Artificial Intelligence: The Views of Tertiary-Level Foreign Language Learners

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Abstract. Artificial intelligence (AI) has developed dramatically in recent decades. Its use has been unprecedented in various disciplines and fields such as: data science, information science, online marketing and data mining from the development of various platforms, as well as in the area of "connected' objects. Since the advent of AI, we have been moving towards ubiquitous computing. Widely used in our everyday personal and professional lives, computing technology has become increasingly "intelligent" and capable of anticipating our every need, with the goal of helping us to be more productive in the long run. Generally speaking, technology refers here to the deployment of an application in a computer system, with or without the use of AI; however, the use of AI in language learning applications is still somewhat neglected.

Keywords: Artificial intelligence · language teaching · education · motivation dynamics

1 Introduction

Artificial intelligence (AI) has developed dramatically in recent decades. Its use has been unprecedented in various disciplines and fields such as: data science, information science, online marketing and data mining from the development of various platforms, as well as in the area of "connected' objects. Since the advent of AI, we have been moving towards ubiquitous computing. Widely used in our everyday personal and professional lives, computing technology has become increasingly "intelligent" and capable of anticipating our every need, with the goal of helping us to be more productive in the long run. Generally speaking, technology refers here to the deployment of an application in a computer system, with or without the use of AI; however, the use of AI in language learning applications is still somewhat neglected.

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2 Theory and Context

2.1 Ubiquitous Computing and the Use AI

In a recent study, new insights into the use of AI in the context of language learning applications have come to light. Pikhart (2020) focuses on the most widely used language learning applications and more specifically on the presence and use of AI in this context. According to Pikhart, almost none of the analyzed applications use any form of machine learning, AI or deep learning. Most of them are based on predefined algorithms that do not use the full potential of the available computing power we have today, and this to the occasional detriment of the learner's learning.

For these reasons, Pikhart (2020) insists on and emphasizes the importance of increased use of AI, deep learning and machine learning in language learning applications. Nevertheless, his research highlights that the application of any type of AI, which is currently almost non-existent, is difficult and laborious to achieve, even though in the field of marketing and communication, it is well established and, on the contrary, highly applied. Pikhart sounds the alarm that higher education (HE) institutions should be prepared to contribute to the development of AI-enabled devices and applications for use in their educational processes. He postulates that this is necessary to ensure the sustainability of language teaching and to encourage the competitiveness of education on a global scale.

2.2 AI at the Service of Education

For researchers who share the views of Schiff's (2021), similar to previous educational technologies, the advent and use of AI in the context of education threatens to disrupt the status quo. On the one hand, proponents point to the potential for the efficiency and democratization of AI, while on the other hand, sceptics warn of the possible excesses of globalization, industrialization and the dependency on AI. Schiff explains that unlike the controversial applications of AI in autonomous vehicles, military and cybersecurity concerns or healthcare, the impacts of AI on educational policy and practice have yet to attract the public's attention. However, in recent decades, research reveals that AI use has clearly been adopted in the context of education, as demonstrated by numerous AI-based educational practices and research projects around the world.

In his research on *Intelligent Tutoring Systems*, Nwana (1990) traces the evolution and use of Intelligent Tutoring Systems (from a more simplified and non-expert perspective), as well as Computer Environments for Human Learning. While the study of artificial and natural language learning is the focus of Ettlinger's research, Morgan-Short, Faretta-Stutenberg and Wong (2016) analyze the performance of adult learners of a Spanish course in second language (L2) and artificial learning environments.

In their study, Popenici and Kerr (2017) explore the phenomena associated with the emerging use of AI in teaching and learning at the tertiary level. Their aim is to investigate the educational impacts of emerging technologies and how students learn and how institutions teach and evolve. Recent technological advances and the increasing speed of adoption of these technologies in HE are explored in order to imagine the future challenges in a world where AI is part of the fabric of our universities. Widely

acknowledged by experts in the field, Popenici and Kerr (2017) argue that the rapid pace of technological innovation will induce a high level of associated job displacement. This means that teaching in HE requires or will require a complete reconsideration of the mission and roles of teachers and professors. The rising use of AI will make it virtually impossible to ignore the very serious debate revolving around the future role of teaching and learning in HE and the kind of choices universities will need to consider in this respect.

