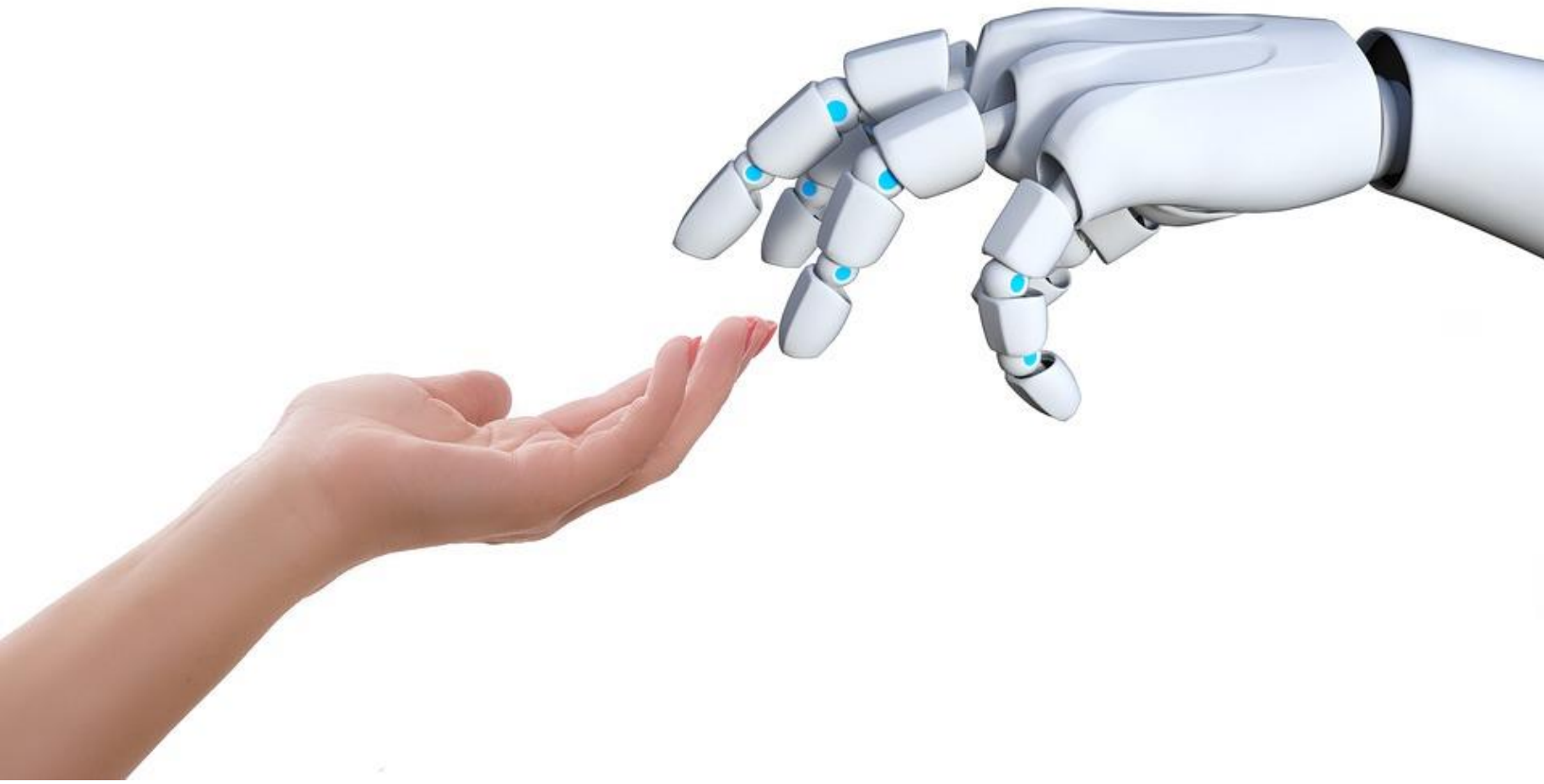
Mr. Winston's Pedagogical Guide

Strategies for the use of Chatbots in language education



MR. WINSTON
The True English Bot

Erasmus+

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1. ABOUT THIS PROJECT

What is Mr. Winston?

Mr. Winston – the true English bot is an Erasmus+ KA2 project. KA2 projects require close cooperation between international partners, in the search for innovation and exchange of good practices in the fields of education, training and youth. The projects developed under this scope enable the participants, of different countries, to work together to create, share and transfer innovative educational practices.

Who are the partners?

Our project is being developed by six partners:

- **Logopsycom**, a Belgian company that specializes in the care of young people with learning disorders. They are the leading partner for this project.
- **Eurospeak Language Schools Ltd**, a private English language school, based in Reading and Southampton.
- **Civiform**, a vocational training centre from Italy that trains professionals in several sectors.
- **Learnmera Oy**, a private adult education provider and translation company from Finland, specialized in private business English lessons.
- **YuzuPulse**, a French SME that aims at creating ICT tools for the social economy.
- **Ljudska univerza Rogaška Slatina**, a Slovenian regional non-profit adult education and training provider that delivers VET and language classes.

The goal of the partners with this project is to develop a chatbot, a conversational bot that will function over a messaging app, that will serve as a tutor to help its users study the English language. Our main target group are learners in Vocational Education and Training (VET).

Three reasons led the partnership to focus on teaching English to VET learners:

1. To reach a large variety of learners (from initial to continuous VET, all types of populations and all age are present)

2. Learners in need of support such as those with Specific Learning Disorders (dyslexia for instance) and/or a socially disadvantaged background tend to be more present in VET than in school education.

3. English is a key skill for employability: the European Commission Study on Foreign Language Proficiency and Employability (2015) revealed that over four in five employers interviewed and three quarters of advertised online vacancies stated that English was the most useful language for the jobs discussed in all sectors and in almost all non-English speaking countries.

The purpose of our chatbot is to support learners who study English at levels A2 and B1 of the CEFR (Common European Framework of Reference for Languages), by helping them to follow, understand and remember the lessons they were taught in class.

The chatbot will be accompanied by a set of supporting resources that will be described later in this guide.

2. THE GOAL OF THIS GUIDE

Today's society has been deeply affected by the internet. It has infiltrated both our personal and professional lives, in a way that it is almost impossible for our societies to live normally without it. Digital technology has come slowly, but it is here to stay, and it has impacted the way we work, communicate, access knowledge, and learn.

Recent studies conducted all over the world, such as a study by C. Jones and B. Shao on the generation of digital natives [1] and another one by J. Palfrey and U. Gasser on understanding the first generation that was "born digital" [2], have made a connection between technology and the way the young generation learns, and proved that digital technology has shaped, and continues to shape, the way we learn and interact with others.

It was with this change in education in mind that this project was created. It is our aim to help bring one of the most innovative technologies to language learning, considering only the best practices and new forms of learning and teaching.

This guide will provide educators with all the needed tools and knowledge on how to introduce such tools in their pedagogical strategies. The goal of this guide is to empower educators in being able to innovate in their educational practices, with the help of technology, to satisfy the ever-growing need to reach the younger generations of students using methods and tools that they call their own.

We will also give a definition of chatbots and explain how they can be used in the classroom with some examples, lesson plans and exercises. This is the pedagogical guide to the use of chatbots for language teaching and learning.

3. DEVELOPMENT OF MR. WINSTON'S OER

Mr. Winston's OER

The tools developed during the project are:

- a booklet gathering partners' research on chatbots in education, to identify the best educative uses of a chatbot,
- two free educational English tutoring chatbots that support the learner,
- free teaching material that will be integrated into the chatbot whose program will follow CEFR levels A2 and B1 (Common European Framework of Reference for Languages),
- a pedagogical guide to help educators understand how to make the most of using a chatbot as part of their teaching (the document you are currently reading),
- a chatbot creation guide to help educators create their own chatbot for education purposes.

All these tools except for the chatbot creation guide will be field tested on 40 teachers and 500 learners in total in the 6 countries of the project partners. This test will allow the partners to update the tools based on users' feedback, in order to produce tools that actually support the learners.

