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THE ROLE OF TECHNOLOGY IN COGNITIVE LANGUAGE LEARNING
Annotation

Language learning has transformed the way languages are learned and taught since the advent of technologies and the development of digital world. However, the role of technologies should be clarified when they are used as a medium of instruction or as a teaching tool. This paper investigates the incorporation of technologies into language learning in a context of English as a second language. The research subjects are students of a private university who study the language for vocational purposes. The study uses quasi-experimental method as the research subjects are selected among students of the researcher.

Key words: digitalization, cognitive skills, cognitive tools, cognitive performance, conventional methods, critical thinking

РОЛЬ ТЕХНОЛОГИЙ В КОГНИТИВНОМ ИЗУЧЕНИИ ЯЗЫКА
Аннотация

Изучение языков изменило способы изучения и преподавания языков с момента появления технологий и развития цифрового мира. Однако следует уточнить роль технологий, когда они используются в качестве средства обучения или инструмента обучения. В этой статье исследуется внедрение технологий в изучение языка в контексте английского как второго языка. Объектами исследования являются студенты частного университета, изучающие язык в профессиональных целях. В исследовании использован квазиэкспериментальный метод, поскольку субъекты исследования выбираются среди студентов-исследователей.

Ключевые слова: цифровизация, когнитивные навыки, когнитивные инструменты, когнитивная деятельность, традиционные методы, критическое мышление.

KOGNITIV TIL O'RGANISHDA RAQAMLI TEXNOLOGIYANING O'RNI
Annotatsiya

Texnologiyalar paydo bo'lishi va raqamli dunyoning rivojlanishi tillarni o'rganish va o'rgatish usullarini o'zgartirdi. Biroq, texnologiyalarning o'rni ularo'qitish vositasi sifatida foydalanilganda aniqlanishi kerak. Ushbu maqola ingliz tilini ikkinchi til sifatida o'rganish kontekstida texnologiyalarni til o'rganishdagi rolini o'rganadi. Tadqiqot ob'ektlari - bu tilni kasbiy maqsadlarda o'rganadigan xususiy universitet talabalari. Tadqiqot kvazi-eksperimental usuldan foydalaniladi, chunki tadqiqot mavzusi tadqiqotchining talabalari orasidan tanlanadi.

Kalit so'zlar: raqamlashtirish, kognitiv qobiliyatlar, kognitiv vositalar, kognitiv ishlash, an'anaviy usullar, tanqidiy fikrlash

Introduction. The use of computers as cognitive tools marks a dramatic shift from earlier ideas about technology. Information and intelligence are not encoded in instructional communications used in cognitive tools, which are intended to effectively transfer such knowledge to learners. The conventional design and development methods are done away with when using cognitive technologies.The technologies are taken away from the educational communications specialists and given to the learners to use as media for representing and expressing what they know, as opposed to the specialists using them to restrict the learners' learning processes through prescribed communications and interactions. Using technology as instruments for information access, world analysis, organizing and interpreting their own knowledge, and communicating it to others, learners play the role of designers.

Review of Literature. As the name suggests, cognitive tools are generalizable computer tools designed to promote and engage cognitive thinking (Kommers, Jonassen, & Mayes, 1992). Cognitive tools refer to mental and computational instruments that facilitate, direct, and expand individuals' thought processes people (Derry, 1990). These are instruments for knowledge building and facilitation that can be used in a range of topic areas. Databases, spreadsheets, semantic networks, expert systems, multimedia/hypermedia creation, computer conferencing, collaborative knowledge construction environments, and, to a lesser extent, computer programming and microworld learning environments are examples of cognitive tools and learning environments that have been modified or created to act as intellectual partners with the learner in order to engage and facilitate critical thinking and higher order learning. Students must evaluate topic areas, create mental models to represent them, and represent what they understand in terms of those models when they build knowledge bases using databases, expert systems, or semantic networking technologies. It requires a lot of labor.

