak z hlediska výzkumu, tak z perspektivy hráče – subjekty pilotáže hrály hru z domova, což znemožnilo kontrolu podmínek hraní, návratnost GDPR forem byla navíc velmi nízká, což vedlo k vysoké mortalitě subjektů studie. Poslední podkapitola třetí části praktického oddílu (3.3.3) pojednává o experimentu, který proběhl ve škole při hodině angličtiny. Text popisuje zvolený design experimentu, kterým bylo porovnání výsledků testu před a totožného testu po odehrání hry. Část podkapitoly je věnována podmínkám experimentu a jeho limitacím (jako byly například problémy s počítači, s nimiž se autorka musela vypořádat tak, že pár subjektů hrálo na jednom počítači ve dvou).

Analýza

Analytická část je čtvrtým oddílem práce, jenž obsahuje výsledky experimentu, které mluví ve prospěch hry *Prep for Adventure*. Pomocí t-testu bylo prokázáno, že hra zprostředkovává signifikantní zlepšení subjektů v kontextech obsahujících šest nejčastějších anglických předložek na úrovni A1-A2 podle nástroje English Vocabulary Profile. Zprůměrované výsledky testu před a po jsou rovněž znázorněny grafem obsahujícím střední směrodatnou chybu.

Diskuse a závěr

Závěr práce shrnuje poznatky experimentu a propojuje je s teoretickým základem obsaženým v předchozích sekcích práce (2.1 a 2.2). Diskuse výstupu práce odpovídá na otázku, zda je *Prep for Adventure* – hra vytvořena v souladu s teoriemi akvizice jazyka – vhodnou alternativou konvenčních studijních materiálů. Z výsledků experimentu vyplývá, že tato hra prokázala svou účinnost a může tedy posloužit jako studijní materiál pro akvizici předložek, kvůli materiálním a časovým limitům práce její efekt však nemohl být porovnán s běžnými metodami výuky předložek. Diskuse se dále zabývá aspekty výzkumu, které je nutno brát v potaz při interpretaci výsledků. Zároveň je poukázáno na mezery v designu práce, na jejich příčiny, a je načrtnuto jejich případné řešení.

Appendix 1: The A1-A2 level contexts of the six prepositions and the particle *to*

Table 5 Appendix 1

PREPOSITIONS	USE (A2 LEVEL) – acc. to English Vocabulary Profile – British English		
TO	next TO PLACE/TIME “to school” FROM...TO RECEIVING “give sth to sb”	x Particle TO	INFINITIVE marker REASON “to see my sis” INSTEAD of VERB “I’d love to”
OF	BELONG “a friend of mine” AMOUNT “lots of ppl” CONTAINING “a piece of cake” NUMBER “a boy of 6” of course / not (emphasize) POSITION “top of his head” SHOW “a photo of my family” COMPARING “worst of all” out of - NO LONGER IN PLACE		
IN	INSIDE DURING “in April” USING TIME “in 10 minutes” PART OF “he’s in a band” in front of sb/sth		
ON	SURFACE DAY/DATE “on Monday” “on the 1th of May” CONNECTED covering, touching, attached to, hanging from something “a stain on your T-shirt” DIRECTIONS “on the left” TRAVEL “on the bus” PLACE “on page/on a farm” RECORDING “on TV, on DVD” TIME/MONEY time/money “waste time/money on” on foot / on sale		
FOR	GIVEN/USED I have something for you” TIME/DISTANCE “for a few hours, kilometres” for example PURPOSE “for skin problems”, “boats for rent” GET in order to get or achieve something “run for the bus” “apply for a job” PAYMENT “I bought it for 10 dollars” OCCASION “for Christmas” AT A TIME “a reservation for 10 o’clock” BECAUSE OF “do something for love” “be remembered for” MEANING “a word for book” TOWARDS “we’re leaving for Peru”		
WITH	TOGETHER “with a friend” HAVING “a house with a swimming pool” USING an instrument “with glue”		

Appendix 2: Prep for Adventure Script and numbering of the recordings

Voice actors and their roles:

- **Lindsay Jewel Salvati:** Morphologina, Elsa, Mermaid, Clown, Angel
- **Sinan Ertin:** Grandma, Teacher, Reaper, Zombie, Lady Skeleton
- **Laura Clayton:** Mum, Mrs Severin, Bat girl, Mermaid, Medusa
- **Steven Wilson:** Bus driver, Preposition Magician, Ogre, Genie, Devil, Fairy

Words highlighted in blue are above the A2 level (based on the English Vocabulary Profile) and were thus translated via the pop-up window.

