The Use of Persona in Foreign Language Learning Facilitated by Chatbots

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Research Article

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Abstract

At present, it is natural for young people to use different digital tools to learn a foreign language. The aim of this article is to explore what kind of chatbot for learning a foreign language at A1-B1 level students would welcome and create a persona (i.e., a typical foreign language user) of a chatbot for learning a foreign language. The research employed a quantitative approach using a questionnaire survey to gather data from 109 respondents. The findings revealed that simplicity, quick practice opportunities, gamification features, accessibility, and cost-free usage were the most valued features of chatbots for language learning. The study also highlights the importance of immediate feedback, user-friendly interfaces, and short-term interactions for optimal chatbot usage. Furthermore, the results shed light on the preferred learning methods, such as spoken communication and writing, as well as user goals, including vocabulary expansion, comprehension improvement, and grammar enhancement. By developing personas, educational chatbot developers can tailor the designs and content of chatbots to better meet the needs of learners and thus enhance foreign language learning experiences for them.

Introduction

Researchers and educators work hard to develop new curricula and instructional techniques in order to cope with the new trends in the teaching process, but many of these innovative ideas are not as successful when used by different teachers in different contexts (Hofert, 2023; Penuel, Fishman, Haugen Cheng, & Sabelli, 2011; Rahman, & Watanobe, 2023; Sallam, 2023), either because of misusing or sometimes because of the laziness of teachers to use them which causes faculty to stop using them (Henderson, Dancy, & Niewiadomska-Bugaj, 2012). The main tactic utilized in science professional development at the university level is to promote educational innovations as finished goods (Henderson, Finkelstein, & Beach, 2010). This strategy makes the assumption that the specifics of the professors, students, and institutions involved in its implementation are not necessary for its successful execution. It does not give the faculty member the opportunity to contribute significantly to the changes or take into account their particular setting (Henderson et al., 2010). Teachers need to be respected and their viewpoints need to be heard and applied at least in their classrooms by letting them change themselves and their context. Teaching is “definitely not about being yourself,” according to a New York Times Magazine article (Green, 2010). The faculty members respect the individuality of their personal styles, abilities, and preferences when selecting a teaching approach that is suitable for them (Henderson & Dancy, 2008). The emphasis on getting faculty to use the educational innovation "as is" may be too great, maybe at the expense of the uniqueness of the faculty and their circumstances and this is the reason for trying to give teachers a chance to develop new innovative ideas and to develop a viewpoint towards the needs of their students. One of the active ways to compile teachers’ ideas and students’ preferences is the use of a persona.

Generally, personas are a popular human-computer interaction strategy for improving stakeholders' understanding of audiences, consumers, or users. Persona is described as a transcription of prospective users' behaviour patterns, objectives, competencies, attitudes, and environments (Canossa et al., 2009),
as well as fictitious, character-driven aspects that personify the ideal user (Lowdermilk, 2013). Personas have stayed largely constant for many years and are used in a variety of fields, including e-commerce, health, marketing, software development, and system design. Personas have been suggested as fictional depictions of user groups "hypothetical archetypes" of target users and their requirements, wants, and preferences (Adlin & Pruitt, 2010). Personas effectively distil complicated data from sources including ethnographic user studies (Blomquist & Arvola, 2002), user interviews and observations (Sinha, 2003), and massive internet questionnaires (McGinn & Kotamraju, 2008), employing narrative and storytelling to aid in remembering and organizing specific user data.

There are many approaches to fostering empathy with lived experiences, and user engagement is a crucial component of design (Wright & McCarthy, 2008). A well-accepted strategy, particularly when creating technology, is to involve people in participatory design (Bødker & Iversen, 2002) and co-design (Sanders & Stappers, 2008), specifically throughout the early stages of a project where their viewpoints could help. It has been demonstrated that working with people who are actively involved in the design domain in their daily lives is a highly effective technique of engagement (Tracy Ross et al., 2016), exceeding non-co-designed solutions. It has been investigated if personal facts may be incorporated into the end-to-end generative framework in studies of personalized dialogue modeling, a fascinating study area in deep learning. Open-domain dialogue in online communication becomes more engaging and consistent (Al-Obaydi et al., 2023) when agents are given predetermined characters, which is a well-established practice.

