

BRNO UNIVERSITY OF TECHNOLOGY

VYSOKÉ UČENÍ TECHNICKÉ V BRNĚ

FACULTY OF ELECTRICAL ENGINEERING AND COMMUNICATION

FAKULTA ELEKTROTECHNIKY
A KOMUNIKAČNÍCH TECHNOLOGIÍ

DEPARTMENT OF FOREIGN LANGUAGES

ÚSTAV JAZYKŮ

ICT IN LANGUAGE EDUCATION IN UNIVERSITIES

INFORMAČNÍ A KOMUNIKAČNÍ TECHNOLOGIE V JAZYKOVÉM VZDĚLÁVÁNÍ NA VŠ

BACHELOR'S THESIS

BAKALÁŘSKÁ PRÁCE

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BRNO 2022

Bakalářská práce

bakalářský studijní obor **Angličtina v elektrotechnice a informatice**

Ústav jazyků

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Ročník: 3

Akademický rok: 2021/22

NÁZEV TÉMATU:

Informační a komunikační technologie v jazykovém vzdělávání na VŠ

POKyny PRO VYPRACOVÁNÍ:

Cílem práce je provést rešerši dostupné literatury a zdrojů, provést analýzu a identifikovat nejvhodnější a nejkvalitnější programy a (mobilní) aplikace pro podporu jazykového vzdělávání na VŠ.

DOPORUČENÁ LITERATURA:

Muñoz-Luna R. (Ed.), Taillefer L. (Ed.) (2018): Integrating Information and Communication Technologies in English for Specific Purposes (English Language Education Book 10), Springer, ISBN-13: 978-3319689258

Cañado P., L. M. (Ed.), Ráez Padilla J. (Ed.) (2014) Digital Competence Development in Higher Education: An International Perspective (Foreign Language Teaching in Europe Book 12), Peter Lang GmbH, Internationaler Verlag der Wissenschaften, ISBN-13: 978-3631638033

Termín zadání: 10.2.2022

Termín odevzdání: 31.5.2022

Vedoucí práce: Mgr. Pavel Sedláček

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předseda oborové rady

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Abstrakt

Předmětem této bakalářské práce je rešerše vhodných a kvalitních softwarových nástrojů, které mohou být použity jako podpůrný element v jazykovém vzdělávání na univerzitách. Rešerše se také zaměřila na softwarové řešení, které lze také použít jako parciální nebo komplexní náhradu prezenční výuky. Práce obsahuje úvod do problematiky, definici a rozdělení základních skupin softwarů a rešerši software s jejich detailním popisem.

Klíčová slova

Rešerše software, jazykové vzdělávání, software pro univerzitní jazykové vzdělávání

Abstract

The subject of this bachelor thesis is a search for suitable and high-quality software tools that can be used as a support element in language education in universities. The search also focused on software solutions that can also be used as a partial or complex replacement for classroom-based teaching. The thesis introduces the topic, definition and basic division of language learning software and software search with their detailed description.

Key words

Search of software, language education, software for language learning in universities

Šmarda, P. (2022). Informační a komunikační technologie v jazykovém vzdělávání na VŠ. Brno: Vysoké učení technické v Brně, Fakulta elektrotechniky a komunikačních technologií, Ústav jazyků. 53 s

Vedoucí bakalářské práce Mgr. Pavel Sedláček.

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V Brně dne 30.5.2022

.....

Pavel Šmarda

Poděkování

Rád bych poděkoval vedoucímu bakalářské práce Mgr. Pavlu Sedláčkovi za odbornou pomoc, kterou mi ochotně poskytoval. Dále bych rád poděkoval své rodině za trpělivost a podporu.

Table of contents

INTRODUCTION	8
1 PRACTICE IN DISTANCE LANGUAGE LEARNING	9
2 LANGUAGE ACQUISITION	11
3 THE CONVENIENCE OF ICT FOR LANGUAGE EDUCATION	12
4 INTRODUCTION TO THE SEARCH OF ICT SOFTWARE.....	13
4.1 THE BASIC DIVISION OF SOFTWARE.....	13
4.1.1 Vocabulary Adoption Software.....	13
4.1.2 Grammar learning Software	14
4.1.3 Phonetics learning Software	14
4.1.4 Combined Software	14
5 SEARCH OF ICT SOFTWARE	15
5.1 LYRICS TRAINING:	15
5.1.1 Introduction.....	15
5.1.2 Description.....	15
5.1.3 Useful features.....	16
5.1.4 Language acquisition	16
5.1.5 User interface:.....	17
5.1.6 Relevance for Language Education in Universities	18
5.2 DUOLINGO	19
5.2.1 Introduction.....	19
5.2.3 Description.....	19
5.2.4 Motivational programme.....	20
5.2.5 User interface.....	20
5.2.6 Relevance for Language Education in University.....	21
5.3 CINEMALINGUA	22
5.3.1 Introduction.....	22
5.3.2 Description.....	22
5.3.3 Word recognition.....	23
5.3.4 Put in order	23
5.3.5 Useful features.....	24
5.3.6 User interface.....	25
5.3.7 Relevance for Language Education in University.....	25
5.4 GRAMMARLY	26
5.4.1 Introduction.....	26
5.4.2 Description.....	26
5.4.3 Grammarly Premium.....	27
5.4.4 Artificial intelligence in Grammarly Premium.....	27
5.4.5 User Interface.....	29
5.4.6 Useful features.....	30
5.4.7 Relevance for Language Education in Universities	30
5.5 DYNED	32
5.5.1 Introduction.....	32
5.5.2 Description.....	32
5.5.3 Core learning principles	33
5.5.4 Teaching feedback.....	36
5.5.5 Relevance for Language Education in University.....	36

5.6 CLARITYENGLISH	37
5.6.1 <i>Introduction</i>	37
5.6.2 <i>Description</i>	37
5.6.3 <i>List of ClarityEnglish programs</i>	38
5.6.4 <i>Relevance for Language Education in Universities</i>	40
5.7 GOOGLE SCHOLAR.....	41
5.7.1 <i>Introduction</i>	41
5.7.2 <i>Description</i>	41
5.7.3 <i>Relevance for Language Education in Universities</i>	41
5.8 SANAKO.....	42
5.8.1 <i>Introduction</i>	42
5.8.2 <i>Description</i>	42
6 CONCLUSION	44
ROZŠÍŘENÝ ABSTRAKT	46
LIST OF REFERENCES	48
LIST OF FIGURES AND GRAPHS.....	52
LIST OF ABBREVIATIONS	53

Introduction

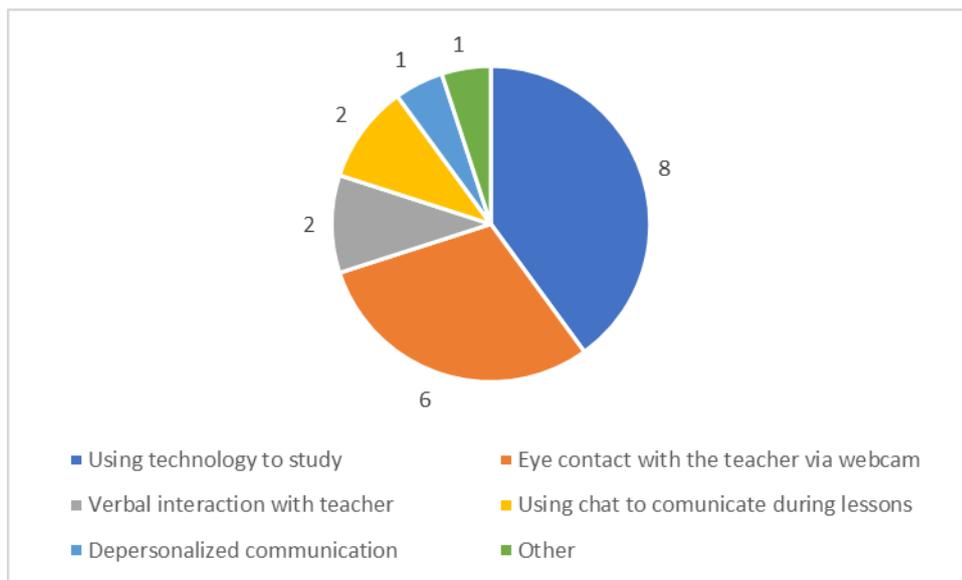
The topic of Information and Communication Technology in language education in universities is exceptionally current these days. For that reason, this study focuses on available software solutions and tools of such a category.

Language education is nowadays an essential part of studying programs in universities of any kind. In support of that, modern technology is widening the options for educating institutions to awaken students' interest in language education and, consequently, increase education quality. Therefore, it is vital to use software tools suitable for desired purposes, verified and dependable. This thesis is aimed specifically for such a purpose. It covers fundamental divisions of software and the following search. In addition, this study also touches on the topic of the language acquisition principle.

The foremost objective of this thesis is to search software with suitable use as a supporting element or complex education solutions for university language education. Furthermore, the objective is also introduce particular software from various viewpoints, e.g. user interface, model of use and the purpose of use. Finally, methods of the search were chosen concerning the searched topic. Available resources are primarily articles, studies, case studies, or thesis in an electronic form. To verify some ideas and thoughts, a search only for the purpose of this study was conducted on a representative sample of students who were part of distant teaching during the COVID-19 pandemic.