SCENE 1: (map 01: house)

rec. no:	character		rec:	add:
1	Morphologina	<i>Hi, I'm Morphologina!</i>		
2		<i>I study magic at The Grammar School of Witchcraft.</i>		
3		<i>The school has been taken over by the EVIL PREPOSITION MAGICIAN.</i>		
4		<i>He is controlling teachers with his magic! Only us students can fight him!</i>		
5		<i>Will you help me get my school back? You're my only hope...</i>		
6	Mum	<i>Wake up, dear ...</i>		
7		<i>Wake up, you lazybones!</i>		
8	Morphologina	<i>I'm awake!</i>		
9	Mum	<i>Breakfast is ready.</i>		
10		<i>Eat up and get ready for school.</i>		
11		<i>Finished with breakfast? Then go to my bedroom and bring me the chest that is on the floor.</i>		
12		<i>Bring me the chest from the bedroom.</i>		
13		<i>I have a gift for you.</i>		
14		<i>I know you have to go to school and fight the EVIL PREPOSITION MAGICIAN!</i>		
15		<i>Take my wand and try to do some magic with it.</i>		
16	Morphologina	<i>How do I use it?</i>		
17	Mum	<i>Just point at the pile of wood and say a spell.</i>		
18	Morphologina	<i>Okay!</i>		
19		<i>Oh, I have an idea! I'll make a chair out of the wood!</i>		
20		<i>ABRACADABRA /Hear my magic hex / ABRACADABRA /Now you have four legs!</i>		
21		<i>Oh no! That's not a chair! It has four legs, but you certainly can't sit on a cat!</i>		
22	Mum	<i>Well...it's not perfect. But you will learn how to use it in time.</i>		
23		<i>You're ready to go to school now. Good luck with the PREPOSITION MAGICIAN, honey!</i>		
24	Morphologina	<i>Thanks for the wand, mum, see you after school!</i>		

SCENE 2: (map 02: village)

25	Morphologina	<i>My friend is late again...</i>		
26		<i>Oh, there's Mrs Severin. I'll go talk to her.</i>		

27		Good morning, Mrs Severin. Is my friend ready to head to the bus stop?		
28	Mrs Severin	They will be out in a minute...		
29		Oh, there you are! You're running late, it's 10 minutes to 8!		
30		There is no time to waste! Hurry up, you'll miss the bus to school!		
x	Custom char	Hello, Morphologina.	x	
31	Morphologina	Good morning! Let's go to the bus stop.		
32	Bus driver	Alright, we're leaving! Everybody, get on the bus!		
33	Morphologina	Wait for us! Let's run for the bus!		
34		Oh no! We didn't get on the bus in time! How do we get to school now?		
x	Custom char	We can go on foot. I know a shortcut.	x	
35	Morphologina	On foot?! It's a long walk from here to school.		
x	Custom char	Choices: Stay home then. / We have no other choice.	x	
36	Morphologina	You're right. Let's take the shortcut.		
37		Don't be mean. Okay, let's take the shortcut.		

SCENE 3: (map 03: shortcut)

38	Morphologina	So... Are you scared?		
x	Custom char	Scared of what?	x	
39	Morphologina	Of the EVIL PREPOSITION MAGICIAN, of course!		
x	Custom char	Choices: I'm not scared of anybody. / I am super scared. / I don't care.	x	
40	Morphologina	You are so brave.		
41		We're not in this alone. Don't worry.		
42		You should, he is the worst criminal of all.		
43	Morphologina	Did you hear that?		
x	Custom char	That sounded like somebody doing magic. / No.	x	
44	Morphologina	Maybe they can help us fight the EVIL PREPOSITION MAGICIAN!		
45		That sounded like somebody doing magic. Maybe they can help us fight the EVIL PREPOSITION MAGICIAN!		