The process of creating personas to reflect important user types is frequently used in user interface design and can be used to provide customized resources. Personas are made-up archetypes of users that are given names and comprise generalizations of their essential traits and objectives gleaned from interviews. Personas effectively package information into the form of a person who is understandable and persuasive, making this strategy very effective (Madsen et al., 2014).

To this end, this study attempts to employ the use of persona in language teaching which is a new and innovative use of it as it is too much used in the economy and health care domains. Persona is a difficult concept and the educational society does not fully understand how and why teachers develop particular personas in their classes. It is essential to understand everything that occurs in the classroom, including the various ways in which teachers assume their responsibilities. Future teacher training may be impacted by research into the personas that teachers develop, specifically those related to educational technology as it is the current trend of life. Therefore, this article aims at exploring what kind of chatbot for learning a foreign language at A1-B1 level students would welcome and creates a persona (i.e., a typical foreign language user) of a chatbot for learning a foreign language.

**Methods**

The study used mainly quantitative data derived from a questionnaire survey, which was launched between February and March 2023, with the help of survio.com (Survio, 2023) in an online form. The
questionnaire contained altogether 16 questions; three questions focused on demographic details, such as age, sex, and the level of a foreign language) and the remaining 13 questions were associated with the development of a chatbot that would be targeted at students’ language needs, such as what their methods of learning are or how often they use a chatbot to learn a foreign language. The survey’s face validity is verified by presenting it to a group of professionals in the fields of education, psychology, and language instruction. The panel decided that it was suitable for this investigation. The inter-rater reliability and test-retest methods were employed to validate the reliability of the questionnaire. It is considered adequate that the test-retest reliability coefficient was 0.82. The inter-rater approach was used, and the outcome of the Pearson correlation coefficient was 0.81, which is also a satisfactory level of dependability.

A total of 109 respondents of different gender and age from all over the Czech Republic answered the questionnaire. Respondents were approached via social networks and verbal agreement. On the basis of the questionnaire results, a persona (i.e., a typical user) of a chatbot for learning a foreign language, in this case, English and Spanish, was created. Only respondents who had an A1-B1 level of English were retained in the questionnaire, as users with higher English and Spanish proficiency might have different preferences for using the chatbot. The language level was set according to the Common European Reference Framework for Languages (CERF, 2020). This survey attempts to analyze the ideas and attitudes of all respondents in order to create a persona for them. All respondents had extensive experience with online teaching during the previous academic years, which was essentially all done in an online mode.

All appropriate privacy precautions were taken, and each respondent gave their consent for the survey to be recorded. None of the data included names or other forms of personal identification, and no personal information was collected. Thus, all GDPR standards were fully observed, and the Ethical Committee of the University of Hradec Kralove with decree no. 4/2023 has agreed with this research.

Results

As indicated above, 109 people filled in the questionnaire, out of which 60 were females and 49 were males. Most of the respondents were between 20 and 39 years old (81 people/74%), followed by 17 (16%) people at the age between 40 and 59 years and eight (7%) people at the age between 0 and 19 years. Only three (3%) people were older than 60 years. According to the responses, the majority of the respondents (82/75%) were classified as beginners (A2 level) in a foreign language. A slightly smaller number (24/22%) have basic proficiency (A1 level) and only three (3%) respondents identified themselves as intermediate (B1 level). If a respondent had a higher or advanced level of a foreign language, s/he was excluded from the survey as s/he did not belong to the target group of this paper.