1 Practice in distance language learning

Recent years brought many people in front of very challenging times. Due to well-known reasons, the entire university education was moved to cyberspace. Such a situation required teaching and learning techniques that were not yet needed. As for the academic field, the challenge was to sustain an adequate level of education quality. One of the main problems was to find a suitable solution for distance learning that would affect students and teachers as little as possible. The usual solution consisted of an online teleconference between the teacher and students. For the purpose of this study, a sample amount of twenty students from the *Faculty of Arts at Masaryk University in Brno* in the field of English Language and Literature were asked what made the online seminars digestible and entertaining. The most common answer was "Using technology to study." The second most common answer was "Eye contact with the teacher via webcam". (See **graph 1**)



Graph 1 A sample amount of twenty students from the *Faculty of Arts at Masaryk University in Brno* in the field of English Language and Literature were asked what made the online seminars digestible and entertaining.

It can be roughly concluded that these most common answers are connected with a phenomenon already defined in an article of The University of North Carolina at Chapel Hill from 2020. Students tend to memorise, enjoy, and prefer things that they already

saw, heard, or witnessed. Such a phenomenon can be described as the *Link it* method of memorisation. (The University of North Carolina at Chapel Hill - 2020)

Students nowadays are naturally used to using their personal devices such as smartphones, laptops, or tablets as well as they are also used to maintaining eye contact when interacting with the teacher in seminars. Such facts can be applied as an advantageous way, or as a tool to make language education more motivational and more comfortable for students. For this purpose, the language learning software was developed.

Software meant for language learning is usually not the primary language knowledge and education source; instead, they are merely supportive elements in traditional forms of education. The ways in which they are able to support mentioned traditional forms of education will be discussed in the following chapters.

2 Language acquisition

As one of the viewpoints for analysis of the software in this study, the Language Acquisition theory was used. This topic has been intensely examined before by many linguists - e.g. Robin Campbell and Roger Wales - *The Study of Language Acquisition* (1970), Noam Chomsky - *Language and Mind* (1968). Fundamentally, two central hypotheses can be observed amongst linguists, and both of them are based on newborns' language acquisition but can also be used to the advantage of adults' language acquisition analysis. The first hypothesis approaches language acquisition as a predetermined phenomenon that is already rooted in every human from the beginning of existence, and the process of language learning is only a specification of the grammar, vocabulary and other rules underlying conventional language (Chomsky, 1968). Second is the 'empiricist' hypothesis " *which in its strongest form says that all knowledge comes from experience.*" (Campbell and Wales, 1970). The empiricist theory, according to Campbell and Wales, is the one that will be used as a scheme for the analysis of the contribution of a given software. Therefore the repetition of previously gained language knowledge will be an essential aspect of the analysis. Considering the well-known quote of Tony Robbins: "*repetition is the mother of learning.*" it can be concluded that multiple researchers would agree on the predominance of the second, empiricist, hypothesis. Core principles of language adoption are an immensely complex topic. Moreover, a complete and universal understanding of language adoption is, in a certain way, impossible due to each learner's wide variety of individuality.

3 The convenience of ICT for language education

In this chapter, the most relevant reasons for the use of Information and Communications Technology (ICT) in language education in universities will be listed and analysed.

Education in general and language education primarily is known for the need of individual attention to every student. Such need is a result of the fact that a student can make a large number of mistakes which are problematic to correct in larger study groups. Many ICT education software enables the teacher to analyse individual errors of the students and respond adequately to them. Following the idea mentioned in the previous chapter, ICT is a tool which makes education engaging, fresh and modern through its core principles and use of personal devices. Personal devices, such as mobile phones, tablets, or laptops, often cause procrastination or inattention to education. The use of ICT - personal devices for education in universities is a partial solution to this phenomenon.

4 Introduction to the search of ICT software

ICT is a general term that can cover various technological instruments of communication, starting with wireless networks such as the internet and ending with mobile phones or social networking. However, this study focuses on a group of software used for language learning. Hence, for better orientation in this topic, the group of language learning software was divided into the following categories according to the use or benefits of each SW.

4.1 The Basic Division of Software

Language education software can be divided into numerous categories; however, this study focuses primarily on the practical viewpoints of users. Since this study concerns the mentioned practical standpoint of view, some divisions will be considered irrelevant. An example of irrelevant divisions can be if the software is a browser application or a permanent application program.

Another criterion that will not be fully considered is the price category in which the respected pieces of software belong. In professional terms, freeware, or commercial software. On the other hand, the point of view that will be examined in depth is the added value and purpose of the specific SW. For each SW solution, the linguistic added value and specification of the language learning process were analysed. Therefore, four essential SW categories according to their purpose of use were created.

4.1.1 Vocabulary Adoption Software

Vocabulary learning software is primarily meant to extend students' vocabulary or practise its use in particular situations. It can be defined that one of many characteristics of such SW needs to be how well the student is stimulated, not only to remember particular words and their spelling, but also when to use them. This concerns, for example, synonym learning. For mildly advanced students, it is crucial to be able to tailor words into a specific style of spoken or written language.

4.1.2 Grammar learning Software

Software focused primarily on grammar will be called Grammar learning SW. Such software expects a certain level of vocabulary from the user, and therefore the student can be more focused on grammar training. It is prevalent that the user interface of SW, which is dedicated only to one learning aspect, includes helpful instruments which guide the user. In the case of grammar learning SW, it is usual to have a direct link to any form of a dictionary or thesaurus because the added value is in grammar and not the vocabulary aspect of language.

4.1.3 Phonetics learning Software

Phonetics is a branch of Linguistics. It studies the production and perception of sounds produced with the intention of transmitting verbal messages (O'Grady, 2013). In phonetics learning, it is necessary to practise both understanding and pronunciation. Exercises of understanding spoken or sang English are not especially rare among the spectrum of Phonetics learning SW. However, the pronunciation exercises are much more difficult to find because they require advanced coding and voice recognition on an extremely high level.

4.1.4 Combined Software

Software with learning approaches and techniques that are not focused only on one of the language aspects mentioned above are called Combined. By combining multiple approaches and learning techniques, new exercises can be formed, and if combined correctly and carefully, the overall benefit can be prominent.

5 Search of ICT software

The following chapters are focused on the search of individual learning tools in ICT. As this is an extensive topic for this study alone, only a few available and convenient SW were chosen to analyse. Fundamental parameters which will be inspected are the main properties of SW, affability of user interface and overall benefit in the language learning process. It is pervasive that the above-described Combined type of software is usually in the form of a complex software solution (see chapter 5.6), which means that the software platform offers multiple learning programs focused on numerous language aspects such as phonetics, grammar, and vocabulary. Therefore, such software can be used as a complex studying tool, almost supplementing present learning.

5.1 Lyrics Training:

5.1.1 Introduction

Lyrics Training is software that connects the theory of phonetics from school lessons with experience. As it can be assumed from the name of this app, the key is in training to understand spoken words from more or less famous songs, films, or serials. After the level of English is chosen, the *Lyrics Training* will begin. The student will fill in missing words in the transcript of the audio record based on what is heard. This learning method is very effective in narrowing the gap between school lessons and real-life English because the student will be able to recognise words from spoken English and yet spell them correctly.

5.1.2 Description

The *Lyrics Training* is an unpaid software accessible in the online browser version or the mobile app for iOS and Android. This study is fundamentally meant to search tools in the English learning spectrum, but it is worth mentioning that this platform also allows students to acquire phonetics and spelling skills in various languages such as Spanish, French, and even Japanese. This feature implies the possibility for trilingual learners to train in both foreign languages by simply switching the language of the media played.

5.1.3 Useful features

One of the finest features of this software is that the student can choose a specific type of media to learn the language. One of the examples could be that a student can pick their favourite music style or artist and let the music make their learning time enjoyable. Other options include filling in missing words from commented documentaries, TV series, or dialogues in films.

Another practical feature of this learning software is a special button to reverse the video if one accidentally misses a word. The optimisation of this feature is on an excellent level. The developers of this application divided every video into logical parts. Therefore, by pressing this functional button, a student will be sent back to the previous sentence or verse of the song.

5.1.4 Language acquisition

According to the Language Acquisition Method of analysis, the *Lyrics Training* software is not using the repetitive method of revision to the degree which would be suitable for a long term, deep language studying. The process of repetition is not a direct part of this software language learning method; however, it can be artificially induced by choosing the same study material again. (Stemmer, 2015)

Language variations, specifically the dialect - accent, are a common cause of overhearing the meaning. From the perspective of individual motivation for self-study, this is not the optimal circumstance and can lead to frustration. However, the authentic spoken word also has many advantages, one described by Hannah Ruch from the University of Zurich. Hanna Ruch has stated in her study from 2018 that "*...the process of dialect identification and the phonetic cues listeners use to identify someone's regional origin.*" It is well known that regional language variations, such as accents, can cause language beginners many hard to comprehend situations. From a linguistic standpoint of view, this software, therefore, in a certain way, teaches the student multiple language variations.