Critical thinking and cognitive learning processes are triggered by cognitive settings and instruments. These are mental extension and complementing computational tools. They process information generatively (Wittrock, 1974). Deeper information processing in generative processing arises from activating relevant mental models, interpreting new information with them, assimilating new information back into those models, rearrangement of the models in light of the newly interpreted information, and finally explanation, interpretation, or inference of new knowledge using those newly expanded models (Rumelhart & Norman, 1978).

Investigations into the integration of mobile devices to promote language learning and practice have also been conducted in-depth. According to certain research, students' academic achievement may be enhanced by using tablets and mobile phones sensibly (Huang, Lin & Cheng, 2010; Ivić &

Jakopec, 2016; Lu & Yang, 2018). Sung, Chang, and Liu (2016) discovered in a meta-analysis that there was a medium effect size for learning achievement when mobile devices were used in the classroom. In other words, compared to students who did not use mobile devices, the majority of students who used them fared noticeably better on dependent variables linked to achievement. According to Hwang et al. (2014), language learners were motivated to practice their foreign language abilities more while utilizing a mobile learning tool because they had favorable perceptions and intentions toward learning activities with these technologies. A number of research, including those by Ciampa (2013), Huang, Lin, and Cheng (2010), Rogers (2011), and Zheng, Chen, and Kong (2017), support the idea that learning via mobile devices increases motivation. Nonetheless, Froese et al. (2012) found that students who texted unrestrictedly during the lecture performed significantly worse than those who turned their phones to silent. This suggests that mobile phones have the potential to be a distraction.

The conditions under which students can assimilate and retain new information without taxing their limited short-term memory resources are the focus of cognitive load theory. When students are working on complicated tasks that need them to draw on their schemas, cognitive load is usually increased (Paas, van Gog, & Sweller, 2010). Working memory will not be able to successfully retain all of the information contained in the task, which will impede effective learning, if they haven't developed the necessary schemas or if the instructional procedures are poorly designed, involving the extraneous or intrinsic, rather than germane, types of cognitive load (Paas & Ayres, 2014; Paas, Tuovinen, Tabbers, & Van Gerven, 2003). This theory could contribute to the understanding of why students with comparable language skills respond differently to the same course material in different learning settings. Researchers have shown that, particularly in the past 20 years, learners' cognitive load can serve as a reliable predictor of the effectiveness of novel teaching strategies or learning technology (Deegan, 2015; Paas, van Gog & Sweller, 2010; van Merrienboer & Sweller, 2005). In order to investigate EFL students' readiness to use mobile learning resources, a model designed for technology acceptance was adopted in this study, as mobile learning may have special characteristics that classic acceptance theories find challenging to handle.

Based on the findings above, the researcher raises the following research questions:

1) To what extent has digitalization of language classes facilitated language learning;

2) To what extent does digitalization assist language classroom organization.

Research methodology
Research participants

The research covers 20 private university students who are studying English as a second language for vocational purposes. Furthermore, ESP teachers at this institution are also included in order to evaluate the effectiveness of application of technological tools in teacher performance.

Research ethics

Ethical guidelines will be adhered while conducting research and consider participants' personal data safety, attempt to minimize possible harm and discomfort. A number of steps can be taken to address the ethical issues related to research project which includes:

-Obtaining ethical approval: the researcher will obtain ethical approval from the relevant institutional ethics board to ensure that the research is conducted in an ethical manner;

-Informed consent: informed consent will be obtained from all participants giving a full explanation about the research procedure to confirm their rights and minimize research-related risks;

-Ensuring voluntary participation: it is ensured that participants have rights to decline participation or withdraw participation in the study without any penalties for them.

-Following academic honesty: academic honesty will be followed using previous studies according to the relevant academic honesty rules.

1)What issues for the personal safety of the researcher(s) arise from this research?

There will be no personal safety concerns for the researchers as a result of this research.

2)steps will be taken to minimise the risks of personal safety to the researchers?

