

A Review on the Research of Computer-assisted Language Learning in Language Teaching, Social Attitudes and Some Other Academic Circles

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Abstract. With the continuous innovation of online education and the continuous rise of computer assisted language learning (CALL), it is very critical to apply it to social life, especially classroom teaching. However, for present purposes, few studies have systematically commented on how much it has changed social life and research fields other than education, what benefits or defects it has caused to learners, and what attitudes and views nearly all walks of life have towards it. In order to settle this issue, this paper refers to more than 50 literatures and summarizes the research on computer network education and learning in foreign authoritative journals in the past ten years. The main purpose of this study is to review these authoritative theses in order to comprehend (1) the attitudes of students and parents towards the use of mobile application software (2) the impact of tools developed by network technology on language teaching models and methods (3) the impact of computer-aided development tools on second language acquisition, translation, Chinese, philosophy and other fields. CALL has promoted the development of modern education and some other fields, and has been recognized by the society. Last but not the least, this paper puts forward some suggestions for the future development of CALL.

Keywords: CALL; Online technological tools; Social appraisal; Language teaching.

1. Introduction

It is precipitated to develop a series of learning platforms / software recommendation programs. Different from the traditional introduction programs, the new introduction program deepening recommendation can grasp the user's preferences visually and audibly (Guan, Wei, & Chen, 2019). Some scholars have made the recommendation process more accurate by integrating multi-perspective factor assessment, including the network evaluation of the learning platform, interface videos or pictures, users' using times, etc (Guan et al., 2019). Nowadays, there are multifarious kinds of network applications in the mobile market. How to excavate the software and service platform beneficial to the comprehensive development of learners is the issue that the current research is trying to deal. Some software touts its advantages, but users should keep their eyes open and learn to identify its real value (Papadakis & Kalogiannakis, 2017). An excellent software system can bring unlimited benefits to learners without causing mishaps to learners themselves and their families. In addition, the point of views and suggestions of all parties are particularly invaluable. It is imperative to find a suitable learning platform or software operation criterion to support the trust of all parties. Furthermore, a tremendous number of empirical studies have also expounded and evaluated the combination of CALL with modern educational technology and traditional teaching theory from diversified perspectives. Some of the developed programs or tools have been applied to multiplex types of classrooms and even in various fields of research except the education sector. In the fourth part, I also summarized the development of CALL in the post Covid-19 era and the preponderances and disadvantages brought to students by network technology in the fifth part, Finally, forming this paper. CALL brings unparalleled wealth to contemporary learners.

This research paper has faith in that the many articles cited in the review are only aimed at one perspective of each field, and there are few precedents that focus on the analysis of CALL's character in multiple fields. For example, before determining to utilize CALL, what was the attitude of students, parents and society towards it? In contrast, what is the real impact of CALL? What software has been

developed via call? Also, what fields other than pedagogy can CALL affect? These problems are ambiguous. Therefore, this paper attempts to break through the boundaries of the original paper and concentrate on to unveil the influence of CALL. Specifically, this paper talks over which teaching methods or models or non-educational fields CALL can be combined with, the attitudes of all social parties to CALL, and the implication CALL can really carry to learners. These are all based on the referred papers of the past ten years. This review can deal the following research issues:

- 1). What are the attitudes of students, parents and software developers towards network software and programs?
- 2). What benefits should a good learning application or platform bring to learners?
- 3). What teaching models or methods can CALL be combined with to promote teaching and learning?
- 4). What scientific and technological tools have been developed by CALL to assist the development of various research fields?

2. Selection of online learning apps and platforms: learning impact, social attitudes

Hitherto, those who learn from the Internet can acquire more and more information by the interests of ultrafast progress of the Internet platform. But the predicament is that it's hard to choose an appropriate e-learning website or software by the learners themselves. From the perspective of children, they lack social experience, and their ability to distinguish between beneficial and harmful needs to be ameliorated. It is also arduous to choose virtual or reality in the era of big data. It is likely to be used by recommender developers driven by commercial interests, thus lacking certain moral guidance (Mascheroni & Holloway, 2018). Every student owns their preferences and aptitude, so the development of online app or platforms' idiosyncratic introduction is also very crucial (Xu & Zhou, 2020).

Due to their relatively affluent social experience, parents can comprehend the potential adverse effects of network applications on their children from such aspects as media, newspapers and colleagues, such as addictive games and bad information orientation. Consequently, they are extremely concerned about the double-edged sword effect in the digital age. Pray to maximize the pushing impact of the Internet on children and minimize the harm to children. This has given birth to more and more developing network platform recommenders (Authors, 2018a). From the perspective of family, parents are the dominant power of the family, and they play a decisive guiding role in how children choose learning platforms. They can also screen and identify children's online learning content to assist them learn better (Livingstone, Mascheroni, & Staksrud, 2017). Parents can obtain their feelings about the learning platform through negotiation, communication and intuitive experience with their children, so as to trim their attitudes towards different learning platforms. For parents who have a zealous and optimistic attitude towards online learning, they may encourage their children to conduct online learning more because of the convenient, liberal and efficient learning atmosphere. For some conservative parents who have suffered from the Internet (e.g. video games), they may try their best to constrain their children's use of online learning and guide them to the Internet relatively little (Ponte, Simoes, Batista, & Castro, 2019). In multitudinous countries in Europe, there is a frequent phenomenon that many parents will regulate their children's computer using time, usually about 3.5 hours a week, and try to avoid their children's use of violence, killing, gun fighting, bloody and other such molds of games (Dias & Brito, 2021). In the traditional education mode, parents often exert the network software that they supposed is beneficial to the healthy development of children and participate in it in their leisure time, but sometimes they neglect the cultivation of individual initiative of their children in the educational network platform or software (Chaudron, Di & Gemmo, 2018). Parents often opt the network teaching materials related to the compulsory courses on campus, such as mathematics, language, physics, chemistry, history, etc., and pay less attention to the more polychrome abilities of students in other aspects (Authors, 2018a,