5.1.5 User interface:

Experts agree that visual calm and clarity are crucial for the user, especially when the user is supposed to be learning. Even if someone uses an interface for the first time, certain elements can still be familiar. Real-life metaphors can be used to communicate meaning. (C. A. D'H Gough; R. Green; M. Billinghamurst, 2014). If the user is presented with an already known visual pattern, the cognitive adoption is highly likely to be successful. The *Lyrics Training* user interface is very well developed in both the browser and mobile app versions. There are no disturbing visuals on the main menu or submenu used for the selection of videos. Additionally the “studying environment” is also very well made. One of the few aspects that is a minor disadvantage of this user interface is the blue colour. The topic of blue light from screens of personal devices has become questionable recently. As stated in Harvard Health Letter from 2012:” *Light at night is dangerous to one's health, and exposure to blue light emitted by electronics and energy-efficient lightbulbs may be especially so.*” Unfortunately, the *Lyrics Training* user interface is full of blue colour, which could negatively affect late-night studies. (See **figure 1**) It is widespread for students to use their personal devices before sleep. According to a study from Loughborough University conducted by Dr Jayne Trickett and Dr Camilla Gilmore, students can remember the information learned before sleep better than students who learned the same information in the morning. *Lyrics Training* has a working environment made predominantly from white and blue colours, which is very eye-stricken, especially in the evening when the students have the chance to learn as effectively as they can.

5.1.6 Relevance for Language Education in Universities

Unfortunate circumstances can occur if the student is unaware of the language variations subordination to the standard language.

For this reason, this software is suitable for language education in universities to the degree in which it will only be used as support to the conventional learning programme. In addition, the use of this software can positively affect the cognitive recognition of words in spoken English, disregarding the language variation - dialect, register, accent

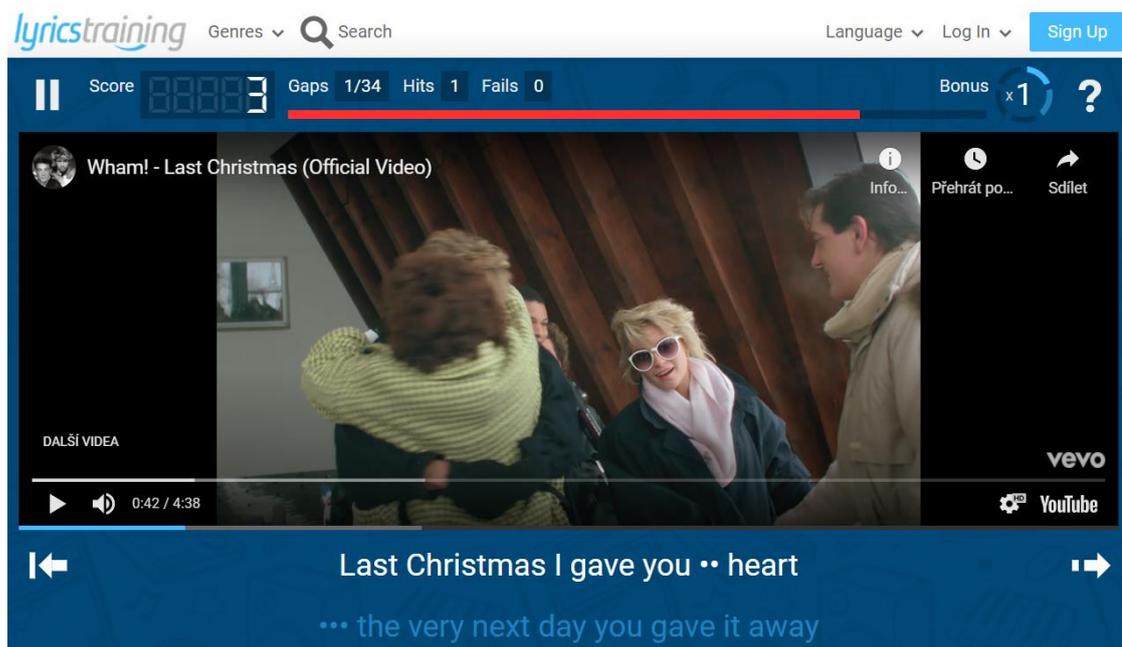


Figure 1 Workplace in the *Lyrics Training* browser version of the software
(Copyright - LyricsTraining.com)

5.2 Duolingo

5.2.1 Introduction

Duolingo is a language-learning mobile app and website that uses a freemium model, which means that the basic version is free. However, *Duolingo* also offers premium service for a fee. In 2020 *Duolingo* has celebrated an immense success of five hundred million downloads cumulatively since 2013. This number may speak for itself in terms of popularity. However, an even more significant indicator than the number of downloads is the mobile app rating on *Google Play* which reaches 92% of recommendations. Furthermore, both the app and the browser versions are localised, not only in Czech, but also in another twenty languages, making it very easy for beginners to start their first steps.

5.2.3 Description

Duolingo is software based on intuitiveness and straight forward approach. After the initial entry test, the user is categorised according to the skill level. *Duolingo* is an innovative SW that combines traditional and innovative teaching or learning techniques. An example of a traditional technique can be a simple passive or active translation. The users are presented with a sentence, and they have to choose from offered words and therefore compose a structurally correct sentence. This applies to both passive and active translation.

The voice recognition feature is an example of an innovative learning technique in this app. The app presents users with a sentence record, and their task is to translate the sentence. The user is then required to say the translation aloud. After this, the system recognises if the translation and pronunciation were correct or not. The feature of voice recognition may also be used in many other helpful forms.

The examples mentioned above of learning and teaching techniques used in this app indicate that the *Duolingo* app should belong to the Combined category of software. Its primary purpose is to train users in vocabulary, grammar, and phonetics. Apart from the

main functions, it also features a motivational programme designed to support and further enhance the user experience.

5.2.4 Motivational programme

Students are rewarded for completing the exercise with points or experiences. According to the total amount of such evaluation, they are placed in the rank list of all other users. Apart from that, the user can obtain gems used to unlock specific features during exercises or daily events, not in other ways available. Such gems can also be purchased for real money, unlocking mentioned features quicker or immediately for impatient users. This principle corresponds with the beforementioned freemium model. From time to time, the software gives the user a small sample of the premium features such as unlimited Hearts, which are used as a unit of tries that a student can make per day. If the maximum number of five mistakes per day is considered, it can be concluded that the user will be soon tired of waiting another full day to have hearts refilled and continue training.

Motivational aspect of the *Duolingo Plus*, as the premium version is called, is access to the app without any commercial advertising. Nowadays, it is a big trend to overfill any virtual space with commercial advertising, making the working environment very visually noisy and hard to focus on essential information. Very often solution is to offer a user a paid version of the used SW, website, et cetera, and consequently lose chains of the visual smog. Unfortunately, this is also applied in *Duolingo*.

5.2.5 User interface

The user interface of *Duolingo* is on a satisfactory level. It is more than clear that professionals made the visual part of the user interface because colours are not eye-stricken, buttons are big and synoptic. The main menu naturally guides a user with no interest to be submerged into complicated settings to proceed to the training.

On the other hand, for more demanding users, *Duolingo* can offer a wider variety of settings directly for the "learning process" or, for example, for the type of notification that the user wants to be notified with. In addition to this, the user can choose the type of exercises which will not occur in the learning session. For example, users can forbid speaking exercises, listening exercises or both of them. **Figure 2** shows the main menu on the browser version of *Duolingo*; however, the mobile app shares most of the similarities, and its design is in principle identical.

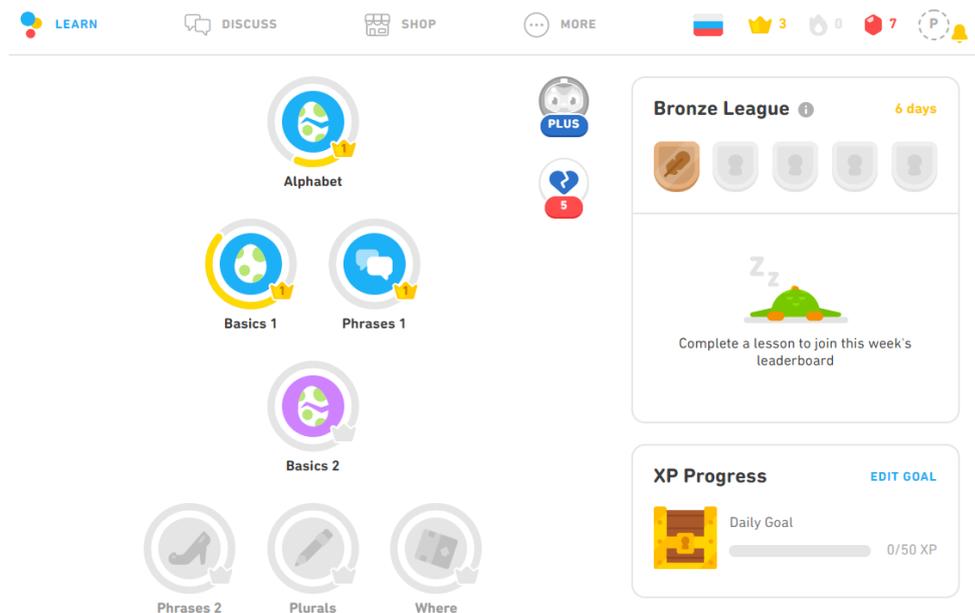


Figure 2 The user interface of *Duolingo* main menu – browser version (Copyright - duolingo.com)

5.2.6 Relevance for Language Education in University

A renowned researcher from the Department of Psychology and Logopedics at the University of Helsinki, Lilli Kimppa, introduced a study in which she describes the importance of repetition of gained language knowledge. "*Even short repetitive exposure to novel words induced a rapid neural response increase that is suggested to manifest memory-trace formation.*" (Kimppa, 2017) *Duolingo* offers university students an acceptable way to enlarge their active vocabulary, grammar and phonetic skill and sustain their level for a certain period of time through *Duolingo's* interactive exercises. Therefore this software is not suitable for direct use in language seminars but can offer excellent learning support outside school activities.