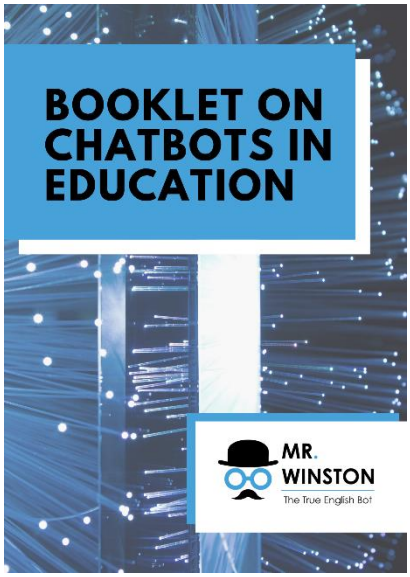
All the tools developed will be available freely on the project website at http://mrwinstonchatbot.eu/resources/.

Here is a more detailed description of the tools of this project, other than the pedagogical guide you have in your hands.

1. The booklet on chatbots in education

This booklet is divided in 3 chapters:

- An introduction to chatbots and their theoretical educational advantages,
- An overview of existing experiments and uses of chatbots in education,
- A summary of the main findings of partners following interviews with language teachers, chatbot experts, and students in VET in order to identify the possible uses of chatbots for language education.



The development of this booklet was one of the first of this project as most resources related to creating or using chatbots tend to focus on commercial uses of chatbots. In addition, this guide will be useful in order to communicate with schools and VET centres to present chatbots and their advantages in an educational setting.

2. The dynamic teaching content for the chatbot

Creating a chatbot is not an end. As it is based on conversation, it must be fed with appropriate content to be able to hold the conversation it was created for. As Mr. Winston aims at tutoring students learning English at levels A2 and B1, it

must be able to offer content corresponding to these courses. In addition, as it is a chatbot, it must be able to provide learning content answering to the rules of microlearning: short, frequent, and actionable content that can be consulted anywhere at any time.

3. The chatbot tutors for English language learning

Two chatbots are under development, one corresponding to level A2 and the second corresponding to level B1 of the CEFR. These chatbots are created as tutors for English language learners in VET: in that sense, they are not meant to replace English classes, but to support the learners in their independent studies outside of the classroom. These chatbots are being developed to be user-friendly in general, particularly for learners with learning disorders.

4. Support lessons

As mentioned above, the purpose of developing a chatbot for English language education is not to replace the teacher's role altogether, but to support their practice as well. One of the ideas of the project is to provide ready-to-use chatbots with supporting pedagogical and guidance material for virtually any English teacher to be able to use the chatbot in their classes. Therefore, support lessons corresponding to the notions explored by the chatbots, covering levels A2 and B1, have been developed during the project. In addition, these lessons were conceived with the needs of learners with SLDs in mind and can be different than other lessons available elsewhere. To some extent, these lessons can be considered as the most formal aspect of Mr. Winston.

5. The chatbot design guide

In order to allow other teachers to create their own chatbots, the partners will have created a chatbot design guide by the end of the project. It will aim at giving educators and VET organisations the tools to design chatbots for language education, be it for other levels of English or possibly other languages, as well as general recommendations on building chatbots for education.

Not only will a booklet be created, but it will also be completed by a chatbot guide on designing language chatbots, or "botbook". The purpose will be for the guide to be conceived more as a complete tutorial, and the chatbot will be a real-time assistant guiding the teachers as they create their own chatbot. In addition, the partners hope that the friendly tone of the chatbot will support the chatbot creator's motivation throughout the process!

Both the guide and the botbook will cover the following aspects of creating a chatbot for language education:

- Presenting the most useful functions of a chatbot for education,
- Introducing principles of user experience relevant for education, including the needs of learners with SLDs,
- Explaining how to create exercises and tasks.

The development of the chatbot

Introduction

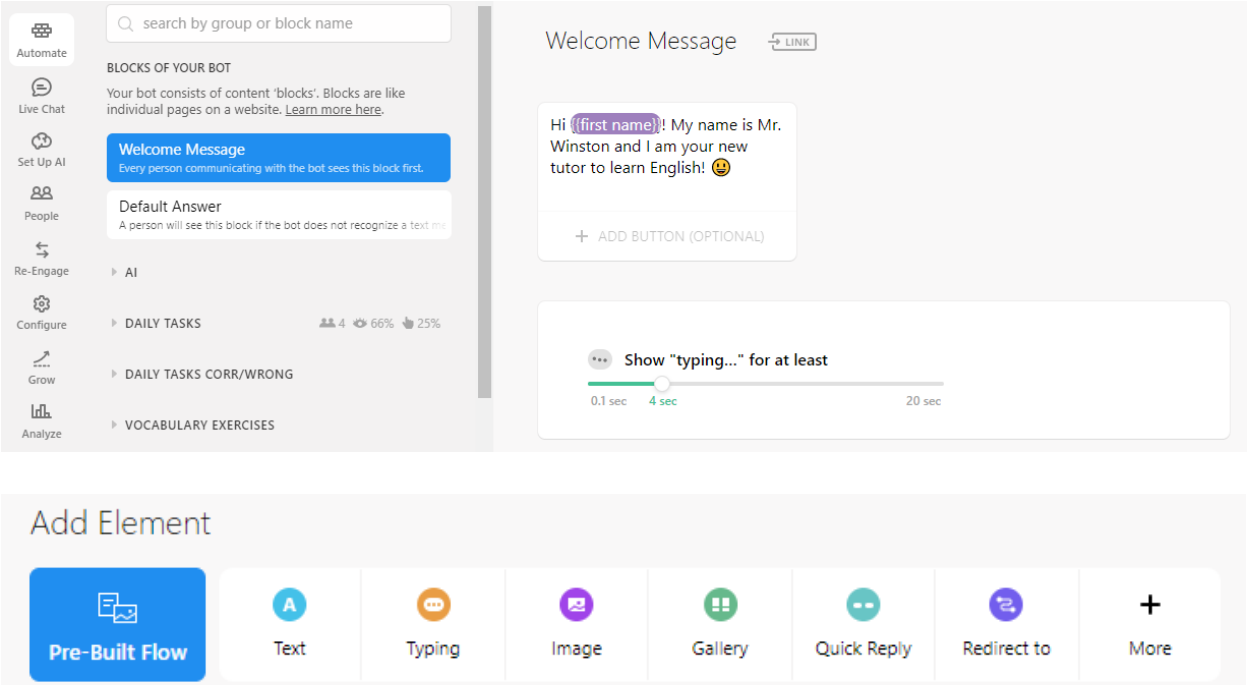
As explained above, the main resources created in this project are the two tutor chatbots for levels A2 and B1. These chatbots will share the same structure and have different names so the students can start learning with Mr. Winston and continue with Mrs. Winston. These will serve as examples for teachers who would, in turn, want to create their own chatbots for their English lessons. The partners thus wanted the development of the chatbots to be as simple as possible so any teacher could see them as an example and find inspiration from them. This meant that the designing process would need to be done without requiring any technical skills. The Belgian partner, Logopsycom, was in charge of the chatbot creation and the person responsible for developing it did therefore not have any prior training or knowledge in Artificial Intelligence. The experience was therefore similar to that of a language teacher wishing to integrate artificial intelligence into their English lessons.

Finding the perfect platform

The first step in the chatbot design was to explore the online platforms that could allow teachers to build their chatbot in the most intuitive and efficient way. Several platforms were found, but many of them presented a strong focus on commercial use, which would certainly not be the purpose of a tutor chatbot.

After thoroughly researching the pros and cons of the existing platforms, Logopsycom chose to work on Chatfuel, an online platform with an

advantageous free plan that allows us to establish a chatbot by creating blocks made of different elements such as texts, images, buttons and many more. These blocks can then easily be linked to each other following a logical structure that the creator should design from the beginning of the process. The produced chatbot will then be connected to a Facebook page that the learners will send messages to in order to chat with their new digital tutor.