SCENE 3: (map 04: jumping) 16 gap-fills

46	Morphologina	Look! There's a tree house on the other side of the river!		
47		Do you know how to get there?		
x	Custom char	Try to jump on the next pillar using SPACE.	x	
48	Morphologina	You have some crazy ideas. But I'll give it a try.		
49a, b	TO – prep.	I'm going... to school.		
50a, b	WITH	I'm going... with my friend.		
51a, b	ON	We didn't get ...on the bus.		
52a, b	FOR	We need to walk...for a few kilometres.		
53a, b	IN	We are ...in a forest.		
54a, b	OF	There's a lot... of trees.		
55a, b	TO – prep.	We want to get... to that house.		
56a, b	WITH	I can do magic ...with my mum's wand.		

57a, b	ON	There's a tree house ...on the other side of the river.		
58a, b	IN	I have a magic wand ...in my pocket.		
59a, b	OF	I'm scared ...of the EVIL PREPOSITION MAGICIAN!		
60a, b	FOR	He's waiting ...for us at school.		
60c, d	OF	He is the worst criminal ...of all.		
61a, b	ON	I have a witch hat ...on my head.		
62a, b	TO – prep.	We're jumping from one pillar ...to another.		
63a, b	IN	Who lives ...in that treehouse?		
64		I'm getting better at this.		
65		This is a piece of cake!		

SCENE 4: (map 05: treehouse) 12 gap-fills

66	Grandma	How did you get in here, kids?		
67	Morphologina	Hello, Mrs Old Witch. We need your help to fight the EVIL PREPOSITION MAGICIAN!		
68	Grandma	Is that little devil causing trouble again? Okay, I'll help you.		
X	Custom char	Thank you, Mrs Old Witch.	x	
69	Grandma	My name is not Old Witch! You can call me Grandma.		
70	Morphologina	O-kay.		
71	Grandma	Help me cook this magical preposition soup.		
72		Pass me the lizard from the jar.		
73		Let's add it to the soup!		
74		The lizard is in the jar on the floor.		
75a, b	TO – part.	I am helping a young witch... to get her school back.		
76a, b	IN	I live ...in the woods		
77a, b	ON	I have a hat... on my head.		
78a, b	OF	The colour... of my hair is grey.		
79a, b	IN	I like spiders ...in my soup.		
80a, b	WITH	We're cooking the soup ...with her friend.		
81a, b	FOR	The soup is... for fighting the EVIL PREPOSITION MAGICIAN.		
82a, b	OF	There is a lot ...of things in the soup.		
83a, b	WITH	She's mixing the soup... with a spoon.		
84a, b	ON	Oh no! There's soup ...on my T-shirt!		
85a, b	FOR	I paid a lot ...of money for that T-shirt.		
86a, b	TO – part.	I have... to get changed.		
87	Morphologina	Eww! Gross!		
88		Just a pinch of salt.		
89	Grandma	And now mix the soup!		
90		Great! Now bring me the spider that's on the chair.		
91		The spider is on the chair.		
92		Try again, dear.		
93		Now, I need a little bit of salt.		
94		The salt is in the bag on the floor.		

95		<i>The soup is ready! Take it with you. It will give you power to fight the EVIL PREPOSITION MAGICIAN!</i>		
96		<i>And take the broom! You can travel faster on it.</i>		
97	Morphologina	<i>Thank you for your help! Let's go!</i>		

SCENE 5: (map 03: shortcut)

x	Custom char	<i>This is Preposition Town. Let's go inside!</i>	x	
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SCENE 6: (map 06: Preposition Town) 12 gap-fills

98	Morphologina	<i>This town looks like a maze, but we must find our way through.</i>		
99		<i>How do I choose the right path? Do you know?</i>		
x	Custom char	<i>Choices: Try stepping on the grass. / I don't know.</i>	x	
100	Morphologina	<i>Okay! I'll give it a try!</i>		
101		<i>Oh, I know! I'll try stepping on the grass!</i>		
in	IN	<i>I'm... in Preposition town.</i>		
to	TO – part.	<i>I'm trying... to get through the town.</i>		
on	ON	<i>There's a fountain... on the square.</i>		
for	FOR	<i>I can throw a coin into the fountain... for good luck.</i>		
with	WITH	<i>The square... with the fountain is nice.</i>		
on	ON	<i>I will spend money... on my wish.</i>		
of	OF	<i>There is a statue... of an angel.</i>		
to	TO – prep.	<i>There is a church next... to the statue.</i>		
with	WITH	<i>There's a church... with a garden.</i>		
of	OF	<i>One... of the houses is a restaurant.</i>		
for	FOR	<i>We need to go... for a few more meters.</i>		
in	IN	<i>We'll be at school... in a few minutes!</i>		
102		<i>Look, a fountain! I want to throw a coin in the fountain!</i>		
x	Custom char	<i>Don't waste your money on it.</i>	x	
103	Morphologina	<i>I wish for a new hat!</i>		
x	Custom char	<i>I wish for... choices: luck /second breakfast / nothing.</i>	x	
104	Morphologina	<i>Finally!</i>		