The findings also show that the most popular chatbot is Duolingo because 100 (92%) of the respondents know and use it, followed by ChatGPT with 66 (61%) users. In addition, Memrise is popular among 42 (39%) users, HelloTalk among 41 (38%) users, and Replika among 21 (19%) users. Tandem, Babbel,
Lingvist, and Busuu have relatively few users, with 18 (17%), 15 (14%), and 7 (6%) users respectively. The respondents were also asked about the features they appreciate most when using these chatbots. Their responses are listed in Table 1 below in order of their frequency.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Number of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simplicity</td>
<td>29 (27%)</td>
</tr>
<tr>
<td>Quick practice, short lessons</td>
<td>25 (23%)</td>
</tr>
<tr>
<td>Free of charge</td>
<td>17 (16%)</td>
</tr>
<tr>
<td>Gamification features</td>
<td>11 (10%)</td>
</tr>
<tr>
<td>A good learning tool</td>
<td>11 (10%)</td>
</tr>
<tr>
<td>Use anywhere and at anytime</td>
<td>9 (8%)</td>
</tr>
<tr>
<td>Appealing design</td>
<td>8 (7%)</td>
</tr>
<tr>
<td>Fun lessons</td>
<td>8 (7%)</td>
</tr>
<tr>
<td>Easy to use</td>
<td>8 (7%)</td>
</tr>
<tr>
<td>Saves time</td>
<td>5 (5%)</td>
</tr>
<tr>
<td>I don´t know</td>
<td>4 (4%)</td>
</tr>
<tr>
<td>Word translations</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>Vocabulary learning</td>
<td>1 (1%)</td>
</tr>
<tr>
<td>Good feedback</td>
<td>1 (1%)</td>
</tr>
</tbody>
</table>

Thus, the findings indicate that the main reason for using chatbots appears to be their simplicity, quick practice, gamification features, accessibility, and the fact that their use is free of charge.

On the contrary, students complained about the advertisements (24/22% users) they had to face when using these chatbots, as well as that some of the chatbots were paid (15/14% users) and some contained complex lessons (12/11% users). Other, lesser criticisms included the incomprehensibility of some features, slowness, lessons on talking, and limitations of lives. However, a total of 33 (30%) users did not find any negative features. Overall, the results of the table suggest that users expect chatbots to be easy to use, and provide relevant and useful content without too many advertisements, with a minimum of restrictions.

Figure 1 below then shows the frequency of using chatbots for learning a foreign language. The findings indicate that most people (56/51%) use chatbots for learning a foreign language at least once a month,
and 21 (19%) of them at least once a week to practice a foreign language.

The respondents were also asked about the period of using the chatbot. Most respondents (97/89%) actively use chatbots for no more than half an hour, which may indicate that chatbots are more suitable for short interactions. At the same time, however, there is no one using chatbots for more than an hour, which might indicate that users increasingly prefer human interaction for longer interactions. Some respondents (12/11%) use chatbots for 31–60 minutes. Overall, the results suggest that chatbots are useful for short-term interactions.

Furthermore, the results reveal that almost all respondents (107/98%) use a chatbot to develop their foreign language at home. 45 (41%) then also use it when traveling, 24 (22%) at work, and only 7 (6%) outdoors (Fig. 2). Thus, most people prefer to use chatbots at home, which might be connected with the convenience and ease of access to these chatbots. On the contrary, outdoor environments seem less suitable for using chatbots, which could be caused by less available internet connections or less suitable conditions for using these chatbots.

Figure 3 below then shows which learning method helps students learn a foreign language best. The findings indicate that most respondents (92%) learn a foreign language through spoken communication, followed by writing (70%) and reading (63%). On the other hand, listening (15%) is not very popular among respondents. This may be due to the fact that people often do not want to or cannot listen to the sound; it is also demanding on concentration. It is also possible that listening is sometimes only in the paid version and users do not want to pay for additional features. Moreover, learning a foreign language on the basis of grammar structures, vocabulary development, and translation of words seems to be also a marginal issue.

When developing a chatbot for learning a foreign language, interaction with a chatbot appears to be an important issue for the development of a personalized chatbot. The findings of this study revealed that the most appropriate way for respondents to interact with chatbots is a choice of options (60/55% of respondents), followed by writing messages (48/44% of respondents). The least popular is speaking into a microphone (1/1% respondent), which may be due to fear of misunderstanding or inability to use this feature. However, the results also demonstrate that the most effective way of interaction for students seems to be writing messages (58/53% of respondents), which is followed by a choice of options (51/47% of respondents). Therefore, when compared with the previous results, one can observe that some respondents find a certain way of interaction to be the most appropriate, but find another option to be the most effective.