[Screenshots of the platform]

How we used the other OER

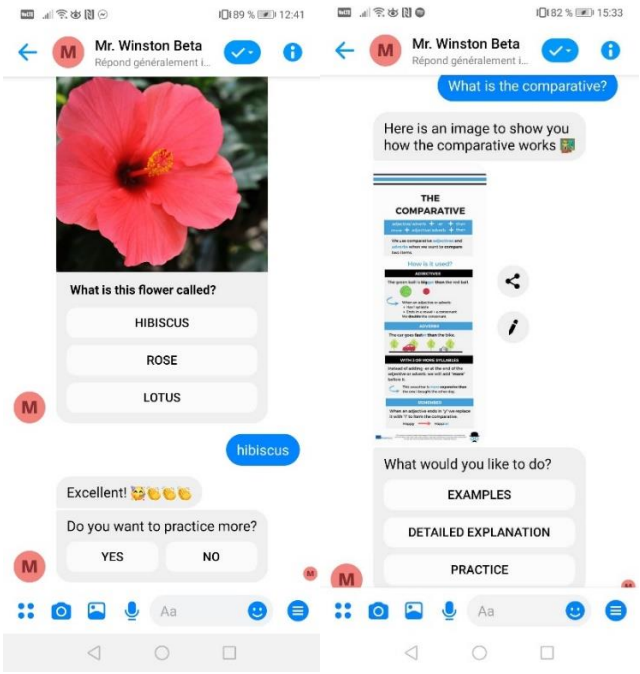
In the meantime, all partners created the learning content to be integrated in the chatbot under the supervision of the English partner, Eurospeak. This content was separated into three different categories that the chatbot would use in its interactions with the students:

- **The Daily Tasks:** they will be sent daily to all the learners who subscribe to them. This will allow learners to test their knowledge on a grammar or vocabulary topic once a day and see what they need to practice more.

- **The Exercises:** the exercises can be accessed by the learners at all times by choosing the grammar or vocabulary topic they want to practice. This allows a lot of flexibility for the students. The exercises will be short enough to allow flexibility and the chatbot will always give some feedback and further explanations when relevant. At the end of each exercise, the learners will be able to ask for more explanations and examples or to practice a little longer on the same topic.

- **The FAQs:** they consist of some revision cards that the chatbot will send in image format to the users who need help in a particular topic. The learners will be able to access them at the end of any grammar exercise or by typing their question to the chatbot. This option, however, is somewhat limited as they will need to type specific words to access this content directly.

The format of these categories of content was decided after researching the options that the platform offered. As the AI cannot be too strong on such a platform, the partners needed to come up with an easy and user-friendly solution to meet the learners' needs. Therefore, the content can sometimes be accessed in several different ways, as is the case for the FAQs.



[Screenshots of the conversations with the chatbot]

Giving it some personality

Another important characteristic to bear in mind when designing a chatbot is its personality. As one of the advantages of using chatbots in education is that it allows learners to get immediate feedback, it remained crucial to give it a nice, motivating and non-judgmental personality. The use of emojis, GIFs and memes that both Chatfuel and Facebook Messenger allowed us to use helped the partners design a fun and friendly chatbot.

A first version of Mr. Winston was created and presented to the partners to see how they felt when interacting with it. The results were rather satisfying as they all said themselves that it was motivating and exciting to use the chatbot. This focus on the chatbot's personality can make it feel like a friendly tutor who is just

there to help the learner better understand the material and practice every day. This is crucial to keep the learners engaged and motivated.

Design also means structure

The design of the bot required an overview of all the necessary interactions to be integrated. Before feeding the content to the chatbot, it was necessary to think of different ways in which this content could be accessed by the user or spontaneously provided by the chatbot.

The platform's settings needed to be thoroughly explored before deciding on the format of the learning content. For instance, the number of characters and the type of files to be integrated in the chatbot are two important items to bear in mind. Imagine creating all your exercises and ending up having to rethink them completely when working on the platform because you realize the buttons cannot be longer than 20 characters!

For our tutor chatbots, several elements needed to be taken into account from the beginning.

First, it was decided that the chatbots created would be used by students who have an A2 or B1 level in English. This meant that all the messages the chatbot would send should be easily understood by any learner at that level. This was taken into consideration when designing the basic interactions that the bot would have with its students. The language used is familiar and easy, and the use of emojis allowed it to give some more context to the messages sent.

Then, there was the general skeleton of the chatbot's interactions with the learners. It needed to be designed very carefully so that the content could be accessed easily by any user. As there are three different categories of content,

several options for the platform were explored and used to provide the best possible experience. These options included artificial intelligence processing to access the FAQs, the subscription function for the Daily Tasks, and the use of buttons to access the Exercises on a particular topic.

The details of all the used functions will be explained more thoroughly in the Chatbot Creation Guide that you will also find on our project's website by Autumn 2020. It will give you more practical and technical advice on how to create your own educational chatbot.

4. THE BENEFITS OF USING CHATBOTS IN EDUCATION

Introduction

As we have already discovered in the "Booklet on Chatbots in Education" created within the project, chatbots have many properties, along with the constant development steps that experts in the field are making in terms of chatbots and AI, that make them an increasingly interesting technology for educational purposes. Using a chatbot for educational purposes allows adapting the content of the lessons to the speed at which each individual learns, so that each of them has the opportunity to follow at their own pace according to their potential, without being in competition with others. It is also possible to statistically predict which problem areas may occur, to create a study plan that will help each individual to deal with them. Summarising our earlier discoveries, some of the main features which make chatbots a useful tool in the field of education include:

1. A personalised experience: making the user the centre of the learning process and helping them identify their strengths and weaknesses and making it possible to develop a strategy for each user.

2. Gamification and motivation: transforming the learning process into a game makes the chatbot fun and the learning process more natural and motivating.

3. Continuous availability: chatbots are available at anytime and anywhere.

4. No judgment, no embarrassment: learners are more inclined to have a conversation and continue to practice.

5. Spacing effect: it is easy to repeat and revise old notions when learners are about to forget them.

6. Evaluation of courses and teaching staff: the chatbot is able to gather opinions through a conversational interface.

7. Increase users' satisfaction: sentiment analysis techniques help these systems recognize the attitude users have towards the chatbot and towards the information it provides them with, and then suggest the solutions or advice most relevant to the needs of each of user.

8. Open source code: development platforms and open source code make the design of chatbots increasingly easier and immediate. [3] [5]

Chatbots provide small amounts (chunks) of information at a time, referred to as microlearning. Microlearning content must be carefully planned and implemented according to micro-objectives. This enables the learner to choose what they will learn and how fast he will progress and gives them a sense of freedom and control over their own studying. Each segment is narrowly oriented and very focused and represents the core knowledge of the lesson.

Chatbots provide flexibility for language teachers to focus on more challenging work while students will have a fun learning experience with the drill exercises provided by the chatbot. The chatbots are also very convenient for homework or for practicing for exams. Chatbots can help encourage students who struggle with learning, motivating them and providing them with all the information they need to revise, at any time. The chatbot is a great tool for both teachers and

students to depend on to improve the learners' level constantly and for them to take responsibility for their learning process at home.

4. a. Chatbots for language learning

Learning a new language can often be quite stressful, as it brings challenges in understanding and learning new vocabulary, grammar, pronunciation, and comprehension. At the same time, the learners of a foreign language have to develop their conversational and communication skills. Naturally, every individual has his/her own pace of learning a new language and therefore following and catching up with other students during real life lessons at school can be quite stressful for somebody who is constantly falling behind the rest of the class and is too shy to ask for additional explanations from the teachers. At the same time, it has been proven many times that the best way to learn a new language by interacting with native speakers of the language we are learning. Naturally, learners of a foreign language do not often get the opportunity to have regular conversations with native speakers in their classrooms.

Taking into consideration all the above challenges that occur during the process of learning a new language, we could probably agree that chatbots, as programs that integrate artificial intelligence allowing them to simulate and maintain a certain level of conversation with real people, could be a great tool for learning a foreign language.

Here are some of the most common beneficial effects that different types of literature report:

- **They give instant help:** when teaching a group of students, it is impossible for teachers to offer every one of them individual help. Therefore, chatbots can be a useful tool while practising because they provide instant answers and additional help to each student individually.

- **They bolster student engagement:** Nowadays, young learners use technology in their everyday lives and they mostly find it fun and relaxing. Therefore, learning with the help of technology, including chatbots, is easier and more fun for them, much more than simply using paper books, exercises and tests. Therefore, even learning a foreign language, which can sometimes be quite stressful for some students, would become more pleasant since they would learn a new language with a fun and entertaining technology rather than filling long worksheets with no interaction. Doing something they like will prevent distractions and encourage them to do more and more exercises, without them even noticing they are learning.

