A Perspective Study Into How the COVID-19 Pandemics Impacted the Use of Computer Assisted Language Learning in Sarajevo, Bosnia and Herzogovina

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Abstract

The term Computer-Assisted Language Learning refers to a style of education that facilitates teaching and learning through the use of a computers and computer-based resources, including the internet, to present, reinforce, and assess the relevant topics. With the beginning of the COVID-19 pandemics, many individuals were forced to become more familiar with, and tolerant of, the necessary transition into entirely digital education. In order to better understand how the COVID-19 pandemics influenced the long-term occurrence of this education style, this study aims to collect data on the public usage of computer-assisted language learning in Sarajevo Canton, Bosnia and Herzegovina. A survey tailored to the research questions was carried out with the purpose of collecting sufficient and relevant data on the subject. It was predicted that the findings would reveal a rise in the usage of computer-assisted language learning as a result of the COVID-19 pandemics. Additionally, it was anticipated that this study will demonstrate how the COVID-19 epidemic, with its severe and widespread effects, contributed to the rise in demand for new applications for computer-assisted language learning.

Keywords: English language, Computer-Assisted Language Learning, CALL, Sarajevo, Bosnia and Herzegovina, public education, COVID-19, pandemics, teaching, learning

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Introduction

The term Computer-Assisted Language Learning (CALL) encompasses a broad range of activities in which computers are used to teach a language. CALL gained prominence due to the growing importance of communication in modern international society (Khamkhien, 2012). Warschauer (1996) highlighted the critical role of technology in teaching second (SL) or foreign languages (FL), as a teacher's assisting tool. A notable amount of existing language learning materials is already digital, or a combination of digital and physical; and they serve an important role in the educational process. Knowledge of this variety of material types can assist educators, researchers, and learners select the most effective resources for their needs.

CALL uses computers to facilitate teaching and research, and has become increasingly incorporated into various areas of education including general skills and learning autonomy (Beatty, 2013; Chapelle, 2010; Ali et al., 2020). The growth and improvement of educational standards has seen significant changes in the last decade as a result of the implementation of CALL methods (Talpur et al., 2021). Additionally, the economy, education, and global society have been impacted by the COVID-19 epidemic and, for the sake of the safety of learners, the majority of educational institutions were forced to shut down or switch to Distance Learning (DL) in order to continue education (Talpur et al., 2021; Ali et al., 2020).

Research Objectives and Hypothesis

The objective of this study is to assess the extent to which computers and computer applications are deployed in the process of learning English and to examine how the COVID-19 pandemic had an impact on this in Sarajevo Canton, Bosnia and Herzegovina.

Research Questions

The research questions are as follows:

1. Has the use of computers and computer-based programs been affected by the COVID-19 Pandemics?
2. What are the other factors that influence use of CALL i.e. age, teacher vs student?
3. What is the frequency of the public using CALL for English language learning and/or teaching?
4. What is the public opinion on use of CALL in Language Learning classrooms?

The research hypothesis is that a visible increase in the use of CALL will be empirically documented due to the COVID-19 pandemics. Additionally, it is expected to see a difference in preferences in regards to CALL uses based on sex, age, and occupation. It is also expected that the participants hold negative opinions towards CALL as the COVID-19 lock-downs saw everything forced indoors, exclusively to DL which left lasting impressions. However, it is expected that the results will show CALL becoming a more integrated part of language learning classrooms as a result of the aforementioned pandemics.

Methodology

This research was conducted in the form of a exploratory study whereby participants were asked to fill out a survey on Google Forms about their opinions on the relevant matter. The participants were informed of the purpose of the study and that by submitting the survey, they consented their anonymous responses to be used in this research. The survey included questions regarding sex, age, education level, and experience with the use of CALL for language learning, followed by questions regarding their opinion and frequency of use of CALL as well as how it was affected by the COVID-19 pandemics, on a 7 point Likert scale. Since participants in Canton Sarajevo, Bosnia and Herzegovina were the target audience for

the survey, it included two languages: Bosnian and English.

An algorithm in Google Forms automatically counts participants a built-in attachment exports the data to Excel Sheets where the statistical analysis was done. The survey's sample count was expected to exceed 50 at which point it would be deemed statistically adequate and the result processing and interpretation phases would begin. However, of the 200 potential participants with access to the survey, a mere 37 responses were recorded and this was deemed enough for a pilot study. Google Scholar was used as a source of information for the theoretical part of this study.

