Comparative Aspects of E-learning Platforms in the Field of Foreign Languages

Georgiana VOICA
Bucharest University of Economic Studies
Faculty of Cybernetics, Statistics and Economic Informatics
Bucharest, Romania
voicageorgiana20@stud.ase.ro

Novelty has become something natural, and innovation has become a norm, which fuels the fierce desire to constantly identify new alternatives. This paper explores the characteristics, advantages and limitations of e-learning platforms dedicated to foreign language acquisition. A comparative analysis was made between platforms such as Duolingo, Babbel, Busuu, Mondly, Seedlang, Drops and DW Learn German, which is based on various criteria such as gamification, vocabulary, grammar or AI. The research also includes an empirical component, based on an user questionnaire that aims to discover the way that the MALL (mobile-assisted language learning) apps are perceived by the public. Furthermore, the study discusses the challenges of these platforms and outlines future directions such as AI-driven personalization, immersive technologies (AR/VR) and integration into classic education systems.

Keywords: *e-learning, languages, MALL, AI, gamification*

1 Introduction

Digitalization has also "infiltrated" the field of education, causing a strong change in the way the learning process is perceived. Classical methods have become obsolete in a very short time, and digital platforms have become a preferred alternative for the majority, replacing key elements of conventional didactics such as books and teachers.

The trend of using this new variant of study was also manifested in the case of foreign languages, because people perceived the emergence of these IT solutions as the beginning of a new era, one of convenience and flexibility. Thus, barriers related to interlingual and intercultural communication, as well as those related to distance, were removed, allowing any person to learn a new language, without having to travel or physically interact with other people. The focus of this study falls on the German language, being one of the most spoken languages in Europe and which has major economic importance at a global level.

The paper aims to analyze the benefits of e-learning applications for learning German, which benefit from a strong diversity among dedicated digital resources. The study focuses on representative platforms such as Duolingo, Mondly, Babbel, Busuu, Seedlang, Drops and DW Learn German, each offering different approaches. The entire research will be divided into several chapters, starting with the presentation of the theoretical framework, followed by the presentation and comparison of the platforms based on several criteria, limitations, integration in formal education, and finally conclusions will be presented regarding trends in this field.

2. Theoretical context

E-learning is a term that has gained weight in the academic context, taking over learning centers with aplomb and gradually integrating into the teaching process, becoming essential for the transmission of information. According to the definition, e-learning means electronic learning and involves the use of electronic

resources such as the Internet, communication networks and interactive software to access the materials made available, to accumulate knowledge, but also to develop through the learning process. [1]

The term hides under its "umbrella" a multitude of components, which thus offer a variety of ways in which e-learning can be used. Here we can talk about asynchronous learning (users use the materials at their own pace) or synchronous learning (that relating to real-time interaction). We can also extrapolate the term e-learning, which has currently acquired new valences through the increasingly common use of the notions of m-learning (learning through mobile applications) and d-learning (the entire digital learning process). It is known that d-learning has gradually begun to replace the general term e-learning, incorporating all the tools and processes necessary for online study, moving from moodle platforms to advanced mobile applications. MALL (mobile assisted language learning) applications are the most common and those that offer the best results in terms of the degree of efficiency in learning a foreign language. [2]

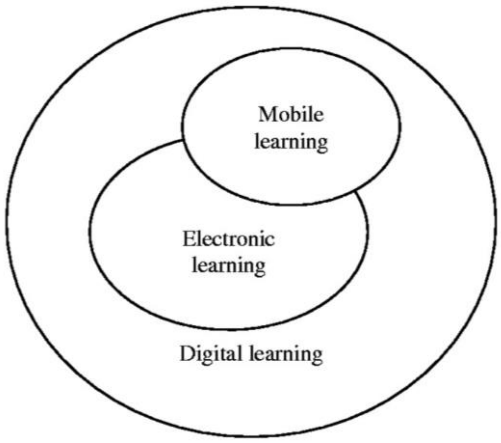

Fig. 1. The relationship between m-learning, e-learning, d-learning

2.1 Advantages

The main advantages provided by a MALL application are highlighted in various studies, which presents how online learning software has eliminated the space limitations imposed by conventional learning methods. The variety of areas from which students can access and deepen foreign language lessons has overcome the restrictions of the past, as they are no longer obliged to support them only from certain classrooms or rooms equipped with appropriate equipment. The working area has been massively reduced, with the emphasis on mobility and flexibility, which has generated an increase in motivation. Thus, anyone eager to master a new language can do so simply by using an application installed on their mobile phone. Regardless of where they are, learners can easily access the resources provided, without feeling pressed for time or having to travel to a specific location [3].