- **They represent diversity in education:** AI and technological devices are constantly improving and upgrading, and learners can constantly choose among new and innovative chatbots. Therefore, even if a learner of a foreign language gets tired of using one chatbot, he or she can instantly find a different chatbot and make his or her learning fun and entertaining again.

- **They enable personalised learning:** Many students feel stressed if they start falling behind in learning a language during their lessons at school. This can cause lack of motivation and a lot of frustration for them, especially

for learners that are too shy or too embarrassed to ask their teacher for help or further explanations. In addition, some students simply need more time to process some of the content, grammar, and new words in a foreign language than others do. Chatbots adapt to the individual's pace of learning, therefore slower and faster students can continue studying at their very own pace, and they all make progress.

- **They offer automatic support: I**nstead of constantly asking the teacher for answers to the exercises, students get the correct answers immediately and instant feedback on how they did. Some chatbots also offer grading and tests. This saves a lot of time for the teachers of foreign language and at the same time puts less stress on the learners, since they do not have to be embarrassed by their mistakes. Moreover, as we all know, technology does not judge.

- **They offer a great flexibility:** You can use it in the comfort of your sofa at home, while listening to music, on a bus, etc. This free choice of environment can provide a more relaxing atmosphere and put less pressure on a learner of a foreign language.

- **They help shy students get help:** Not every student has self-confidence and some are anxious if they have to ask something or admit they do not know something in front of their classmates. By using chatbots they can get all the information or additional content they need without having to expose themselves in front of their teachers or classmates.

- **They provide learning opportunities for those who have less time to attend lessons:** Many people would like to learn a new language but cannot attend all of the lessons because they work long hours or live in remote areas. Therefore, chatbots can be a great tool if they skip some lessons and can practice and gain information at home on the topics they missed in class.

- **They enable the practice of specific skills and abilities:** The easiest way of learning a new language is to have as many conversations with native speakers as possible. However, this does not occur very often during lessons at school. Chatbots can be designed in such way that they offer stimulating conversation contexts organised by level and with different roles and discourses. This creates an intelligent human conversation so that the speaker has an experience that simulates as well as possible a conversation with another person.

- **They offer qualitative data to the teachers:** If learners do not express their doubts and questions while studying a foreign language, it is impossible for teachers to understand and know what kind of struggles their learners are facing and which parts of the learning process they should spend more time on. However, chatbots can help them with these problems, since they enable the teachers to see the chat history, and thus to identify areas that they might want to concentrate more on in class.

- **They enable an easy self-analysis:** Most chatbots keep a transcript of the conversation where students can evaluate themselves.

There are several chatbots used in education in general, as well as for learning languages. Let´s look at some of the chatbots, which can be a useful tool for learning a new foreign language:

- **ALICE:** The Artificial Linguistic Internet Computer Entity was implemented by Wallace in 1995 and inspired by ELIZA, a program developed by Joseph Weizenbaum in the 60s. ALICE is a natural language processing chatbot. It creates conversations with the help of existent matching rules to the inputs of users. The chatbot has won three Loebner Prizes so far. ALICE can process what we are saying and also has the ability to avoid responding to an input it does not understand by giving a canned response.

- **The Jabberwacky chatbot:** Its main goal is to simulate natural human chat in an ´interesting, entertaining, and humorous manner´ (Carpenter 2007). It also has the ability to learn from its previous conversations and uses contextual pattern matching techniques to select responses.

- **Ani:** It was developed in order to offer some tasks instead of human teachers and among other functions, it offers a tutored English-language learning course, accompanied by elements of motivation, assessment and immediate feedback. It provides individual and personalised mentoring and tutoring to learners, which increases their commitment and involvement. In addition, it has the ability to adapt according to the learner's needs with the help of automatic learning algorithms.

- **Duolingo**: A chatbot integrated in the language learning app, applied only for certain languages. Its main purpose is language learning by using conversation together with gamification techniques.

- **CLIVE**: This chatbot offers a method for practising the conversational skills of learners of foreign languages. Its special asset is that is has the ability to hold a natural human-like conversation with people on a wide range of topics which creates a realistic experience of a conversation. Experiments have shown that CLIVE is very accurate in comparison to a conversation between two humans.

- **Let's chat system:** Similar to CLIVE, this chat robot technology helps people in developing conversational skills in a foreign language. It is designed to simulate a social and conversational environment with a person. In this way, people can gain language skills that they use in real life conversation.

- **Langbot**: This is a gamified language-learning service where students earn points, badges and compete. It is available on Facebook messenger and it helps users in learning French.

- **Computer Simulation in Educational Communication (CSIEC):** This is an intelligent web-based human-computer dialogue system with natural language for English instruction and a learning assessment system for learners and teachers. It contains grammar-based gap-filling exercises, scenario shows, chatting for free and on any given topic.

Naturally not all feedback about using chatbots is positive. For example, Chantarotwong´s study done in 2006 has shown that "responses of most chatbots are frequently predictable, redundant, lacking in personality, and having no memory of previous responses which could lead to very circular conversation." But despite some doubts, in general the feedback on chatbots in education and language learning is positive. For example, Fryer and Carpenter claim that the chatbots enable learners to acquire a foreign language at anytime and anywhere. They carried out a test where they asked 211 students to chat with ALICE and Jabberwocky. After the experience, the learners stated that they enjoyed learning a language with the help of chatbots. This kind of learning and chatting with the bots made them feel more relaxed and comfortable than situations where they have to face a teacher and other students.

Another study done by Jiyou Jia, an associate professor in the Department of Educational Technology at Peking University, included graduate students and high school students. His research showed that the attitudes of both kinds of students towards technology-based English learning were very similar. The majority of students questioned answered that this kind of learning can help with course unit review, it makes them more confident, improves their listening ability, and enhances their interest in language learning. Furthermore, the research showed that 60, 5 percent of high school students liked this kind of English learning. The same percentage stated that they would continue using this tool after their English class. Later on, this learning method was integrated into an English class in grade one of a junior middle school and the results were remarkable. Only one class was using the technology while 15 other classes used a standard paper-based and face-to-face method of learning. In the class where the technology method of learning English was used, there was a sign of

great improvement of students' performance as well as their satisfaction. At the same time, the average score of the class using the technology increased from 64, 39 % to 90, 81 % of the total score and the collective performance of this class was amazing.

To summarise, we can hypothetically state that there is great potential for chatbots to make a positive difference in language learning and to be used as an excellent support tool during classes and at home. It certainly makes life easier for both learners and teachers of foreign languages and are therefore a great asset to the world where learning at least one foreign language has become a necessity in business and personal skills of each individual.

5. HOW CAN TEACHERS USE CHATBOTS IN THEIR TEACHING PRACTICE?

As stated in previous chapters, using technology for learning can feel easy and familiar for the students. For the teacher, a chatbot can be used as a useful assistant, not as a substitute of their job. The bot encourages independent learning and can help the teacher with small things such as instant assistance and feedback if the students give a wrong answer, and some bots can also provide test scores. This reduces the teacher's burden and also makes the students feel supported and encouraged.

Here we will introduce the background for how chatbots and similar software have developed over the course of time and how these can be utilised in teaching.

Introduction and history of CALL

Computer Assisted Language Learning (CALL) (British), or Computer-Aided Instruction (CAI)/Computer-Aided Language Instruction (CALI) (American), refers to the range of processes and activities that employ computers in the teaching and learning of a new language.

CALL approaches and technologies start from **Structural/Behaviorist CALL** in the 1950s, developing through the 1970s, which refers to Stimulus and Response or "traditional" drill-and-practice programs. In the 1980s and 1990s this developed into **Communicative CALL**, with a communicative approach to language teaching which was a response to the Grammar-Translation and Audiolingual methods. This means that instead of teaching the language rules, syntax, etc., teachers helped the students find ways to use the language in a practical way. The **Integrative Phase of CALL, starting from 2000 onwards**, integrated the knowledge presented in the first phase as well as the communicative skills of the second phase. [14]

The more recent applications include language learning in a virtual learning environment and Web-based distance learning. It also extends to the use of corpora, interactive whiteboards, Computer-mediated communication (CMC), language learning in virtual worlds, and mobile-assisted language learning (MALL).

