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Implementing Alexa Virtual Assistant in Learning a New Language: Students' Perception Analysis

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ABSTRACT

This article reports the results found in an investigation that analyzed students' perception of the learning process based on the "Alexa" virtual assistant as an educational resource. Alexa was used during 6 sessions; at the end of the session, each participant answered a survey. The results showed evidence that most students answered in favor of the use of Alexa to improve their motivation and willingness to perform learning activities.

Keywords: Virtual assistants, Alexa, IoT, ICT, Learning

INTRODUCTION

A virtual assistant introduces a new communication form in which a computer mimics common conversation when interacting using natural language. Thus, the interaction between humans and virtual assistants are often perceived like between human interactions (Mann, 2021). Consequently, virtual assistants have been able to work with artificial intelligence (AI) in different scenarios such as customer service, education, health, etc. showing encouraging results.

The potential use of virtual assistants is growing every day (Terzopoulos & Satratzemi, 2020) just as user acceptance. Although initially, users had some privacy concerns, nowadays consumers balance between privacy risks and the benefits associated with using voice-based virtual assistants (VBDA) (Vimalkumar et al., 2021) (Pitardi & Marriott, 2021). As a result, users have significantly increased in recent years.

This research shows the results of the students' perception of an experiment based on the use of Alexa to work on the language skills to learn a new language.

VOICE VIRTUAL ASSISTANTS' RESEARCH

The tendency to incorporate conversation assistant agents into people's lives has followed the unprecedented expansion in the use of artificial intelligence (AI). Amazon has been a key pioneer in this area through its assistant Alexa (Ramadan et al., 2021). Currently, there is a wide range of virtual assistants (Cóndor- Herrera, Jadán- Guerrero, & Ramos-Galarza, 2020) and as mentioned above the application has been extended to different fields. A recent study used Alexa to support people in prenatal care (Schindler et al., 2021), other studies have analyzed how voice-activated smart home devices like Alexa and Google Home influence consumer search and request behaviors (Canziani & MacSween, 2021). Some studies have analyzed Alexa's potential for people with special needs, findings indicate that a relationship between Alexa and consumers with special needs helps them to regain their independence and freedom by providing solutions that facilitate their lives (Ramadan et al., 2021).

Another field that has driven the application of virtual assistants is the educational field in which virtual assistants are used for pedagogical purposes (Cóndor- Herrera, Jadán- Guerrero, & Ramos-Galarza, 2020). For example, a recent study reported that students who learn a second language aided by a Russian voice assistant "Alice" obtaining encouraging results when practicing speech (Al-Kaisi et al., 2021). Besides, these virtual assistants can function as virtual teachers, maintain an interactive conversation with the user and being able to solve doubts and explain certain topics. (Ramos-Galarza et al., 2021).

STUDENT'S MOTIVATION TO USE TECHNOLOGY

It is undeniable that new technologies have revolutionized not only the productive world but also the educational field resulting in a diversification of the sources of knowledge (Fernández et al., 2013), (Cóndor -Herrera & Ramos-Galarza, 2020). According to UNESCO, students and teachers already use technologies in various contexts for a wide range of purposes (UNESCO, 2013). In this sense, ICTs have changed how knowledge is organized. Consequently, when adopted by teachers, ICTs have made it possible to propose a transformation of teaching by building knowledge supported using technologies where the teaching process is more attractive to students allowing them to use their technological skills and increasing their interest and motivation which improves their willingness to learn.

METHODOLOGY

Quantitative research was conducted in which a questionnaire was applied to identify aspects such as the educational benefit, motivation, and taste of the student in favor of using the Alexa virtual assistant as a learning resource.

A sample of 32 students consented to their voluntary participation in the intervention. The students were between 9 and 12 years old. In terms of gender, 50% were female and 50% male. All participants belonged to the educational system of the city of Quito, Ecuador.

Figure 1: Example of voice commands used in the intervention.