RESULTS

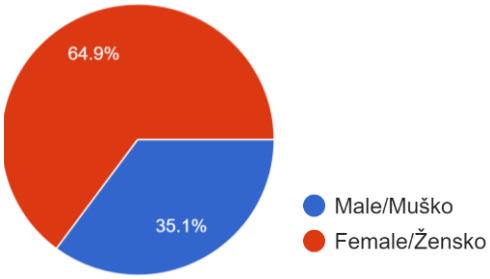

Chart 1 - Sex

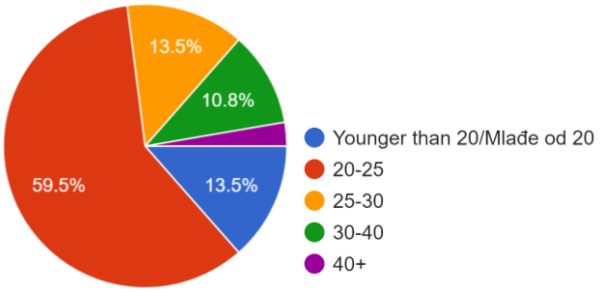

Chart 2 - Age

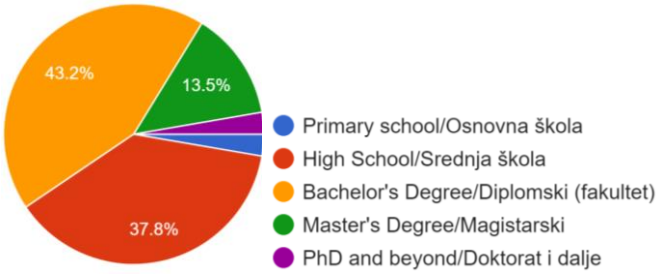

Chart 3 - Education Level

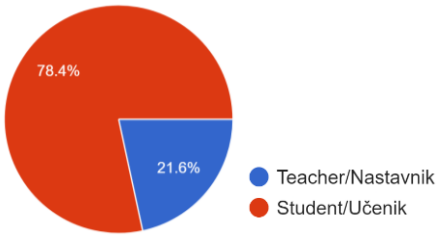

Chart 4 - Teacher/Student ratio

Of the 37 participants that submitted a valid response, 64.9% were females and 35.1% were males, following a 2:1 ratio as presented in a previous study (Odak & Sijercic, 2021). Regarding age range, a total of 5 participants selected “<20”, 22 selected “20-25”, 5 selected “25-30”, 4 selected “30-40”, and 1 selected “40+”. The participants’ education level was also measured with 1 individual selecting Elementary school, 17 that selected High school, 16 that selected Bachelor's degree, 5 that selected Master's degree, and 1 that selected PhD, meaning this sample was relatively educated. Moreover, 19 were students and 8 were teachers. It is reasonable to deduce that the participants with the higher degrees of education were likely to be among the teachers while the lower degrees were likely to be the students since 73% of the participants were in their 20s.

Has the use of computers and computer-based programs been affected by the COVID-19 Pandemics?

Comparing *Charts 5* and *6,* it is clear that there is a significant increase in use of most applications as a result of the COVID-19 pandemics. This jump is particularly noticeable with online tools for video conferencing, such as Zoom and Google meet, and Institution’s Learning Management Systems (LMS). However, there was a decline in the use of

Duolingo, a self-language learning app and Skype.

