Review
CTIT

Panorama of Technology Assisted Teaching/Learning Language Pedagogy: A Glance

Pranav Pathak[1,*], Pratik Pandya[2]

Abstract

The dawn of the 21st century has heralded a new sun to empower teaching/learning experience. To impart quality in higher education, all universities are experimenting with new methods/techniques that can bring about a transitional shift from traditional classroom teaching to smart room learning experience. There has been a sudden shift from teacher centered classroom teaching to students centered classroom learning. The pivotal focus is on the learner's self-learning. This is where the importance of Technology Assisted Teaching/Learning comes into the picture. Looking around at developments in technology and education today, it appears that technology-assisted education and e-learning can only be a trend that will continue to pick up in the years ahead. Teaching with technological assistance typically involves employing multimedia instructional formats like animation, video, simulation, and virtual learning environments. In the widest sense, Technology and internet assisted learning has been marching like anything in varieties of ways depending on need. As a result, it has been catering ample opportunities for the learner to study with the use of innumerable internet resources and audio-visual aids. The widespread dominance of technology inspires us to peep deep into its different forms which fall under the consideration of this study. In this study, the researchers aim at exploring the panorama of Information, Communication and Technology (ICT) for educational pedagogy from its root to its current position and trends. The study deals with different E-tools that have been adopted to enrich teaching/learning experience. Review of CALL, MALL, and Internet Assisted Learning come under the umbrella of this research work. The researcher will discuss advantages of using such tools and how these have been a source of helping hand to soften teaching/learning experience.

Keywords: Technology assisted teaching/learning, CALL, MALL, ICT, internet, e-learning

INTRODUCTION

The advent of the 21st century has brought about a transformative era in the realm of education, ushering in a new dawn that seeks to enhance the teaching and learning experience. Universities worldwide are actively exploring innovative methods and techniques aimed at steering a paradigm shift from conventional classroom teaching to the dynamic landscape of smart room learning [1]. This transition is characterized by a notable move from teacher-centered classroom dynamics to student-centered learning environments, with a pivotal focus on fostering self-directed learning among students. The pivotal role of Technology Assisted Teaching/Learning is central to this transformative shift in education [2].

In response to the evolving educational landscape, institutions are increasingly integrating technology to impart quality education at the higher education level [3]. The shift towards technology-assisted education is evident in the adoption of multimedia instructional formats, including animation, video, simulation, and virtual learning

*Author for Correspondence
Pranav Pathak
E-mail: pathakpranav23@gmail.com

[1,2]Assistant Professor, Department of Computer Science, Smt. K.B. Parekh College of Computer Science, Mahuva, Gujarat, India

environments. This study aims to delve into the multifaceted aspects of Information, Communication, and Technology (ICT) in educational pedagogy, tracing its roots, examining its current position, and exploring emerging trends [4–7].

As we observe the intersection of technology and education today, it is evident that technology-assisted learning and e-learning are not fleeting trends but enduring phenomena that are poised to gain momentum in the years to come [8]. The study embarks on a comprehensive exploration of various E-tools that have been embraced to enrich the teaching and learning experience. Within this research, a thorough examination of Computer-Assisted Language Learning (CALL), Mobile-Assisted Language Learning (MALL), and Internet Assisted Learning is undertaken, encapsulating their roles and contributions to the educational landscape [9–12].

The researchers will expound on the advantages of employing such tools, illustrating how they serve as invaluable assets in facilitating a more flexible and engaging teaching and learning environment. This study offers a panoramic view of the dynamic interplay between technology and education, shedding light on the transformative potential of these tools in shaping the future of higher education.

PANORAMA OF TECHNOLOGY ASSISTED TEACHING/LEARNING PEDAGOGY: A GLANCE

Technology contributes to the growth of teaching learning methodology. Integration of technology into teaching pedagogy has changed the way teacher used to teach and students used to learn. There is a consistent widespread trend to explore and use Computer Assisted Language Learning to augment the teaching learning processes in the classroom [13–18]. Most parents, teachers and students identify computers as a source of learning. Here is the brief overview of what is CALL, brief history of CALL and advantages of using CALL.