Not applicable. A quasi-experimental method is used selecting participants among students she has already taught. Furthermore, pre-prepared pre-test and post-tests were used in order to find differences in student performance before and after use of technology. T-test is then, run in order to discuss the findings of the research. Before application of technological tools in classes, students' interaction modes in the classroom and their writing performance are checked by a survey. During the treatment period, research subjects are taught with incorporation of technological tools. Furthermore, teachers' attitudes towards classes are checked in pre-application and post-application tests.

Results and discussion

Table 1.

	Valid	Missing	Mean	Std. Deviation	Minimum	Maximum
pre-test	20	0	2.700	0.470	2.000	3.000
post-test	20	0	4.850	0.366	4.000	5.000

As the descriptive statistics shows, all research participants have taken part in the tests. It further shows that mean stands at 2.7, indicating that in the pre-test student satisfaction and motivation in language classes are around 3 according to the 5-point-likert scale. However, post-test results shows that student satisfaction and motivation stand at 4.8, accounting for almost the highest in the scale.
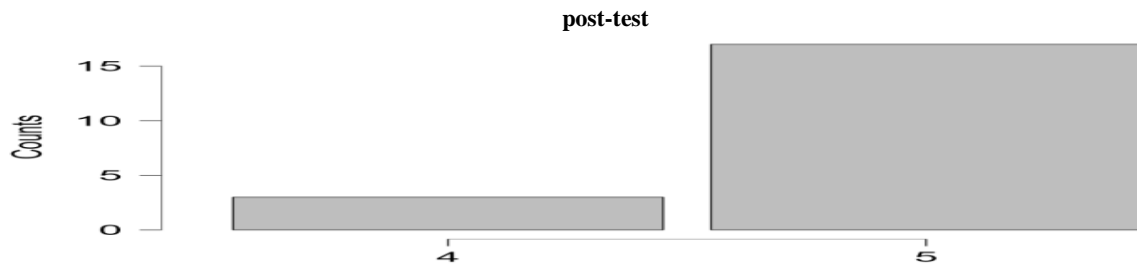
post-test
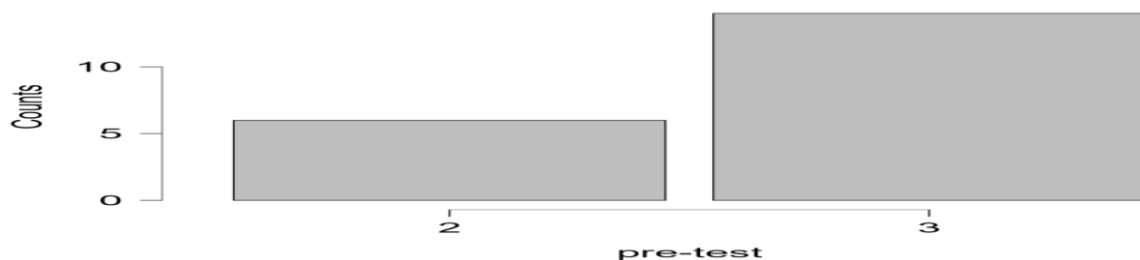
Table 2.