The idea of mobility basically refers to the independence of time and space of learning through mobile phones, referring to them as "24/7, barrier-free education centers". This produces benefits especially among students who do not perform so well in the classroom, but manage to find their motivation when using m-learning from home or even in informal activities, because they study at their own pace, without being compared to others. The results show that MALL technologies produce a significant increase in the degree of autonomy, but also in self-confidence and give learners a sense of achievement through their own strengths [4].

People who choose to use mobile applications to learn a new language are primarily attracted to gamification. This term refers to the integration of games into educational activities. Tasks initially perceived as difficult are transformed with the help of these didactic devices into enjoyable activities that stimulate cognitive capacity and reduce stress. Concrete examples that justify the attraction that learners show towards this type of applications are word games that contribute to the development of vocabulary or simulation games that improve pronunciation [5].

We can see how all these improvements in functionality have reduced the impediments to language acquisition through speech, as you can now interact with virtual chatbots, which simulate human conversations by integrating AI tools, or even with real native speakers. Contact with people from different cultures strengthens interlingual dialogue skills, as understanding customs and traditions leads to better communication, one based on respect, harmony and unity.

3. Presentation of the platforms analyzed

As I said in the previous article, the most famous language learning application globally is Duolingo, offering courses in over 30 languages, and can be used both in the web and mobile versions. Easy to use, interactive and extremely attractive, this mobile solution is chosen by people of all ages because it manages to attract them through simplicity, but also through parasocial marketing. Although in this field, capability is determined by how practical the lessons are and how well chosen the exercises are (these are divided into different themes), there is a growing trend in the social impact that these applications have [6].

Duolingo has the same technical functions as its competitors, but it stands out for managing to "sell" itself through social media promotions (funny posts that give the brand an almost human valence, with which most users identify; informal interactions of the page with other users of social media applications)[7]. In addition, the rewards offered at the end of the lessons are represented by the idea of *gamification* (badges, points in a ranking, tracking statistics), which arouses a magnetic interest among learners [8].

Babbel differs from Duolingo primarily in its scientific profile, the application being designed by linguistic experts. This additionally includes the option to participate in meditations supported by accredited people, the scheduling being done within the application, depending on criteria such as availability, number of places, language level [9].

Mondly is a paid application that structures the lessons into various essential categories in mastering a foreign language (necessary for carrying out everyday conversations), and each chapter consists of several lessons. We also find vocabulary pages and a dialogue page (where you can converse with a chatbot to practice). Like Babbel, there is also information related to statistics and progress within the application.

Seedlang is an application with a completely different approach from those on the market. It presents lessons in the form of stories, told by native speakers, which capture different contexts that can occur in everyday life. The emphasis is on speaking and listening, so users can hear their own pronunciation and compare it with that of another German speaker in order to improve it. Also, another interesting functionality is represented by flashcards, which users can build themselves to practice different terms. Grammar and vocabulary are also present, with a dedicated button, which by pressing which, learners can discover information related to pronunciation, concrete examples of use and helpful explanations. Another interesting component is represented by the trivia section, where there are mini-games dedicated to learning new words and which aim to motivate through competition with other users.

Busuu is similar to Seedlang, but has a few things that make it stand out. While the lesson structure is still based on videos with native speakers, there is also an integrated AI component that analyzes the pronunciation part and provides feedback. The community page allows members to post recordings of various phrases to improve their pronunciation, through comments left by other users.

