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## ORIGINAL ARTICLE

### Computer-Assisted Language Learning in English for Academic Purposes Courses: Eliciting the Instructors' Perspectives within the COVID-19 Pandemic Period

**Background:** The implementation of computer-assisted language learning (CALL) in English for academic purposes courses has gained prominence within the last decades. It received particular attention after the worldwide spread of COVID-19 pandemic. The current study attempted to probe the medical science EAP instructors' attitudes towards implementing CALL in teaching English to the students of medical sciences. The study further tried to inquire into the barriers to the implementation of online EAP classes for the students of medical sciences within the pandemic period.

**Methods:** Taking a mixed-method research design, the questionnaire and interview were used to gather the required data. Eighty EAP instructors completed the questionnaire and 25 instructors answered the interview questions. The participants were instructors that taught English to the medical science students in Iranian state universities of medical sciences in Tehran, Yazd, Tabriz, and Mashhad in the academic year 2019-2020. Mean values were used to illustrate the results of the questionnaire items, and interview responses were scrutinized to extract the constituent themes.

**Results:** The results revealed that the medical science EAP instructors held positive attitudes towards the use of technology in their classes. Indeed, the mean values ranged from 3.16 to 4.79, which indicated the instructors' positive inclination towards implementing CALL in EAP classes. They also pointed to the existing barriers to the successful implementation of CALL and the challenges they encountered in online classes during the COVID-19 pandemic period.

**Conclusions:** The findings highlighted the significance of revisiting the role of technology in EAP curriculum for medical science students. In this regard, the results carry implications for the policymakers, material developers, and instructors in universities of medical sciences.

**Keywords:** Computer-Assisted Language Learning, English for Academic Purposes, Medical Sciences, COVID-19 pandemic.

تدریس اللغة المعتمدة على الكمبيوتر في دورات اللغة الإنجليزية ذات الأهداف الأكاديمية (EAP=English for Academic Purposes): مسح لوجهات نظر الأساتذة في فترة Covid-19

**الخلفية والهدف:** اكتسب تطبيق دورات تعلم اللغة بمساعدة الحاسوب (CALL= computer-assisted language learning) في اللغة الإنجليزية للأغراض الأكاديمية مكانة بارزة خلال العقود الماضية. وقد حظيت باهتمام خاص بعد انتشار جائحة COVID-19 في جميع أنحاء العالم. حاولت الدراسة الحالية التحقق من مواقف مدربي العلوم الطبية تجاه تنفيذ CALL في تدريس اللغة الإنجليزية لطلاب العلوم الطبية. كما طُلب من الأساتذة التعليق على التحديات والعقبات التي تعترض التدريس عبر الإنترنت خلال جائحة كوفيد 19.

**المنهج:** باستخدام تصميم بحث مختلط، تم استخدام الاستبيان والمقابلة لجمع البيانات المطلوبة. أكمل ثمانون معلماً من EAP الاستبيان وأجاب 25 معلماً على أسئلة المقابلة. كان المشاركون يدرسون اللغة الإنجليزية لطلاب العلوم الطبية في جامعات العلوم الطبية الحكومية الإيرانية في طهران ويزد و تبريز و مشهد في العام الدراسي 2019-2020. تم استخدام القيم المتوسطة لتوضيح نتائج عناصر الاستبيان وتم فحص إجابات المقابلات لاستخراج الموضوعات المكونة.

**النتائج:** أظهرت النتائج أن مدربي العلوم الطبية EAP لديهم مواقف إيجابية تجاه استخدام التكنولوجيا في فصولهم. في الواقع: تراوحت القيم المتوسطة من 3.16 إلى 4.79، مما يشير إلى الميل الإيجابي للمدرسين نحو تنفيذ CALL في فصول EAP كما أشاروا إلى العوائق القائمة أمام التنفيذ الناجح لـ CALL والتحديات التي يواجهونها في الفصول عبر الإنترنت خلال فترة COVID-19.