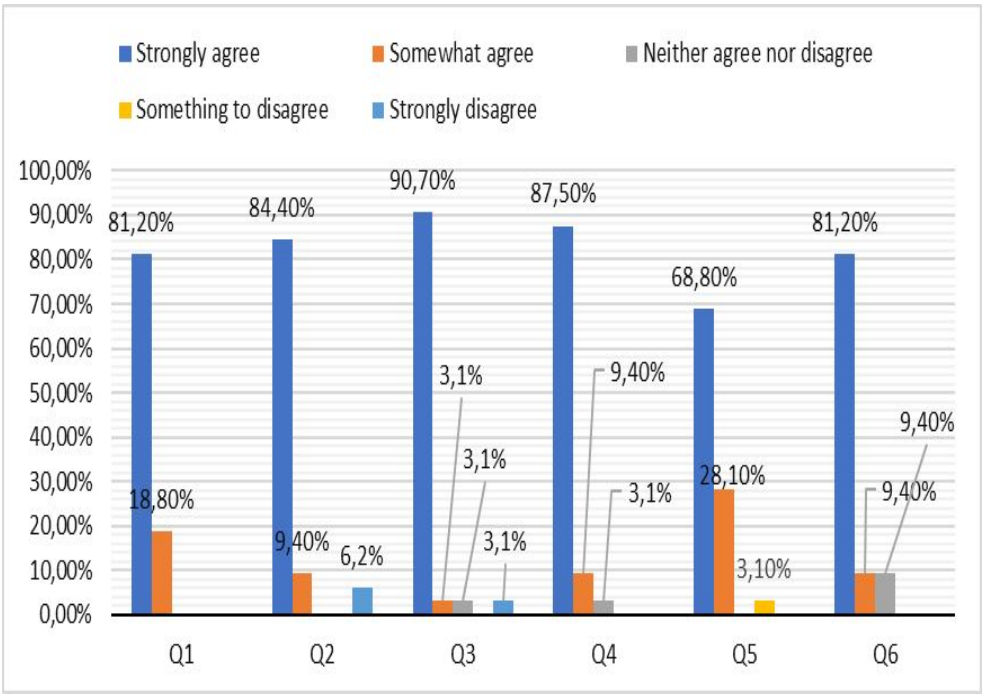

Figure 2: Percentage representation of participants' responses.

INTERVENTION PROTOCOL

An intervention was performed using the virtual assistant Alexa, the device used in the intervention was the Amazon Echo Dot (fourth generation).

There were 6 working sessions in which students were able to interact with the assistant using different voice commands such as "Alexa how do you say x in English" among others (Figure 1), to work skills for learning a second language.

At the end of the intervention, all students were surveyed to collect data on their perception of the work done with the virtual assistant.

Table 1. Questionnaire results.

ITEM	ANSWER FREQUENCY				
	Strongly agree	**Somewhat agree**	**Neither agree nor disagree**	**Somewhat disagree**	**Strongly disagree**
Q1. Do you believe that the use of a virtual assistant "encourage your participation in the learning process"?	26	6	0	0	0
Q2. Were you motivated to work with Alexa?	27	3	0	0	2
Q3. Did you like activities with Alexa?	29	1	1	0	1
Q4. Would you like to work on other topics with Alexa?	28	3	1	0	0
Q5. Do you think you were able to learn the topics studied with this work methodology?	22	9	0	1	0
Q6. How would you rate the learning experience with Alexa?	26	3	3	0	0

The results obtained are presented in the following section.

RESULTS

The participants' response frequencies are presented in Table 1.

The reader is invited to review in Figure 2 the participants' responses percentages.

DISCUSSION

This article has reported the results found in an investigation that analyzed student perception around the learning process based on the use of virtual assistant Alexa. A high percentage of students expressed favorable responses around the use of the virtual assistant Alexa in the learning-teaching process. Most students agree that using the virtual assistant improved their motivation to learn and increased their willingness to perform learning activities.

Future research will focus on the use of different virtual assistants in experimental studies at a longitudinal level. Pre and post-test measurements will allow to determine the effectiveness of this type of technologies in the academic performance of the student.

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