

Information and Communication Technology in English Language Education: A Review and Future Research Directions

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Keywords: *Information and Communication Technology, English Language Education, computer-assisted language learning*

ABSTRACT This study investigates the current research progress of the integration of Information and Communication Technology (ICT) in English Language Teaching (ELT) and its educational implication by drawing upon the empirical evidences provided by recent related studies. The findings show that current ELT research on ICT usage becomes more detailed with specific ELT skills. Among four basic sub-skills, the integration of ICT into receptive skills including reading and listening seems to be more successful than that of productive skills (writing and speaking). The research also finds that possible challenges for using ICT in ELT includes financial concerns from schools, technical concerns of limited ICT skills and stability of Internet, and also pedagogical concerns of classroom management issues from teachers, implying that more detailed and comprehensive studies should be conducted into the relevant field.

1. INTRODUCTION

The issue of how information and communication technology (ICT) might influence language education has been one of the most frequently discussed topics in relevant fields, as a large amount of academic books and articles have been published on this topic [1], [2]. Educators' increasing interests on the seemingly irrelevant "technical issue" stem from both theoretical and practical concerns. From the theoretical perspective, studying the technical factor helps to testify the potential of computer-assisted language learning (CALL) in an information era. From the practical perspective, investigating the effect of technology on language education, mostly English language education (ELT), would imply educators the appropriate approach to integrate ICT tools with the seemingly personal and private language learning experience, in the hope of creating an open language teaching platform accessible to all language learners. With regards to both theoretical and practical benefits, ICT has become one of the most heatedly discussed topics in relevant research fields.

Motivated by the above theoretical and practical concerns, this study will investigate the research progression of ICT support to language education with reference to relevant studies in the past 10 years, and it is constructed according to the following outline. First, major debates and arguments related to the ICT and ELT theme, together with essential concepts like CALL will be introduced as theoretical foundation of this paper. Second, the selection criterion of the papers under review will be presented. Third, this paper will draw upon some of the empirical evidence of the proposed concepts. Finally, a synthesized conclusion as well as its application for language education will be summarized.

2. THEORETICAL FRAMEWORK

2.1. Debates

Debates on the ICT usage in ELT focused on several questions: How can ICT be integrated into ELT? What are the possible obstacles and benefits? In which aspects of ELT would ICT be the

most helpful? In the past research history, possible answers have been proposed by scholars from different perspectives.

Most researchers agreed that the integration of ICT into ELT classrooms is, although with certain challenges, unavoidable in foreseen future. The benefits of combining ICT in language teaching are obvious: contextualization of English courses, multimodal resources, motivated learner autonomy, student-centered pedagogy [3] —most of these are proposed or even already proved by teachers and researchers from tertiary level[2], [4], where educational resources would be more abundant and available. However, some researchers focusing on ELT in primary school and high school would argue against the promotion of ICT in language classrooms, concerning its availability and affordability. These researchers also gained support from experienced English teachers who believed that classroom teaching should be “teacher-centered” and ICT style of teaching with fancy videos and motion graphs would distract students’ attention, hence reducing learning efficiency [5], [6]. As a result, the debates have led to immense theoretical and empirical studies into this research area.

2.2. Computer-assisted language learning

2.2.1. Definition

The potential of using ICT in ELT is then highlighted by the proposal of the Computer-assisted Language Learning (CALL) concept by Warschauer [7] and Bax [8]. Computer-assisted language learning, being defined as language learning with the help of “interactive multimedia, electronic reference materials such as online dictionaries and grammar checkers, and electronic communication in the target language” [8], [9] is the language learning process supported by modern technology, whatever form it might be[8]. Back in the 1980s, CALL might only mean language learning with electronic hardware; whereas current development of technology has expanded the research area of CALL, constantly adding new ideas like “blended learning” and also resources like “corpora” into this newly established research discipline [9].

2.2.2. Different attitudes

Language teachers and researchers hold different opinions towards CALL. Theoretically, CALL coincides with the traditional behavioral approach of language learning, which holds the view that language should be acquired through repeated imitation of ‘language models’ and stimuli. In the opinion of behaviorists, those language models and stimuli can be constructed in more diverse forms with the help of technology, making language learning more efficient[10]. Similar welcoming views would also be held by corpus linguists, who believed that by collecting and analyzing language samples, the detailed language learning process can be staged and reconstructed.

On the other hand, in the practical field, CALL is less welcomed. For English teachers, efficient language learning occurs when suitable and immediate feedback are provided by teachers on the spot, and it would be challenging for the rigid computer technologies to react as appropriately and timely[17]. In addition, CALL also contradicts with the interactive and communicative approach (CLT) of ELT, which suggested that successful language education should be based on the sufficient interaction and communication between teachers and students, and among students themselves[2]; in this sense, technology could not be the replacement of teachers or students’ peers. Overall, it is the supportive and objective voices that facilitate the integration of ICT into ELT both in theory and in practice.

3. Research Method

3.1. Procedures

To investigate into the current ICT progress in ELT, this study chooses to carefully locate and reanalyze relevant research papers published in the past 10 years. By searching on popular research databases using key words “Information and Communication Technology, English language education”, “ICT, ELT”, “technology, language education”, research articles published between

January 2010 and December 2019 were located. Included in this study were reports of empirical research involving a direct ICT practice and were published in recent 10 years (3-5 years better). Excluded in this paper were interdisciplinary studies with more than one focus (e.g. using ICT to support both ELT and math teaching). It should also be noticed that some other past studies might be mentioned in brief so as to reveal the recent research progress.