**الخلاصة:** أبرزت النتائج أهمية إعادة النظر في دور التكنولوجيا في مناهج EAP لطلاب العلوم الطبية. في هذا الصدد؛ تحمل النتائج آثاراً على صانعي السياسات و مطوري المواد و المدرسين في جامعات العلوم الطبية.

**الكلمات المفتاحية:** تعلم اللغة بمساعدة الحاسوب، اللغة الإنجليزية للأغراض الأكاديمية (EAP)، العلوم الطبية، جائحة كوفيد 19.

### آموزش زبان رایانه محور در دوره های انگلیسی با اهداف دانشگاهی: بررسی دیدگاههای اساتید در دوران بیماری همه گیر کووید 19

**زمینه و هدف:** بکارگیری آموزش زبان فناوری محور در دوره های زبان تخصصی در دهه های اخیر توجه فرهیختگان را به خود جلب کرده است. این امر به طور خاص پس از شیوع بیماری همه گیر کووید 19 اهمیت بیشتری یافت. مطالعه ای حاضر به دنبال بررسی دیدگاه اساتید انگلیسی با اهداف دانشگاهی در دانشگاههای علوم پزشکی در مورد کاربرد آموزش فناوری محور در کلاسهای زبان تخصصی بوده است. همچنین، از اساتید خواسته شده است تا در مورد چالش ها و موانع موجود برای تدریس برخط در دوران بیماری همه گیر کووید 19، نظرات خود را ارائه نمایند.

**روش:** با اتخاذ رویکرد ترکیبی کمی و کیفی تحقیق، پرسشنامه و مصاحبه برای گردآوری داده ها مورد استفاده قرار گرفتند. از 80 استاد زبان تخصصی دانشگاههای علوم پزشکی خواسته شد تا پرسشنامه ی مربوطه را تکمیل نمایند. شرکت کنندگان در تحقیق، در سال تحصیلی 1399-1400 مشغول تدریس زبان انگلیسی تخصصی به دانشجویان علوم پزشکی در دانشگاههای دولتی تهران، یزد، تبریز، و مشهد بودند. همچنین، 25 استاد زبان تخصصی در مصاحبه شرکت کردند. مقادیر میانگین برای تحلیل داده های پرسشنامه و تحلیل محتوا برای استخراج موضوعات مطرح شده در مصاحبه بکار گرفته شد.

**یافته ها:** نتایج حاکی از دیدگاه مثبت اساتید زبان انگلیسی با اهداف ویژه نسبت به کاربرد فناوری در کلاسهای زبان تخصصی در دانشگاه های علوم پزشکی بود. میانگین های بین 3.16 تا 4.79 نشان دهنده ی تمایل اساتید به کاربرد رویکرد آموزش محور در کلاسهای زبان تخصصی زبان انگلیسی بود. اساتید در مصاحبه به برخی چالش ها و موانع برای برگزاری کلاسهای برخط در دوران بیماری همه گیر کووید 19 اشاره نمودند. **نتیجه گیری:** یافته ها، اهمیت بازنگری کاربرد و نقش فناوری را در دوره های زبان تخصصی علوم پزشکی روشن ساخت. در این راستا، نتایج مطالعه ای حاضر می تواند برای سیاستگذاران، مؤلفان و مدرسان دوره های زبان انگلیسی با اهداف دانشگاهی برای دانشجویان علوم پزشکی کاربردهایی داشته باشد.