2.3 AI and Language Teaching

AI-powered language learning tools and platforms allow for a more personalized learning experience allowing learners to work at their own pace, by repeating training exercises in a random way with a special focus on specific problem. At the same time, AI can engage learners in the tasks they are most comfortable with, by additionally appealing to their interests and considering unique factors such as cultural context or the specificities of the language in question. Today, many inexpensive AI tools and forms for teaching and learning English as a second or foreign language exist, such as *Google Docs* word processor with voice recognition, or voice interaction with *Google Assistant*, or using *Google Maps* to practice giving and receiving directions in English. Another innovative tool comes in the form of IBM's *Watson* supercomputer. Pokrivcakova (2019) shares eight other practical types of AI-powered tools adapted to foreign language teaching, as well as the results of a few existing studies which examine the creation of a framework for the effective integration of AI-powered tools in the preparation of foreign language teaching lessons. The objective is thus to improve overall language pedagogy by rendering the lesson preparation phase easier, shorter and more effective.

As an innovative tool, AI can therefore be used as an assistant to assist teachers in improving their teaching practices as it allows them to create improved learner-friendly content that is more adapted to their students while ensuring individualized learning. In this way, redundant tasks can be automated, so that teachers will have more time to focus on their teaching and their pedagogy. AI needs to be developed and nourished, since it is the simulation of human intelligence processes by machines, and more specifically computer systems. Like human intelligence, AI first needs to be nurtured in order to 'learn' to 'develop' and then 'realize' its full potential. It is therefore necessary to 'train' an AI first and to do this it needs to be 'fed' with large volumes of data (or databases). However, AI cannot and will never fully replace teachers, nor can it provide a child or learner with everything they need in terms of emotional relationships and the understanding of non-verbal communication for instance. The relationship between teachers and learners remains essential and necessary in order to guarantee and testify to the overall quality of the training and educational experience.

Unable to invest in or provide this kind of human investment, AI remains indispensable in improving the quality of teaching while accelerating personal training based on a more responsive learning experience. AI systems can provide effective support for online learning and teaching, including personalizing learning for students, while automating routine instructor tasks and creating adaptive assessments. In the context of a crowded classroom of learners.

AI systems are then able to offer effective and beneficial support by memorizing and analyzing the frequency and production of different types of errors, providing practice exercises while modifying, repeating, or rephrasing statements, when and if necessary. In comparison, human teachers are not very effective at simultaneously juggling these types of activities. With AI, the learner experience can be enriched through improved personalized learning based on unique diagnostic assessments (Di Pardo Léon-Henri, 2008) and training cycles fed by adaptive assessments. Within this context, AI will aim to promote or encourage learning to accompany learners, while automating the most routine and redundant tasks of teachers.

As a promising and indispensable adjunct to traditional teaching practices, AI can become a significant driver or element in the development of language skills for learners of all levels. Furthermore, beyond optimizing study progress, AI can significantly reduce the level of stress that learners traditionally used to experience when confronted with a new language and its culture. This tool can provide finer differentiation of students and help them overcome their fears of making errors, subjective views or the judgement of others, which is considered one of the most common challenges learners face when learning a foreign language. With the help of algorithms, foreign language learning can become a much more innovative and exciting process marked by exciting new technological discoveries.

However, many challenges remain. In their extended study, Zawacki- Richter, Marín, Bond and Gouverneur (2019) provide an overview of research on AI applications in HE through a systematic review. Out of 2656 publications initially identified for the period between 2007 and 2018, 146 articles were included for the final synthesis, following explicit inclusion and exclusion criteria. The descriptive results show that most of the disciplines involved in this AI study came from computer science and STEM fields, and that quantitative methods were the most frequently used in the empirical studies. The synthesis of results presents four areas of application of AI in education in academic support services: 1. Profiling and prediction, 2. Assessment, 3. Adaptive systems and personalization, and 4. Intelligent tutoring systems. In their concluding remarks, Zawacki-Richter et al. (2019) highlight the almost complete lack of critical reflection on the challenges and risks of artificial intelligence, the weak link to theoretical pedagogical perspectives and the need to further explore ethical and educational approaches to the application of AI in HE.