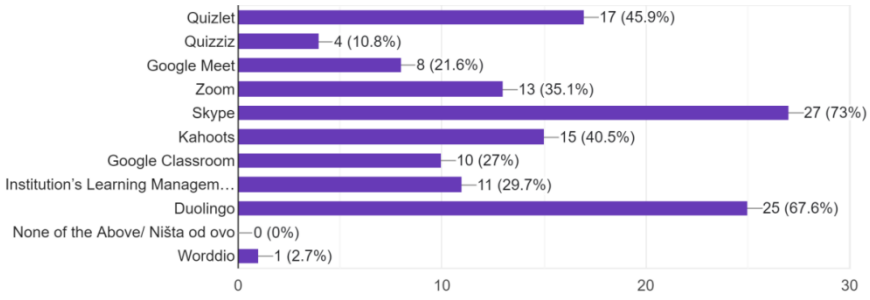

Chart 5 - Use of computer and mobile phone applications BEFORE COVID-19 pandemic

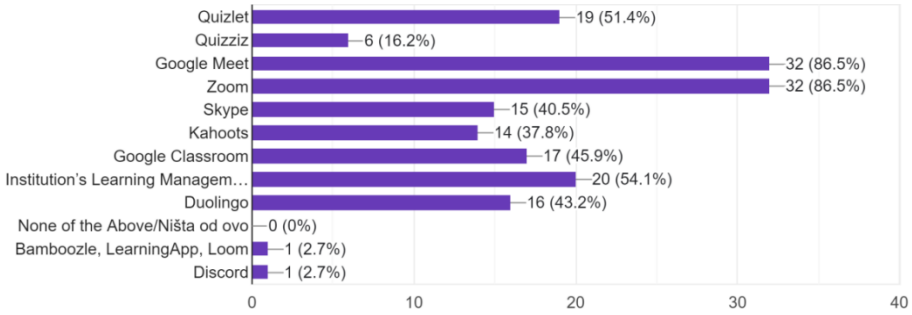

Chart 6 - Use of computer and mobile phone applications DURING COVID-19 pandemic

As presented in *Charts 10*, and *11*, the presiding opinion is that there was an increase in use of CALL as a result of the COVID-19 pandemics. *Chart 10* saw all participants voting on the positive side of the spectrum which presents a rare occurrence of unanimously supportive responses to the research hypothesis. For *Chart 11*, 83.8% of participants selected positive responses which further contributes to supportive responses towards the aforementioned hypotheses.

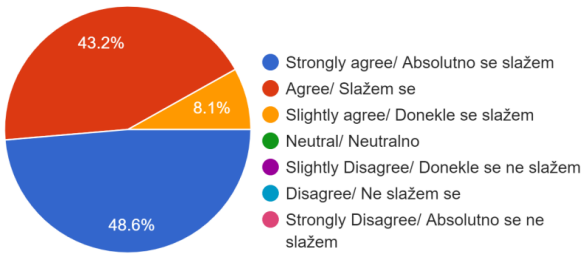

Chart 10 - Public opinion: The use of computers and digital learning aids has increased due to the pandemics

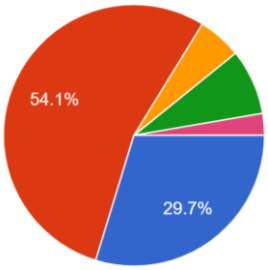

Chart 11 - Public opinion: Due to the COVID-19 pandemics, new online teaching/learning programs were introduced to the classroom

What are the other factors influence use of CALL?

Some factors that seemed to influence use of CALL included age group, academic degree, and whether or not the individual was student or teacher at the time of taking the survey (*Charts 2*, *3*, and *4*). The surveyed participants that were actively studying, teaching, or being part of academic world were more likely to use CALL, corresponding with higher levels academic education.

On the series of questions regarding attitude towards use of CALL, Teachers were more likely to “agree”, “slightly agree” or “strongly agree” to the given statements when compared to the students (*Charts 12*, *13*, *14*, and *15*).

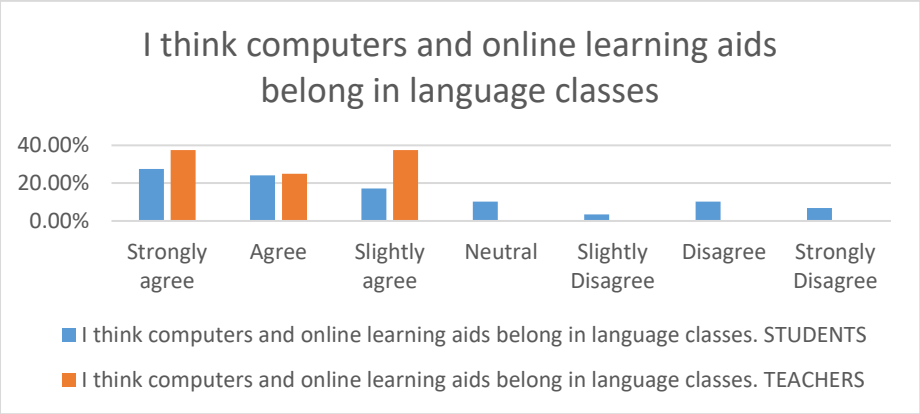

Chart 12 - Difference between Teacher & Student: I think computers and online learning aids belong in language classes.