CALL (COMPUTER ASSISTED LANGUAGE LEARNING)
What is CALL?

The term Computer Assisted Language Learning (CALL) covers a range of computer-based packages, which aim to provide interactive instruction with the use or without the use of the Internet. Computer Assisted Language Learning (CALL) is a kind of Computer-based learning which primarily involves teaching and learning process in two ways namely bidirectional and individual. It is well to remember that CALL is not a method or result in itself; it is a tool or process to learn [19]. The primary focus of CALL is on learning rather than teaching. As Prof. Dr. Dilip Barad claims, "The focus of CALL is learning, and not teaching".

Brief History and Development of CALL

Firstly, Computer Assisted Instruction (CAI) revolutionized the teaching method during the 1960s. For the first time CAI module was developed by Patrick Suppes at Stanford University which set structured computer systems featuring learner feedback, lesson branching, and students' record keeping. The widespread and influential dominance of CAI was further carried forwarded in the University of Illinois PLATO system.

This system comprises numerous tutorial and drill-and-practice programs in today's context, microcomputers possess sufficient power to function as file servers. Computer-assisted instruction (CAI) has evolved to the point where it can operate as standalone software [20–22]. CAI software delivers textual content and presents students with multiple-choice questions or problems, providing instant feedback, highlighting incorrect responses, summarizing student performance, and generating exercises for worksheets; and tests identify three historical phases of CALL namely:

- *Behaviouristic CALL: Behaviouristic* approach included drill and practice materials in which Computer provided stimulus and learners were provided with the environment in which they could obtain response. The limitation of this stage was that it could only be done using only text.

- *Communicative* approach provides skill-based practice in non-drill format (e.g. language games, reading, text reconstruction etc). In this phase, the computer serves as a guide, offering learners options, control, and opportunities for interaction.
- *Integrative* approach relies exclusively on multimedia and the internet, incorporating a blend of text, graphics, sound, animation, and video. While using the Internet, learners must read and write in English. And it helps them acquire the language [23].

These hypermedia resources can be accessed from PC, using CD/DVD-ROMS, external hard drive, internal hard drive, or internet as well as computer-mediated communication. This approach has extended the reach of computer from being merely tutor to its application beyond classroom [24].

MALL (MOBILE ASSISTED LANGUAGE LEARNING)
What is MALL?
Mobile-Assisted Language Learning (MALL) involves leveraging mobile technology for language learning. With the global proliferation of advanced mobile phones penetrating every facet of human existence, the anticipation is that wireless computing devices will soon be universally accessible. The widespread availability of these affordable and sophisticated devices has significantly transformed the e-learning landscape. In contrast to conventional classroom settings, MALL eliminates the necessity for learners to be physically present in a classroom or at a computer to access learning materials [25].

Advantages/Disadvantages of Mobile Learning
Mobile phones stand out as the most convenient and potent communication devices in the contemporary era, surpassing even email or chat in terms of richness. The mobile learning experience is tailored by learners according to their individual styles and cognitive states, enabling them to learn without being constrained by physical proximity to a classroom. M-learning empowers learners to acquire knowledge while on the go, whether they are on a bus, outdoors, or at their workplace. The outline the key attributes of mobile devices in the context of learning:
1. *Portability:* Such devices can be taken to different places due to their small size and weight.
2. *Social interactivity:* exchanging data and collaboration with other learners is possible through mobile devices.
3. *Context sensitivity:* the data on the mobile device can be gathered and responded uniquely to the location and time.
4. *Connectivity:* mobile devices can be connected to other devices, and collection devices, or a common network by creating a shared network.
5. *Individuality:* activities platform can be customized for individual learners.
6. *Application aid:* Smart mobile phones have innumerable applications that hinder language learning.