2018b). According to the investigation and research, a bunch of students like to share the contents in electronic equipment (learning, entertainment, etc.) with their parents, and are willing to accept the guidance from their parents. Parents can instruct students solve the complicated problems encountered in the operation of the equipment and play key character in their successive progress (Kildare & Middlemiss, 2017). But at the same time, students do not want parents to interfere too much in their personal cyberspace. Parents often recommend learning software and platforms that parents think are bravo, without considering children's interests (Oliemat, Ihmeideh, & Alkhawaldeh, 2019).

In fact, there are an extensive of reasons that make students' network use time squeezed, which makes it laborious to apply network learning properly. Using computers for a long time, especially for non-learning factors, may trigger physical health problems, psychological isolation, social isolation, sleep deprivation, excessive dependence on the Internet, etc (Chaudron et al., 2018). In the network platforms of occidental countries such as Europe and America, the universality and openness brought about by the global users' access also indirectly led to the widespread lack of supervision and the rampant behavior of lawbreakers. By comparison, this is far from the strength of China's network control. For example, on social media platforms such as Facebook and twitter, there exist potential terrorists, illegal armed account users and even mental patients among the billions of users. Once children reach the age of puberty, they are more likely to be bewitched or even hurt by terrorist thoughts. In addition, the online fraud crime we often see in news reports has shown a trend of targeting young people in recent years, and criminals have extended their black hands to teenagers and students. Most of the false lottery information, paid inducement services, and even some people disguised as fake police officer to carry out illegal intimidation. However, a considerable number of parents ignore this threat in the Internet, lack explanations on the relevant traps for their children, and fail to improve their children's self-protection awareness (Authors, 2018a, 2018b). A study carried out by (Dias & Brito, 2021) showed that students, their parents and developers of educational software companies all have different bearings and goals towards applications. Often, software developers cannot balance the interests between parents and students, and operate more for their own economic benefits, lacking certain social responsibilities. Parents always associate online learning with school-based courses, and pay little attention to fostering students' other interests.

Teachers also need to encourage and pilot students to become more and more familiar with network technology, because network learning claims students' independent learning and requires students to be able to exert programs or platforms independently and flexibly. These convenient ways are brought by the necessity for network technology (Lai, Yeung & Hu, 2016).

3. Empirical evaluations on CALL Technology: software platform, video teaching, post covid-19 era

The digital network era has spawned a variety of online learning models, but if there is no reasonable specification, it will lead to horrible aftermaths. In particular, online education should be more appropriate for students' physical and mental development laws (Guernsey & Levine, 2015). The platform needs to fully consider the following factors, including operation interface buttons, customer assistance response speed, interface color matching, and the hierarchical design of acquired knowledge, etc. Papadakis, Vaiopoulou, Kalogiannakis and Stamovlasis (2020) have cooperatedly developed an assessment tool for learning platforms or applications in electronic devices. There are 13 assessment benchmarks in total, of which the most important benchmark comprise practicality, whether it is convenient for parents to supervise, safety protection capability, and actual implication on learners. The tool can also identify some features that reflect potential hazards, such as: payment services to induce teenagers, garbage advertisement implantation, user account security, etc.

A fabulous learning software should enable learners to feel more sense of participation and satisfaction, enhance their imagination, stimulate innovation, avert potential deleterious risks, have

enough attraction, be designed for the age of users, be interesting but not monotonous, have a sound service guidance, browse without barriers, be rich in content and be practical.

In recent years, the research scope and research papers of computer-aided language learning (CALL) have been expanding and growing. We can't overlook its influence in online education platforms and software. Some studies have investigated the development of CALL field in the last 20 years, and proposed the research blind spots and inadequacies in this field. Among them, the theme of the thesis is relatively focused on the development of strong points in the field of classroom teaching, such as listening, speaking, reading, writing, vocabulary and grammar. However, there is a lack of research on non-classroom audiences, even high-level language learners, and applications in social and cultural fields (Gillespie,2020). This is where future researchers need to mend.