5.3 CinemaLingua

5.3.1 Introduction

CinemaLingua is an app and browser site which combines the common phenomenon of procrastinating with phonetics and vocabulary learning. The term procrastination is commonly used to denote the delay in essential activities such as language learning. (Morelli, 2008; Schmitt, 2008; Letham, 2004). Whatever the kind of procrastination is, however, it slows down the performance of students, making them careless, lazy, passive and academically stagnant. (Irshad Hussaina 2010; Sarwat Sultanb 2010). *CinemaLingua* is a unique tool that allows students to transform unhealthy habits of procrastination into productive and effective time.

5.3.2 Description

CinemaLingua belongs to the category of paid software, however, there is also a possibility of free trials, which will give the user a sample of the *CinemaLingua* learning methods. If the year license of this SW is bought, the price for one month of use is approximately 2.7 Euros.

The fundamental principle of *CinemaLingua* lies in the practice of understanding the spoken word in the least uncomfortable way possible. It is a widespread phenomenon that a student procrastinates by watching TV shows or videos on any social media platform. *CinemaLingua* uses the advantage of the students already existing interest in a medium through which the knowledge is transferred.

The student can choose the type/genre of video played, and, therefore, the student's motivation is very likely to be increased. After a specific video is chosen, the student is introduced to the whole record. While the video is playing, the possibility of viewing real-time translation into Czech or English transcript is present to increase the probability of correct understanding. After the whole recording is watched, a series of language exercises follow. For the facts mentioned above, the *CinemaLingua* will be categorised as a Combined learning software as it stimulates phonetics learning and emphasises the importance of word order patterns or translations of particular phrases.

For the purpose of this search, only a representative sample of two exercises and activities from *CinemaLingua* were chosen to analyse.

5.3.3 Word recognition

The first of the abovementioned sample exercises is the *word recognition* exercise. The record of chosen video is played once again, and the student's task is to *catch* words or phrases in the text. The student has to follow the spoken word carefully and *catch* particular words or phrases in the video by clicking on the icon at the precise moment when the word or phrase is said in the video. **Figure 3** shows that the icons will turn red if the student misses the proper time. On the other hand, if the student caught the phrase or word correctly, the icon would turn green.

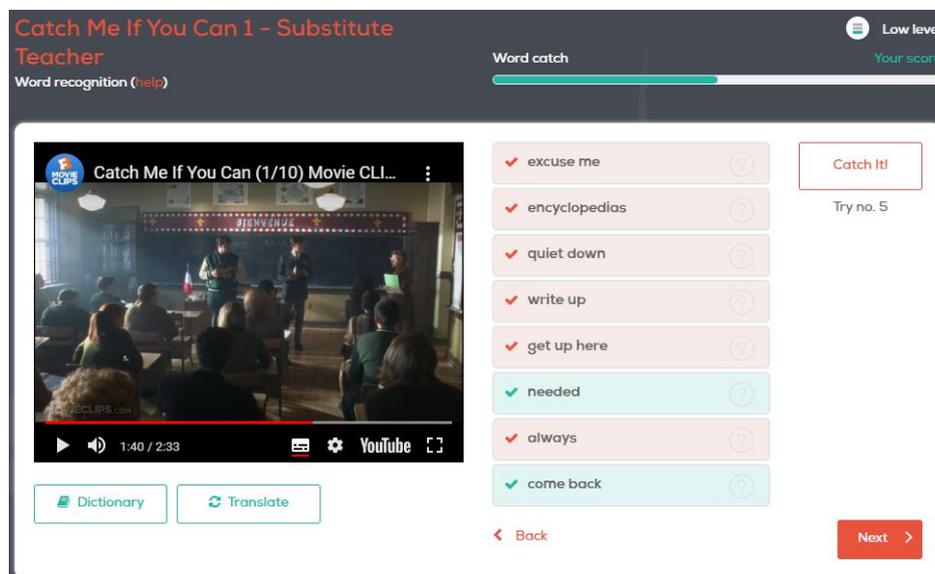


Figure 3 The user interface of *CinemaLingua* while practising the word recognition exercise.
(Copyright - CinemaLingua.com)

5.3.4 Put in order

Put in order is the name of the second exercise, which is more complex than the *Catch* exercises. Not only are the users required to *catch* phrases in spoken word, but they are additionally required to put such phrases in the correct order. The record can be played multiple times during the whole exercise if one try is insufficient to fulfil the task. As shown in **figure 4**, the scheme and graphic design are similar to *catch* exercises, making it easy for students to orientate and understand the principle.

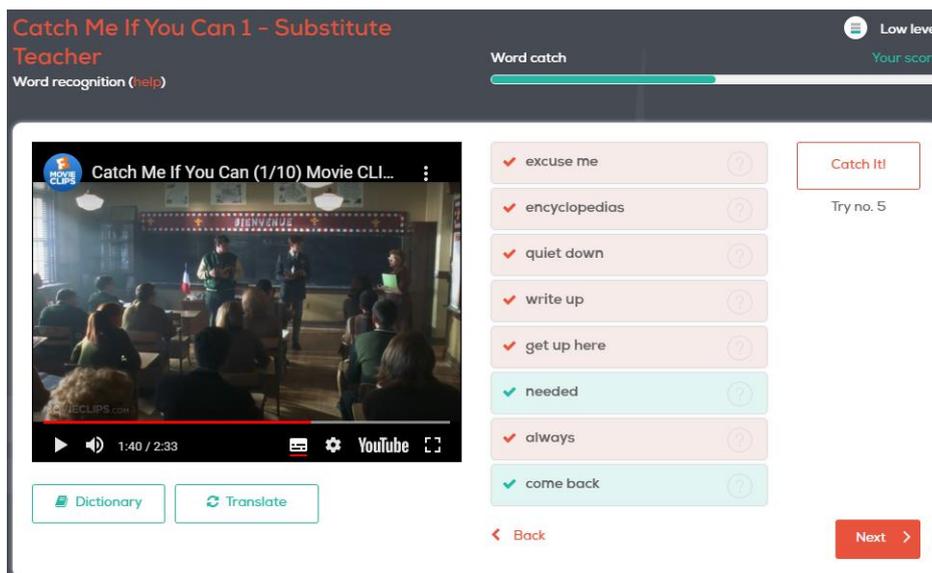


Figure 4 The user interface of *CinemaLingua* while practising the Put in order exercise
(Copyright - CinemaLingua.com)

5.3.5 Useful features

CinemaLingua fundamentally relies on the simplicity of exercises and design, however, this SW offers various advanced options for demanding users. One of such options is to track user's performance during exercises. The quality of user's performance is measured on a relative and absolute scale and can be analysed after each exercise is finished. The absolute scale includes the number of given questions, made mistakes, correct answers and how many times the students used the *hint*. The relative scale shows the percentage correctness of the user's answers regardless of the *hints* given during the training. Such relative measures might be, in some circumstances, misleading.

Another helpful feature of this software is the presence of two buttons accessible at any moment while practising. One of such buttons is the direct link to *Google Translator*. In addition to this, it is essential to mention that usage of this button is not considered a *hint* and, therefore, will not be added to the abovementioned absolute scale of the user's performance. The second button is a link to *The Online Macmillan Dictionary*, which explains the meaning of the searched word and shows examples of the use of the

particular word in sentences or phrases. Again, as in the previous case, usage of this button is not considered *a hint* and is not added to the absolute scale of performance.

5.3.6 User interface

The user interface of the *CinemaLingua* was presumably made to stimulate the users' attention exclusively to the subject of exercises. As some websites are using the phenomenon of distraction by side banners and multiple text sections on the whole screen, the developers of the *CinemaLingua* probably used this as a guide to avoiding user's distractions. Consequently, the exercise environment is synoptic and without any unnecessary information, which would lead to distraction of the user's attention. Another convenient feature is the *CinemaLingua* user interface on personal computers. On larger screens, the visualisation of the exercise environment becomes significantly divided from the edges of the screen, resulting in a large section of free space filled only with dark grey colour. According to the search of this study, this is a significant design element that most users appreciate.

5.3.7 Relevance for Language Education in University

CinemaLingua is software that cannot be used as a direct component of university language seminars. However, as part of higher language education is the ability to understand fluent spoken English, *CinemaLingua* can enhance student's skills in such activity. Moreover, exercises are focused on practical passive use of phonetic and semantic aspects of the spoken word. Therefore, *CinemaLingua* can serve as home preparation or continuous stimulation for not only phonetics learning in a very intuitive and, for many students, attractive way.