Besides its advantages, mobile devices have some disadvantages. It has small screen, reading difficulty on a screen, memory capacity, and multimedia limitation. Advanced smart phones can overcome such limitations, but they are not affordable for everyone.

Examples of Mobile Based Learning
Nowadays, wireless technology for communication such as Bluetooth, Wi-Fi, GPS, has almost become available in most of the devices of moderate rate. SMS based exchange of texts is one of the based advantages for language acquisition outside the classroom. With the wide spread of mobile operating systems like Android, free flow of language learning software is used on mobile phones. Such software ranges from language-related activities to reading of books. To our great help and surprise, the latest software has a gaming environment and high graphic interface which stimulates interest of learner. Learners will have fun experiences while acquiring language. For example, the software called Learning English allows users to exercise Reading, Listening, Grammar, Essay Writing, Tips for abroad studying, newly added vocabulary, speaking exercise, spellings exercise, writing exercise, communication tips, etc.

Thus, The MALL has proved to be superior means for language learning compared to CALL, as it permits portability. A computer is better than a mobile phone or handling various types of information such as visual, sound, and textual information, but the mobile phone is superior to a computer in portability. Further, some students do not have their own computers [25].

CHATTING

Engaging in real-time text-based communication, commonly known as "chatting" on the Internet, can be a valuable activity for language students. This involves typing messages into a computer, allowing them to be instantly visible on screens worldwide. Some online platforms cater specifically to non-native English speakers, offering opportunities for them to practice and communicate in English.

Today, language educators all around the world are organizing online exchanges because they recognize their potential in bringing the target language and culture together to L2 learners. As a consequence, computer-mediated communication (CMC), which refers to communication that takes place between human beings via the use of online tools such as e-mail, discussion forums, electronic bulletin boards or text and oral chat, has also received significant attention for its potential in facilitating language skills development. Via computer-mediated communication (CMC), language learners can engage in meaningful interactions and be immersed in authentic contextualized language, which are identified as crucial elements in fostering the communicative competence of learners.

They asserted that comprehensible input was both a necessary and a sufficient condition for the acquisition of language input and interaction influence second language acquisition. He outlined eight features related to input and interaction that appear to expedite swift learning. They are:
1. A high quantity of input is directed at the learner.
2. The learner's perceived need to communicate in the L2.
3. Independent control of the propositional content by the learner (e.g., control over the topic choice).
4. Adherence to the "here and now" principle, at least initially.
5. The performance of a range of speech acts by both the native speaker/teacher and the learner (i.e., the learner needs the opportunity to listen to and to produce language used to perform different language functions).
6. Exposure to a high quantity of directives.
7. Exposure to a high quantity of "extending" utterances, (e.g., requests for clarification and confirmation, paraphrases, and expansions).
8. Opportunities for uninhibited "practice" (which may provide opportunities to experiment using "new" forms).

People all over the world get connected through the Internet to share information, experiences, and opinions. Since it is a natural resource (i.e. not a textbook created for the purpose of language teaching through *created* dialogues), it presents real language. While using the Internet, learners must read and write in English. And it helps them *acquire* the language. It should be emphasized that engaging in conversation allows learners to remain connected with the language in practical use. Interaction is an important part of key to developing proficiency in a second language, and chatting on the Internet is one way for students to find opportunities for interaction in the target language.

BLOG

The Oxford Dictionary Online defines the term blog as "A regularly updated website containing personal reflections, excerpts from various sources, and often managed by an individual, typically featuring hyperlinks to other sites; essentially, an online journal or diary". A blog is a personal space where one can express himself and others can read, comment, and enjoy others' write up. Blog allows uploading photos, audio clips and video clips. The application of blog in education has immense importance as it provides a real audience for students, it provides extra reading practice for students, it encourages students to participate and above all it creates online portfolio of students' written work.