**واژه های کلیدی:** یادگیری زبان فناوری محور، انگلیسی با اهداف دانشگاهی، علوم پزشکی، بیماری همه گیر کووید 19

### یونیورسٹیوں میں کمپیوٹر کی مدد سے انگریزی کی تعلیم: کوویڈ 19 وبا کے دوران اساتذہ کے نظریات کا جائزہ

**بیگ گراؤنڈ:** حالیہ دہائی میں یونیورسٹیوں کی سطح پر ٹکنالوجی سے انگریزی سیکھنے کی طرف خاص رجحان بڑھایا ہے۔ جب سے کوویڈ 19 کی عالمگیر وبا پھیلی ہے اس رجحان میں اضافہ ہوا ہے۔ ہماری اس تحقیق کا هدف یونیورسٹیوں کی سطح پر کمپیوٹر کی مدد سے انگریزی زبان کی تعلیم کے بارے میں اساتذہ کی رائے جانے گئی ہے۔ اساتذہ سے یہ بھی درخواست کی گئی تھی کہ کوویڈ 19 کے زمانے میں آن لائن ٹیچنگ میں کونسی چیلنجز اور رکاوٹیں حائل ہیں ان کی بھی نشاندہی کریں۔

**روش:** تعداد و کیفیت سے ترکیب شدہ روش کے ذریعے سوالنامے اور انٹرویوز سے ڈیٹا جمع کیا گیا۔ انگریزی تعلیم دینے والے اسی 80 اساتذہ سے درخواست کی گئی کہ وہ سوالنامہ پر کرکے بھیجیں۔ اس تحقیق میں شرکت کرنے والے اساتذہ نے دو ہزار انیس اور دو ہزار بیس میں یونیورسٹی سطح پر میڈیکل طلباء کو انگریزی پڑھائی تھی۔ ان یونیورسٹیوں میں تہران، یزد، تبریز اور مشهد کی یونیورسٹیاں شامل ہیں۔ انگریزی پڑھانے والے پچیس اساتذہ نے انٹرویوز بھی دئے۔ سوالنامے کے ڈیٹا کا اوسط نکالا گیا اور جن موضوعات کے بارے میں سوال کیے گئے تھے ان کا بھی تجزیہ کیا گیا۔

**نتیجے:** اساتذہ نے میڈیکل طلباء کے لئے مہارت کی سطح پر انگریزی تعلیم میں ٹکنالوجی کے استعمال کو مفید قرار دیا۔ یہ تحقیق میڈیکل یونیورسٹیوں میں انگریزی زبان کا نصاب بنانے والوں نیز طلباء کے لئے بھی راہ گشا ثابت ہوسکتی ہے۔

**کلیدی الفاظ:** انگریزی کی تعلیم، ٹکنالوجی کی مدد، یونیورسٹی کی سطح، کوویڈ 19۔

## INTRODUCTION

Teachers' attitudes towards computer-assisted language learning (CALL henceforth) directly influence its implementation in the educational settings (1). The practitioners' attention has been drawn to the importance of CALL in education within the last decades particularly recently after the worldwide spread of COVID-19 pandemic (2) since they are in urgent need of using technological tools in order to fulfill their educational duties.

Teachers are nowadays expected to make informed decisions on the available platforms, technological devices, and various types of software and application. To this end, they need to broaden the depth and breadth of their knowledge and improve their skills to conduct online teaching (2). Previous studies have revealed the English language instructors' positive attitudes towards the use of CALL in their classes (3,4), as they approved the crucial role of technological tools in enhancing the quality of instruction.

Using technology has contributed to the efficiency of English for general purposes classes. Likewise, it has been proven to be valuable in promoting the students' learning outcomes in English for academic purposes (EAP) courses (5,6). Prior studies have demonstrated the EAP instructors' positive attitudes towards implementing CALL in EAP courses (1,7). These positive dispositions seem to be a prerequisite for holding online courses and gearing EAP courses to the technological demands of the current critical condition of COVID-19 pandemic (8).

The instructors' role in providing high-quality online education seems to be pivotal, and thereby, employing technology-based instructional approaches is currently inevitable (7). Integrating the emerging CALL tools would have a tremendous impact on EAP courses. This is even more delicate in EAP contexts as the CALL-based instruction should be tailored to the needs of the intended group of audience (5). Hence, probing the EAP instructors' attitudes towards CALL seems to cast further light on the way educational technological tools are perceived by the instructors (9) since little attention has been allocated to this issue in EAP courses. EAP courses are offered either by the content specialist instructors or by language instructors. In this regard, the students of medical sciences are not exception. Although there have been a few studies eliciting the EAP instructors' attitudes towards CALL (1,7), to the researchers' knowledge, no study has yet addressed the EAP instructors' views on the application of CALL-based instruction in universities of medical sciences despite the fact that the medical science instructors' use of technology was demonstrated to be a challenge (10). Trying to enrich the existing literature and bearing this gap in mind, the current study attempted to probe the medical science EAP instructors' attitudes towards implementing CALL in their EAP courses. Moreover, the study inquired into the barriers to the successful implementation of online EAP classes within the COVID-pandemic period. Hence, the following research questions were addressed in the current study:

1) What are Iranian medical science EAP instructors' attitudes towards CALL?

2) What are the challenges with which the Iranian medical science EAP instructors encounter in holding online classes and adopting CALL-based instruction within the pandemic period?

The study aimed to explore the Iranian medical science EAP instructors' attitudes towards CALL. Moreover, it strived to investigate the challenges of holding online classes and adopting CALL-based instruction within the pandemic period from the Iranian medical science EAP instructors' viewpoints.

## METHODS

A mixed-method design was used through employing both quantitative and qualitative methods to augment the validity and reliability of the findings and enrich our understanding of the EAP instructors' attitudes towards CALL in EAP courses for medical science students and the barriers to its implementation within the COVID-19 pandemic period. A convenient sample of 80 EAP instructors (36 language and 44 content instructors) from Iranian state universities of medical sciences in Tehran, Yazd, Tabriz, and Mashhad participated in the study in the academic year 2019-2020. Their age ranged from 32 to 55 and they had between 2-15 years of experience in teaching EAP course. Considering the interview phase of the study, 25 EAP instructors (18 language and 17 content instructors) agreed to be interviewed.

In order to elicit the medical science EAP instructors' attitudes towards CALL, a 20-item questionnaire was used in which the responses ranged in a 5-Likert-scale from *strongly disagree* (1) to *strong agree* (5). The questionnaire was devised and used by Dashtestani (7) aiming to obtain EAP instructors' attitudes towards the use of CALL. It was modified by panel members consisting of two university instructors from the English language department and two physicians to be geared to the purpose of the current study. The slight modifications were made considering the terms used for the course such as English for medical science students, medical sources, etc. In this way, the validity of the instrument was ascertained. Furthermore, the Cronbach's Alpha coefficient was calculated ( $=0.87$ ) in order to check the reliability of the instrument.

In line with the quantitative instrument, the interview questions were formulated. The EAP instructors were requested to elaborate on their attitudes towards the implementation of CALL in EAP courses for medical students, the challenges and barriers to hold CALL-based online classes within the Coronavirus pandemic period. The interview questions were checked by the same panel of experts. The participants filled out the questionnaires. Following that, the interview questions were emailed to the volunteer participants and they were asked to send their responses in the written form to the researchers' email address or as an audio-file to the researchers' WhatsApp account. In this way, the researchers took heed of the pandemic condition through avoiding face-to-face interview sessions.

The questionnaires were sent to the medical science EAP instructors through email. They were asked to complete them at their convenient time. Besides, 25 EAP instructors granted their consensus to answer the interview questions.

The quantitative analysis of the data was run through SPSS. The mean values were used to lay out the results of the questionnaire. The higher the mean values were obtained, the more positive the instructors' attitudes were. Moreover, a content analysis of the answers to the interview questions was carried out and the themes were extracted. The responses to the interview questions were scrutinized in order to decipher the major themes by two researchers and the inter-coder reliability coefficient of 0.98 was obtained.

## RESULTS

The present study aimed to explore the medical science EAP instructors' attitudes towards the use of CALL in their classes. The instructors' age ranged from 32 to 55 and they had between 2-15 years of teaching EAP course experience. Considering the interview phase of the study, 25 EAP instructors (18 language and 17 content instructors) agreed to be interviewed.