SCENE 7: (map 07: broom adventure)

105	Morphologina	<i>My feet hurt...let's get on the broom Grandma gave us.</i>		
106		<i>Get on the broom, friend! It's faster than travelling on the school bus.</i>		
x	Custom char	<i>I'm scared of heights! I can go on foot.</i>	x	
107	Morphologina	<i>Okay, next time then.</i>		
108		<i>Whoa, the broom is so fast!</i>		
109		<i>Oh no, it's raining!</i>		
110		<i>It's so stormy! I can hardly hold onto the broom!</i>		
111		<i>It's no use, we have to go on foot.</i>		

SCENE 8: (map 08: cave) 12 gap-fills

x	Custom char	<i>And...we're lost.</i>	x	
112	Morphologina	<i>I thought that shortcuts were for saving time, not wasting it.</i>		
113		<i>It's so scary in here...</i>		

114		<i>Let's find a way out of here!</i>		
115		<i>What is that on the ground?</i>		
x	Custom char	<i>I think that's: Choices: a dead dragon / a dead dinosaur. It smells bad, don't step on it.</i>	x	
116	Morphologina	<i>Ew, I stepped on a bone!</i>		
117		<i>There are ghosts floating in the air!</i>		
x	Custom char	<i>Choices: AAAAArhg! / They don't care about us.</i>	x	
118	Morphologina	<i>Look, there are some goblets in the cave.</i>		
x	Custom char	<i>Maybe we can use them to open the door at the back of the cave.</i>	x	
119	Morphologina	<i>It's locked, there's no way we can open it.</i>		
x	Custom char	<i>What if we light up the goblets?</i>	x	
120	Ghosts	<i>We are the ghosts of lost travellers.</i>		
121a, b	IN	<i>We are locked... in this cave.</i>		
122a, b	OF	<i>We can't get out ...of this cave.</i>		
123a, b	TO – part.	<i>The EVIL PREPOSITION MAGICIAN used his magic... to trap us here.</i>		
124a, b	WITH	<i>You can free us... with your magic.</i>		
125a, b	FOR	<i>We thank you... for your help.</i>		
126a, b	ON	<i>There is a symbol...on the ground.</i>		
127a, b	WITH	<i>Light up the goblets ... with your magic wand.</i>		
128a, b	FOR	<i>We are waiting ...for you to set us free.</i>		
129a, b	OF	<i>There are fires, each... of a different colour.</i>		
130a, b	ON	<i>There are plants... on the walls.</i>		
131a, b	IN	<i>The door... in front of you is locked.</i>		
132a, b	TO – part.	<i>You have...to set us free.</i>		
133		<i>We are free! Thank you for your help!</i>		

SCENE 9: (map 09: in front of school)

134	Morphologina	<i>Our school bus is arriving!</i>		
135	Bus driver	<i>Alright, we're here! Everybody, get off the bus!</i>		
136		<i>School starts in a few minutes, kid. Hurry up!</i>		

SCENE 10: (map 10: school) 12 gap-fills

137	Teacher	<i>Good morning, Morphologina. Your friends are in the classroom.</i>		
138a, b		<i>The EVIL PREPOSITION MAGICIAN is in the library. He used his magic to control the other teachers.</i>		
139	Morphologina	<i>Don't worry, Mr Teacher, we are ready to fight for our school!</i>		
140	Teacher	<i>I feel bad for sending you kids to fight him...</i>		
141		<i>But he can't control children. You have a chance to win.</i>		
x	Custom char	<i>Leave it to us, Mr Teacher!</i>	x	
142	Clown	<i>Hahaha! Make me laugh and I'll join you!</i>		
143a, b	FOR Morpho	<i>Where do cows go... for fun? To the moo-vies.</i>		
144a, b	IN Morpho	<i>It's so hot ...in here.</i>		
145	Elsa	<i>Is it? I'm totally frozen.</i>		
146a, b	ON Morpho	<i>I saw Batman...on TV yesterday. Maybe he can help us?</i>		