Currently, CALL emphasises student-centred materials that allow learners to work on their own, emphasising important features of interactive learning and individualised learning. CALL is essentially a tool that helps teachers **to facilitate the language learning process for their students**. As stated in previous chapters, it can be used to **reinforce** what has already been learned in the classroom or as a **remedial tool** to help learners who require additional support. The design of CALL materials generally takes into consideration principles of language pedagogy and methodology, which may be derived from different learning theories and second-language learning theories. [14]

A combination of face-to-face teaching and CALL is usually referred to as **blended learning**. Blended learning is more common than using CALL on its own, and its aim is to support and increase learning potential.

CALL can even be used when the teacher is absent, as this language learning technology is student-initiated and student-centred, allowing the students to focus on practising. As the students can study anywhere at any time, they do not have to fear judgement or embarrassment. CALL technologies can also use fun and gamified approaches to language learning, such as practising words and phrases with fun pictures and games. Nowadays, CALL can indicate learning methods and content that integrate video, audio streaming, interactive content and graphics or virtual reality. CALL has led to interactive and versatile content that can help students develop all aspects of language – speaking, listening, reading and writing and even interactive dialogue whenever and wherever they wish.

Furthermore, one of the major contributions is that such language technologies, e.g. italki and Skype applications, have given learners the possibility to communicate with native speakers online. [14] [15] [16]

Evolution of chatbots

In this chapter, we will briefly discuss the history and evolution of Chatbots, starting from 1950s onwards. The Turing Test was developed in 1950 by Alan Turing, who was the first to present the theory of the concept of AI. He is best known for the invention of the Turing Test, which aims to identify whether you are talking to a machine or a human. The 1960s and 1970s saw the rise of chatbots

such as Eliza and PARRY, which convinced people and even some psychologists that they were human.

In the 1980s, a new type of chatbot, Jabberwacky, was developed. The previous ones were entirely text-based chatbots, whereas Jabberwacky had a voice. Jabberwacky could not only think like a human but also sound like one. In the 1990s, more advanced chatbots such as Dr. Sbaitso, an AI speech synthesis program for MS-DOS based systems, and language processing robot Alice, were developed. [17]

In the 2000s, SmarterChild chatbot was developed for messaging purposes. It operated over AOL, MSN and other messenger platforms to offer fun messages and interactive chats. It could be considered to be the predecessor of Apple's Siri, one of the first voice-based assistants, which was launched in 2010. Siri is an intelligent personal assistant first created as a standalone app for Apple devices that was quickly bought by Apple. It is now part of iOS and its answers are designed to sound human. Siri is efficient in finding data from the web and performing web-based service requests. Following Siri, several intelligent assistants were created by all the big tech companies. Google launched Google Now (now Google Assistant) in 2012, Amazon developed Alexa in 2015 and Microsoft's Cortana was first presented in 2014.

Bots operating over Facebook messenger have a different approach as they are mostly text-based. Messenger bots were introduced in 2016. They help users to get a prompt response and save time in customer assistance or human support. [17]

Chatbots have thus existed for a long time, even though they remained a niche use for a very long time. Most conversational robots today focus on three things: assisting humans in organisation tasks, as personal assistants do; guiding

customers through a customer path, as most commercial chatbots do; and as they provide information, they can also be used for educational purposes.

The future of chatbots

As previously demonstrated, the technology behind chatbots is developing constantly, which means that future chatbots could be quite different from the current ones. They will become even smarter and better at anticipating the needs of human users. Chatbots will begin to solve new problems and they will also be used more and more for educational purposes in different forms. They will likely integrate methodologies and findings derived from CALL technologies, integrating different methods and types of content, and use Learner modelling systems that can personalise exercises and content according to the learner's profile and needs. In our project, Mr. and Mrs. Winston could be considered as simpler forms of language learning bots in the sense that they are not powered by AI. They do however offer a rich interactive language learning experience as they include varied types of content, graphics, and a great deal of support materials that all reinforce and support the students' learning.

5.a Teaching with a Chatbot – Examples of pedagogical strategies

Chatbots have been created and developed from the 60s until today: their use has mostly developed in the commercial field, but in the last 20 years chatbots have also been developing in the educational field.

In the previous chapters, we have already presented many Chatbots built for educational use in general and those built in the specific field of foreign language study have been mentioned (Duolingo, Clive, ALICE, etc.)

Some research has been mentioned on the beneficial effects of using chatbots for students who are learning a foreign language: they can be a great help and a good support tool to learn a new language.

In addition, chatbots could provide a means of language practice for students anytime and virtually anywhere. In learning a foreign language, one of the most important aspect to practice is conversational skills that could be improved for example with the Chatbot Clive – an artificially intelligent chat robot for conversational language practice. A study about the use of this bot shows that Clive performs with accuracy and is an accepted method of language practice amongst users [20] (article by J. Zakos, L. Capper, 2008).

Various studies indicate that the benefits of chatbot technology use in education contexts includes improved learning, provision of an alternative means of content delivery, increased student motivation and their interest in learning a new language. [21] Students felt more comfortable conversing with the bots than a classmate or teacher. [22]

Despite this, there are still few that have assessed the impact of the use of chatbots in teaching practice.

There are still no examples of how teachers can integrate chatbots into language teaching, but teachers should be reminded that chatbots can keep the student engaged with the subject and provide fewer distractions as a whole.

For this reason, it will be very important that teachers have a good attitude towards this new technological tool and at the same time demonstrate familiarity with the use of chatbots. This has a direct bearing on whether or not such technology will successfully be integrated into routine classroom practice and whether the benefits of using such technology for teaching-learning purposes will be realized.

A recent study sought to ascertain the teachers' attitudes towards the use of chatbot technology for teaching and learning purposes. The results can be summarised as follows: a majority of the teachers involved in the research questionnaire agreed that chatbot use is interesting and clarifies topic content and chatbots are not hard to use. They also think that chatbot use is not a waste of time and feel that their use improves student understanding. Teachers, lastly, found the chatbot friendly and helpful and they are confident about teaching with this technological tool. [23]

Another recent study on applying this technology in language education has revealed that there are still few chatbot programs that allow for direct interaction between chatbots and humans through voice recognition systems or texting for the purpose of learning foreign languages. Nevertheless, the empirical studies conducted in this research say that chatbots have proven to have some positive effects on students' communication skills largely by their effect on expanding the quantity of their interactions, meaning negotiation, increasing their motivation, and on raising their interest in learning. This study proposes that chatbots can enrich language inputs and bring opportunities for language learners to raise communicative competence.

At the end of this study, researchers state that the effects of the use of AI chatbots on EFL (English as a foreign language) teaching and learning should

be investigated in various aspects including the four fundamental language skills: listening, reading, speaking, and writing. [24]

In conclusion, many studies show that chatbots are in the very beginning of entering education. The impact of adding chatbots in the classroom is still to be investigated even though the familiarity of the majority of young students with technological devices is a positive factor for the integration of chatbots in learning practices. A chatbot can become not only a new tool for supporting lessons given in class, but also a sort of teacher's assistant. Our project therefore aims to create and use a chatbot (Mr. and Mrs. Winston) in the field of foreign language education in order to develop and test new related pedagogical strategies.

5. b. Using a chatbot in your classes

Using technology such as chatbots serves useful double-duty both in terms of providing students with more learning resources and in making teachers' lives easier.