Blog creates classroom environment or learning environment outside the classroom. We have outlined three distinct types of blogs applicable in English writing classes: the tutor blog, managed by the tutor to facilitate reading practice, encourage exploration of English websites, foster online interactions through comments, provide class information, and serve as a resource hub for self-study; the learner blog, independently operated by individual learners, particularly suitable for English reading and writing classes; and the class blog, a collaborative effort of the entire class, utilized for sharing messages, images, and links relevant to classroom discussions in English, and potentially serving as a virtual space for international language exchange in the classroom.

Since 1998, weblogs, commonly known as "blogs", have garnered growing attention within the online community. An increasing number of foreign educators have embraced this accessible technology for classroom instruction and language learning. Nevertheless, it appears that a limited number of English teachers in our vicinity have incorporated blogs into their EFL writing classes. Implementation of Blog into classrooms has the following advantages:

- It is facilitating the students' analytical thinking skills.
- It provides students with the examples of model writing for LEARNING.
- It allows self-expression with self-evaluation.
- It allows peer review to improve the quality of writing.
- It gives an open space and for purposive writing.
- It promotes interaction between/among students and TEACHERS.
- Interaction motivates writing.

As blogs have become ubiquitous, educators are increasingly recognizing their efficacy in the realm of teaching and learning. Published studies explore various aspects, such as the impact of blogging on learner autonomy, enhancement of writing fluency, utilization as a platform for completing writing tasks, sharing class materials, and fostering communication with bloggers beyond the classroom.

CONCLUSION

In a nutshell, technology has brought about a revolutionary paradigm shift in the way teachers used to teach and students used to learn language. Widespread craze and accessibility of computer, mobile phones, and internet have made it utmost possible to acquire language using such means. Furthermore, there are numerous such areas that are still to be explored or untrodden. The E-Means like Facebook, MOOS, I Pad, doodle, virtual classroom, and web 2.0 tools can be area to be looked upon.

REFERENCES

1. Li D, Jing H. Innovation of the Teaching Mode of History Courses in Colleges and Universities Based on Digital Technology. Int J Web-Based Learn Teach Technol (IJWLTT). 2023 Feb 23; 18(2): 1–2.
2. Li D, Jing H. Innovation of the Teaching Mode of History Courses in Colleges and Universities Based on Digital Technology. Int J Web-Based Learn Teach Technol (IJWLTT). 2023 Feb 23; 18(2): 1–2.
3. Neale WC, Kursted P. The development of an interactive multimedia courseware program highlighting visual momentum. In Conference Companion on Human Factors in Computing Systems 1994 Apr 28; 19–20.
4. Slater M, Navarro X, Valenzuela J, Oliva R, Beacco A, Thorn J, Watson Z. Virtually being Lenin enhances presence and engagement in a scene from the Russian revolution. Front Robot AI. 2018 Aug 23; 5: 91.
5. Barjis J, Sharda R, Lee PD, Gupta A, Bouzdine-Chameeva T, Verbraeck A. Innovative teaching using simulation and virtual environments. Interdiscip J Inf Knowl Manag. 2012 Jan 1; 7: 237−255.
6. Melatti M, Johnsen K. Virtual reality mediated instruction and learning. In 2017 IEEE Virtual Reality Workshop on K-12 Embodied Learning through Virtual & Augmented Reality (KELVAR). 2017 Mar 19; 1–6.

7. Chan CS, Bogdanovic J, Kalivarapu V. Applying immersive virtual reality for remote teaching architectural history. Educ Inf Technol. 2022 Apr 1; 27(2): 1–33.

8. Kudale P, Buktar R. Investigation of the Impact of Augmented Reality Technology on Interactive Teaching Learning Process. Int J Virtual Pers Learn Environ (IJVPLE). 2022 Jan 1; 12(1): 1–6.

9. Hosseini M. View-aware tile-based adaptations in 360 virtual reality video streaming. In 2017 IEEE Virtual Reality (VR). 2017 Mar 18; 423–424.