147	Bat girl	<i>For the last time, Morphologina! I don't know Batman!</i>		
148	Fairy	<i>THE EVIL PREPOSITION MAGICIAN can fly. Do you think he's a fairy?</i>		
149a, b	OF Morpho	<i>Of course not!</i>		
150	Mermaid	<i>There is something fishy about the teachers...</i>		
151a, b	WITH Morphologina	<i>THE EVIL PREPOSITION MAGICIAN controls them... with his magic.</i>		
152	Morphologina	<i>Hey, Medusa, can you turn the EVIL PREPOSITION MAGICIAN into stone?</i>		
153a, b	FOR Medusa	<i>I have no time for that, I have to study... for my Hissstory test.</i>		
154a, b	IN Lady Skeleton	<i>The EVIL PREPOSITION MAGICIAN is bad. I can feel it... in my bones.</i>		
155a, b	TO – prep. Angel	<i>The EVIL PREPOSITION MAGICIAN is so bad, he won't go... to heaven.</i>		
156a, b	OF Morpho	<i>Devil? What is that on top...of your head?</i>		
157	Devil	<i>The things on top of my head are horns, of course.</i>		
158	Morphologina	<i>Oh...I meant the spider in your hair...</i>		
159	Devil	<i>Whaaat? Get it out!!!</i>		
160	Morphologina	<i>Reaper? Can you...maybe...</i>		
161a, b	ON Reaper	<i>I can't, his name is not written ...on my list.</i>		
162a, b, c, d	TO – part. Zombie	<i>The EVIL PREPOSITION MAGICIAN is so bad, I don't even want... to eat his brain.</i>		
163	Genie	<i>What do you wish for?</i>		
164a, b	WITH Morph	<i>I need to get to the library. Come... with me.</i>		
165	Genie	<i>Maybe something easier?</i>		
166	Morpho	<i>Uh, I want a house...with a swimming pool?</i>		
167	Genie	<i>Okay, let's go to the library.</i>		
168	Ogre	<i>Go away!</i>		
169	Morphologina	<i>What do we do?</i>		
x		<i>Let's talk to our classmates. /Kick that ogre's butt!</i>	x	
171	Morphologina	<i>You're right. Let's go!</i>		
172		<i>Are you sure? O-okay...</i>		
173		<i>We're taking our school back! Get out of the way!</i>		
174	Ogre	<i>You think you can fight me?! You die now!</i>		
x	Custom char	<i>I don't think so!</i>	x	
175	Ogre	<i>Ouch, ouch, ouch! Okay, you can pass!</i>		
176		<i>Leave me alone. Please.</i>		
177	PrepMagician	<i>I am the Evil PREPOSITION MAGICIAN! How did you get here?!</i>		
178	Morphologina	<i>We're taking our school back!... What is happening?</i>		

SCENE 11: (map 11: final fight 1) – jumping (4 gap-fills) town maze (4 gap-fills)

179	Morphologina	<i>Where are we?</i>		
180	PrepMagician	<i>You want your school back? You want to fight me? You can try! MUHAHAHA!</i>		
181a, b	TO – prep.	<i>You can't do anything ...to me!</i>		
182a, b	WITH	<i>I can do what I want... with your school!</i>		

183a, b	FOR	<i>I have news... for you. You cannot win!</i>		
184a, b	ON	<i>Don't waste your time... on trying to stop me.</i>		
185	Morphologina	<i>You talk too much!</i>		
of	OF	<i>I'm not scared... of the PREPOSITION MAGICIAN anymore!</i>		
with	WITH	<i>I can fight him... with my friends.</i>		
to	TO – part.	<i>We need...to stop him.</i>		
in	IN	<i>He can't stay... in our school.</i>		
x	Custom char	<i>Let's get out of here.</i>	x	

SCENE 12: (map 12: final fight 2) lighting goblets (4 gap-fills) cooking (4 gap-fills)