5.4 Grammarly

5.4.1 Introduction

Grammarly is SW which belongs to the Grammar leaning SW category. Accessibility of this SW is possible on mobile phones and personal computers. *Grammarly* is software that works as an interactive tool, automatically correcting user's mistakes in word order, grammar, misspelling, punctuation or style, and many other aspects of correct writing. Regarding the financial policy of *Grammarly*, it uses the freemium model of use (see chapter 5.2.1). The demo version of this SW is for purposes of not overly demanding users very satisfactory. A variety of setting options are available in the free version, including style setting, type of delivery or measure of the clarity of the text.

It is not standard among SW reaching the quality of *Grammarly* to offer time-unlimited free trials without any form of third-party advertisement. The aspect in which the paid version of this software differs from the unpaid is the absolute number of suggestions given. The topic of features of free and paid versions of *Grammarly* will be further analysed in the following chapters.

5.4.2 Description

Grammarly can be used in two general ways. Firstly, it can be used as a browser extension, which helps the user with daily writing on social media or with formal communication via email. *Grammarly* automatically corrects misspelling and punctuation errors while any text is written in the browser, however the total number of possible settings limits the use of this browser extension. Secondly, *Grammarly* can be used as an online word processing software. The purpose of such SW is to edit or enhance multiple aspects of written texts. As opposed to the abovementioned browser extension, this version allows a wider variety of settings and corrections. As this study concerns software for university use, this chapter will further focus exclusively on the version of word processing SW of *Grammarly*. In most cases, the browser extension is not suitable for language learning in universities due to the scarcity of settings.

5.4.3 Grammarly Premium

The beforementioned freemium model of use implies the existence of paid/full version of *Grammarly* software which will be further profoundly analysed. *Grammarly Premium* offers the most suitable approach for the sole purposes of university education and language learning. The cost of *Premium* services of *Grammarly* depends on the absolute number of licenses bought. If only one license for a single year of *Grammarly Premium* is bought, the price is approximately 10.6 Euros. Such a license could be installed on five devices simultaneously.

Grammarly provides the user with a library of documents in which the SW automatically backups all text written after every word is finished. After a new document is uploaded or created directly in the *Grammarly* interface, users' preferences and goals of text parameters are set. As shown in **figure 5**, the user can select the type of audience, level of text formality, the domain of use. These are the essential information for the AI, which will later work as an intuitive dictionary and thesaurus according to the settings of such required parameters. As *Grammarly* names them, experimental parameters which are present only in *Grammarly Premium* can be set in addition: tone and intention of the text.

5.4.4 Artificial intelligence in Grammarly Premium

According to software engineer and founder of *TechTalks*, Ben Dickson, understanding and processing natural language are among the most challenging areas of AI. As a result, many companies have engaged in ambitious AI-based language projects. However, a considerable number of them have failed miserably for not having considered the limits of current AI technologies.

Grammarly has implied the deep learning algorithm, which helps the user target the set writing style. Yann LeCun, Yoshua Bengio, and Geoffrey Hinton published their article in 2015 in which they stated that: "*Deep learning allows computational models composed of multiple processing layers to learn representations of data with multiple levels of abstraction.*"

It can also be defined that the *Deep learning algorithm* in *Grammarly* processes every problem in context, and if possible, the algorithm draws a conclusion that leads to widening the context of understanding for future tasks. Moreover, gained knowledge and experience of such an algorithm is shared among all users, resulting in constant improvement of context understanding. It can be observed that context understanding is the common problematic phenomenon of many translating or grammar assisting software. Using the Deep learning algorithm, *Grammarly* partly eliminates such phenomenon.

The AI suggestions are also present in the unpaid version of *Grammarly*; however, the user is not informed about the complete description of all problems which occurred and therefore is unable to correct them properly. As presented in **figure 6**, the user is only informed that some problem has occurred in a phrase or sentence. Such a problem is only highlighted by underlining.

As opposed to the unpaid version, *Grammarly Premium* provides the user with a detailed description of the problem and proposes a solution with an explanation. In both versions, the communication channel between the user and the AI assistant is impersonal and narrowed only to the plane of functionality. The user communicates with the assistant only through the above-discussed suggestions.

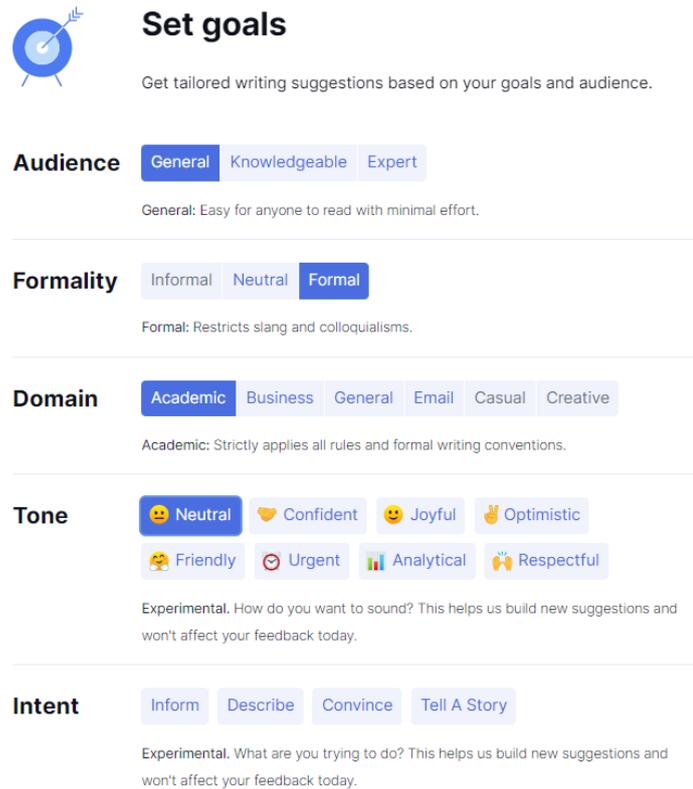


Figure 5 List of possible settings in *Grammarly* text editor (Copyright - Grammarly.com)

5.4.5 User Interface

The user interface of *Grammarly* is self-explanatory and minimalistic. The usual form of the main menu, often present in other software, is missing. Instead, the main page consists abovementioned library of user's documents with an uncomplicated side panel offering possibilities of options. The primary workplace is introduced after a new document is created or a recent one is reopened. The workplace consists of two main parts. The left part is devoted to text writing and editing (see **figure 6**). The right part is dedicated to suggestions and statistics of parameters of text. Such clear visual division of the workplace usually supports effective working. Icons used for graphical text editing are located in the lower part of the working environment. The visual format of such icons is very intuitive for most users because of their visual similarity to those used in classical text editing software like *MS Word* (see **figure 7**).

5.4.6 Useful features

An exceptionally useful feature of *Grammarly* is the possibility to inspect the measure, how long it would take for the speaker to read text written. In the lower part of the workplace, the submenu also shows other text parameters, as presented in **figure 8**.

Another convenient feature is the online thesaurus and dictionary combined. A list of synonyms will appear if the user double-clicks on any word in the text. By doing so, *Grammarly AI assistant* will offer suggested synonyms with additional information on the context, and where are such words usually used. The AI chooses the synonyms offered in the list according to multiple aspects. Some of the mentioned aspects are the pre-set style of the text or the use of some words in previous sentences.

5.4.7 Relevance for Language Education in Universities

Grammarly is not software which would be used as a primary tool for language acquisition. Instead, this software can be used to enhance students' awareness of diverse types of mistakes in written texts. As one of the requirements for higher language education is the students' ability to compose grammatically correct texts, *Grammarly* can be used to reinforce students' confidence and practical knowledge in such output.

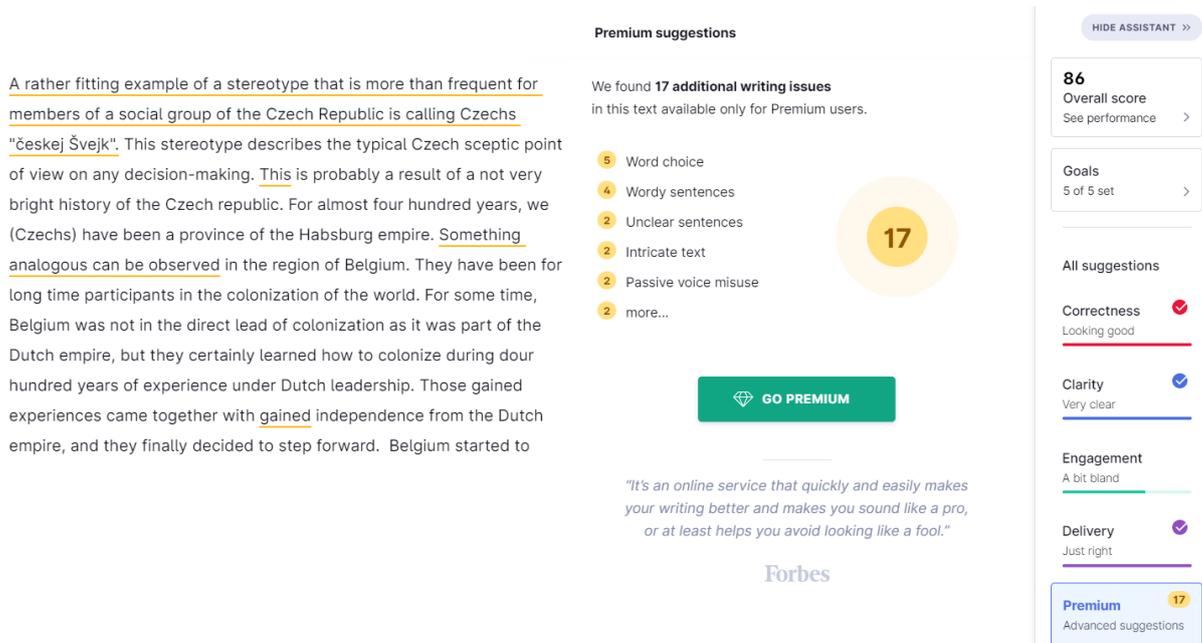


Figure 6 Design of working environment of *Grammarly* including highlighted suggestions of unpaid version. (Copyright - Grammarly.com)