More than a quarter of a century ago, the advent of Information and Communication Technologies (ICT) revolutionized teaching and learning in schools. From the point of view of second and foreign language (SL/FL) teaching and learning, the target language and its cultures became within reach and accessible at any time using the Internet and specialized language software or applications. In contrast to ICTs "which have enabled the emergence of more efficient means of communication, by improving the processing, storage and retrieval of information", target languages and cultures have become accessible at all times through the Internet and specialized software applications. Unlike ICT, which « have made it possible to increase the processing capacity of data, their storage possibilities, their accessibility and the speed of their transmission» (Office québécois de la langue française, 2008), AI "autonomously learns to interpret language in a child-like way, by observing its environment, without requiring prior data" (Matheson, 2018). AI

tools will be able to learn a FL and (re)use that knowledge of FL structures to simulate interactive conversations with students. AI can adapt to the individual interests and learning needs of FL learners, allowing for more varied types of learning, and most importantly, it will be able to communicate interactively with the learner. In short, the advent of AI represents a significant change in terms of the learning context in the teaching-learning of FL. However, to what extent would university students opt for AI teaching in the context of learning a FL? Furthermore, what are the underlying reasons motivating these choices?

2.4 Motivation to Learn SL/FL

The most influential variable in SL learning in monolingual milieus is learner motivation (Colletta, Clement, & Edwards, 1983). By definition, FL are not accessible outside the classroom. For this reason, student motivation should be considered a crucial, if not the most influential, variable in learning the target FL. Motivation to learn a SL or FL is a function of learners' perception of the course, desire to learn the SL/FL and interest in the language itself (Gardner & Lambert, 1972). In order to stimulate student motivation, the teacher should encourage the learners to "enjoy the task of learning the language" while encouraging learners to invest the necessary effort in learning it (Gardner, 2001). The concept of effort overlaps with perseverance and cognitive engagement, effort being an indicator of learner motivation (Gardner, 1985). Learning with a new medium also contributes to motivation in ICT contexts (e.g. Karsenti, 2001); the same can be said in SL/FL learning (e.g. Gazaille, 2001; Hamers, Huot, Lemonnier, & Parks, 2001).

2.5 Motivation Dynamics in the School Context

"Motivation in the school context [is] a dynamic state that has its origins in students' perceptions of themselves and their environment and that leads them to choose an activity, to engage in it, and to persevere in its accomplishment in order to achieve a goal" (Viau, 1994, p. 7). This definition allows one to approach the concept of SL/FL motivation in terms of concrete student and contextual variables that teachers can directly influence. The learning context is an essential variable in school-based learning and, as such, it is an important component of motivation (Viau, 1994). From the learners' point of view, the learning context refers to the teaching-learning activities to which learners are subjected. Based on the observation that a significant majority of teachers say that the activities they present in class do not interest their students, Viau and Louis (1997) developed a dynamic model of motivation in the school context (see Fig. 1 on the following page), which approaches motivation from the point of view of the teaching-learning activities rather than studying motivation in general.

In Viau's model, motivation consist of *determinants* (perceived competence, perceived task value and perceived controllability over the activity) and *indicators* (cognitive engagement, perseverance and performance). *Determinants* correspond to how students perceive the various teaching-learning activities. Determinants condition and determine student behavior (Barbeau, 1993); determinants (may) are affected by and (may) vary in function of it (Viau, 1994). Indicators can be used to assess and measure

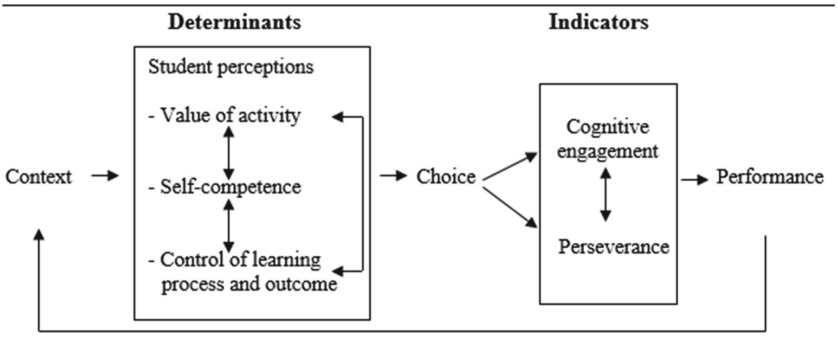

Fig. 1. Motivation dynamics in the school context. Source: Own elaboration (2022) based on Viau and Louis (1997).

the degree of student motivation (Barbeau, 1993; Viau, 1994). Informed by student perceptions, indicators influence learner behavior and engagement in the learning task and, consequently, student performance.