Another popular app is ***Drops***. It stands out for its gamification-based approach, with users being encouraged to go through as

many topics as possible through games. They must match the word (noun, adjective, verb) to the corresponding image that describes it. The solution is built to be in line with the fast-paced society we live in, with the expectation that the user will progress at a leisurely pace, according to their own schedule. To draw attention to itself, the app sends reminders and motivates its learners through daily streaks.
The last app reviewed was ***DW Learn German***. This app is a reference point for all German speakers, as it is built around the idea of Deutsche Welle, which started as a radio station, which gained notoriety, and over time expanded to a German-language news website, which became recognized worldwide for its verticality and has now also come to offer German language courses (both in web and mobile form). Each chapter aims to present the lives of different characters, and can be watched as a mini-series, which incorporates everyday language, making it particularly easy for users to feel like they are part of the story. At the end of each episode, there are lessons to fix vocabulary and grammar, and users can even hear their own pronunciation.

4. Comparative analysis

E-learning platforms for learning German differ significantly from each other, both in terms of structure and the technologies used. This analysis was based on the following ***criteria***: type of content, feedback, grammar, vocabulary, level of human interaction, gamification, accessibility and integration of artificial intelligence.

4.1 Theoretical foundation of comparison criteria

In order for the analysis of these language learning solutions to be consistent with the requirements of scientific research, we chose as basic "measures" relevant pedagogical and technological criteria, which reflect the learning process of a standard user from several angles. Thus, the comparison made is rigorous, especially because the attention is polarized on different aspects that can be addressed when we talk about an examination of an information technology in the educational field.
The criteria selected in this paper – lesson content, feedback, vocabulary, grammar, human interaction, gamification elements, price and use of artificial intelligence – are frequently used in specialized studies on e-learning, and for this reason I have chosen to briefly argue their use, as well as a brief definition [10] [11].
a) Lesson content
The content of a platform represents a fundamental step in the learning process. The way it is structured plays a decisive role in guiding a learner's progress, which makes the lesson preparation process the basic stage. According to some studies, teaching materials must be relevant, motivating and adapted to the real communication needs of learners [12].
b) Feedback
Feedback is another extremely important component in the process of knowledge accumulation. In online environments, it can be immediate, automated, or personalized. Thus, formative feedback contributes to improving performance by identifying gaps and offering concrete suggestions. Platforms that provide detailed feedback (not just binary, right/wrong) favor self-regulated learning.
c) Vocabulary
When we want to learn a new foreign language, the first step we need to take is to assimilate new words. Vocabulary thus becomes a pillar that supports a language, and the newer terms we learn and the more often we practice, the closer we are to achieving our goal.
d) Grammar
Vocabulary would not be sufficient without the grammar component, which can be presented: explicitly (through rules) or implicitly (through examples). That being said, a combination of deductive and inductive learning is most effective, especially in technology-assisted

environments. Platforms that offer clear explanations and contextualized application exercises are more effective [13].

e) Human interaction

We often hear that a language must be practiced in order not to be forgotten. And a very important aspect in this regard is the dialogue with native speakers. They help us to learn the correct pronunciation, vocabulary, and grammar more quickly. Applications that manage to introduce this component are becoming increasingly sought after today.

f) Gamification

Gamification refers to the integration of "game" elements (badges, levels, points) into the educational process. It is shown that these mechanisms can increase user motivation and engagement. In language learning, gamification helps create a rhythm and routine for learning, through daily challenges and visual feedback of progress [14].

g) Price and accessibility

Another very important criterion (and one that attracts users' attention) is the free versions of the applications (the freemium model) and how much they can offer compared to paid subscriptions. Democratized access to education is a key principle in e-learning [15].

h) Artificial intelligence

AI has become the most sought-after functionality of contemporary technology. By personalizing the learning process (recommendations), voice recognition or providing dynamic feedback, AI has managed to become an indispensable component, without which learning would not be so fun.