Figure 7 Design of icons in *Grammarly* text editing submenu (Copyright - Grammarly.com)

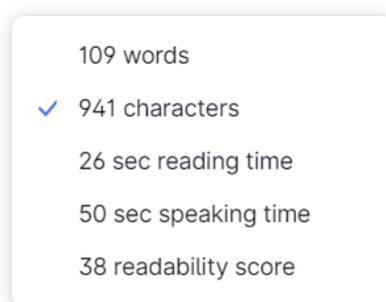


Figure 8 List of additional useful information about text in *Grammarly* submenu. (Copyright - Grammarly.com)

5.5 DynEd

5.5.1 Introduction

As presented on the company's web page, *DynEd* is the world's leading provider of English language learning software, and its courseware is the most highly awarded in the field (dyned.com, 2022). As evidence of such a statement, the company presents many awards and proofs of their software quality, one of which is the ECC (E-Learning Courseware Certification) granted by the ASTD (American Society for Training and Development). "*DynEd is the first e-learning company to earn ECC standing, which designates DynEd's BEAS (Business English Advantage Series) as the highest quality content and technology for training worldwide.*" (dyned.com/list-of-award, 2022)

5.5.2 Description

DynEd is a language learning SW designed to suit learners according to their language level, instead of other software, usually developed purposefully in one version of language level. Such a version is commonly assumed to be in use for all skill levels of learners, which is not the case with *DynEd*. An example and representation of such a statement is *Grammarly*. Although *Grammarly* allows for setting the goals of the written work (Audience, Formality, Domain, and Intent), it is not feasible to specify the language level suitability for a particular user. Instead, *DynEd* proudly points out that the pre-set algorithms or supervisors in the form of language teachers can fully adjust every course language level according to a student's skill set.

Under the auspices of *DynEd*, four basic categories of courses exist. *DynEd for Corporations*, *DynEd for Schools*, *DynEd for Individuals* and *DynEd for Universities*. Only *DynEd for Universities* will be further analysed in the following chapters, as this thesis is focused on the university's language learning software.

5.5.3 Core learning principles

Six core principles are followed by *DynEd*, and such principles are underlying *DynEd's* Language Learning Theory, therefore, are part of their learning philosophy and procedures. Core learning principles are described below.

Language as a Skill

"DynEd approaches language as a skill, not a subject, and like other skills it is best developed through repetitive practice." (dynedeurope.com/dyned-for-universities/core-principles-for-universities, 2022) According to respected language teacher Andrew Weiler, there is a significant difference between repetition and mindful repetition. As he stated in an article on his website from January 5, 2016, it is not as important to listen and repeat as knowing what is heard and repeated. The above written official statement of *DynEd* is confirmed by the theory of Weiler (Weiler, 2016). Weiler's theory is also applicable to the whole *DynEds* Language Learning Theory as described below.

Listening and Speaking Come First

DynEds teaching approach is predominantly focused on the aural and oral skills facilitation. As *DynEd* developers state: *"Development of listening and speaking skills should precede reading and writing skills in a four-skills path."* (dynedeurope.com/dyned-for-universities/core-principles-for-universities, 2022) They justify this particular approach by stating that a young child also learns to speak first when learning the language.

Spiral Syllabus

The spiral syllabus is a *DynEds* concept that directly follows the abovementioned Weilers theory. Long-term vocabulary acquisition is achieved by nonlinear spiral

Recursive Hierarchical Recognition language sequence. The concept can also be represented by a pyramidal scheme - the student learns by using before learned vocabulary.

Selective Memory

Selective memory is a phenomenon that can be used to the advantage of efficient learning. It is a prominent advantage of the *DynEds* algorithm that it works with student's faults in a way that tries to analyse the type of mistake and its cause. If the *selective memory* pattern is recognised, the algorithm tries to compensate for such a phenomenon. (collinsdictionary.com/dictionary/english/selective-memory, 2022)

Pattern Recognition

In the previous point, the term *pattern recognition* was mentioned. It is known that *pattern recognition* is a very general term, but for the purpose of this thesis, it is taken from a linguistic standpoint of view. In English and also in every language, specific patterns are fundamental for the creation and use of the language. Therefore, being aware of such patterns to the maximum extent is, in a way, the definition of correct language usage. Moreover, finding such patterns familiar, recognising them, or comprehending them is the goal of the *DynEds* algorithms as, for previously mentioned reasons, it is an essential part of an approach to language learning.

Temporal Tension

Finally, yet importantly, the last core concept of *DynEds* education principle is called *Temporal Tension*. The awareness of *DynEds* developers was also dedicated to a specific group of learners, commonly called false beginners. According to Oxford Learners Dictionary, a false beginner is "*a person who has a basic knowledge of a*

language but has started to study it again from the beginning." Such a person or an older learner is likely to slip into purely textual knowledge with no connection to active or passive phonetics when educated in the conventional way of passive learning typical for mentioned types of learners. *DynEd* uses the principle of temporal tension to stimulate word acquisition principles and correct passive and active phonetics skills. The founder and long-time president of *DynEd International*, Lance Knowles stated: "*Once students are able to listen to and repeat the entire sentence – with confidence and relative fluency – they can begin to look at the text for confirmation. This provides another form of repetition, and additional orthographic input, which reinforces the memory.*" (dyned.com/media-library/teacher-resources/guides, 2022) Insight into the learning principle of temporal tension is summed up by this quotation.

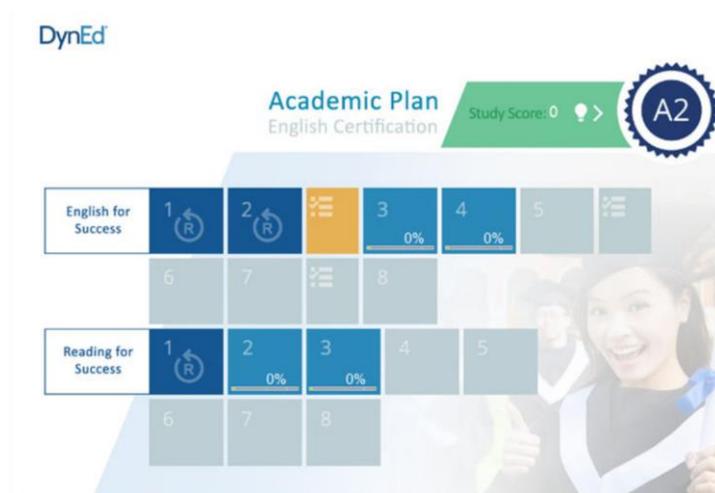


Figure 9 Students menu in DynEd (Copyright - dyned.com)

5.5.4 Teaching feedback

One of the most critical aspects of teaching is the teaching feedback and, consequently, feedback on students' efforts. As Dana Gray, EL Program Coordinator for Dixie Unified School, commented on the *DynEd* feedback for teachers: " *Records option gives teachers instant feedback and clear, easy to read graphs that are helpful.*" (dyned.com/case-studies/, 2021) Accordingly, *DynEd* allows the teacher to have a clear overview of the students' performance plotted in time. Regarding the learning for students, the feedback is progressively changing with the learners' language skill level; thus, with each advancing level, the feedback is more detailed and demanding. (Gökhan BAŞ, 2010)

5.5.5 Relevance for Language Education in University

DynEd is a software tool that can be used as partial support for university language education. Its main beneficence lies in well-thought learning principles (see chapter 5.5.3.), which contribute to proper language acquisition. The content of many programs in *DynEd* offer is focused on academic and technical problematics, such as describing mathematical problems, graphs, or presentation skills.

5.6 ClarityEnglish

5.6.1 Introduction

ClarityEnglish is a renowned publisher of English Learning Software. Since the year 1992, their programs "...helped students in specific language areas: grammar, reading, writing, pronunciation, study skills and IELTS." (LinkedIn, ClarityEnglish, 2022). The quality and convenience of their software are supported by many case studies from the entire world, one of which was published by the Higher Colleges of Technology in the United Arab Emirates. The case study states that "*from the community of more than 18,000 students and almost 2,000 staff based on 17 campuses throughout the United Arab Emirates (UAE) — the largest higher education institution in the UAE - approximately 10 000 active users are using a version of ClarityEnglish software.*" (clarityenglish.com/aboutus/, 2022)

Many other prestigious institutions (e.g. Université de Nice Sophia Antipolis, University of Sussex, Newcastle University) are active users of *ClarityEnglish* software tools. Such fact can be used as a measure of convenience and suitability for University Language Education.