Figure 4 below then illustrates the students’ goals for learning a foreign language by using a chatbot. The results reveal that the highest number of responses include improving vocabulary, indicating that most respondents (41/28%) wish to expand their vocabulary and learn more words and phrases in a foreign language. The second highest number of responses (39/36%) was recorded for improving the ability to understand a foreign language, indicating that many respondents wish to improve their ability to read, listen and understand a foreign language. The third, also a high number, was recorded for improving their
grammar (27/25%). Conversely, only two people (2%) responded that their goal was to improve their conversational skills.

Moreover, the findings reveal that respondents prefer to receive feedback immediately after each answer (105/96% of respondents), suggesting that they want to know straight away whether they have made a mistake and whether there has been any misunderstanding. Only 4 (4%) respondents prefer to receive feedback after the conversation has been completed.

The respondents were also asked how they would like new words and phrases to be explained to them. Most respondents prefer verbal definitions to examples of use or pictures. Specifically, 106 (97%) respondents prefer verbal definitions, while only 2 (2%) respondents prefer examples of use and 1 (1%) respondent prefers pictures. In practice, one can interpret this as users wanting explanations of new words or phrases using definitions.

Thus, in summary, it can be concluded that the respondents were roughly equally divided by gender. The main group was made up of people aged between 20 and 39 years old and most of them were classified as beginners and advanced beginners of English. The chatbots that were familiar to the respondents included Duolingo and ChatGPT, while other chatbots were not as widespread. The conclusion from the survey showed that chatbot users valued free, easy-to-use, and quick-to-learn features the most, while complex features, the presence of advertisements, and paid versions were less popular. More than half of the respondents use chatbots regularly, usually at home for less than 30 minutes. Respondents prefer learning a foreign language through writing and reading while listening exercises and speaking are not as popular.

The method of interacting with the chatbot that has proven most effective is the choice of options, however, texting is also very popular. When it comes to effectiveness, texting was identified as the most effective method of interaction. Chatbot users aim to improve their vocabulary and understanding of a foreign language. It is important that the chatbot responds to replies in text form and explains new words and phrases using word definitions.

These survey results suggest that chatbots are a valuable resource for users learning a foreign language. Free, easy-to-use, simple, and fast learning are key factors that chatbot user value. Since most respondents use chatbots more than once a month, it seems that these applications are very effective for foreign language learning. The survey results also showed that typing messages is the most effective way to interact with a chatbot, but the choice of options is also very popular.

Table 2 below describes the appropriate persona of the foreign language user.
### Table 2
The persona of a foreign language user

<table>
<thead>
<tr>
<th>Category</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Female</td>
</tr>
<tr>
<td>Age</td>
<td>22 years</td>
</tr>
<tr>
<td>Language level</td>
<td>A1</td>
</tr>
<tr>
<td>The environment where a chatbot is used</td>
<td>At home</td>
</tr>
<tr>
<td>Frequency of use</td>
<td>Several times a month</td>
</tr>
<tr>
<td>Period of use</td>
<td>0–30 minutes</td>
</tr>
<tr>
<td>Favourite learning method</td>
<td>Speaking, writing, and reading</td>
</tr>
<tr>
<td>Goal of use</td>
<td>Enhancement of vocabulary</td>
</tr>
<tr>
<td>Other requirements</td>
<td>Free, easy to use, simple, fast</td>
</tr>
</tbody>
</table>

### Discussion

Researchers and educators are constantly developing new teaching methods, but their success often depends on teachers’ willingness to adopt them. In the field of science education, there is a tendency to promote educational innovations as finished products without considering the unique needs and contexts of individual teachers (Roumeliotis & Tselikas, 2023). This approach undermines teachers’ autonomy and creativity in the classroom. To address this issue, the use of personas has emerged as a way to involve teachers in the design process and understand their perspectives. Moreover, this use can be implemented when chatbots are involved in foreign language education. In the context of language teaching, personas offer insights into the needs and preferences of language learners (Salomão et al., 2015).