A study has investigated the impact of using mobile devices (usually desktop computers, smartphones) to watch educational videos on students' learning results in cooperative classes (Albo, Hernandez-Leo& Moreno, 2018). This video-based learning (VBL) boosts students' participation and interactivity in the classroom, and desktop computers are more effective than mobile phones. The enlightenment is that the type of mobile devices needs to be controlled reasonably. In the era of multiplied development of online education, video-based learning has gradually entered people's lives. It has a unique technical mechanism, which can stimulate learning motivation and amplify learning results (Yousef, Chatti, & Schroeder 2014).

Online teaching has been developing rapidly in recent years, but an obvious approximated-peak was after the outbreak of COVID-19 in 2019. Restricted by the space conditions under the debuff brought by the virus, students cannot revert to the real classroom, and remote online teaching has become the only reliable teaching mode. There is a study starting from this turn in order to explore the inspiration for the future development of online teaching (Moser, Wei & Brenner,2020). Through the data, it can be summarized that before the outbreak of the epidemic, the attention to network technology was relatively minor, and even some experts and teachers did not take an hopeful attitude towards it. However, after that, the advantages of online learning became prominent, and it was generally believed that it had become an impeccable teaching mode. However, there is no doubt that this shift caused by the epidemic has brought challenges to learners and the entire education sector. Moreover, online learning has the drawbacks of cumbersome monitoring by teachers and difficult standardization of learners' self-control. It demands to be improved in the future in order to truly profit learners. It is also pressing to urge all sectors of society to join hands to win the battle of COVID-19 and return to offline classes stably and persistently.

4. Combination of network learning technology and some teaching modes and methods

Network learning could enhance the capacity of learner's mind. E-learning can also be updated with the potential classical educational methods. As a consequence, learners' learning performance (usually revealed as scores in class) can eventually be soaring.

Flipped classroom in foreign language teaching is a very fervent teaching mode in recent years. The main driving force of flipped classroom is its technical innovation, so it can develop with super rapid momentum in recent years (Steen-Utheim & Foldnes, 2018). It can employ the classroom more centered on students rather than dominated by teachers, and bring about an ecological and interactive classroom atmosphere. It can employ full use of the advantages of online learning resources and apply digital learning tools to lay a good foundation for students before class (Zou, Xie, Wang, & Kwan, 2020). Flipped classroom is a new teaching mode developed by integrating and drawing on the elements of CALL (Computer Assisted Language Learning) and TELL (technology enhanced language learning). The fluidity and availability of learning materials permit learners to assist learning in a more maneuverable way and show solicitude on students' autonomy in the classroom (Webb & Doman,2019). Nevertheless, due to the uneven use of online learning resources, teachers' recruitment is not careful enough, and students' actual learning and cognitive abilities are not targeted, the effect

of flipping the classroom has declined. After investigation and research, teachers should effectively manage learning materials in flipped classes, such as: videos or audio should grasp the key points, not be too lengthy, learning materials should be interesting, avoid tedium, effectively identify the quality of selected materials, and teachers should communicate with software developers to talk over amelioration (Zou, Luo, Xie & Hwang, 2020).

Flipped learning class can also be combined with notion mapping-based mode, which can upgrade the critical thinking capability of EFL learners through visualizing map, hoist English course learning scores (mainly in Speaking and Listening), and alleviate inquietude in oral English expression (Mei & Gwo, 2020). In this type of flipped class, the technology-supported concept map is integrated to link the concepts of knowledge points in the course, which further strengthens the cultivation of students' cognitive ability (Yang, 2015). Concept map combines concept mapping theory and exerts the power of computer science and technology to explicate complicated concept relationships for students. English has become more and more exceedingly significant in the world, and the number of people learning and using English is the largest even gigantic in the world. English also plays a seminal role in the field of second language acquisition (Mei & Gwo, 2020). Restricted by personality and practice time, oral English is usually tough to master, and users usually have miscellaneous degrees of oral anxiety (Yaikhong & Usaha, 2012). Run out of systematic and professional guidance from teachers and regular practice with peers will also result in poor oral ability (Chen Hsieh, Wu, & Marek, 2017). Flipped classroom can alleviate anxiety to the maximum extent by creating a harmonious and stress-free classroom environment, providing interesting teaching activities and strategies, stimulating participation. With the support of modern information technology, flipped learning can completely make students get enough practice time and make entire use of the whole curriculum. It can also render students more opportunities to use language, and it is also convenient for teachers to charge students' learning in the background through digital online learning tools. (Lin & Hwang, 2018). The flipped classroom mode has a super invincible impact on students' autonomy in learning, because in one study, the flipped classroom combined Moodle curriculum management system (CMS), which can provide students with convenient learning paths, such as course videos, e-books, news information, and online teaching tests (Tsai, 2019). Applying CMS system, this online learning program enables students to arouse their motivation for autonomous learning and enhance their sense of autonomy. After flipping classroom teaching, learners gradually enhance their ability of autonomous learning and self-confidence, have an intimate knowledge of and interested in network technology, are more willing to partake in classroom activities, communicate and interact more with peers and teachers, and can self-regulate their learning, becoming more disciplined (Tsai, 2019).