Applying Viau's motivation model to study the effects of the implementation of a multimedia laboratory in SL learning at the CEGEP, Gazaille (2001) specifies and warns about the promises of ICTs – and by extension, about the promises of AI – in SL teaching-learning. According to her findings, the implementation of a multimedia laboratory had little or no influence on participants' overall motivation. Indeed, while the implementation of a multimedia lab in the SL classroom created an immediate increase in student interest, this increase proved to be transient and the influence of novelty on interest temporary. In terms of the learning context, the tasks and teaching strategies should foster learner self-competence in order to avoid creating a sense of incompetence or inability in the SL/FL on the part of the language learner. In addition, the change in context must be tangible and genuine. In other words, it is not enough to replace a paper-and-pencil exercise by an electronic one. In this respect, the author underlines that more traditional, behaviorist or non-strategic pedagogical uses of ICT tools will lead to monotony and a decrease in SL/FL learners' interest. Finally, teachers being an integral part of the school context, students must "perceive their teacher's passion for the subject […] otherwise they [the students] will feel lost, abandoned in their learning" (Gazaille, 2001: 94).

3 Methodology

This study is based on a brief survey administered to 103 university students from two universities in Quebec (Canada) and one in Franche-Comté (France). The majority of the participants are registered in Second Language Teacher Training or in *Sciences du langage*; the remaining students are independent students registered in a Spanish or German FL course. The age range runs from approximately 20 to 57 years old. The purpose of the survey is to identify university students' interest in taking SL/FL AI-led courses. The survey consists of two questions: 1) If you had the choice, would you take a foreign language course with *Alexa* or *Siri* rather than with Josée, Noémie, or Andréanne?

Yes, no, or maybe? and 2) Why? Explain your choice of answer. No socio-demographic data was collected.

Both qualitative and quantitative data are compiled in an Excel document. In the first coding phase, two of the authors first identify significant items and then assign them to pre-established categories. Categories were left open to allow for the emergence of new ones. A third author compares and analyzes the identified significant items and the categories. Categories with fewer than 5 endorsers were integrated into a related and more conceptually inclusive category. For example, the item *more interesting course and teacher* was regrouped under the category *motivation*, as interest is a variable that contributes to motivation.

4 Results

From the outset, and as could be expected given participants' programs of study, everyone was interested in learning languages. A total of 227 significant items were identified as reasons for taking or not an AI-led FL course and 10 categories emerged from participants' explanations. Table 1 shows that the majority of the university students (73.8%) who responded to the survey would not take an AI-only FL course, some (23.3%) might while only a very few (2.9%) would be interested in such a course. Table 2 (next page) shows the categories that emerged from the categorization phase.

Two participants said that they would be interested in taking an AI-led FL course. Participant 7 suggested that "the course would be better tailored to each individual and you would learn better". As for Participant 8, his interest in taking an AI-driven course is purely professional. As a future SL or FL teacher, Participant 8 would like to "experiment with this approach" in order to "discover ways to use AI in [his] my classes to facilitate [his] students' learning".

On the one hand, the reasons why 23.3% of the participants would *maybe* take an AI-led FL course are similar to those of the participants who would not. However, the

Table 1. University students' interest in AI-led foreign language courses. Source: Own elaboration (2022).

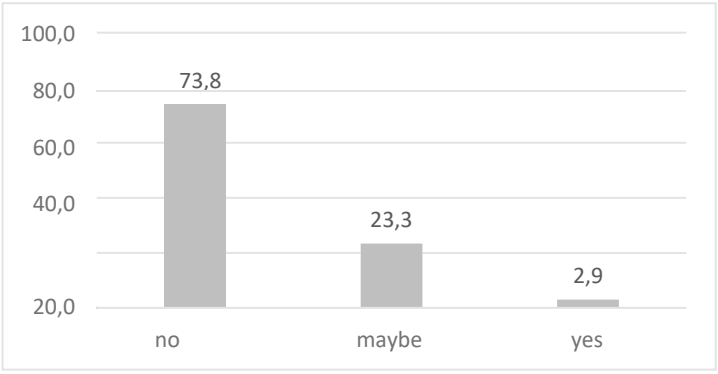

Table 2. Reasons for taking or not an AI-delivered foreign language course. Source: Own elaboration (2022).

