

BENEFITS OF THE COMPUTER-ASSISTED PRONUNCIATION TRAINING (CAPT) IN TEACHING PRONUNCIATION

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Annotation. *The focus of the article is on computer-assisted pronunciation training in the classroom. When learning English, the majority of ESL students struggle with proper pronunciation. It would be more advantageous to teach pronunciation using this more sophisticated method. Students can learn how to pronounce words correctly, mimicking the pronunciation of native speakers, using this method. The varieties of CAPT and their benefits and drawbacks are covered in the article.*

Key words: *AI-based, second language, technology, instruction, CAPT, CALL, and pronunciation.*

Introduction

Pronunciation is a critical aspect of language learning, as it directly impacts communication and comprehensibility. However, time limits and a lack of individualized feedback make it difficult to teach pronunciation successfully in traditional schools. Computer-Assisted Pronunciation Training (CAPT) has emerged as a promising solution, offering learners tailored, technology-driven approaches to improve their pronunciation skills. The function of CAPT in teaching pronunciation is examined in this article, along with its advantages, difficulties, and potential uses.

Literature review

Language is built on pronunciation, which is essential for acquiring linguistic skills. Enhancement in verbal communication skills is achieved through the use of

clear and understandable language, which enhances learning. This factor influences their speaking ability. (Farhat & Dzakiria, 2017; Morley, 1991). However, despite its importance, pronunciation has frequently been overlooked in foreign language research and teaching (Derwing & Munro, 2015; Farhat & Dzakiria, 2017; Haghighi & Rahimy, 2017). Students need assistance identifying the discrepancy between their actual performance and the desired results because they have restrictions, have trouble learning pronunciation, suprasegmental and segmental sounds. (Bodnar, Cucchiarini, de Vries, Strik, & van Hout, 2017). Personalized instruction for pronunciation training is important and should happen often, but it requires a significant amount of time and effort. Technology has greatly changed language education recently, improving both access and practicality. (Chang & Hsu, 2011). Language learners now benefit from seamless access to the authentic pronunciation models, facilitated by CAPT (Neri, Cucchiarini, & Strik, 2001; Zhao, 2003) A growing number of people are using Computer-Assisted Pronunciation Training (CAPT) to improve their second language (L2) learners' pronunciation skills. Research consistently shows that CAPT gives students thorough pronunciation input, self-paced practice, and instantaneous, personalized feedback through automatic speech recognition (ASR), all of which help them spot and fix errors more successfully than traditional methods.(Moustafa Amrate&PI-hua Tsai.CAPT systematic review.2024) High variability phonetic training, which is widely used in CAPT systems, exposes learners to a variety of speech models and phonetic environments, enhancing their ability to generalize pronunciation abilities. Both segmental and suprasegmental components of pronunciation have been found to develop favourably in empirical investigations, with novice and intermediate learners exhibiting discernible gains.(Behice Ceyda Cengiz. CAPT an analysis of Empirical Research. 2023)

Methodology

The majority of research methods used in CAPT studies are quantitative in nature. A comprehensive analysis of research conducted between 2012 and 2021 showed that the majority of studies used quantitative techniques to evaluate the effect of CAPT on pronunciation learning, with the most widely used systems being mobile app-based (Chen et al., 2022). 3. An increasing interest in using mobile devices to aid in language acquisition is reflected in this trend. Extensive searches in scholarly databases such as Cambridge Core, Sage Journals, ScienceDirect, and Google Scholar were used to find pertinent studies. Regardless of whether they employed quantitative, qualitative, or mixed approaches, studies empirically investigating CAPT interventions targeted at enhancing pronunciation in L2 learners were included. The crucial information on participants is learned, such as the CAPT instruments used, the pronunciation aspects targeted, the study Data Extraction and Analysis: Important participant data, research design, results, targeted pronunciation traits, and CAPT tools were extracted. Common themes like learner achievement, motivation, and teacher responsibilities were found through qualitative synthesis. This approach serves as the basis for suggestions on how to include CAPT into language instruction.

Discussion and results

Computer-Assisted Language Learning (CALL) helps to improve the English language proficiency of people in different regions (Levy and Stockwell, 2013). CALL relies on computerized self-service tools that are used by students to practice a language, usually a foreign language, also known as a non-native (L2) language. Students can practice multiple aspects of the language, including grammar, vocabulary, writing, reading, and speaking. Computer-based tools can also be used to measure student's language skills and their learning potential by using Computerized Dynamic Assessment (C-DA) test (Mehri Kamrood et al., 2019). CALL can complement traditional language learning provided by teachers. Computer-Assisted Pronunciation Training (CAPT) is a part of CALL responsible

for learning pronunciation skills. It has been shown to help people practice and improve their pronunciation skills (Neri et al., 2008,). A novel approach to teaching proper pronunciation is computer-assisted pronunciation training, or CAPT.