Based on task-based teaching method and modern network information technology, scholars (Fang, Yeh, Luo & Chen, 2021) developed m-learning TBLT learning program, which can mainly enhance students' language proficiency and ameliorate their oral and vocabulary levels. After scores of years of educational reform and innovation, task-based teaching has been introduced into EFL classrooms in many Asian countries. It has overwhelmingly changed the situation that classroom teaching overpays too much attention to language forms, and promoted the status of language input and output (Richards & Rogers, 2014). However, TBLT has always been unable to avoid the disadvantages of insufficient and lopsided student participation when there are too many students in the classroom, and students' habit of using their mother tongue for communication, which makes its application ineffective (Hwang et al., 2016). This program created by combining m-learning with TBLT theory can make it more convenient for teachers to manage the classroom, and enhance the participation and interaction of each student. Mobile tools can also supply personalized learning guidance according to the characteristics of students. However, the role of this program in students' grammar acquisition is not obvious, which is what needs to be probed in the future.

The world is undergoing leviathan development and change. Under the new situation, educators are required not only to efficiently apply online learning to classroom teaching, but also to teach students certain computer information technology skills. It is particularly vital to develop new teaching methods of educational technology and apply them to teaching. For example, some scholars

have developed the innovative "applied information technology: office software" course, which can adjust the teaching mode according to students' different learning styles and foster students' ability to master network technology (Tsai, 2018). The automatic essay scoring system (AES) is also operated under the development of network programs. Its function is to accurately analyze the characteristics of students through the genres of articles and score their written test writing and papers. Its operation theory is combined with computer linguistics, corpus linguistics, cognitive science and network learning, and has the characteristics of originality and scientificity (Latifi & Gierl, 2021).

BL (blend learning) itself is integrated and can consider teaching and learning. It is increasingly applied to higher education (Spanjers et al., 2015). Some researchers have investigated the use of students' self-regulation strategies in the context of BL (blend learning). Among them, the non-interference interactive communication method using online network tools can employ students gain more from self-regulation strategies. It also owns the effect of enhancing learners' cognitive strategies, metacognitive strategies and second language acquisition abilities (Eggers, Oostdam & Voogt, 2021).

In the CALL research community, scholars from all walks of life are increasingly aware of the significance of applying technology-based writing teaching. With more extensive corpus assistance, and with the favor of advanced learning platforms, students can achieve more high-level writing experience. Interactive whiteboard technology tools can immensely enhance learners' writing ability, which can play a better hero in combination with traditional classroom writing teaching mode. Through empirical research, within the specified writing time, the cognitive level of learners exerting this tool has been generally enhanced, the collaboration in the classroom has also been strengthened, and they have become more willing to partake in writing (Teng, 2020).

5. The promotion of network learning technology to a wide range of research fields

When the CALL mode is applied, CMF (Computer mediated feedback) tools can also be used. CMF can be used to detect and adjust the wrong speech acts made by learners when expressing language. It is a high-level detection tool that can be applied to multiply forms of teaching genres covering listening, speaking, reading and writing, and can be applied to and promote the booming of the field of second language acquisition (Bahari, 2020).

Researchers (Hwang, Huang, Wang & Zhu, 2020) have also developed a concept-based learning system and utilized it to the teaching of Chinese subjects in junior high schools. The result is to strengthen students' text comprehension ability, inspire their wisdom to shape a divergent thinking mode, and actively deliberate about problems and answers.

A teacher once taught in a vocational school in Rwanda, Africa, where he explored the attitudes of local multilingual students towards the application of online translation in ESL, reflecting the local culture convention, values and social orientation (Felix, 2021). Local students attach significant position to English second language learning for their career development and considering the worldwide influence of English, but occasionally they keep their mother tongue in mind and do not exert it in the second language classroom, which will make students forced to accept the consciousness of a single language culture (possibly English). However, the introduction of translation teaching in ESL classes through network technology can advance learners' recognition of multilingual identity (García, 2014). The translation class integrated with computer technology reduces students' cross language psychological pressure.

Before participating in EAP (English for Academic Purposes) courses, students need to learn academic English vocabulary, and the universality of English teaching around the world also makes students have a certain language foundation (Clarke, 2018). However, this is not enough. In addition to reading written language fluently, EAP courses also require students to comprehend spoken language when they partake in academic conferences and group discussions. Students' vocabulary knowledge is still insufficient (Soruç & Griffiths 2018). Researchers have applied digital learning technology to develop ASWL (the academic spoken vocabulary list), which can assist students in

EAP courses effectively master academic vocabulary and better comprehend spoken English (Dang, 2019). However, there is also a disadvantage that the acquisition implication of written vocabulary is not good, which needs to be updated in the future.

The lexical density of English vocabulary refers to the frequency of vocabulary use, which can be exerted to evaluate the quality of academic writing papers (Biber & Gray, 2016). The diversity of English vocabulary refers to how much vocabulary users can exert to express themselves, which is related to the quantity of vocabulary learners themselves (Yoon, 2017). Researchers investigated an automatic paper scoring system using network technology, considering vocabulary density and vocabulary diversity, and the results showed that it was related to the results of manual scoring and had optimistic value (Nasseri & Thompson, 2021).