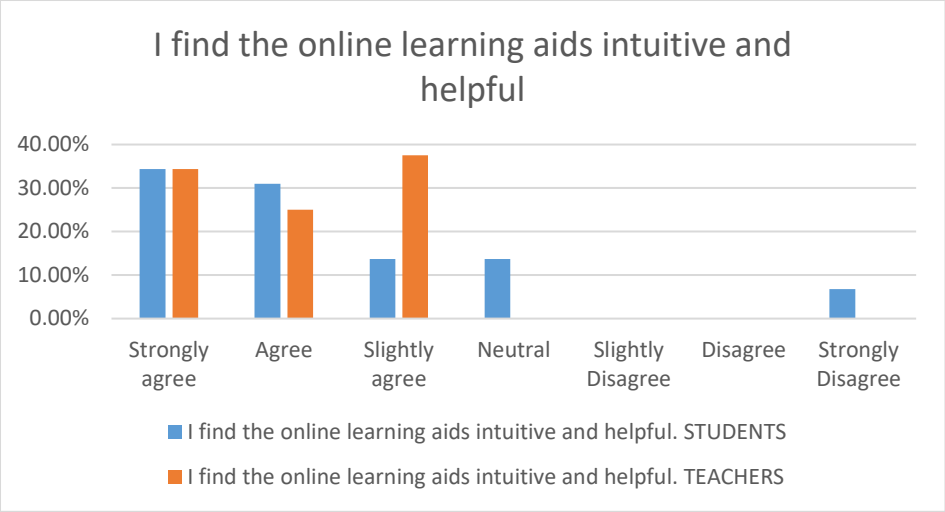

Chart 13 - Difference between Teacher & Student: I find the online learning aids intuitive and helpful.

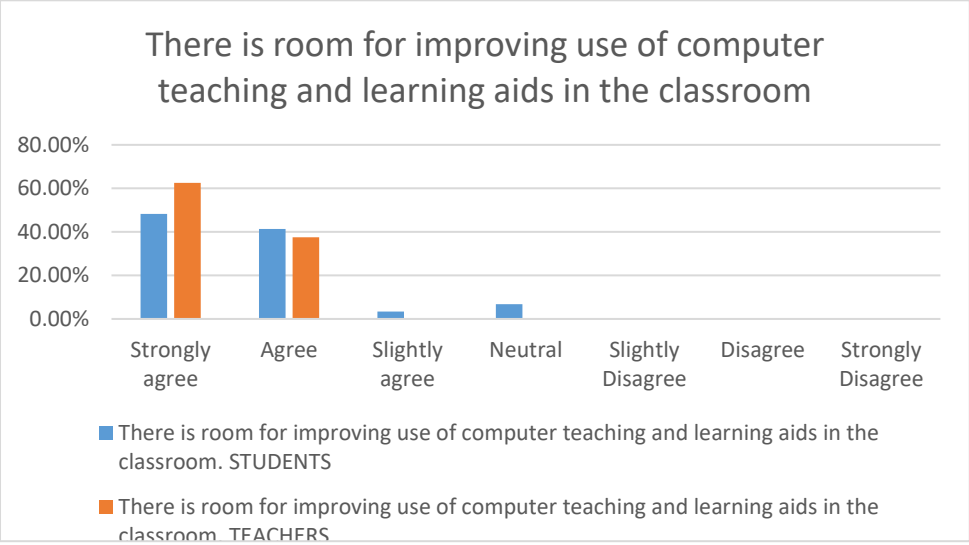

Chart 14 - Difference between Teacher & Student: There is room for improving use of computer teaching and learning aids in the classroom

As exemplified in *Chart 15*, Teachers were more likely to use computers and applications in the classroom before, during, and after the COVID-19 pandemics, when compared to students. Additionally, the lasting effects are more visible in the responses given by teachers than those given by students.

As presented in *Chart 16*, the age groups 30-40 and 40+ were most likely to use CALL before, during, and after the pandemics, when compared to the <20, 20-25, 25-30 age groups. Furthermore, similar results were noticed regarding the difference in opinion based on age groups on whether computers belong in language classes or not (*Charts 17* and *18*), as well as how helpful and intuitive they find the online learning aids.