Mr. and Mrs. Winston chatbots can be used as a tool for both teachers and learners working on specific vocabulary and grammar topics, as well as overall support during English lessons. The teacher can use the material already available in Mr. and Mrs. Winston chatbots and the support lessons, in addition to creating their own material. This can save some time in lesson preparation. A chatbot such as Mr. or Mrs. Winston can be used by students while the teacher is engaged in other pedagogical duties. The teacher can assign the students homework with Mr. and Mrs. Winston to practice vocabulary or grammar that was already explained in class. This chapter is a guide for how teachers might

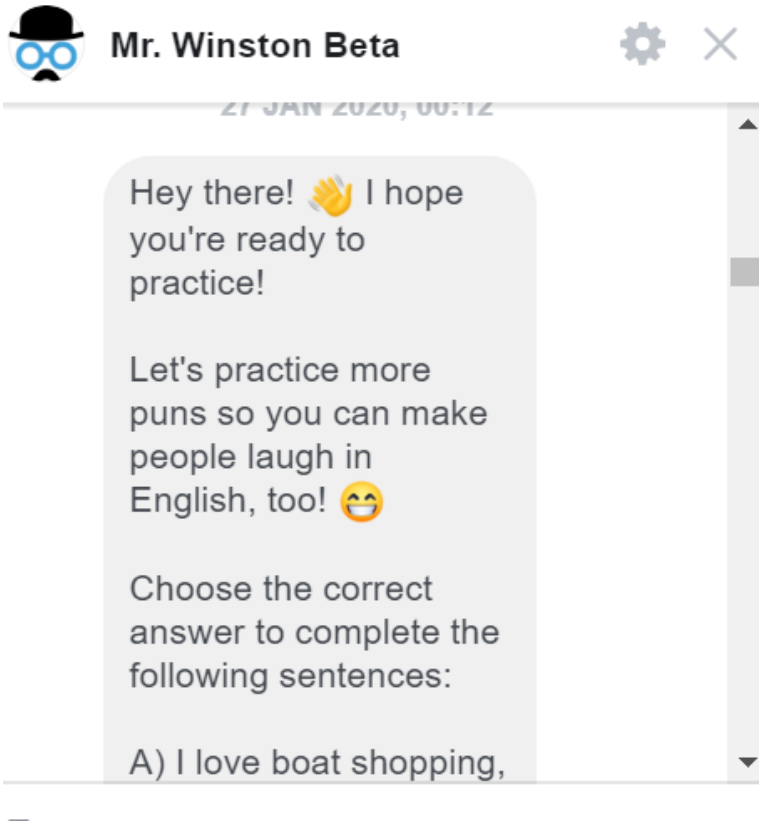
use the chatbots, but it is by no means exhaustive. A teacher with a creative approach to their classes may find limitless uses for this type of technology.

Using chatbots to reinforce learning in the classroom

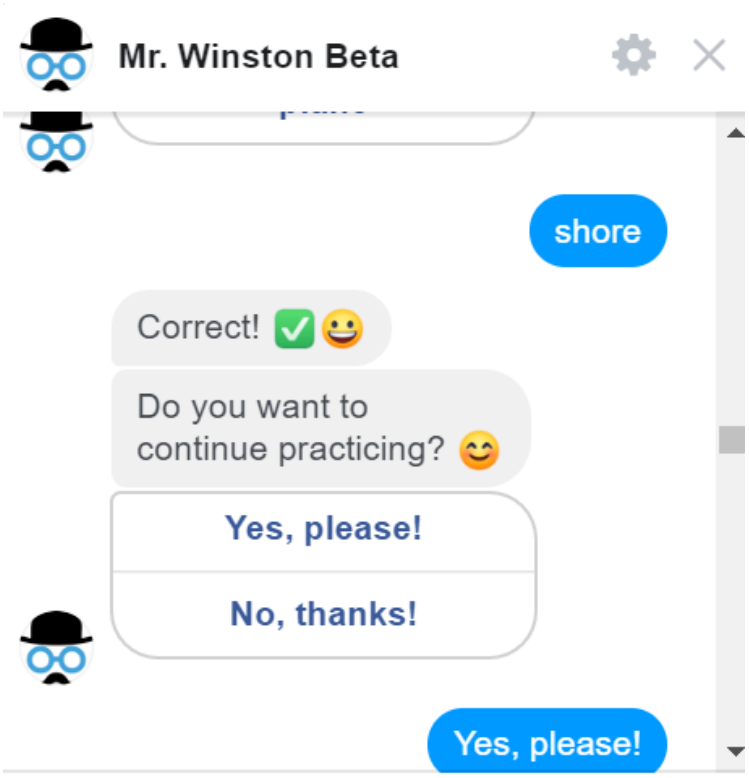
Chatbots can be used at home to repeat and reinforce what has been taught in class. When the students learn vocabulary or a grammar item in class, a good idea for homework is to **practice that topic at home using the chatbot**.

Another option is that the teacher uses the support lessons to teach the topic in class, and then the students can use the chatbots at home to study independently. In the following lesson at school, the teacher can repeat the grammar/vocabulary and exercises to check if the students have practiced sufficiently. The Mr. and Mrs. Winston chatbots have features that support the learning process in many ways:

The bots send daily reminders to suggest a daily task.



The bots also have a feature asking if the student wants to practice more after the daily task.



Mr. Winston material also offers **FAQs in the form of infographics or images** in a very clear and concise format that can help students in case they forgot about some grammar concepts and need a reminder, or for preparing for their exams. Within the FAQs they can ask for a detailed explanation that sends them to a YouTube video to see the content displayed differently, and they can also ask for more examples in order to understand how to use the grammatical point even better.

It is important to **vary between using the chatbot and doing other types of exercises**, as students learn better in this manner. Varying the methods and tools for learning is especially efficient for learners with learning disorders. Here, the **support lessons** created in the Mr. Winston project will be particularly useful.

Chatbots are good for learning that takes place outside of the classroom. In addition to assigning homework with the chatbot, it can also be used to support learners in achieving their goals, e.g. passing an exam or feeling more confident with their English skills. The chatbot can also be used while on the move, in a queue, or while traveling from A to B. This can give up to one extra hour of practice per day.

As the chatbots developed in our project rely on an external platform, some technical issues might occur. These cannot be corrected by the project's partners but when the chatbot fails to answer, the best thing to do is to wait and try again later as technical problems are usually quickly solved by Chatfuel. You can also type "menu" and try to reach another exercise.

Using chatbots for other purposes in the classroom

Many chatbots can be used to easily **conduct quizzes or tests**. In some chatbots, the results are automatically scored by the chatbot. However, Mr. and Mrs. Winston do not have a scoring function but provide feedback and explanations when the learner gives the wrong answer. This saves the teacher valuable time. By not grading the exercises, the chatbot allows the learner to only view these exercises as practice, not as a test.

Even though Mr. and Mrs. Winston focus only on language learning functions, some chatbots can also be used for more tailored content and to collect and analyse data about the students and feedback for teachers. Some chatbots can even be used to **collect feedback from students** regarding their feelings about school and other issues. For example, the United Kingdom's Plymouth School of the Creative Arts is using a chatbot called Emoti-OS that uses AI to

"mimic natural conversations and encourages students to talk about their feelings". In addition to choosing from a scale (using avatars), they can also explain their choice by having a discussion and interacting with the chatbot [25]. This kind of technology can be very useful as AI develops further.

Chatbots can also be used to **help students find information**. Some libraries, for example The Mentor Public Library, located in Mentor, Ohio, United States, started using a chatbot named Emma that served as a sort of virtual reference librarian, answering questions about the library and advising people on how to find information. [25]

Practical tips for using Mr. and Mrs. Winston chatbots in teaching

General Activities

For the EFL teacher who faces the challenges of differentiation and short attention spans, Mr. and Mrs. Winston can be a welcome aid during an intense class. Consider the following suggestions:

- Ask the students to practice a specific topic in pairs, taking turns as tutors. The exercises can be more fun when done together.

- After discussing a grammar topic, start practicing with using the chatbot for 5 minutes in class. This will be a refreshing break from theory.

- In pairs, student A studies one micro lesson while student B studies another. They both report back to one another about what they have learned.

  The teacher checks for errors.

- Students form a quiz based on what they have learned on Mr. and Mrs. Winston.

- For early finishers, the teacher can direct them towards the chatbot.

- Mr. Winston can always be used for additional review if the student is behind in their studies (due to various reasons such as an absence or late arrival to school).

- Books like English File often present text or listening activities. Mr. and Mrs. Winston can step in here, either as a substitute or to supplement this consolidation of new structures.

- Study Buddy systems can incorporate the app so that one student can test their partner and vice versa.

- After starting to use the chatbot, the students will get a daily reminder to do one daily task on their own time, and then can opt to practice further with more targeted material that they may be struggling with.

- Reward the students with some free time or some other prizes when they have done their daily tasks 5-10 or 30 days in a row.

- Remind the students to turn to FAQs if they want a quick and clear explanation of a grammar concept when reviewing for class or exams.

- Ask the students to create new exercises using the Mr/Mrs. Winston chatbots as examples and to create their own vocabulary/grammar exercises they need to practice.