Aral (automatic record analysis language), that is, language assessment, as a discipline independent of linguistics, has experienced about 40 years of stride, but it still has significant influence in diversified fields of society, such as education, science, business and politics. Through the critical time point of 2016, supported by network data technology, Aral has also been updated in a timely manner. It began to recommend new evaluation criteria, showing the innovation of language evaluation (Chapelle, 2020).

Network education technology can also be combined with philosophical science and get greater development. In fact, the ontology and epistemology embodied in philosophical thought once existed as the basis of educational technology. A study has urged people to ponder over information education through nationalism and the thoughts of philosophers such as Marx (An & Oliver, 2020). This novel concept draws the conclusion that network technology is a tool to assist people become better.

6. Gifts or pitfalls? Changes brought by mobile network technology: especially for students

In the digital network era, electronic equipment is an indispensable equipment for every family. Every family can not aloof the network, ranging from desktop computers and notebook computers to iPads and mobile phones. Diversified electronic devices have also become more and more emerging products for children. In addition to learning, children can release their pressure through games. Because of the variety of games, children's life is full and varied, but also on account of the potential consequences of being addicted to games, children's life is affected (Chang et al., 2019). APA (American Psychological Association) issued a statement declaiming that young children should not be permitted to touch mobile phones. Even if they do, parents should take responsibility and effectively manage their use time. The ideal state is that before the age of 18 months, children can not touch electronic equipment, and after that, until the age of five, if it is integral to contact electronic equipment, the daily contact time with electronic equipment can not exceed one hour. Another survey shows that wasting too much time on electronic devices every day and reading fast food every day will affect the social communication circle, and even backfire the development of children's cognitive ability, resulting in low intelligence (Anderson & Subrahmanyam, 2017).

In the second language classroom, information technology should not interfere with the proper learning of mother tongue and students' self-identity. Such as, in EFL classes, if we completely abandon the exertion of the first language, it will also incite some trouble to students. In some countries that were once colonized by imperialism, it may make students not confident in their mother tongue culture. Nor is there any research suggesting that we should exclude the use of mother tongue in ESL classes (Macaro, Tian & Chu, 2018).

Learner autonomy is the main factor that affects learning consequences. In order to find out the relationship between computer-aided language learning and learner autonomy, some scholars have obtained through unstructured research methods that CALL is conducive to satisfying different types of personalized needs of learners, and there is an interactive relationship with learners' autonomy, and it may evolve together due to this interaction (Kalyaniwala & Ciekanski, 2021). In fact, the application of science and technology and the improvement of autonomy are interrelated. Online

learning needs the premise of autonomy, but the process of online learning also strengthens the cultivation of autonomy (Reinders & White, 2016).

In order to excavate the exert needs of juvenile and adults for mobile devices, researchers conducted a survey (Zilka, 2018). Using mobile phones can satisfy the requirements of interpersonal communication and expand the distance between people. Out of immediacy and convenience, people are used to exploring the world with electronic devices. Facebook, INS and Twitter are people's hotspot network applications and platforms. The network has hewed out a new door for people's world. People can freely voice their feelings and learn knowledge.

With the acceleration of information technology, learners get a huge bunch of opportunities to elevate their professional skills in the network environment. Due to its availability, universality and conciseness, technology mediated instruction plays a vital role in promoting learners' all-round development, especially their autonomy. (Chen Hsieh, Wu, & Marek, 2017). Through the application of network technology, learners may enhance individual competitiveness, accelerate their intelligence, prefer to reflect on learning, manage their own personalized learning mode, and initiate metacognitive ability (Dang, 2012).

7. Discussion and Conclusion

In practical terms, in the digital world, we are committed to combining the strength of all parties to discuss, jointly build and share online learning, and balance the value judgments and value choices of all parties. In terms of the content of learning materials and network security, we should strengthen joint efforts and win-win cooperation. The research results of all parts show that CALL and network technology bring infinite convenience and benefits to mankind. Although there is still faultiness to be ameliorated, one of the crucial points is the self-control and motivation of learners in online classes, as well as the effective control of teachers, which need to be amended in the future. Teachers also need to develop new skills, CALL and mobile assisted language learning (MALL) are inextricably linked. A research investigated the impact of mobile assisted language learning on Teachers' capability results in second language English classrooms. The implication is that teachers must strive to enhance their electronic technology skills, not only to reserve teaching knowledge (Hsu & Liwei, 2016).

For the first research problem, the information age has brought many benefits. Endless knowledge has made learners gain a huge and enriched students' lives. Students generally suppose that the advantages of the Internet outweigh the misgivings, and have turned into an indispensable part of life. However, they are too inexperienced to distinguish potential network security threats. Parents generally have a high awareness of network risks, and can help children learn together and form a fabulous family atmosphere. However, parents occasionally have misconceptions that they are too subjective to comprehend their children well, and they do not pay enough attention to the network security problems involving account funds. Online developers suppose that the construction of online learning platforms can be instrumental in them, mainly focusing on economic profits. The enlightenment is that students should enhance their online self-control and identification of illegal behaviors while surfing in the online world. If they encounter predicaments, they should consult their parents more. Parents should approach students' hearts more, communicate with students more, and pay attention to the education of students' network security, especially in terms of funds. Network developers should attract more learners to exert by optimizing the user experience, enhancing the practicality of material, investigating user research and function research and development, and strengthening technological progress, so as to achieve lasting economic benefits, instead of focusing on immediate interests and belittling the trust of users. A colossal number of English teaching tools based on network technology have sprung up, which is essential for understanding the situation of users and conducting research on their preferences (Hwu, 2013).