Table 2. Comparative analysis of the studied platforms

Platform	Content	Feedback	Grammar	Vocabu-lary	Human Interac-tion	Gamifi-cation	Price	AI Integrated
Duolingo	Interactive lessons	Automatic	Summary	Extended	Miss	Yes	Free & subscrip-tion	Yes (prediction /vocal feedback)
Babbel	Interactive lessons, dialogue	Customized	Detailed	Moderate	Yes (chat)	No	Subscrip-tion	Yes (feedback)
Mondly	Interactive lessons, AR, chatbot	Automatic	Summary	Extended	Chat	Yes	Free & subscrip-tion	Chatbot AI, (AR)
Busuu	Video lessons, conversations	Human, Automatic	Detailed	Extended	Natives	No	Free & subscrip-tion	Yes (recommen dations)
Seedlang	Video lessons	Human (partially)	Developed	Really extended	Natives	No	Free & subscrip-tion	Missing
Drops	Games	Automat	Weak	Visual	Miss	Yes	Free & subscrip-tion	Missing
Dw learn german	Video lessons, exercises	No	Developed	Extended	Miss	No	Free	

4.2 Content

All the applications presented offer various language levels, starting from A1 and even up to C2, but Seedlang, Drops or Mondly place the predominant emphasis on the beginner and intermediate level, insisting on notions related to vocabulary and expressions encountered in everyday conversations. The content is varied, most of which contain interactive lessons with

well-structured exercises. Seedlang is distinguished by videos featuring native speakers, while Drops uses a minimalist approach, namely games of associating certain terms with visual elements to make it easier to remember. Mondly is the only application that stands out by integrating augmented reality, but this option can only be used by people who have purchased VR (virtual reality) glasses.

4.3 Feedback, grammar and vocabulary

Regarding the feedback part, **Babbel** and **Busuu** offer the most developed solutions, because they manage to add in addition to the automatic feedback the possibility of evaluation by people who already master the German language. **Duolingo**, although it is the most famous application, is quite limited in this aspect, offering only automated feedback, lacking a substrate.

Although grammar should be an essential component, **Drops** completely excludes this criterion and focuses exclusively on the visual memorization of terms. On the other hand, **Babbel and DW Learn German** manage to include all the explanations related to the lexical and morphological parts, necessary for the correct speaking of a language. The vocabulary part is covered by all platforms, but **Drops**, **Mondly** and **Seedlang** emphasize this aspect, being the most suitable for the rapid assimilation of words.

4.4 Interaction and gamification

It can be noted how platforms like **Busuu** (through native correction) and **Babbel** (which offers live sessions or simulated conversations) manage to use human interaction. **Duolingo** and **Mondly** compensate for the lack of real human interaction through gamification elements: points, levels, daily progress and rankings. This approach helps maintain motivation, especially for beginners.

4.5 Integration of artificial intelligence and machine learning

One of the defining aspects that differentiates these platforms is the degree to which they integrate artificial intelligence (AI) and machine learning (ML) technologies. Platforms like **Duolingo, Babbel, Mondly**, and **Busuu** use AI to personalize the learning experience, adapting content and exercises based on the user's performance and habits.

For example, Duolingo uses ML algorithms to predict words that are likely to be forgotten, and **Babbel** offers a "revision manager" that adjusts content based on individual difficulty. **Mondly** even introduces an AI chatbot, along with augmented reality, to create an interactive conversational environment. **Busuu**, on the other hand, combines technology with a social component, providing intelligent recommendations and corrections from native speakers.

In contrast, platforms like **Seedlang, Drops**, and **Deutsche Welle** do not integrate AI significantly, relying on fixed content, without automatic adaptation or analysis of user performance. Thus, the difference between traditional and AI-based platforms becomes visible in the level of personalization and efficiency of learning.

4.6 Integration of artificial intelligence and machine learning

Most platforms offer interfaces in Romanian or English, but some, such as **Seedlang**, are only available in English, which may limit access for certain categories of users. **Deutsche Welle** has an interface available in several languages, but it requires a greater degree of autonomy in learning.

In terms of financial accessibility, **Duolingo** and **Deutsche Welle** are the most accessible – the first through the freemium model (i.e. both free and with the possibility of purchasing a subscription), and the second completely free. **Babbel** and **Busuu** require monthly subscriptions for full access, which may influence the choice of users depending on their budget.