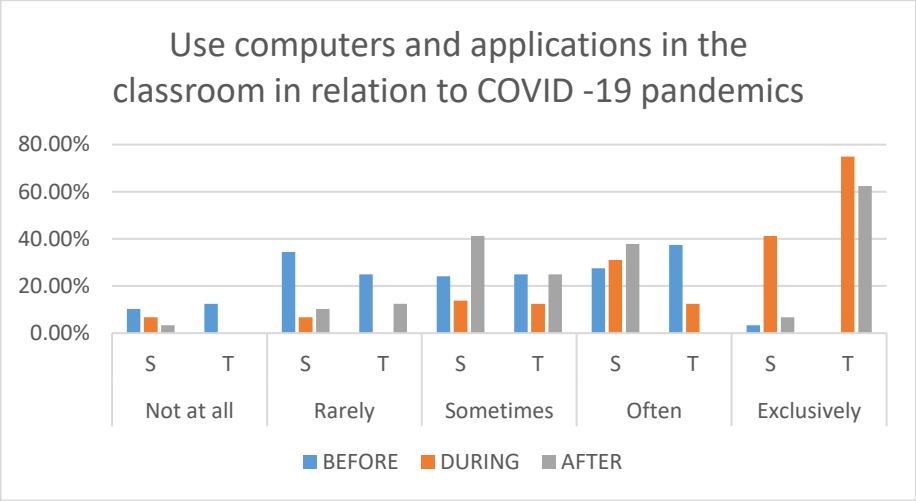

Chart 15 - Difference between Teacher & Student: How often did you use computers and applications in the classroom BEFORE/DURING/AFTER the COVID-19 pandemics? -CHART 15 LEGEND: S- student; T- teacher

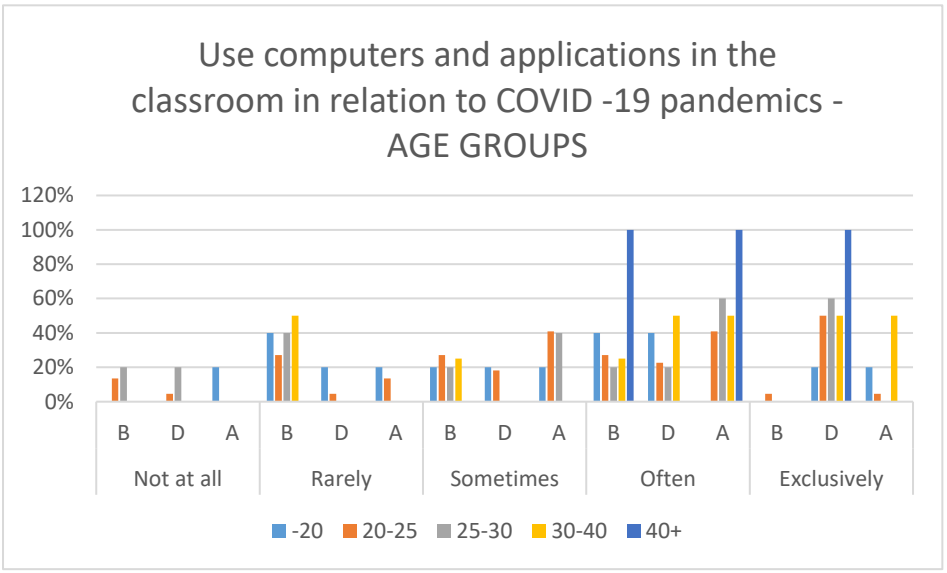

Chart 16 - Difference based on age group: How often did you use computers and applications in the classroom BEFORE/DURING/AFTER the COVID - 19 pandemic?