The second research question, in my opinion, e-learning application software should have the following conditions: enhance the comprehensive knowledge reserve of learners, profit their physical

and mental health, add sociality and interactivity, and mobilize learners' interest in e-learning. For network researchers, in the future, they need to labour hard to crack at an education and learning platform that benefits users the most, and implement an precise software evaluation system to evaluate. To achieve this, they need the joint efforts of learners (usually students), parents, software operators and other social sectors.

In this paper, CALL can be combined with many traditional teaching methods to apply it to real classroom teaching, and can also be used to update remote network teaching. Among them, this paper involves the flipped classroom teaching mode, which is more student-oriented and committed to developing student autonomy, teaching based on concept mapping, task-based teaching method, and mixed learning method (BL). In the future, researchers can try to carry out more experiments on CALL technology to apply it to a wider range of teaching methods, such as situational teaching method, teaching method, conversation method, discussion method, demonstration method, visit method, practice method, cooperative learning mode(In order to solve the problem of students' participation in online courses, a study investigated cooperative learning in online interactive courses and applied call auxiliary means. Finally, at the end of the survey, students' enthusiasm was greatly improved, their self-confidence was improved, and they were able to encourage and drive others to participate in it. They were willing to share and actively learn from others to improve their homework level (Chang& Windeatt,2016), discovery learning mode, etc. The visual concept map developed by CALL can be applied to assist teaching, the Moodle curriculum management system (CMS) can be applied to help learners obtain more resources and improve their autonomy and help teachers manage teaching, and the m-learning application can be developed to help task-based teaching methods change and upgrade themselves over time, The development of Applied Information Technology: office software "course" can help learners master more knowledge of computer operation, the automatic message scoring system (AES) can analyze the details of learners' writing level, and interactive whiteboard technology tools can also help improve learners' writing ability. CMF (computer mediated feedback) can be applied in second language acquisition Due to program collocation errors, aswl (the academic spoke vocabulary list) tool is used in academic English courses to retrieve student papers. In addition, CALL is widely used in translation teaching, Aral (automatic record analysis language), and philosophy to improve and upgrade. There are still some inconveniences in the development of some sophisticated software, but few breakthroughs have been made. One study adopted the PRISMA protocol analysis program, which can effectively help accurately and normatively extract the biological neural disorder analysis made for reading difficulties, and it can also assist clinical medical research(Usman, Muniyandi, Omar& Mohamad, 2021).

We excitedly look forward to seeing network information technology applied to more and more research fields other than education, which will never become a sunset industry. This paper refers to many authoritative empirical research papers with a view to enlightening network developers and educators. No matter what application tools or learning programs researchers can emerge in the future by using CALL and computer technology, or whether they are applied to any kind of classroom and other research fields, they should adhere to the principle of serving global mankind and enriching the harmonious world.