5. Empirical analysis

5.1. Empirical study on user perception of e-learning platforms

To strengthen this analysis, an online questionnaire was developed to assess users' perceptions of e-learning platforms used in language learning. The instrument included closed-ended questions (scale from 1-5) and open-ended questions, and its distribution was carried out through social networks and university groups. The questionnaire was completed by 23 participants

Table 3. Structure of questionnaire

Question	**Answer options**
1. How old are you?	<18 18–25 26–35 36–45 > 45
2. What is the foreign language you mainly learn through platforms?	English German Spanish French Other
3. What language learning platforms have you used? (you can check more than one)	Duolingo Babbel Mondly Busuu Drops Seedlang DW Learn German Other
4. How frequently do you use e-learning platforms for foreign languages?	Daily Several times a week Once a week Rarely I don't use anymore
5. On a scale of 1 to 5 (1 = very poor, 5 = excellent), how would you rate your preferred platform on the following aspects?	a. Clarity and structure of lessons b. Quality of vocabulary exercises c. Quality of grammar exercises d. Possibility to receive useful feedback e. Human interactivity (chat, corrections from users) f. Gamification elements (badges, points, levels, etc.) g. Use of artificial intelligence (AI) for personalization h. Value for money i. Which platform do you find most effective for learning a foreign language? Why? j. Have you had any difficulties using any platform? If so, which one and what type of difficulty? k. What would you like these platforms to improve?

5.2. Results and their interpretation

The majority of respondents (43.5%) fall into the 18–25 age group, followed by the 26–35 age group (30.4%). This confirms that the core audience of platforms like ***Duolingo***, ***Babbel*** or ***Seedlang*** is young and digitally active.

In terms of languages learned, English (34.8%) and German (26.1%) are dominant, followed by Spanish and French. This profile is consistent with the

languages predominantly offered by the platforms analyzed in the paper.

Duolingo is by far the most used platform – mentioned by 82.6% of respondents – followed closely by ***Babbel***, ***Busuu***, ***Seedlang*** and ***DW Learn German***, each with around 8.7%. This can be attributed to the free availability, attractive interface and high notoriety of the application.

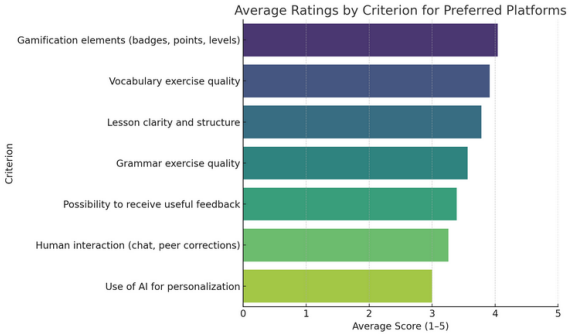

Fig. 2. Results of the questionnaire

In terms of frequency of use, only 21.7% use the platforms daily, while 39.1% state that they use them less frequently, which may reflect a lack of consistency or difficulties in maintaining motivation without a formal framework.

Participants rated their preferred platform on a scale from 1 to 5 according to several aspects. The average results obtained are as follows:

Table 4. Criteria and average score

Criteria	Avg. Score
Gamification (badges, points, levels)	**4.13**
Value for money	**4.00**
Vocabulary exercise quality	3.96
Lesson clarity and structure	3.87
Grammar exercise quality	3.65
Useful feedback	3.52
Human interaction (chat, peer corrections)	3.35
Use of AI for personalization	3.00

The platforms are perceived positively especially in terms of **gamification** and **value for money**, which confirms the importance of motivational design and financial accessibility. Playful elements seem to be a determining factor in attracting and retaining users.

Vocabulary and **clarity of lessons** also receive high scores, indicating a good pedagogical organization of the content. In contrast, **human interactivity** and the **use of AI** received lower scores, which may indicate either a lack of these features or a superficial use of them by users. It is possible that the platforms do not offer enough opportunities for authentic conversation or advanced personalization, two important aspects for linguistic progress.

In addition to quantitative data, respondents were invited to provide personal opinions on the effectiveness of the platforms used, the difficulties encountered and possible directions for improvement.