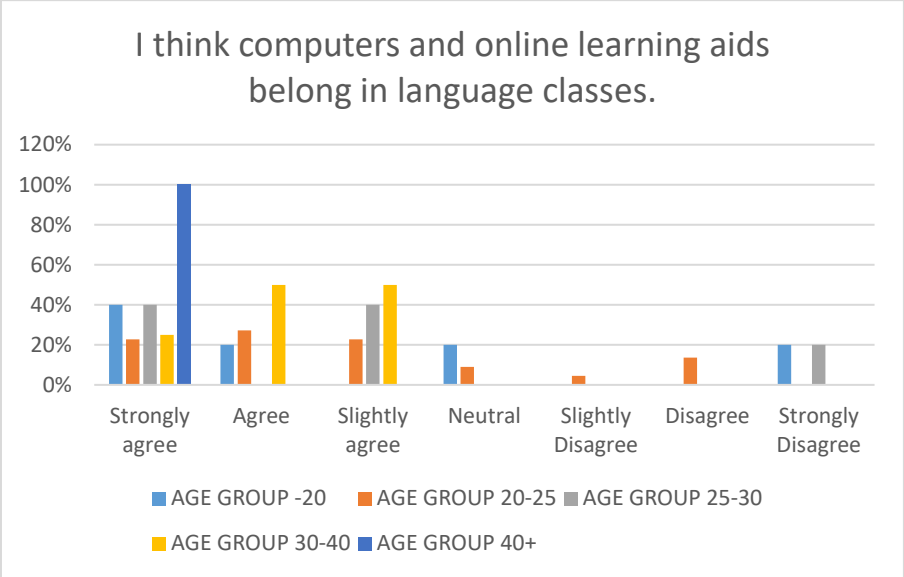

Chart 17 - Difference based on age group: I think computers and online learning aids belong in language classes

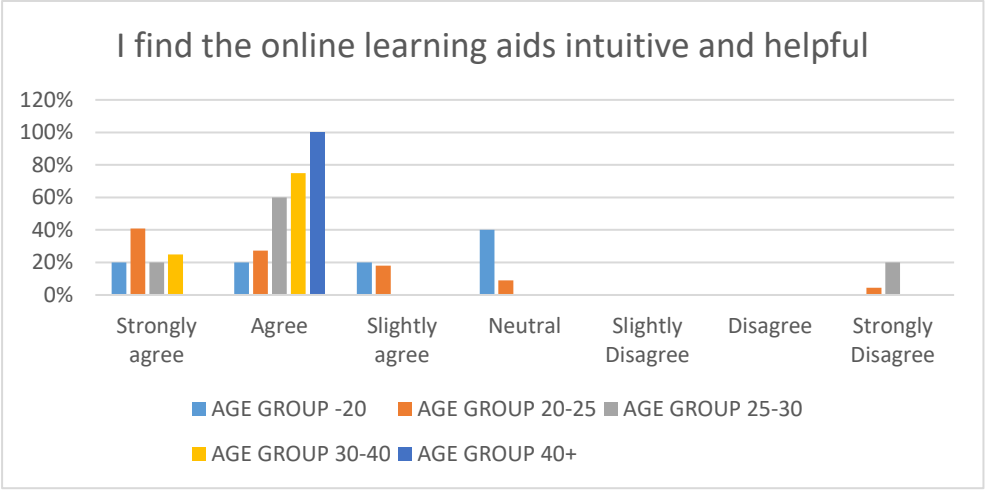

Chart 18 - Difference based on age group: I find the online learning aids intuitive and helpful.

What is the frequency of public using CALL for English language learning and/or teaching?

As presented in *Chart 19*, the majority of participants (56.8%) was learning and/or teaching language during the entire period of time between the years 2019 and 2022. A total of 40.5% of participants selected "Some of it" and the remainder selected "No, none of it." Furthermore, as shown in *Charts 7*, *8* and *9*, there is a noticeable difference in the use of computers and applications in the classroom before, during, and after the COVID-19 pandemics. *Before* the pandemics (*Chart 7*), 29.7% of participants expressed using computers and applications in the classroom "often" and 2.7% selected "exclusively", while *during* the pandemics (*Chart 8*), these answers changed to 27% on "often" and 48.6% "exclusively". The results stay in higher values for *after* the pandemics (*Chart 9*), with 43.2% of participants selecting "often" and 5.4% selecting "exclusively".

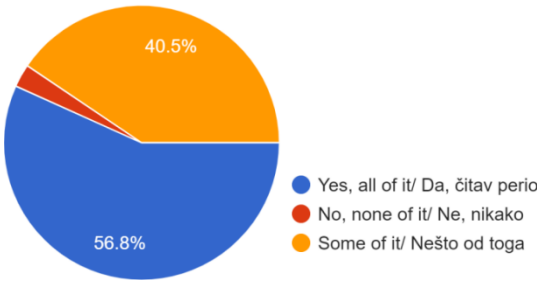

Chart 19 - Have you been learning and/or teaching a language for a period of time between 2019 and 2022?