186	PrepMagician	<i>You can't win! You're just children!</i>		
187	Morphologina	<i>It's so dark in here.</i>		
x	Custom char	<i>What if we light up the goblets?</i>	x	
188a, b	OF	<i>We need a little bit ...of light.</i>		
189a, b	IN	<i>I can't see ...in the dark.</i>		
190a, b	FOR	<i>It's not easy ...for me to light the goblets.</i>		
191a, b	ON	<i>But I'm ...on my way out of here!</i>		
192	Morphologina	<i>I'm getting tired of this... and it's so cold in here!</i>		
x	Custom char	<i>Let's eat the soup grandma gave us.</i>	x	
193a, b	OF	<i>Grandma gave me a bowl ...of soup.</i>		
194a, b	IN	<i>There are weird things... in the soup.</i>		
195a, b	FOR	<i>Grandma said it is... for fighting the EVIL PREPOSITION MAGICIAN.</i>		
196a, b	TO – part.	<i>I don't want... to eat it!</i>		
87	Morphologina	<i>Eww! Gross!</i>		
x	Custom char	<i>Do you feel better?</i>	x	
197	Morphologina	<i>Yes, the soup is working! I feel great!</i>		
198	PrepMagician	<i>You! You can't win! I'm THE EVIL PREPOSITION MAGICIAN!</i>		
199	Morphologina	<i>And I'm Morphologina! I'm taking my school back!</i>		
200		<i>ABRACADABRA /Hear my magic charm / ABRACADABRA /You will do no harm!</i>		
198a	PrepMagician	<i>AAAAAARGH!!!</i>		
201	Morphologina	<i>Huh? The EVIL PREPOSITION MAGICIAN is a cat now.</i>		
202		<i>Well, at least our school is safe from him.</i>		
x	Custom char	<i>Choices: So cute! / I like dogs more.</i>	x	

SCENE 13: (map 13: happy ending)

203	Teacher	<i>Thank you for saving the school! You both get a medal for your bravery.</i>		
204	Mum	<i>I'm so proud of you, honey!</i>		
205	Morphologina	<i>Thank you, friend. You are the hero of this story.</i>		
x	Custom char	<i>Choices: Thank you, Morphologina. / I did all the hard work.</i>	x	
206	Morphologina	<i>Let's throw a party!</i>		
x		<i>GAME COMPLETE, CONGRATULATIONS, [name of the custom char] – Take a screenshot (PrtSc) and send it to your teacher.</i>	x	

207	Morphologina	<i>OPTIONAL: YAY! NO! OH NO! GOOD JOB! WELL DONE!</i>		
208	Morphologina	<i>TO, ON, WITH, IN, OF, FOR</i>		

Appendix 3: The results of the subjects

Table 6 Appendix 3

ID:	completed tasks in the game	pre-assessment (correct ans)		re-assessment (correct ans)	
		prepositions	prep : part to	prepositions	prep : part to
01	6/6	8	1:0	9	1:1
02	6/6	8	1:1	10	1:1
03	6/6	10	1:1	10	1:1
04	6/6	10	1:1	11	1:1
05	4/6	10	1:1	10	1:1
06	5/6	4	1:0	8	1:1
07	6/6	10	1:0	10	1:0
08	6/6	0	0:0	3	0:0
09	6/6	9	1:1	11	1:1
10	6/6	3	1:0	7	1:0
11	4/6	4	1:1	10	1:1
12	3/6	2	1:0	8	1:0
13	6/6	10	1:1	11	1:1
14	6/6	10	1:1	10	1:1
15	6/6	5	1:0	7	1:0
16	4/6	9	1:1	10	1:1
17	3/6	1	1:0	6	1:0
18	6/6	3	1:0	9	1:0
19	6/6	8	1:1	9	1:1
20	5/6	10	1:1	11	1:1
21	6/6	2	1:0	3	1:0
22	6/6	9	1:1	10	1:1
23	3/6	6	1:0	7	1:0
24	6/6	10	1:1	9	1:1

Appendix 4: The pre-assessment and re-assessment test

ASSESSMENT TEST:

NAME:

ID NUMBER:

- 1) There's a lot ____ things in the soup.
- 2) Anne is ____ (old) than her brother.
- 3) I have news ____ you.
- 4) She is nice, I like ____ (she).
- 5) I can't see ____ the dark.
- 6) Grandma gave me a bowl ____ soup.
- 7) I want a house ____ a swimming pool.
- 8) I am ____ (study) at the moment.
- 9) We need to walk ____ a few kilometres.
- 10) She's mixing the soup ____ a spoon.
- 11) I have a hat ____ my head.
- 12) ____ (do) he like chocolate?
- 13) We are ____ a forest.
- 14) We need ____ stop him.
- 15) I saw Batman ____ TV yesterday.
- 16) I'm going ____ school.