The platforms considered the most effective

Most respondents mentioned Duolingo as the most effective platform, citing reasons such as:

- user-friendly interface,
- clarity in the organization of lessons,
- variety of exercises,
- "fun" or "interactive" character.

One respondent states: "*Duolingo is an interactive, colorful, easy-to-access platform that keeps you motivated*."

Other users appreciated Seedlang, especially for its video lessons and correct pronunciation: "*Seedlang seems to me the best because it personalizes well and emphasizes pronunciation*."

5.3 Difficulties encountered

Most respondents stated that they did not have significant difficulties. However, a few recurring aspects are worth mentioning:

- Restrictions in the free version of platforms such as **Babbel** or **Mondly**: "*Babbel, because of the pricing system, sometimes it is frustrating that I cannot access all the content.*"

- Lack of real human interaction – which corroborates the lower score given to this criterion in the quantitative assessments.

5.4. Suggestions for improvement

The responses were diverse, but can be grouped into a few key categories:

- More human interactivity / real conversations: "*I would like to be able to communicate live with other users who speak the same language."*
- Better adaptation to the level of difficulty: *"I would like it to have different levels of difficulty and personalized exercises."*
- Diversification of exercises and content: *"More variety in exercises, maybe on topics of current interest."*
- Improvement of simulated conversations: *"Conversations should be closer to real, natural ones."*

6. Current limitations and future development directions of platforms

Although e-learning platforms have taken on the study of a foreign language with aplomb in recent years, both on the technological and educational fronts, we can still talk about limitations related to functionalities and content. It is necessary to recognize these obstacles and study them so that in the future we can offer more efficient solutions that are specifically oriented to each learning process.

6.1. Suggestions for improvement

Following the analyzed questionnaire, we can notice some directions given by the learners themselves. A first feedback refers to the lack of authentic human interaction. As previously mentioned, a foreign language cannot be fully known if it is not spoken, and interaction with native speakers or even with other people who know the language plays a major role in cementing the verbal component. Although there are also applications that manage to partially integrate this component (through videos, artificial intelligence, feedback), they often require a paid subscription, and the free version is seen as deficient and needs to be expanded in order not to jeopardize the user's progress, when we refer to creating a connection with a person who uses another language through conversation.

Another difficulty may also be imposed by the educational path. Although adaptation algorithms are used within certain platforms, either personalization is treated superficially or must be accessed with money. The content often ends up being standardized, sequential, focused on following a pre-established template and not taking into account the particularities of the learning style or even the individual objectives of the learner. This issue was raised by several respondents, who expressed their desire to have a more customized learning path.

As we have already mentioned, financial accessibility hinders the educational process, and essential functionalities can only be accessed by paying. It is understandable that platforms need many resources to create complex exercises that adapt to each person’s learning style, but it is necessary to understand that when we talk about studying a foreign language, the practical (conversational) component is also needed. Survey respondents reported this aspect in the case of Babbel and Mondly, indicating a frustration related to the limitations of the free versions. Motivation also represents another major obstacle, since there is a tendency among users to abandon the progress made up to the present moment, if they do not feel external pressure, as happens in actual courses. This can come from teachers, deadlines or even from the colleagues involved. Although gamification largely contributes to keeping users active, it cannot fully replace interpersonal relationships.

6.2. Development directions

In order to overcome these barriers, it is necessary to establish concrete and innovative solutions from the point of view of the techno-educational process. Therefore, we have created this graphic that reflects the first steps that need to be taken in this direction.