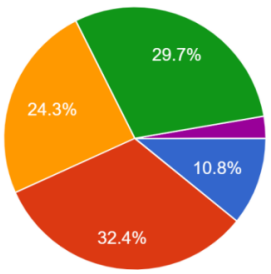

Chart 7 - Use of computers and applications in the classroom BEFORE COVID-19 pandemics

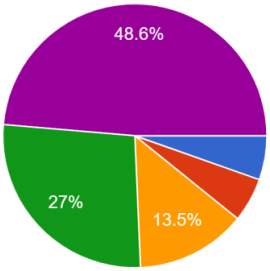

Chart 8 - Use of computers and applications in the classroom DURING COVID-19 pandemics

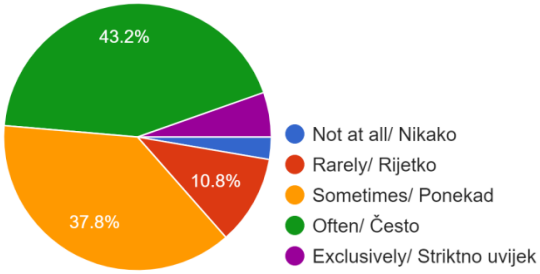

Chart 9 - Use of computers and applications in the classroom AFTER COVID-19 pandemics

What is the public opinion on use of CALL in Language Learning classroom?

When following the statements (*Charts 20*, *21*, *22*, *23*, and *24*) were given in the survey, the majority of the participants selected “agree” or “strongly agree” to the given statements, with marginal votes on the other options. All of which have positively supportive responses.

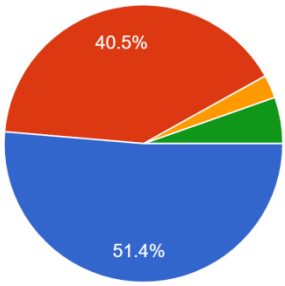

Chart 20 - There is room for improving use of computer teaching and learning aids in the classroom.

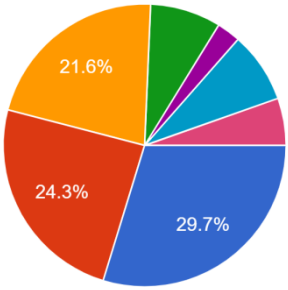

Chart 21 - I think computers and online learning aids belong in language classes.

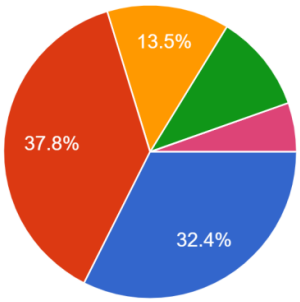

Chart 22 - I find the online learning aids intuitive and helpful.

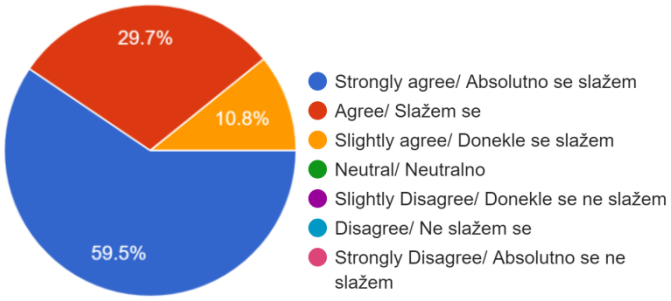

Chart 23 - The COVID-19 pandemics increased use of online teaching/learning programs.

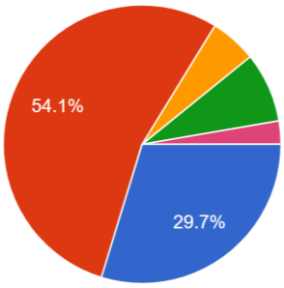

Chart 24 - Due to the COVID-19 pandemics new online teaching/learning programs were introduced to the classroom.

Discussion

The Discussion section will follow the previously presented research questions and discuss how the results compare to the hypotheses, and previous studies. Details such as how CALL was affected by the COVID-19 pandemics, factors that influence the prevalence of use of CALL, and the public opinion on use of CALL for English language learning and/or teaching will be covered in more detail. Finally, the possibility of human teachers being replaced with technology discussed.

According to given Research questions discussion is divided into following sub-chapters:

Has the use of computers and computer-based programs been affected by the COVID-19 Pandemics?