Table 1 displays the mean values for the participants' responses to the questionnaire items. The results demonstrated the medical science EAP instructors' positive dispositions towards the use of CALL in the EAP course (Table 1)

The EAP instructors believed that using technology smoothens the process of EAP teaching to medical science students increases their motivation, provide the instructors with ample opportunities to teach a variety of skills, enhances the medical science students' intercultural understanding and learning autonomy, fosters the instructors' professional identity, facilitates having access to updated medical

resources and authentic materials, and enables them to utilize various assessment techniques.

They also insisted on the importance of providing the required facilities and equipment to enable the instructors to employ them for educational purposes in EAP courses. They expressed their willingness to learn how to take advantage of a wide range of CALL-based tools and approaches in their classes. The medical science EAP instructors also pointed to the importance of acquiring an adequate bulk of knowledge about technology-based, need-oriented, pedagogical and medical applications and tools. All in all, the medical science EAP instructors consented that integrating technology in EAP courses is inevitable and should be considered as a priority.

The analysis of the answers to the interview questions confirmed the findings of the quantitative phase of the study. The participants expressed their positive attitudes towards the use of technology in teaching English to the students of medical sciences. Considering the benefits of using technology in medical science EAP courses, the instructors pointed to several merits including facilitating access to authentic medical sources, opportunities for establishing communication with medical scientists and the larger medical academic communities, increasing the students' motivation and adding variety to the class activities, opportunities for providing learner-centered and need-based instruction in EAP courses, promoting instructors' technological literacy, and finding opportunities to provide different types of feedback on the students' learning outcomes.

**Table 1. EAP instructors' attitudes towards CALL in medical science EAP courses**

Items	Mean	SD
Technology facilitates the process of EAP teaching to medical science students.	4.15	0.65
CALL in medical science EAP instruction enhances students' motivation.	4.00	0.76
I am willing to learn how to use computers in medical science EAP instruction.	3.56	1.09
Medical science EAP courses should be equipped with computers.	4.12	0.75
Call can be used to teach different language skills and activities of medical science EAP.	4.45	0.73
Technology brings variety to medical science EAP courses.	4.67	0.90
Technology gives medical science EAP teachers different pedagogical options in their teaching.	4.24	0.79
Having technological knowledge is very important for medical science EAP instructors.	4.05	0.97
It is easy to learn how to work with online medical sources for medical science EAP instructors.	4.59	0.56
Medical science EAP instructors should be encouraged to use technology in their classes.	4.18	0.95
Using computers in medical science EAP courses enhances students' autonomy.	3.76	0.68
Computers are very effective to improve medical science EAP students' intercultural competence.	4.15	0.81
Computers help medical science EAP instructors to assess students effectively.	3.67	1.10
Computers help medical science EAP instructors provide students with appropriate feedback form.	3.16	1.23
Using computers in medical science EAP classes facilitates access to medical academic information.	4.79	0.56
CALL programs improve interactivity in medical science EAP courses.	4.05	1.03
Implementing CALL promotes medical science EAP teachers' professional development.	4.46	0.79
Computers define new roles for EAP teachers.	3.86	0.89
Technology can be easily combined with medical science EAP teaching.	4.35	0.85

However, the instructors referred to the challenges they encounter in holding online classes and adopting CALL-based instruction in EAP classes within the pandemic period. These barriers to the implementation of CALL in EAP classes included some students' lack of access to technological devices particularly in remote areas, dominance of traditional approaches in pre-pandemic period and teachers' lack of knowledge about the CALL approaches and available platforms for holding online EAP classes, students' financial problems in affording the Internet expenses, poor and deficient Internet connection. The EAP instructors believed that overcoming these challenges require providing the instructors and students with the required facilities, applications and software tools, and training them to feel at ease working with the technological tools.

## DISCUSSION

The results of the study revealed the medical science EAP instructors' positive attitudes towards integrating technology and implementing CALL in EAP courses. The results were commensurate with previously conducted studies which have proven the beneficial contribution of CALL in educational contexts from the teachers' perspectives (3,7). The positive attitudes of the EAP instructors in the current study corroborated the findings in the available literature (9). There is no doubt that getting the medical students involved in various major-specific activities which gear to their needs in the EAP courses would lead to heightened levels of motivation (11-14). In this regard, in line with the existing literature, EAP instructors in universities of medical sciences highlighted the pivotal role of the implementation of CALL in promoting their students' motivation through improving the quality of teaching materials and approaches (7, 10).