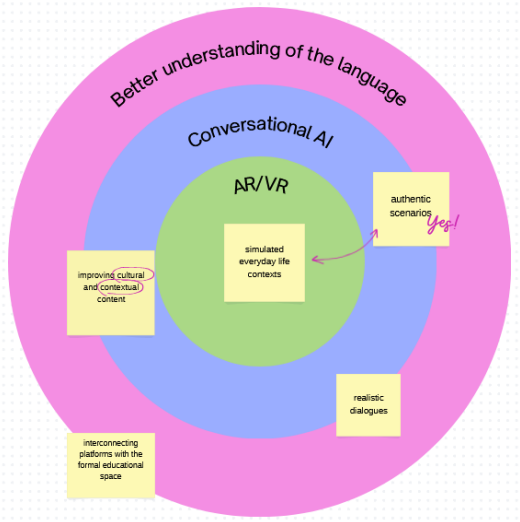

Fig. 3. Proposed solutions

To minimize the lack of interaction with other people, augmented reality (AR) and virtual reality (VR) can be implemented. This gives users the chance to practice their language in various simulated contexts such as a conversation at the train station, in the park, at the supermarket, etc. These technologies are already being researched as possible options to overcome the current barriers of language learning platforms [16] .

Of course, this can only be possible through the use of artificial intelligence. Another branch of AI could be supported by the integration of a conversational AI, with the help of which learners can interact with a virtual assistant that simulates realistic dialogues. As many platforms as possible should consider integrating a chatbot to allow learners to receive dynamic feedback.

In addition, the solutions presented above lead to an important part that is often omitted, which consists of increasing the cultural and contextual content, since it is important for users to understand how people actually speak depending on the situation, interlocutor and culture, not just to memorize some expressions or grammatical rules.

Finally, placing these functionalities in an academic context can contribute to much deeper learning, and used as adjacent tools, they become an interactive means for deepening foreign languages.

7. Integrating e-learning platforms into formal education

E-learning platforms should not be restricted to being used only in leisure time, but should also be introduced into formal education. Thus, these instruments who were initially used outside the institutional framework, could now complete and modernize the traditional ways of teaching foreign languages in schools and universities.

7.1. Arguments for integration

Comparing the platforms presented in this study, Duolingo, Babbel, Busuu or DW Learn German offer a wide range of functionalities that can extend the classic curriculum:

- Multiple accessibility (via phone, tablet, or PC)
- Interactive and engaging exercises that boost motivation
- Immediate feedback that supports personalized and individualized learning
- Adaptability to the learner's level, including automatic review sessions

In an educational setting, these foreign language learning platforms can be used as:

- Methods for reinforcing lessons taught in class
- Tools for ongoing formative assessment
- Resources for independent study

This blended learning model is also supported by numerous studies, which highlight the pedagogical benefits of combining classic teaching methods with

new digital solutions, specially designed to serve this purpose [10].

7.2. Examples of good practices

There are already initiatives where platforms have been successfully integrated into formal education:

- In some schools in Germany and Austria, ***DW Learn German*** is used to support migrant students in the process of linguistic integration [17].
- ***European Erasmus+ projects*** have used mobile applications for language learning in intercultural contexts, emphasizing autonomy and gamification [18].
- Some universities offer credits for completing digital modules in Duolingo or Memrise, as support for foreign language courses [19] [20].

7.3. Challenges and limits of integration

Although the advantages are numerous, integrating these platforms into evryday teaching and learning system also comes with challenges:

- Uneven quality of content: not all platforms follow the same curricular structure
- Lack of digital training for teachers: not all teachers are prepared to use these tools effectively in a pedagogical way.
- Differences between platforms: some focus on vocabulary, others on grammar, and others on conversation, which makes standardization difficult.

7.4. Insights and recommendations

For e-learning platforms to become an active part of classical education, it is necessary to:

- Careful selection of applications appropriate to the level and objectives of the course;
- Training teachers in their pedagogical use;
- Adapting the platform content to the requirements of the school curriculum;
- Integrating them into a well-planned hybrid system (blended learning).

Thus, instead of competing with traditional methods, digital platforms can become an additional educational partner, contributing to more interactive, motivating learning adapted to the current needs of students.

8. Conclusions

The comparative study highlights the diversity and complexity of e-learning platforms dedicated to learning German. Each application analyzed presents specific strengths, addressing different needs and learning styles. Platforms such as **Babbel** and **Busuu** stand out for their structured content, personalized feedback and extensive coverage of language levels, while **Duolingo** and **Mondly** offer a gamified, accessible and engaging experience, based on modern technologies such as AI and ML. Although platforms such as **DW Learn German**, **Drops** or **Seedlang** do not actively integrate intelligent technologies, they offer authentic content and valuable resources for strengthening language skills.