5.6.2 Description

The core concept of the *ClarityEnglish* approach is that its products can be used for a wide variety of purposes. There are nine leading products which are all rated according to the Common European Framework of Reference for Languages. As their business plan expects, not every language learner knows on which precise level of the Common European Framework of Reference for Languages he/she is. *ClarityEnglish*, for that reason, also offers the *Dynamic Placement Test*, which will determine the user CEFR level not only with the level representations (A1, A2, B1, B2, C1, C2) but also with a precise numeric score. In addition, according to *ClarityEnglish* developers, such a test is also suitable for mass testing in universities. "*Leading universities around the world have found they can test an intake of 2 000 students in a single morning: a significant saving in time, cost and admin.*" The following chapter introduces the program list of the most relevant programs for Language Education in Universities and their brief description. (dynamicplacementtest.com, 2022)

5.6.3 List of ClarityEnglish programs

Road To IELTS

Road to IELTS is a preparation program for The International English Language Testing System exam consisting of four key elements. The first element is the introductory eBook which introduces each paper and clarifies the purpose of the exercise. The second element includes Advice and Tutorial Videos with experts characterising the most convenient preparation strategies for the IELTS exam. The third element is named Practise Zone, correspondingly to its principle. Candidates practise a wide variety of question types, leading to the final, fourth element - Test Practise allowing the candidates to replicate the test experience with mock papers. The program *Road to IELTS* includes more than three hundred interactive exercises, thirteen videos with tips and lessons, and forty practice tests.

Active Reading

Active Reading is a programme developed to present texts relevant to real-life textual interaction in English. The program helps users learn crucial reading skills such as predicting, vocab strategies, skimming, scanning, or using layout to improve orientation in the semantics of English texts by various exercises focused on given problematics.

Tense Buster

ClarityEnglish developers claim that the *Tense Buster* is *Clarity's* most popular program. Tense buster is a program helping ESL learners (English as Second Language) successfully adopt thirty-three key areas of English grammar, divided into five structural levels according to CEFR.

Study Skills Success

Study Skill Success is a programme focused on academic English language. During the course, the students will develop skills in the field of academic writing, such as citing sources, evaluating evidence, avoiding plagiarism, or eliminating grammar errors. According to the presentation brochure of *ClarityGuide*, among other skills developed

by students during this course, belongs, for example, the ability to evaluate data in seminars and reports, taking notes or exam preparations.

Clear Pronunciation

As pronunciation is an essential part of language knowledge and practice, *ClarityEnglish* offers two programs dedicated to the pronunciation of three basic pronunciation models - Australian, British, and North American pronunciation models. The first program, named *Clear Pronunciation 1*, covers the pronunciation of fundamental elements of English language sounds such as vowels, consonants, and diphthongs. The second program, *Clear Pronunciation 2*, covers the topic of word stress, sentence stress, consonant clusters, connected speech and intonation.

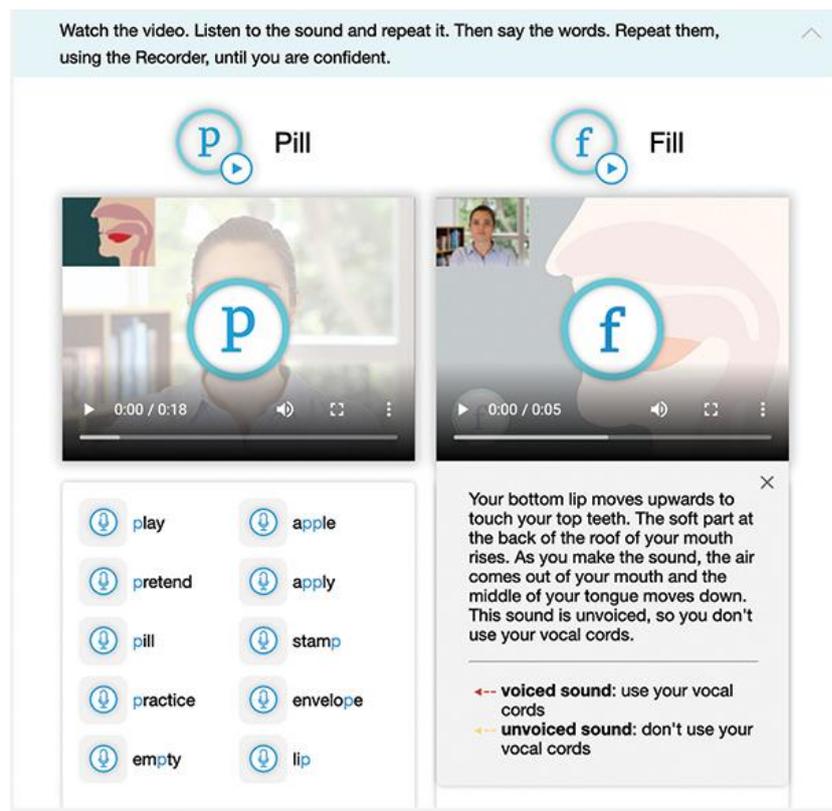


Figure 10 User interface of Clear Pronunciation (Copyright - ClarityEnglish.com)

5.6.4 Relevance for Language Education in Universities

As *ClarityEnglish* is a tool used by many renowned universities worldwide, it can be concluded that the suitability for Language Education in Universities is more than apparent. The practicality can be exemplified by the possibility of choosing the level of exercise difficulty according to the CEFR level reaching from level A2 - to level C2. *ClarityEnglish* also supports the suitability for the University environment by offering the *Admin Panel* programme specially developed for administrators and teachers. It enables administrators to manage users, monitor usage, generate detailed reports, and set up tests for a group of students. In addition to this, the *Admin Panel* is included with all *ClarityEnglish* programs, which makes the *ClarityEnglish* software an overly complex solution for Language Education; therefore, it can be categorised as Combined Learning SW.

5.7 Google Scholar

5.7.1 Introduction

Google Scholar is currently one of the most widely used search engines for academic, technical, or scientific purposes. As it is a freely accessible web search engine, it allows every University student with an internet connection to access databases of "*articles, theses, books, abstracts and court opinions, from academic publishers, professional societies, online repositories, universities and other web sites.*"

(scholar.google.com/intl/en/scholar/about.html, 2022)

5.7.2 Description

Google Scholar is an effective tool for accessing relevant academic, scientific, or technical information sources. One of the main advantages over conventional search engines is the narrowed number of search results according to the *Google Scholar AI*, which selects only papers relevant only to the academic, scientific, or technical field. In addition to this, it is possible to sort the searched results according to date, relevance, or type of writing. A helpful feature is also a possibility to search exclusively in patents, citations, or both.

5.7.3 Relevance for Language Education in Universities

The relevance of this browser application for the topic of this thesis can be apparent from multiple examples of the possible use of *Google Scholar*, one of which is the widening of the resource spectrum for essays or thesis for university students. Another potential benefit of *Google Scholar* in language education is that it can be used as a database of texts which can be studied from a discourse perspective of view. *Google Scholar* can be a supporting tool for discourse analysis as it is an integral part of higher language education. Students and teachers can search for diverse types of language-focused papers whose quality can be verified, for example, by the number of citations of particular work.

5.8 Sanako

5.8.1 Introduction

Sanako is a complex set of "technology solutions for language teachers" and students which helps universities to provide the highest quality second language education possible. (Sanako.com, 2022) According to their website presentation, the key principle of this language learning platform is the offer of digital products which are used to develop or enhance the speaking and listening skills of language learners either inside or outside of the physical space of a classroom. (Sanako.com, 2022). *Sanako* is a Finnish Education Technology company with customers in more than one hundred and ten countries and supplies more than fifty thousand classrooms with their products. As mentioned, *Sanako* offers multiple products for various uses; however, for the purpose of this study, only products with relevance for language education in universities were chosen as search material for analysis.

5.8.2 Description

Sanako Connect

The first product of *Sanako* relevant for language education in universities is *Sanako Connect*. *Connect* is a virtual classroom software which can be used for both synchronous education (teaching with the presence of both participants, teacher, and learner, at the same time) and asynchronous education (learners work through materials according to their individual time schedules). *Sanako Connect* is an online cloud-based system for remote language learning that provides an inclusive system that aids language acquisition, whether in present or distant teaching. It may be used for language instruction, conference interpretation, remote simultaneous and consecutive examinations, and various other tasks. For example, a teacher can control students' activity in special examination mode by predefined exam exercises or by creating special exercises tailored to particular education needs of a given studying group (see **figure 11**) (sanako.com/help/connect/1-what-is-sanako-connect, 2021)

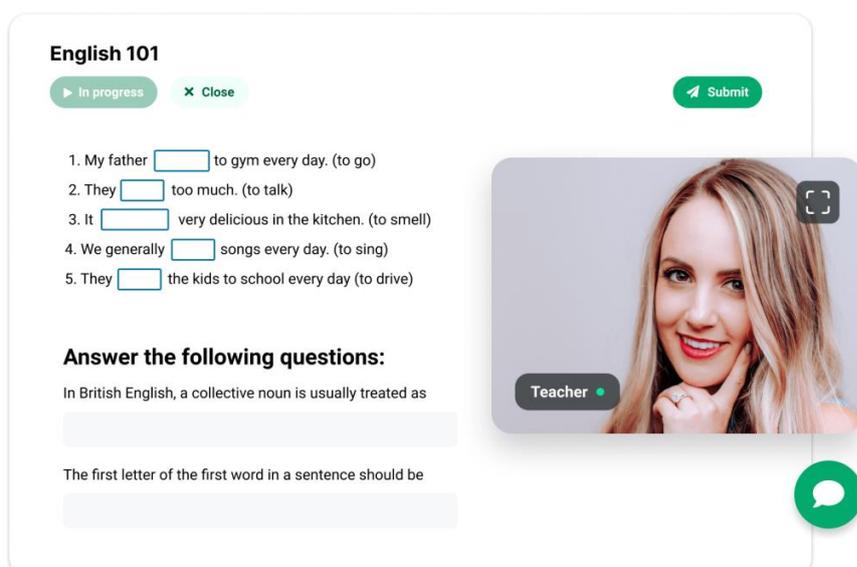


Figure 11 Example of a custom gap-filling exercise in Sanako Connect (Copyright - Sanako.com)