Homework

According to the Booklet on Chatbots in Education, "most of the interviewed students and experts agreed that the use of chatbots is more useful for study at home." With this in mind, it is not expected that teachers would devote a lot of class time for Mr. and Mrs. Winston but that they would encourage students to access the chatbot out of class.

Homework tasks from Mr. and Mrs. Winston are designed to be short and engaging- 3-5 minutes rather than the more traditional forms of homework that can take more than half an hour. This enables students to have greater flexibility in the contexts in which they might complete that homework. For instance, 5 minutes spent researching phrasal verbs could easily be done on the bus home or after breakfast.

Spaced Repetition

This is the concept that repetition over several spaced periods can lessen the intensity of time and effort spent on trying to remember a lesson. For example, if you look at the table below, you'll see ideal gaps between study according to when a test is due [26]. If you have a test in 1 month, the gap between study sessions would be 1 week for optimum retention of new vocabulary or new grammar construction.

Time to Test	First Study Gap
1 Week	1-2 Days
1 Month	1 Week
3 Months	2 Weeks
6 Months	3 Weeks
1 Year	1 Month

With Mr. and Mrs. Winston, you could prepare a timetable of revision sessions for when students should be revising material that will appear in a test.

Inverted Learning

The concept of the flipped classroom where classroom time is dedicated to homework and homework time is focused on preparing for class activities is a relatively new concept. With the so-called 'Flipped Classroom' Mr. and Mrs. Winston provide ample opportunity for teachers to direct students to lessons to support their learning on the chatbot in preparation for the following day.

Specific Activities

1. Collocations

Collocations are very useful lexical items for foreign students. They come in lots of shapes and sizes: verb+noun, adjective+noun etc. While they may look easy to grasp intellectually, students often have difficulty in retaining and sometimes abandon learning them altogether. A good remedy is to get students to refer to Mr. and Mrs. Winston for 5-minute sessions, perhaps after class, informing them that there will be a collocation test the next day. Being able to study on their own can relieve a students' fear-of-failure in the class and with the gamification of learning that Mr. and Mrs. Winston can offer, students are more likely to be focused and distraction-free while studying. A potential plan is to introduce the idea of collocations in the classroom either in isolation or in the context of a particular subject, check and drill phonology and allow for a meaningful speaking activity to practice. After that, teachers can set homework on Mr. and Mrs. Winston (i.e. 10 minutes reviewing collocations) alongside any other homework.

2. Conditionals

For foreign students, grammar constructions like conditional sentences regularly cause confusion both in spoken activities and in real life situations. Often "will" and "would" are incorrectly used in the result section of the conditional or used in the condition as well as the result.

Examples:

If I **won** the lottery, I **would travel** the world.

If I **had known** you were coming, I **would have made** lunch.

Sometimes only by regular correction and extension exercises do these errors get corrected. Mr. and Mrs. Winston can be used specifically here to review these constructions to avoid the teacher spending further class time on re-teaching them. Likewise, this notion of spaced repetition can be used for any other items on the curriculum that are eating up too much class time.

3. Introductory Lesson

As a first lesson, Mr. or Mrs. Winston can be introduced within the context of a lesson about technology. You can get students to brainstorm the latest developments in technology and especially technology in the classroom. Students can give their opinions about smart boards and e-learning. Perhaps they know of some chatbots already. You can then give students information on how to access the chatbot and give them some time to browse the content.

4. Collecting Questions

To extend students' learning and ensure their understanding of the material in the chatbots, students can be asked to write down questions as they practice on their own time. The following day, teachers can start the class with a warmup activity based on the students' questions. There are countless ways of exploiting their questions that arise from using the chatbots; for example, teachers can do the following activities:

- Choose 10 questions and get students in pairs to explore some possible answers.
- Put a collection of these questions in a team quiz.

- Arrange the questions with multi-choice answers.
- Choose 15 questions, write the answers but mismatch them with the questions. Students then match question with answer.

Personalised Learning

In recent years much has been reported about the concept of personalised learning – a move away from the one-size-fits-all style of education. Furthermore, many language schools face the challenge of differentiation in the class, especially in summer schools.

While teachers are expected to be skilled enough to deal with some occurrence of differentiation, the fact is teachers cannot create 3 or 4 separate lessons for the one class. One possible application of Mr. and Mrs. Winston is to act as a teaching assistant where the difference in levels or particular linguistic knowledge is significant.

If a student has had no exposure to the present perfect, a class which extends its use is not going to be very helpful. In such cases the teacher is faced with a

dilemma – they cannot focus on only one student. On the other hand, they cannot abandon that student (or students). A remedy could be to direct such students to Mr. and Mrs. Winston for some speedy micro-learning, then re-incorporating them in the class at a more suitable moment. Teachers should also advise students who have difficulties with certain topics (the present perfect, for example) to support their learning by using the chatbot at home. This will provide them with necessary repetition and review in order to grasp a difficult concept.

Support lessons

Support lessons corresponding to the notions explored by the chatbots Mr. and Mrs. Winston, covering levels A2 and B1, respectively, have also been developed during the project. The support lessons present vocabulary and grammar topics in a clear way with rules and theory, as well as related exercises. These lessons were created with the needs of learners with learning disabilities in mind, to make them as clear and simple as possible. The support lessons can be used in class to teach or practice a specific topic and further exercises can be assigned using the Mr. and Mrs. Winston chatbots at home.

The support lessons act as a useful extension of specific grammar points and new lexis covered in the app. The topic areas are replicated across both mediums and in the case of the latter specific colours, spacing, fonts and wording have been carefully chosen to cater for the basic needs of students with learning disorders. There is no one-size-fits all approach to adapt to such students. The support lessons include theory and different kinds of exercises, both open-ended and multiple-choice questions. They also include a lot of pictures and visual material. The support lessons for vocabulary include vocabulary lists,

which can be taught and studied together in class. Then the exercises can be done individually, in pairs or as homework.

Some tips for using vocabulary support lessons:

- Use the support lessons to introduce a new vocabulary topic before practicing with the chatbots.
- Read the vocabulary out loud with a group or in pairs. Then do some of the exercises in pairs. For example, exercises with pictures can be done in pairs so that one person hides the word and only shows the picture, and the other person has to remember the word.
- Discuss the topic of the lesson in pairs. For example, in the lesson about Health, the students can discuss the general types of illnesses listed and tell a personal story if they have ever suffered from one of them. In the lesson about Food, the students can discuss in pairs if they like cooking and what ingredients they use when they cook. At the end of these lessons, the students could make short dialogues about those topics in pairs or in groups.
- It is important to check the answers for the written exercises together with the class.
- As homework, the teacher can assign some exercise using Mr. or Mrs. Winston chatbot on the same topic, especially if the support lessons have been used in class. This will give the students some variety in the practice methods.

Some tips for using grammar support lessons:

- Use the support lessons to introduce a new grammar topic before practicing with the chatbots.
- Teach the grammar in class together. Then the students can do the first exercises together or individually in class.
- Students can do some verbal exercises related to the grammar topic in pairs. For example, in the lesson about phrasal verbs, the students can be divided into groups and asked to come up with a certain number of phrasal verbs that include a certain preposition (each group gets a different preposition). Then, the groups share what they came up with and the whole class verifies whether the phrasal verbs exist and what their meanings are.
- It is important to check the answers for the written exercises together with the class.
- As homework, the teacher can assign some exercise using Mr. or Mrs. Winston chatbot on the same topic, especially if the support lessons have been used in class. This will give the students some variety in the practice methods.

Both the support lessons and the chatbots can be used as help towards a weekly quiz or a test on the topic and can help the students to revise all the lessons without the teacher's help. The main task of the chatbots is to serve as virtual advisors, where the students can use them when they need in their own pace. This offers invaluable support to the students' learning.

5. c. Understanding and assessing students' performance

As we created the chatbot, we took many different criteria into account. However, the actual success of the chatbot and its performance can only be proven by some relevant data that both Facebook and Chatfuel (or any other chatbot design platform) provide. This data is analysed by the platform to give us statistics and numbers, as well as access to the bot's conversations with its users.

As explained in the Booklet on Chatbots in Education, students will often feel more comfortable making mistakes and asking their questions when using a chatbot since this digital tutor will never judge them or be annoyed if they ask many questions. This is why having access to the bot's conversations can be a great help for the teacher to better understand their students' needs.