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References

- [1] Albo, L., Hernandez-Leo, D., & Moreno Oliver, V. Smartphones or laptops in the collaborative classroom? a study of video-based learning in higher education. *Behaviour & Information Technology*, 2018.
- [2] Anderson, D., & Subrahmanyam, K. Digital screen media and cognitive development. *Pediatrics*, 2017, 140(2), 53–74.
- [3] An, T., & Oliver, M.. What in the world is educational technology? rethinking the field from the perspective of the philosophy of technology. *Learning Media and Technology* (2), 2020, 1-14.
- [4] Author & Author. *Aplicações ~ seguras e benéficas para crianças felizes. Perspetivas de famílias*. Lisboa: Centro de Estudos em Comunicação ~ e Cultura, Universidade Catolica ~ Portuguesa, 2018a.
- [5] Author & Author. *Aplicações ~ seguras e benéficas para crianças felizes. Perspetivas dos pais*. Lisboa. Universidade Catolica ~ Portuguesa: Centro de Estudos em Comunicaç~ ao e Cultura, 2018b.
- [6] Bahari, A.. Computer-mediated feedback for l2 learners: challenges versus affordances. *Journal of Computer Assisted Learning* (4), 2020.
- [7] Biber, D., & Gray, B. *Grammatical complexity in academic English: Linguistic change in writing*. Cambridge: Cambridge University Press, 2016.
- [8] Chang, F.-C., Chiu, C.-H., Chen, P.-H., Chiang, J.-T., Miao, N.-F., Chuang, H., et al. Children's use of mobile devices, smartphone addiction and parental mediation in Taiwan. *Computers in Human Behavior*, 2019, 93, 25–32.
- [9] Chang, H., & Windeatt, S.. Developing collaborative learning practices in an online language course. *Computer Assisted Language Learning*, 2016, 29(8), 1-16.
- [10] Chapelle, C. A.. Reflect, revisit, reimagine: language assessment in aral. *Annual Review of Applied Linguistics*, 2020, 40, 113-118.
- [11] Chaudron, S., Di Gioia, R., & Gemmo, M. Young children (0-8) and digital technology. A qualitative study across europe. EUR 29070. Publication Office of the European Union, 2018.
- [12] Chen Hsieh, J. S., Wu, W.-C. V., & Marek, M. W. Using the flipped classroom to enhance EFL learning. *Computer Assisted Language Learning*, 2017, 30(1–2), 1–21.
- [13] Clarke, D. 'Student responses to vocabulary learning strategies on an ESAP course'. 2018, *ELT Journal* 72/3: 319–328.
- [14] Dang, T.T. High-frequency words in academic spoken English: corpora and learners. 2019, *ELT Journal* (2), 2.
- [15] Dang, T. T. Learner autonomy: A synthesis of theory and practice. *The Internet Journal of Language, Culture and Society*, 2012, 35, 52–67.
- [16] Dias, P., & Brito, R.. Criteria for selecting apps: debating the perceptions of young children, parents and industry stakeholders. *Computers & Education*, 2021, 165(2), 104134.
- [17] Eggers, J. H., Oostdam, R., & Voogt, J.. Self-regulation strategies in blended learning environments in higher education: a systematic review. *Australasian Society for Computers in Learning in Tertiary Education*, 2021.
- [18] Fang, W. C. , Yeh, H. C. , Luo, B. R. , & Chen, N. S.. Effects of mobile-supported task-based language teaching on efl students' linguistic achievement and conversational interaction. *ReCALL*, 2021, 33(1), 71-87.
- [19] Felix, K.. Enhancing efl students' participation through translanguaging. *ELT Journal*, 2021.
- [20] García, O. 'Becoming bilingual and biliterate: sociolinguistic and sociopolitical considerations' in C. A. Stone, E. R. Silliman, B. J. Ehren, and G. P. Wallach (eds.). *Handbook of Language and Literacy: Development and Disorders*. New York: The Guilford Press, 2014.
- [21] Gillespie, J.. Call research: where are we now?. *ReCALL*, 2020, 32.
- [22] Guan, Y., Wei, Q., & Chen, G. Deep learning based personalized recommendation with multi-view information integration. *Decision Support Systems*, 2019, 118, 58–69.
- [23] Guernsey, L., & Levine, M. *Tap, click, read: Growing readers in a world of screens*. New York: Jossey-Bass, 2015.

- [24] Hsu, & Liwei. Examining efl teachers' technological pedagogical content knowledge and the adoption of mobile-assisted language learning: a partial least square approach. *Computer Assisted Language Learning*, 2016, 29(8), 1-11.
- [25] Hwang, G., Huang, H., Wang, R., & Zhu, L. Effects of a concept mapping-based problem-posing approach on students' learning achievements and critical thinking tendency: an application in classical chinese learning contexts. *British Journal of Educational Technology*, 2020.
- [26] Hwang, W.-Y., Shadiev, R., Hsu, J.-L., Huang, Y.-M., Hsu, G.-L. & Lin, Y.-C. Effects of storytelling to facilitate EFL speaking using web-based multimedia systems. *Computer Assisted Language Learning*, 2016, 29(2): 215–241.
- [27] Hwu, F. A review of the use of script-based tracking in CALL research for data sharing: Applications providing meaning aids. *Computer Assisted Language Learning*, 2013, 26(4), 350-370.
- [28] Kalyaniwala, C., & Ciekanski, M.. Autonomy calling: a systematic review of 22 years of publications in learner autonomy and call. *Language Learning & Technology*, 2021, 25.
- [29] Kildare, C., & Middlemiss, W. Impact of parents mobile device use on parent-child interaction: A literature review. *Computers in Human Behavior*, 2017, 75, 579–593.
- [30] Lai, C., Yeung, Y., & Hu, J. University student and teacher perceptions of teacher roles in promoting autonomous language learning with technology outside the classroom. *Computer Assisted Language Learning*, 2016, 29(4), 703–723.
- [31] Latifi, S., & Gierl, M.. Automated scoring of junior and senior high essays using coh-metrix features: implications for large-scale language testing:. *Language Testing*, 2021, 38(1), 62-85.
- [32] Lin, C.-J., & Hwang, G.-J. A learning analytics approach to investigating factors affecting EFL students' oral performance in a flipped classroom. *Journal of Educational Technology & Society*, 2018, 21(2), 205–219.
- [33] Livingstone, S., Mascheroni, G., & Staksrud, E. European research on children's internet use: Assessing the past, anticipating the future. *New Media & Society*, 2017, 20(3), 1103–1122.
- [34] Macaro, E., Tian, L., & Chu, L.. First and second language use in english medium instruction contexts. *Language Teaching Research*, 2018, 24(3), 136216881878323.
- [35] Mascheroni, G., & Holloway, D. The internet of toys: Practices, affordances and the political economy of children's smart play. London: Palgrave Macmillan, 2018.
- [36] Mei-Rong Alice Chen, & Gwo-Jen Hwang. Effects of a concept mapping-based flipped learning approach on efl students' english speaking performance, critical thinking awareness and speaking anxiety. *British Journal of Educational Technology*, 2020, 51(3).
- [37] Moser, K. M., Wei, T. E., & Brenner, D.. Remote teaching during covid-19: implications from a national survey of language educators. *System*, 97(4), 2020.
- [38] Nasser, M., & Thompson, P.. Lexical density and diversity in dissertation abstracts: revisiting english 11 vs. 12 text differences. *Assessing Writing*, 2021, 47(2), 100511.
- [39] Oliemat, E., Ihmeideh, F., & Alkhawaldeh, M. The use of touch-screen tablets in early childhood: Children's knowledge, skills, and attitudes towards tablet technology. *Children and Youth Services Review*, 2019, 88, 591–597.
- [40] Papadakis, S., & Kalogiannakis, M. Mobile educational applications for children. What educators and parents need to know. *International Journal of Mobile Learning and Organisation*, 2017, 11(3), 256–277.
- [41] Papadakis, S., Vaiopoulou, J., Kalogiannakis, M., & Stamovlasis, D. Developing and exploring an evaluation tool for educational apps (E.T.E.A.) targeting kindergarten children. *Sustainability*, 2020, 12, 4201.
- [42] Ponte, C., Simoes, ~ J. A., Batista, S., & Castro, T. S. Implicados, intermitentes, desengajados? Estilos de mediaç~ ao de pais de crianças de 3-8 anos que usam a internet. *Sociologia - Problemas e Praticas*, 2019, 91, 39–58.
- [43] Reinders, H., & White, C. 20 years of autonomy and technology: How far have we come and where to next? *Language Learning & Technology*, 2016, 20(2), 143–154.
- [44] Richards, J. C. & Rodgers, T. S. Approaches and methods in language teaching (3rd ed.). Cambridge: Cambridge University Press, 2014.