Categories	Item		No		Perhaps		Yes	
	nb.	%	nb.	%	nb.	%	nb.	%
1. Human contact and relations	60	26,4	55	28,8	5	14,7	0	0
2. Teaching efficacy	36	15,9	28	14,7	7	20,6	1	50,0
3. Personalized teaching	31	13,7	23	12,1	7	20,6	1	50,0
4. Language knowledge and skills	27	11,9	19	10,0	8	23,6	0	0
5. Communication and interaction	21	9,2	20	10,5	1	2,9	0	0
6. Motivation	18	7,9	16	8,4	2	5,9	0	0
7. Authenticity	12	5,3	12	6,3	0	0	0	0
8. Non-verbal communication	8	3,5	8	4,2	0	0	0	0
9. Culture	7	3,1	5	2,6	2	5,9	0	0
10. Feeling safe	7	3,1	5	2,6	2	5,9	0	0
Total	227	100	191	100	34	100	2	100

participants who would do so distinguish themselves from those who would not in that they see some potential in combining AI's and humans' strengths to teach FL. Some of these respondents say they would be "curious or interested" in trying AI-led FL courses, since "it's not all black and white. I think AI can help, but replacing human teachers seems counterproductive to me" (Participant 24). The only exception was participant 86, who would prefer to talk and discuss with *Siri* or *Alexa,* because she is shy. This comment suggests a possible influence of personality traits on FL course modality and delivery preferences. Results show that the reasons why students (73.8%) would prefer to study a FL with a teacher and not opt for AI-led courses are directly or indirectly related to the teachers themselves or to teacher intervention. For these participants, AI-led teaching is impersonal and can be frustrating. While these participants believe that AI could adapt to SL/FL learner individual needs, they also believe that AI's potential for supporting one's learning is limited to certain types of content. For example, participants do not believe that AI can teach culture and speaking as well as human teachers. Participant 48 explains:

> "It all depends on what is being taught. If it's standard written LX [target foreign language], I think AI could do the teaching job. However, I think it might be difficult for it to come up with learning activities that are varied and tailored enough to suit all audiences. On the other hand, when it comes to oral LX and the informal register as well as the different varieties of LX and the perception of these variables, it seems to me that AI would be less effective unless it was really advanced." (Participant 48)

5 Conclusions

In conclusion, FL university students are not against the integration of AI into FL courses. However, they are against the idea of removing the FL teacher from the classroom. The university students surveyed in the current study are well aware of the potential of AI for teaching and learning a FL. In particular, they evoke IA's potential for individualized teaching and learning. However, FL university students would predominantly opt for a course with a "human teacher", namely because of the interactive, cultural, and relational aspects they associate with learning a LS/FL. In addition, they recognize the advantages of human-machine cohabitation for the teaching and learning of SL and FL. Participants described AI devices as "coach-exercisers" under the control and leadership of the teacher who, in turn, guides the learners in their language learning journey. At this point, however, we feel that this conclusion should leave the floor to the participants who expressed, through their opinions and comments, how they see the future of FL teaching and learning.

> "Using AI half and half along with human teaching classes COULD be okay, but never ever only using a computer to teach!" (Participant 17).
>
> "I think AI can be useful for language learning. It could be interesting as a complement to human teaching." (participant 53)
>
> "Because the lessons would lose their human warmth. A good course is given by a dynamic teacher who knows how to give life to the content taught in order to transmit their passion for the subject being taught." (participant 103).
>
> "What I like about language learning is the human aspect of teaching. If languages were taught by artificial intelligence, I don't see how second language teachers' warmth, welcoming and understanding could be emulated." (participant 49)

There is no doubt that AI will be part of the future of language teaching and learning. Since resorting to AI to teach FL could represent a major shift of the learning context for many learners, it will be important for in-service and prospective teachers to know more about AI's potential so that they can adapt their pedagogical choices to meet the challenge of motivating and engaging students in the AI FL classroom.

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CEGEP - or Collège d'enseignement général et professionnel - is a post-secondary educational institution exclusive to the province of Quebec, Canada. CEGEPs offer two-year pre-university programmes and three-year technical programmes. College education normally follows the fifth year of secondary school and precedes university studies.

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Gazaille. “Multimedia context and student motivation in college ESL learning”, 94.
Josée, Noémie and Andréanne are the first names of the lecturers who were teaching the FL courses at the time of data collection.