CAPT is a cutting-edge method of language learning that helps students pronounce a target language more accurately by utilizing technology, particularly computers and software. Additionally, it has the potential to increase accessibility to second language learning in situations where traditional methods of language acquisition are not feasible because of the high cost of instruction or the inaccessibility of foreign language teachers. With the promise to overcome some of the drawbacks of traditional education, computer-assisted pronunciation training, or CAPT, has become a promising technique for improving the pronunciation of second language (L2) learners. Typically, CAPT systems include a variety of features and techniques intended to improve non-native speakers' pronunciation, making them an invaluable tool in language education. Most CAPT programs include a variety of interactive activities, such as repeating phrases, practicing specific sounds, or engaging in dialogues. These exercises are designed to target common pronunciation challenges specific to different languages.

Nowadays a variety of commercial and open-source CAPT systems are available on desktop and mobile devices (Bajorek, 2017). These systems promise L2 learners rich pronunciation input, self-paced practice, and immediate feedback (Neri, Cucchiarini, Strik & Boves, 2002). Input in CAPT ranges from natural speech models produced by first language (L1) speakers to manipulated speech emphasizing specific pronunciation features, as well as synthetic computer-generated speech that models human pronunciation (Wang & Munro, 2004). Such forms of input are particularly valuable when presented through high variability phonetic training (HVPT), which exposes learners to a wide range of pronunciation models presented by different speakers in different phonetic contexts (Thomson, 2012). CAPT systems are further enhanced with automatic speech

recognition (ASR), which provides learners with instantaneous speech-to-text conversion, error detection, and personalized feedback. CAPT consists of two components: an automated pronunciation evaluation component (Korzekwa et al., 2021c) and a feedback component. The automated pronunciation evaluation component is responsible for detecting pronunciation errors in spoken speech, for example, for detecting words pronounced incorrectly by the speaker. The feedback component informs the speaker about mispronounced words and advises how to pronounce them correctly. This article is devoted to the topic of automated detection of pronunciation errors in non-native speech. This area of CAPT can take advantage of technological advances in machine learning and bring us closer to creating a fully automated assistant based on artificial intelligence for language learning.

Most existing CAPT methods are designed to recognize the phonemes pronounced by the speaker and compare them with the expected (canonical) pronunciation of correctly pronounced speech (Witt and Young, 2000,).

Several studies have shown that CAPT is a useful tool for enhancing pronunciation. According to Mahdi and Al Khateeb's (2019) systematic review, CAPT applications greatly improve L2 learners' pronunciation, particularly at the beginner and intermediate levels. According to more recent studies, ASR-based CAPT performs better at segmental accuracy (vowels and consonants) than suprasegmental accuracy (stress and intonation).

Benefits of CAPT in Pronunciation Training:

1. CAPT systems offer learners the opportunity to receive personalized feedback in real-time, enabling them to identify and correct specific pronunciation mistakes. For instance, learners can effectively concentrate on their areas of deficiency due to the capabilities of Automatic Speech Recognition (ASR) technology, which can assess speech patterns and offer immediate corrections [1][3].

2. Increased Practice Opportunities: CAPT enables learners to engage in practice at their own pace and convenience, extending beyond the classroom setting. This flexibility promotes regular practice, which is essential for mastering pronunciation
3. Reduced Anxiety: Numerous learners perceive practicing with technology as less daunting than addressing their peers or instructors. ASR systems cultivate a low-pressure atmosphere that enhances confidence and motivation [1][3].
4. Visual and Auditory Feedback: CAPT tools frequently incorporate visual aids such as spectrograms and waveforms, which assist learners in comprehending phonetic subtleties. Such multimodal feedback enriches the educational experience. [1][5].

Despite its advantage sites, CAPT has also some challenges to implement:

1. Technological Complexity-some CAPT systems require learners to interpret complex visual feedback, such as spectrograms, which can be overwhelming without proper training[1][5].
2. Limited Flexibility-certain CAPT tools rely on pre-recorded phrases or native speaker samples, restricting the scope of practice to predefined scenarios[5][6].
3. Instructor Training-teachers may need specialized training to integrate CAPT effectively into their curriculum, which can be resource-intensive[6][7].
4. Accessibility Issues-not all learners have access to the necessary devices or software, creating a digital divide that limits the widespread adoption of CAPT[7].

To optimize the effectiveness of CAPT:

-Enhanced User Interfaces - Streamlining visual feedback systems can render CAPT tools more accessible to a wider array of learners.

- Integration with Curricula

Educational institutions ought to integrate CAPT into language programs as supplementary resources rather than independent solutions.

-Focus on Multilingual Contexts

Broadening research regarding CAPT's efficacy across various linguistic backgrounds will yield significant insights for global application.

- AI-Powered Adaptations

Utilizing artificial intelligence can further customize feedback and modify learning trajectories based on individual advancement.

Conclusion

Computer-assisted training has transformed the approach to teaching pronunciation by overcoming limitations present in conventional methods. With its capacity to deliver personalized feedback, alleviate learner anxiety, and provide flexible practice opportunities, CAPT signifies a notable advancement in language education. Although challenges such as technological complexity and accessibility persist, continual research and innovation hold the promise of enhancing the effectiveness and inclusivity of these tools in the future.

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