However, the instructors' positive attitudes do not, by themselves, suffice to guarantee the high-quality EAP instruction. The required facilities should be provided (7) and the prerequisite skills should be developed. Indeed, both the instructors and the students should be familiarized with a wide range of medical mobile apps and relevant online resources, such as Access Medicine, DynaMed, John Hopkins POC-IT Guides ABX, VisualDX, etc. This would hopefully remove one of the major challenges in medical science universities, i.e., EAP instructors' and students' low status of motivation (10).

The findings of the study revealed that from the EAP instructors' viewpoints, applying a CALL-based approach to teach English to medical science students would allow for including various activities and teaching numerous skills. In this regard, the results of the current study confirmed those of previous ones which have demonstrated the role of using technology in designing and offering various need-based activities for presenting, practicing, and evaluating the related lessons (15).

Further, the findings highlighted the EAP instructors' awareness of the use of technology in empowering them to affiliate themselves with the larger academic discourse community of medical scientists. On the other hand, the implementation of CALL would enhance the students' interactional competency and confidence in establishing

successful communication with their peers as well as established members of their discourse community at higher levels (7). The findings also seemed to present a solution for solving the instructors' problems with assessment practices in EAP courses for the students of medical sciences, as using technological tools would allow them to assign a multitude of online tasks and tests as well as to provide the students with online and offline feedback in order to ameliorate the existing flaws.

The findings of the current mixed-method study enrich the existing literature on the use of CALL in EAP contexts and carry pedagogical implications for the EAP curriculum in universities of medical sciences. The findings demonstrated the necessity of providing hardware and software facilities for medical science EAP courses, familiarizing the instructors and students with the latest technological devices and applications, and providing technical support in order to facilitate the implementation of CALL in medical science EAP courses in order to enhance the efficiency and quality of EAP instruction. The results also raised the policymakers' consciousness about the status of technology in EAP curriculum. The recent pandemic crisis calls for revisiting the role of technology in EAP courses (8) and seeking the help of a panel of EAP material developers, information technology experts, and instructors to design the need-based technology-oriented syllabus and develop engaging, skill-based, and relevant resources for medical science students. The findings accentuated the important role of technology in developing EAP courses for medical science students. In this regard, the policymakers are recommended to consider technological advances and their facilitative role in setting the academic objectives and establishing the prospects for EAP courses in medical universities. Furthermore, the material developers are advised to include a variety of technology-based activities and tasks in EAP textbooks. The EAP instructors are also urged to take advantage of the recent technological instructional approaches (flipped classroom, mobile-assisted language learning, virtual reality, etc.) in their classes to teach English to the students of medical sciences.

The study had some limitations. The sample size was small; hence, generalizations must have been made cautiously. Accordingly, future studies can be conducted including a larger number of participants in order to see if the same mindset is revealed among the EAP instructors in various academic settings. The study sought to explore only the medical science EAP instructors' attitudes towards the use of technology; further studies can be carried out to elicit the medical science EAP students' perspectives. Besides, the questionnaire and interview were used as the instruments of the current study. Further studies may apply the observation checklists to inquire into the correspondence between the CALL-oriented perceptions and practices among the EAP instructors in general and medical science EAP instructors in particular. Furthermore, analyzing the technological needs of medical science students would enrich the available literature. Indeed, the current critical pandemic condition might be the right time to identify and exploit the full potential of CALL in EAP courses for the

students of medical sciences.

The researchers assured the participants of the anonymous use of the data. Hence, the codes of ethics were considered in data collection and reporting procedures.

#### Ethical considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc.) have been completely observed by the authors.

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**Conflict of Interest:** There is no conflict of interest.

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