10. Al Farsi G, Yusof AB, Romli A, Tawafak RM, Malik SI, Jabbar J, Bin Rsuli ME. A Review of Virtual Reality Applications in an Educational Domain. Int J Interact Mob Technol. 2021 Dec 11; 15(22): 99–110.

11. Jung J, Lee JY, Kim B, Lee S. Upright adjustment of 360 spherical panoramas. In 2017 IEEE Virtual Reality (VR). 2017 Mar 18; 251–252.

12. Matthiesen A, Majgaard G, Scirea M. The Process of Creating Interactive 360-Degree VR with Biofeedback. In International Conference on Human-Computer Interaction. Cham: Springer Nature Switzerland; 2023 Jul 9; 261–268.

13. Zhang J, Zhu T, Zhang A, Yuan X, Wang Z, Beetschen S, Xu L, Lin X, Dai Q, Fang L. Multiscale-VR: multiscale gigapixel 3D panoramic videography for virtual reality. In 2020 IEEE international conference on computational photography (ICCP). 2020 Apr 24; 1–12.

14. Yali L, Huijie Z. Three-dimensional campus 360-degree video encoding VR technology based on OpenGL. Multimed Tools Appl. 2020 Feb; 79(3): 5099–107.

15. Pan Y, Wu J, Ju R, Zhou Z, Gu J, Zeng S, Yuan L, Li M. A Multimodal Framework for Automated Teaching Quality Assessment of One-to-many Online Instruction Videos. In 2022 IEEE 26th International Conference on Pattern Recognition (ICPR). 2022 Aug 21; 1777–1783.

16. Zhang Y, Zhang W, Shen Y. Design of a SCORM Courseware Player Based on Web AR and Web VR. In: Augmented Reality, Virtual Reality, and Computer Graphics: 6th International Conference, AVR 2019, Santa Maria al Bagno, Italy, June 24–27, 2019, Proceedings, Part I 6. 2019; 3–9. Springer International Publishing.

17. Sun M. Application of multimodal learning in online English teaching. Int J Emerg Technol Learn (Online). 2015; 10(4): 54–58.

18. Zhang Y, Zhang W. Design of an AR and VR supported SCORM courseware player. In Proceedings of the 23rd International ACM Conference on 3D Web Technology. 2018 Jun 20; 1–2.

19. Shen YH. Design of Digital Network Shared Learning Platform based on SCORM Standard. Int J Emerg Technol Learn. 2018 Jul 1; 13(7): 214–227.

20. Nie Y. Application of Multimodal Multimedia Information and Big Data Technology in Teaching Chinese as a Foreign Language Course. Int J Digit Multimedia Broadcast. 2023 Jan 31; 2023: 2257863.

21. Goli A, Teymournia F, Naemabadi M, Garmaroodi AA. Architectural design game: A serious game approach to promote teaching and learning using multimodal interfaces. Educ Inf Technol. 2022 Sep; 27(8): 11467–98.

22. Philippe S, Souchet AD, Lameras P, Petridis P, Caporal J, Coldeboeuf G, Duzan H. Multimodal teaching, learning and training in virtual reality: a review and case study. Virtual Reality & Intelligent Hardware (VRIH). 2020 Oct 1; 2(5): 421–42.

23. Shankar SK, Ruiz-Calleja A, Prieto LP, Rodríguez-Triana MJ. A multimodal learning analytics approach to support evidence-based teaching and learning practices. In 2020 IEEE 20th International Conference on Advanced Learning Technologies (ICALT). 2020 Jul 6; 381–383.

24. Almasseri M, AlHojailan MI. How flipped learning based on the cognitive theory of multimedia learning affects students' academic achievements. J Comput Assist Learn. 2019 Dec; 35(6): 769–81.

25. Yamaguchi T. Vocabulary learning with a mobile phone. In Program of the 10th Anniversary Conference of Pan-Pacific Association of Applied Linguistics. 2005 Aug 2; 57.