Sanako Study

Sanako Study is a sophisticated language lab program. Such software is commonly used by language teachers to assist their students in spending more time actively practising and learning during language sessions and helping them organise their classes more efficiently. *Sanako Study* is a Windows-based program that is installed on school computers, such as the Windows workstations in their computer lab. Therefore, the Study program may turn the computer classroom into a language study centre. (Sanako.com/help/study/1-what-is-sanako-study, 2021)

Sanako Reactored

Reactored is a digital language education platform that allows students to study using language courses which were created by their instructors. It is similar to the popular *Duolingo* solution (see chapter 5.2), but with the significant difference that teachers may customise the ready-made content or build their own from scratch to ensure that it exactly suits their needs and curriculum. With a unique approach that allows students to pick their learning mode, the *Reactored* platform makes the learning experience flexible and personalised. (Sanako.com/help/reactored/additional-resources, 2021)

6 Conclusion

In conclusion, the main points which have been discussed can be summarised. The representative software sample was analysed to a certain extent in which the study can be further used as a reference and inspiration for language teachers or students primarily focused on English language education in universities. Valuable features of the software were pointed out, as well as its primary purpose of it. This study also presented various software divided according to their purpose of use, language acquisition method, or complex solutions for university language education. Sources for the searched topic were predominantly studies, results of search engine algorithms, or practical measures of the number of downloads of particular software. According to the searched material, the SW can be further divided into three categories according to their relevance and purpose of use in language education in universities.

The first software category is developed to be used as a complex studying solution for higher language education (see chapters 5.5, 5.6, 5.8). The second category of SW can be used to complement higher language education activities directly but cannot serve as a complex teaching or learning tool (see chapters 5.2, 5.4, 5.7). Finally, the third category of software is meant primarily for students who can, for example, widen their vocabulary or put their theoretical phonetics knowledge into practical use with this category of software (see chapters 5.1, 5.3).

As explained in the previous chapters, personal devices and the general use of technology in language education can be approached in various ways. However, if handled and used correctly, the benefit of using such tools in language education is prominent. According to the needs of specific studying groups, a suitable software solution can be chosen either for supportive activities outside seminars or, for example, as a complex studying solution which includes grammar, vocabulary and phonetics learning activities or examination tools. The most suitable software for complex studying solution would, for most universities, be above analysed *ClarityEnglish*, as its benefits are proven in many case studies and references from numerous universities (e.g. Université de Nice Sophia Antipolis, University of Sussex, Newcastle University). Moreover, it offers many programs which can be used simultaneously or separately.

The future path of language education development will be undoubtedly fascinating to observe, primary for those who experienced language education without any ICT tools. Those individuals can view the differences from a unique perspective and summarise the process. The question could be whether evolution would affect the language positively or negatively.

Rozšířený abstrakt

Předmětem této bakalářské práce je rešerše vhodných a kvalitních softwarových nástrojů, které mohou být použity jako podpůrný element v jazykovém vzdělávání na univerzitách. Rešerše se také zaměřila na softwarové řešení, které lze také použít jako parciální nebo komplexní náhradu prezenční výuky v případech, kdy tato forma výuky není možná. Jazykové vzdělání je významnou součástí mnoha studijních programů na vysokých školách napříč oborovým spektrem, a to ať se jedná o studijní obory zaměřeny přímo na studium cizích jazyků, nebo obory, které jsou orientovány na jiné disciplíny. Přítomnost moderních technologií v jazykovém vzdělávání může u mnoha studentů zvýšit zájem o vyučovanou problematiku a také následně zvýšit produktivitu a kvalitu výuky. Za tímto účelem lze použít softwarové nástroje, které mohou být aplikovány různými způsoby a pro různé cíle. Použití těchto nástrojů lze uplatnit přímo při prezenční kontaktní výuce na seminářích, při domácích podpůrných aktivitách nebo například jako komplexní studijní řešení pro distanční výuku.

Úvodem této práce je charakteristika problematiky použití softwarových řešení pro výuku jazyků na vysokých školách. Úvodem práce je také kapitola věnující se nastínění procesu *Osvojení jazyka (Language acquisition)*. V rámci této kapitoly byly definovány dvě základní teorie osvojení jazyka, z nichž právě jedna byla použita jako metrika pro analýzu a výběr softwarových řešení. Pro účely této studie bylo na reprezentativním vzorku dvaceti studentů z *Filozofické fakulty Masarykovy univerzity v Brně* studujících obor *Anglický jazyk a literatura* zhodnoceno, který aspekt online distanční výuky dokázal jazykové semináře udělat přijatelné a produktivní, i přes skutečnost, že tato forma vzdělávání nebyla dříve při konvenční výuce na vysokých školách aplikována.

Je známo, že používání osobních zařízení může u studentů způsobovat poruchy pozornosti a zvyšovat množství času, který není efektivně využit. Tento novodobý fenomén, který v mnoha případech neprospívá kvalitě výuky cizích jazyků lze použít také jako nástroj pro zatraktivnění a zlepšení vyučovacího systému na vysokých školách. Jedním z mnoha předpokladů pro úspěšné nasazení osobních zařízení do výuky na univerzitách je správně zvolený softwarový nástroj. Za tímto účelem bylo provedeno následující základní rozdělení softwarových řešení podle jejich pedagogicko-lingvistického přínosu studujícím i vyučujícím:

Software pro rozšíření slovní zásoby (*Vocabulary Adoption SW*), Software pro výuku gramatiky (*Grammar learning SW*), Software pro výuku fonetiky (*Phonetics learning Software*) a kombinovaný Software (*Combined Software*). Následně bylo rešerší vyhledáno osm softwarových nástrojů, které jsou vhodné pro tři základní druhy použití. První skupina software je určena k použití jako komplexní studijní řešení pro vysokoškolské obory, které dokáže kvalitně zprostředkovat výuku jazyků, například v případech, kdy je nutné praktikovat distanční výuku (např. *ClarityEnglish* – kapitola 5.5). Druhá skupina analyzovaného software slouží jako přímý dodatek k vysokoškolským aktivitám, které tvoří nebo doplňuje. Tento software nelze použít jako komplexní zprostředkovatel výuky, ale spíše jako podpůrný element pro vysokoškolskou prezenční výuku (např. *Google Scholar* – kapitola 5.7). Poslední, třetí skupinou software jsou nástroje určené k použití téměř výhradně studenty, kteří si pomocí nich mohou například udržovat vysoký poměr mezi aktivní a pasivní slovní zásobou, nebo osvojovat praktické znalosti fonetiky (např. *CinemaLingua* – kapitola 5.3)

Závěrem práce je zvolen nejvhodnější softwarový nástroj jako komplexní studijní řešení pro výuku jazyků na univerzitách – *ClarityEnglish*. Tento software byl vybrán jako nejvhodnější z řady důvodu, z nichž lze jmenovat například spolehlivost a ověření kvalitní výuky roky používání na prestižních univerzitách po celém světě (například Université de Nice Sophia Antipolis, University of Sussex, Newcastle University). Dále tento software nabízí řadu programů, které mohou být použity simultánně, nebo zvlášť pro specifické účely.

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List of figures and graphs

Figure 1 Workplace in <i>Lyrics Training</i> browser version of software	18
Figure 2 User interface of <i>Duolingo</i> main menu – browser version.....	21
Figure 3 User interface of <i>CinemaLingua</i> while practising the word recognition exercise	23
Figure 4 User interface of <i>CinemaLingua</i> while practising the put in order exercise ...	24
Figure 5 List of possible settings in <i>Grammarly</i> text editor	29
Figure 6 Design of working environment of <i>Grammarly</i> including highlighted suggestions of unpaid version.....	31
Figure 7 Design of icons in <i>Grammarly</i> text editing submenu.....	31
Figure 8 List of additional information about text in <i>Grammarly</i> submenu.....	31
Figure 9 Student's menu in DynEd	35
Figure 10 User interface of Clear Pronunciation	39
Figure 11 Example of a custom gap-filling exercise in <i>Sanako connect</i>	43
Graph 1 Questionnaire about online seminars.....	9

List of abbreviations

- ICT – Information and Communication Technology
- SW - Software
- AI - Artificial Intelligence
- ECC - E-Learning Courseware Certification
- ASTD - American Society for Training and Development
- BEAS - Business English Advantage Series
- EL – English Learner
- IELTS - The International English Language Testing System
- CEFR - Common European Framework of Reference for Languages
- UAE – United Arab Emirates
- ESL – English as Second Language