Table 2 shows the distribution plots of research participants according to their motivation and language learning satisfaction before and after use of technological tools in language classes. As the results show, the majority of research participants in the test are not satisfied and motivated in the classes. On the other hand, the majority of the participants stated their high-level satisfaction and motivation in language classrooms.
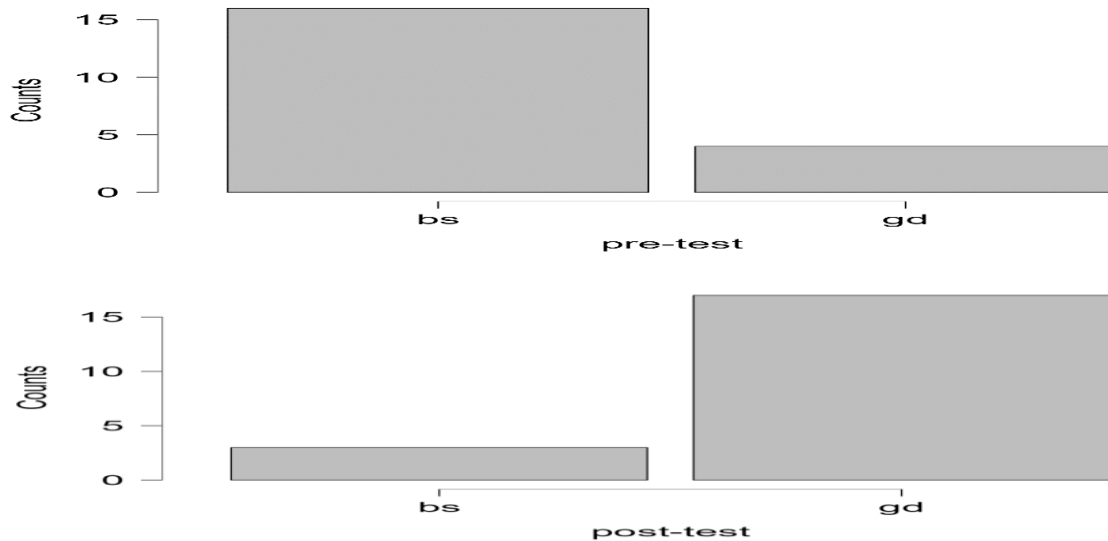

Table 3.

The pre- and post-test results show that when students' vocabulary expansion and writing skills are checked after the treatment period, research participants have scored "good" and "below standard" performances account for a slight minority. The reverse is true for pre-test results, as the statistics show.

Conclusions and. The effective integration of digital tools and technologies in the English language classroom has been a subject of considerable research and debate in recent years. This study sought to investigate the impact of utilizing such tools on language learning outcomes and student engagement. Through a comprehensive analysis of various studies and empirical evidence, several key conclusions have emerged, affirming the positive effects of digital tools in enhancing English language instruction.

Firstly, the findings of this research support the notion that digital tools offer valuable opportunities for interactive and personalized learning experiences. By incorporating multimedia resources such as videos, audio recordings, and interactive applications, educators can cater to diverse learning styles and preferences, thereby promoting deeper understanding and retention of language concepts.

Moreover, digital tools facilitate authentic language practice and communication opportunities, both inside and outside the classroom. Platforms such as online forums, virtual language exchanges, and language learning apps enable students to engage in real-world language use, interact with native speakers, and receive immediate feedback on their language production. Such authentic experiences not only enhance linguistic proficiency but also foster cultural awareness and global citizenship among learners.

Additionally, the integration of digital tools promotes collaborative learning and peer interaction. Through collaborative online projects, discussion forums, and virtual group activities, students can collaborate with their peers, share ideas, and co-construct knowledge in a supportive and engaging environment. This collaborative approach not only cultivates essential 21st-century skills such as communication, collaboration, and critical thinking but also fosters a sense of community and belonging within the classroom.

Furthermore, the research findings highlight the potential of digital tools to accommodate individual learner needs and preferences. Adaptive learning platforms, personalized learning algorithms, and data-driven feedback mechanisms enable educators to tailor instruction according to each student's unique strengths, weaknesses, and learning pace. This personalized approach enhances learner autonomy, motivation, and self-efficacy, ultimately leading to more meaningful and effective language learning experiences.

In conclusion, the evidence presented in this research strongly supports the effective application of digital tools and technologies in the English language classroom. By leveraging the affordances of digital tools, educators can create dynamic, interactive, and personalized learning environments that promote linguistic proficiency, cultural competence, and 21st-century skills among learners. However, it is imperative for educators to approach the integration of digital tools thoughtfully, ensuring alignment with instructional goals, pedagogical principles, and learner needs.

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