It is however important to point out that the data analysis of the project's two chatbots, Mr. and Mrs. Winston, will not be available for teachers testing them as there will be far too much data and we would not be able to share the password of the account through which these chatbots were created. Nevertheless, the information provided in this guide regarding the analytics function of the platform will help anyone interested in creating their own pedagogical chatbot for language learning.

1. Why do you need to evaluate your chatbot?

You have now read a lot of information about why you should use a chatbot for language education, but did you know that by evaluating and analysing the chatbot's performance and your student's use of this tool, you can also better address the needs of your classroom?

As a teacher, having an overview of how your students are using the tool, what their most frequent questions are and what exercises they like or dislike can provide you with essential information to prepare your lessons according to the students' needs. It can also be a good tool to see if the students are really practicing regularly or not.

Take a student who is struggling in the classroom. If you see that they really try to practice regularly and ask their questions to the chatbot, it would help you appreciate the efforts they are making and show you what topics they are struggling with. As a result, you would know which topics to review in the classroom. If, on the other hand, the student is not using the chatbot, you might not have enough information to help them improve.

By seeing the questions your students ask the chatbot, you will understand which topics you might want to spend more time on and you will see if the explanations you gave were clear enough or if you need to adapt to your students' level. This is also true if, on the contrary, you see that the students find the exercises too easy. You could then add some more challenging tasks to stimulate their learning.

All this data can thus help you modify your chatbot to better fit your learners' needs. If the students are often asking questions about a certain topic, make sure that the topic can be explained and illustrated properly by your digital

tutor. If they have difficulties with some exercises, you could try to adapt their format. Make sure to regularly check the inputs that have not been recognized by the chatbot since this might sometime mean that students are asking questions either using unrecognized commands or about a topic that the chatbot cannot yet explain.

2. Evaluation checklist

In technical terms, the data we use to evaluate a chatbot's performance is measured by what we call 'metrics'. However, before you dive into this pure data, it might be better to create a checklist of what you want to know about your students' use of the chatbot. Here is a suggestion of the questions you might want to answer when you evaluate the performance of your chatbot, or, in other words, when you try to see whether it fulfils its purpose.

Feel free to add any other questions to this list to guide yourself!

- Did all the students use the chatbot?
- Did all the students stay engaged in their tasks?
- Did the students ask things that were not recognised by the chatbot?
- What were the exercises or topics that the students used the most?
- Did the students finish all their exercises?
- Are my students satisfied with the chatbot?
- Does the chatbot provide the support and help it is supposed to?
- Are there any mistakes in the exercises?
- Are there any GIFs or images that do not seem to work?

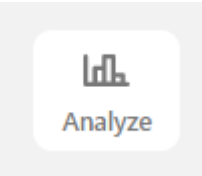
In addition to evaluating the performance of your chatbot through its metrics, do not hesitate to ask your students what they think about it once in a while! You

can even ask for feedback from the students directly from the chatbot, by using the "re-engage" section for example.

In the following section of this chapter, you will discover more thoroughly the different analytics features that Chatfuel and Facebook offer. You will also learn more about the platform in our Chatbot Design Guide.

5.c.i. How to collect data with Data collection Analytics

As mentioned previously in this guide, we focus on analysing the functions in Chatfuel as this was the chosen chatbot development platform for this project. The point of this part is not to provide you with an exhaustive list of functions available: not only can you find them in Chatfuel and other chatbot's support section and guidance material, but too precise descriptions are likely to get outdated quickly. Instead, we will go through the main existing features of Chatfuel's "analyze", "people" and "live chat" sections.



The "Analyze" section allows you to have an overview of the statistics of your chatbot.

The most general metrics are:

- **Total users:** this number will allow you to know how many of your students subscribed to the chatbot and to know if they are engaged in the exercises that you created for them. It includes the number of users who deleted or blocked the chatbot.

- **Daily new and blocked users:** this measure shows how many people have used or blocked the chatbot on a specific date or during a specific timeframe,

- **User activity:** this graph shows you how many users were active in the past few days, measuring the total number of people having some form of interaction with the chatbot, those who read what the chatbot sends, and those who continuously interact with it.

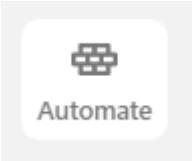
- **Sources:** this section is meant to show you where the users of your chatbot are coming from; it might not be the most useful for you if you are only looking to have your students use it.

- **User retention:** this measure is useful as it reveals what percentage of the chatbot users use the chatbot several days in a row. While it might not reach 100%, it should sound the alarm if there are less than 50% of your students not interacting regularly with the chatbot. If user retention is low, you could communicate more actively about the chatbot to your students, or you could make it more friendly to improve the relationship between the student and the chatbot.

Three more specific measures can be useful in knowing how your students are doing with the chatbot:

- **Popular blocks:** this category shows you the blocks (or sections of your chatbot, which might be topics of exercises for example) the users interact the most with. This function is a good indication of what vocabulary and grammar topics your students need more help with. If the most popular blocks are exercises about a particular topic, you might want to review it in class as well and assess their knowledge and understanding.

To go further: the statistics of individual blocks

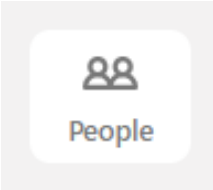


You might also want to check the statistics of each individual block in the "Automate" tab of Chatfuel to get more refined data. For each block, you can see how many of your students saw the content, and how many of those viewers clicked or wrote their input to answer the bot's question. By doing so, you can also see how many students finished the exercise. This will give you the chance to improve any exercise where students stopped in the middle for any given reason. It can also help you spot mistakes in the block's structure and correct it for further use.

- **User inputs not recognised:** this category is very useful as it will reveal you what users want to ask the chatbot. It may reveal very simple changes you could make: sometimes, you only think about one or two ways to ask for help, while your students might ask in different ways. Once you see those unrecognized inputs, you can add new AI rules to make sure the chatbot understands them next time someone tries to type them, or

create new blocks to cover topics that the students are asking for. This category gives you leads on how to improve your chatbot for your audience.

- **Popular buttons:** to an extent, this can reveal how students are doing in their exercises: you get to know the number of times one particular exercise or topic was selected.



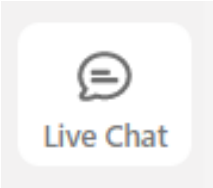
While the Analyze section is meant to provide you with overall data about the use of the chatbot, the People section is meant to help you read the actions of the users with your chatbot. At the time of writing this guide, the overview of the "People" section was limited in the free plan, but there are several types of useful data you can extract from it.

- First, the list of people gives you **an overview of the last people who used the chatbot**, with the following data in particular: name, country, the last moment they used the chatbot, the date the signed up, and whether they blocked the chatbot or not;

- **By clicking on the name of a user, you get more refined data**, such as: how many sessions the user had with the chatbot, the list of exercises they completed, and what they answered to specific questions.

- There is a research bar at the top of the page that allows you to **segment the research among the users of your chatbot:** for example, you can

select only the people who worked on one specific exercise (eg. "attribute: VocabularyTopic is/is not/starts with "animals"). This specific research can help you track whether your students are keeping up with the programme of the class, or whether they are already ahead. This will allow you to know what you should remind the students to study with the chatbot, or how to tailor the rhythm of your class to one particular group of students.



The third most useful feature in Chatfuel's analytics tools is probably the **Live Chat section.** As the name suggests, it provides you with a live feed of the active and closed chats that users had with your chatbots. What is useful is that you can see what each user answered in a specific exercise, or if they struggle in using the chatbot. This will help you provide appropriate support to your students.

This section can be more relevant to look at than the conversation history on Facebook Messenger. In fact, this section of Chatfuel shows you not only the conversation going on in Messenger, but also the relevant structure of your chatbot (ie. How you built it) by detailing the blocks and exercises. It can help you find anything you'd like to correct or check in the structure of the chatbot by giving you the name of a specific block for instance.

Note: At the time of writing, most of the available add-on tools to measure the performance of chatbots compatible with Chatfuel and/or Facebook Messenger were heavily focused on turning users into clients, or on managing huge groups of users. In addition, it seemed that their free features did not add

much value for a teacher compared with the metrics and information available from Facebook Messenger or Chatfuel. Therefore, the partners chose not to analyse these other tools. [29]

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Mr Winston the chatbot

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