This paper not only summarized the ***advantages*** of the listed platforms, but also the current ***limitations*** that hinder user progress, such as the lack of human interaction, fluctuating motivation, and the barriers raised by paid subscriptions.

The applied *questionnaire* was a good way to confirm these hypotheses, and user suggestions should be listened to, as more rigorous AI integration is the clear path that language learning applications should follow.

Therefore, choosing an ***effective platform*** depends on the user's profile, goals and learning style preferences. At the same time, the integration of artificial intelligence remains an essential criterion in differentiating modern platforms, with significant potential to personalize and streamline the language learning process.

References

[1] M. Ally, "Foundations of educational theory for online learning," *The theory and practice of online learning*, pp. 15-44, 2008.

[2] K. B. Sujit, W. Marguerite and B. Paul, "E-learning, M-learning and D-learning: Conceptual definition and comparative analysis," *E-Learning and Digital Media*, vol. 15, no. 4, pp. 191-216, 2018.

[3] Elena, D. Svetlana and M. K. Ibrahim, "Using M-Learning Technology in Teaching Foreign Languages: A Panacea during COVID-19 Pandemic Era," *International Journal of Interactive Mobile Technologies*, vol. 15, no. 15, 2021.

[4] J. Kacetl and B. Klimova, "Use of Smartphone Applications in English Language Learning—A Challenge for Foreign Language Education," *Education Sciences*, vol. 9, no. 3, p. 179, 2019.

[5] R. Gafni, D. B. Achituv and G. Rahmani, "Learning Foreign Languages Using Mobile Applications," *Journal of Information Technology Education*, vol. 16, no. 1, pp. 301-317, 2017.

[6] G. Voica, "M-Learning Solution For Learning A Foreign Language," 2023.

[7] N. Laanti, "Parasocial relationships between businesses and customers as a way of marketing," *International Business*, p. 46, 2023.

[8] K. Teske, "Duolingo," *CALICO Journal*, vol. 34, no. 3, pp. 393-401, 2017.

[9] S. Beheshti, "Babbel: A Mobile Language Learning App," *TESL Reporter*, vol. 51, no. 1, pp. 109-121, 2018.

[10] N. Hockly, "Blended Learning," *ELT Journal*, vol. 72, no. 1, pp. 97-101, 2018.

[11] Kukulska-Hulme, "Will mobile learning change language learning?," *ReCALL*, vol. 21, no. 2, pp. 157-165, 2009.

[12] J. C. Richards, Curriculum Development in Language Teaching, Cambridge University Press, 2001.

[13] Rod, "Current Issues in the Teaching of Grammar: An SLA Perspective," *TESOL Quarterly*, vol. 40, no. 1, pp. 83-107, 2006.

[14] S. Deterding, D. Dixon, R. Khaled and L. Nacke, "From Game Design Elements to Gamefulness: Defining Gamification," in *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments*, 2011.

[15] N. Selwyn, Education and Technology, 2016.

[16] R. Godwin-Jones, "Using mobile technology to develop language skills and cultural understanding," *Language Learning & Technology*, vol. 22, no. 3, pp. 104-120, 2018.

[17] Welle, "Learning and Teaching German," https://learngerman.dw.com/en/learning-and-teaching-german/a-215435, 2025.

[18] Commission, "Erasmus+ Programme Guide," 2018.

[19] Dulingo, "Duolingo for schools," https://schools.duolingo.com/.

[20] B. e. al., "Higher Education Horizon Report.," 2019.

Georgiana VOICA graduated from the Faculty of Cybernetics, Statistics and Economic Informatics of the Academy of Economic Studies in 2023. She is currently pursuing a Master's degree in Business Support Database Systems. Her main areas of interest and work are focused on programming and working with SAP technologies. Throughout both bachelor's thesis and dissertation, she has concentrated on developing language learning aplications thaht integrate advanced functionalities such as artificial intelligence (AI), optical character recognition (OCR) and speech recognition.