- [45] Soruç, A. & C. Griffiths. 'English as a medium of instruction: students' strategies', 2018, *ELT Journal* 72/1: 38–48.
- [46] Spanjers, I., Könings, K., Leppink, J., Verstegen, D., de Jong, N., Czabanowska, K., & van Merriënboer, J. The promised land of blended learning: Quizzes as a moderator, *Educational Research Review*, 2015, 15, 59–74.
- [47] Steen-Utheim, A. T., & Foldnes, N. A qualitative investigation of student engagement in a flipped classroom. *Teaching in Higher Education*, 2018, 23(3), 307–324.
- [48] Teng, M. F. Interactive-whiteboard-technology-supported collaborative writing: writing achievement, metacognitive activities, and co-regulation patterns. *System*, 2020, 97, 102426.
- [49] Tsai, C. W. Applying online competency-based learning and design-based learning to enhance the development of students' skills in using powerpoint and word, self-directed learning readiness, and experience of online learning. *Universal Access in the Information Society*, 2018, 19(2), 283–294.
- [50] Tsai, Y. R. Promotion of learner autonomy within the framework of a flipped efl instructional model: perception and perspectives, 2019.
- [51] Usman, O. L., Muniyandi, R. C., Omar, K., & Mohamad, M. Advance machine learning methods for dyslexia biomarker detection: a review of implementation details and challenges. *IEEE Access*, 2021, PP (99), 1-1.
- [52] Webb, M., & Doman, E. Impacts of flipped classrooms on learner attitudes towards technology-enhanced language learning. *Computer Assisted Language Learning*, 1, 2019.
- [53] Xu, W., & Zhou, Y.. Course video recommendation with multimodal information in online learning platforms: a deep learning framework. *British Journal of Educational Technology*, 2020.
- [54] Yaikhong, K., & Usaha, S. A measure of EFL public speaking class anxiety: Scale development and preliminary validation and reliability. *English Language Teaching*, 2012, 5(12), 23–35.
- [55] Yang, Y.-F. Automatic scaffolding and measurement of concept mapping for EFL students to write summaries. *Journal of Educational Technology & Society*, 2015, 18(4), 273–286
- [56] Yoon, H. Linguistic complexity in L2 writing revisited: Issues of topic, proficiency, and construct multidimensionality. *System*, 2017, 66, 130–141.
- [57] Yousef, A. M. F., M. A. Chatti, and U. Schroeder. "Videobased Learning: A Critical Analysis of the Research Published in 2003-2013 and Future Visions." In *eLmL 2014, The Sixth International Conference on Mobile, Hybrid, and On-line Learning*, 112–119. Barcelona, Spain: IARIA XPS Press, 2014.
- [58] Zilka, G. C.. Always with them: smartphone use by children, adolescents, and young adults—characteristics, habits of use, sharing, and satisfaction of needs. *Universal Access in the Information Society*, 2018.
- [59] Zou, D., Luo, S., Xie, H., & Hwang, G. J. A systematic review of research on flipped language classrooms: theoretical foundations, learning activities, tools, research topics and findings. *Computer Assisted Language Learning* (1), 2020, 1-27.
- [60] Zou, D., Xie, H., Wang, F., & Kwan, R. Flipped learning with Wikipedia in higher education. *Studies in Higher Education*, 2020, 45(5), 1026.