This study was conducted to develop a persona of a chatbot for language learning at the A1-B1 proficiency level. A questionnaire survey was administered to 109 respondents, focusing on their language learning methods, frequency of chatbot use, preferred features, and interaction preferences. The results show that the majority of respondents were beginners in a foreign language, with Duolingo being the most popular chatbot among them, as with Munday (2016), in addition to ChatGPT. The results revealed that simplicity, quick practice, gamification features, accessibility, and cost-effectiveness were highly valued by users. These design features could work as a guide that can help game designers through the process of designing (Salomão et al., 2015). On the other hand, advertisements, paid versions, and complex lessons were viewed negatively. Most respondents used chatbots at least once a month, primarily for short interactions of up to half an hour. The home was the preferred environment for using chatbots, while outdoor settings were less favorable. This can be due to the concentration needed when using chatbots, unlike gaming which could be played everywhere.
Regarding language skills, spoken communication was the most preferable. This is because the participants come mainly to communicate and exchange ideas and opinions. The same idea is also repeated with digital gaming. Foreign learners usually need to communicate using their second language though this may consist a challenge to them (Liu, 2021; Sylvén & Sundqvist, 2012). The mode of communication with the chatbot that has shown to be most successful is the selection of alternatives; however, texting is also fairly common. The most productive way of communicating, in terms of effectiveness, was found to be texting.

Users of chatbots want to increase their vocabulary and comprehension of a foreign language. This is because of the urgent need of the users to express what they want. Therefore, it is common for them to learn and explore more vocabulary words during the process of using the chatbot, an issue that is common in using many online applications and digital gaming in language learning (Dewaele & Dewaele, 2020; Edmonds & Gudmestad, 2021). It is crucial that the chatbot responds to text-based comments and uses word definitions to define new terms and phrases. The kind of language used is acquired by the learners as it is. They understood the meaning of the words as they appeared in the context, not after having to interpret them. From the standpoint of L1 acquisition, this is a natural process where people pick up the language without the requirement for translation or explicit explanation of the grammar (Elsabbagh et al., 2013). As a result, this L2 acquisition through the use of chatbots is highly natural because it resembles L1 acquisition at a very young age (Legault et al., 2019). When creating various learning apps for L2 acquisition, it would be advantageous to utilize this benefit and keep it in mind.

The other two skills are writing and reading which are also essential skills in using chatbots (Castellanos-Gomez, 2023). Both are important for learners as they consider complemented to the communication used in this application. Listening exercises were less favored which is also a justifiable result as the learners do not need it in chatbots. Text-based interaction was found to be the most effective way of engaging with chatbots, with a preference for immediate feedback after each answer. The existence of feedback is one of the main features that may determine the success of an online application, as recommended by (Al-Obaydi et al., 2023). Feedback, which informs learners of their actual performance with respect to their performance objective, is seen as a crucial element in learning. The purpose of feedback is to help students develop by pointing out issues that need to be changed and highlighting strengths that they should build on (Shute, 2008). Feedback is a crucial component of any educational assessment. Verbal definitions were the preferred mode of explaining new words and phrases.

**Conclusion**

In conclusion, the findings of this study represent a valuable source of information both for teachers and software developers. For the software developers, the findings show that chatbot users valued the simplicity, accessibility, and cost-effectiveness of the digital tool. In addition, the results indicate that students prefer text-based interactions and immediate feedback. For language teachers, the findings reveal that improving vocabulary and understanding a foreign language are students’ main goals.
Overall, the findings provide valuable insights for the development of chatbots since by developing personas, educational chatbot developers can tailor the designs and content of chatbots to better meet the needs of learners and thus enhance foreign language learning experiences for them. In this respect, the results of this study are important both for the field of foreign language education, as well as educational technology.

Declarations

Ethics approval and consent to participate: All respondents provided their informed consent and the study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board of the University of Hradec Kralove, no. 4/2023. No personal or private data were collected and the GDPR standards were followed.

Consent for publication: Not applicable.

Availability of data and materials: All data generated or analyzed during this study are included in this published article.

Competing interests: The authors declare that they have no competing interests.

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Author Contributions: The study conception and design were conducted by BK. Material preparation, data collection, and analysis were performed by BK, LHA, and MP. The first draft of the manuscript was written by BK and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

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References


Figures

Figure 1

Frequency of using chatbots for learning a foreign language

Figure 2

Environment in which people use a chatbot for learning a foreign language

https://doi.org/10.1145/1357054.1357156.
Figure 3

Methods of learning a foreign language while using a chatbot

Figure 4

Students’ goals for learning a foreign language by using a chatbot