A significant increase in use of CALL was noticed *during* the pandemics when compared to *before* COVID-19. This spike was particularly noticeable among online conferencing aps, including Zoom and Google Meet, and LMS for exchanging materials. Maatuk et al. (2022) and many other scholars has similar observations, the generally repeating causation for this being pandemic safety restrictions (Maatuk et al., 2022; Gamage et al., 2020; Malta 2020). Interestingly, there was a decline in the use of Duolingo, a self learning app. The results of a study by Squire (2022) showed the opposite, suggesting that the study group may be the dividing variable (Squire, 2022). One possible explanation for the decrease in use includes a reassessment of values in regards to interaction, valuing human to human interaction over human to machine. Alternatively, other studies may have seen such improvements due to increased free time to learn things the participants have always wanted to learn. Another study saw 9% of students dropping courses after pandemics (Fichten et al., 2021).

What are the other factors that influence use of CALL?

Factors observed to influence the use of CALL, include age, sex, academic degree, and teacher/student status. The participants with higher academic degrees and education levels were more likely to use CALL, due to its relevance and connections to academia (Nora & Snyder, 2008; Czaja et al., 2006). Also, individuals with higher education have better understanding of CALL and its use in classrooms (Perrotta, 2013; Nora & Snyder, 2008).

Males were more likely to use CALL in each phase than females were. This could be related to males being more prone to addictions to internet and technology (Su et al., 2019). Other studies show males as more likely to use music, email, and chat rooms (Comber et al.,

1993; Li & Kirkup, 2007; He & Freeman, 2010; Cai et al., 2017). Another study showed that females tend to choose to study humanities or social sciences, while males prefer technology, engineering, or science (Trusz, 2020).

The age groups of 30-40 and 40+ were most likely to use CALL across the board. In fact, for all questions relating to attitude and utility, the older age groups always responded more positively than the younger ones. These results are related to those of the Student vs Teacher, since the older groups were mainly are teachers.

In a study, teachers were future-oriented and preferred support that would help increase their proficiency rather than consolidate their existing knowledge base, they preferred CALL over not using it (Janssen & Lazonder, 2015; Ertmer et al., 2000; Adnan & Anwar, 2020). Something also worth mentioning is that, according to the Beeland (2002) study, students were more engaged with technology and CALL in class, rather then online through DL (Beeland, 2002).

What is the frequency of the public using CALL for English Language Learning and/or teaching?

The frequency of the public using CALL increased during pandemics and remained increased after pandemics, when compared to pre-pandemic standards. Similar observations were made and other studies (Azar & Tan, 2020; Hanna et al., 2020; Saeed et al., 2021).

What is the public opinion on use of CALL in Language Learning classroom?

The majority of pparticipants of the study agreed that there is room for improving use of CALL in the classroom; that computers and online learning aids belong in language classes; that they find the online learning aids intuitive and helpful. Additionally, it was expressed that the COVID-19 pandemics may have increased the use of online teaching/learning programs; that due to the COVID-19 pandemics new online teaching/learning programs were introduced to the classroom.

Conclusion

CALL is experiencing ongoing change as a result of technological advancements in the areas regarding communication and data exchange. These developments allow for more effective long-distance communications in the form of conference calls, opening up new possibilities and platforms for language teacher to occur. This study saw dramatic and rapid changes in video conferencing as well as data exchange platforms due to the health and safety restrictions set in place due to the COVID-19 pandemics. All classes had to be transferred exclusively to the online platforms, organizing classes and homeworks became more complicated so user friendly advancements had to be made. The sharing of materials could no longer be exchanged as physical books, the existing platforms, i.e. email, were inefficient and disorganized at best; this brought about streamlining the process through popularizing the use of Learning Management System which either already existed or got beneficial updates.

Major factors observed to impact use of CALL included age, sex, teach/student status, and academic degree. While it was expected for the younger generation to be more likely to use CALL, it was discovered that the older participants both used it more frequently and had better attitudes towards it than the younger generation. This is likely due to the relation to Academic Degree, Teacher/Student status, and Age factors which had similar results, with the older, more educated individuals likely to be the teachers or simply the more experienced ones finding the apps more beneficial in simplifying their jobs. The older generation had hassles with

old technology, struggling to find materials in physical form, now has the appreciation for the accessibility of everything. When it comes to sex, males had more positive attitudes towards CALL though the margins were close.

In conclusion, CALL has been significantly impacted by the COVID-19 pandemics. New applications replaced older ones, the post-COVID era sees an increase in frequency of use of devices, and there is still room for growth. Many factors influence attitudes and preferences in regards to its use but it's typically the older, more educated, male, and individuals with teaching experience that hold better opinions towards CALL. The world of computer-assisted language learning has been impacted by the pandemics and will only continue to improve over time.

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