After the selection stage, all chosen research papers would be compared and analyzed. In the analyzing stage, comparison would be made between key features including research background, classroom setting, research design, and most importantly, the findings with regard to ICT utility and its possible large-scale pedagogical implications.

3.2. Studies

Due to space limit, this paper would focus on 15 relevant reports of research, as are listed in Figure 1. Nearly half of them were published within 5 years, and more than 80% of them were published within 9 years. Some of their findings provide positive feedback of ICT usage in ELT, while others do not. The research background, classroom setting, research design, and findings of these studies vary, with the detailed comparison summarized below.

TABLE I: SELECTED RESEARCH PAPERS

Ref	Background		In/Out of class		Research design				ICT's Positive results
	B1	B2	C1	C2	D1	D2	D3	D4	
[11].	✓		✓		✓				✓
[12].		✓	✓		✓	✓			✓
[13].	✓		✓		✓				
[14].	✓			✓	✓				✓
[15].		✓	✓	✓		✓			✓
[16].		✓	✓			✓			✓
[17].		✓	✓				✓		✓
[18].			✓	✓			✓		✓
[19].	✓			✓			✓		✓
[20].		✓	✓					✓	✓
[21].		✓	✓						✓
[22].		✓	✓		✓				
[23].	✓		✓		✓				✓
[24].		✓	✓		✓				✓
[25].	✓		✓			✓			

B1=primary and high school, B2= university,

C1= in class, C2=out of class,

D1=Reading, D2=Writing, D3= Listening, D4=Speaking.

4. Findings

The past years have witnessed the rapid expansion of ICT in ELT, attracting more attention to the ICT and ELT research field from diversified perspectives.

4.1. ICT in ELT: using ICT in sub-skills

The integration of ICT into ELT can be divided according to the four sub-skills of language acquisition: reading, writing, listening, and speaking.

Reading comprehension as a receptive skill has long been recognized as one of the crucial skills in measuring the proficiency of language learners, as comprehension is thought to be the prerequisite of any further language production[11]. In the past decade, numerous studies have been conducted to discuss on the possible positive influence of ICT. In most studies, researchers used multimedia classrooms as ICT tool to observe the learning and teaching process of reading skill, with half of the findings in support of ICT compared with traditional and cost-efficient way of ELT [11],[12],[13]. Many studies stated that ICT would help “attract students’ attention, facilitate

students' learning process, and promote meaningful learning"[11][12]. Compared with the half-half result in ELT classrooms, more positive feedback seemed to be reported in out-of-classroom's reading activities[14], where various online reading applications are applied as app books to scaffold learners' after-class reading activities.

Compared with the multimedia classroom usage in reading research, ICT studies on English writing focused more on the collaborative and interactive side of technology. Teachers are reported to use ICT networks to not only set authentic writing contexts for students, but also create collaborative writing study groups where students can work with their peers in the originally lonely and isolated writing process[15],[16]. These innovations have also resulted in more positive teaching and learning feedback of ICT.

For the receptive skill of listening, the usage of ICT used to be a necessity, as in relevant research studies, using ICT in listening has been referred to as "putting technology in its place"[6]. The unique part of teaching and learning the listening skill is that listening comprehension is usually a once-only simultaneous experience, and "there are very few moments in which students are taught the stream of speech" in class[18]. Apart from the development and adaption of online listening resources as supplementary materials, language teachers also began to employ ICT in classroom teaching. In some colleges, teachers even began to experiment on building ICT based listening courses where all teaching procedures including classroom management, listening activity organization, and assessment can all be completed with ICT based online learning system in computerized labs. In relevant descriptive reports, it was summarized that the benefits are obviously enhanced motivation and learner autonomy[18],[19].

In contrast to the above mentioned skills, it seems that speaking is the area that ICT can offer relatively little assistance, with very few studies conducted in this area. In fact, speaking has seldom been tested separately--most times combined with listening or reading in integrated classes to test learners' language output[6]. As has been stated by Bax in the case of teaching pronunciation, although ICT resources can help to "model the target sound for imitation", ICT is still generally "not reliable enough to replace the teacher in the role of evaluating and then modifying the input to take learners on to the next stage"[6].

4.2. ICT in ELT: Challenges

There are also a number of doubts expressed about the ICT usage in ELT. The most commonly mentioned one in most of the above mentioned empirical studies is cost. Some scholars indicated that although ICT might be beneficial for ELT, it might not be cost efficient compared with traditional teaching methods. Some stated that schools might be "spending far too much money (on computer technology) with too little thought", and that the majority of educational ICT resources "has been poorly managed and badly executed"[6].

Studies conducted on teachers' attitudes towards ICT have also revealed similar negative concerns. Several factors were listed as possible reasons, including limited ICT skills and pedagogic expertise[22],[24], difficulty in classroom control and students distraction[12], and unreliable Internet connection[23],[25]. According to most of the studies, although initially the majority of teachers were enthusiastic towards ICT use in English teaching, "their enthusiasm was waning in the light of inadequate support and training"[22].

5. Implication

5.1. Research

The review of studies suggests a need for more focused research into the relevant field. Future research should be detailed enough to test the ICT usage in each ELT sub-skills, especially productive ones like writing and speaking. In addition, more research areas should be expanded. At present, most of the studies were conducted from teacher as researcher perspective, while the attitudes of students or learners are also worth noticing. By investigating into the possible causes of students' uncooperative behaviors in ICT classroom control and distraction, possible theoretical

solutions might be concluded to help tackle the problem.

5.2. Practice

The current development of ICT in ELT research implies that a more detailed instructional curriculum for ICT teaching is necessary. For English learners of varied ages and self-controlling abilities, ICT support could vary in their ELT courses. For schools and policy makers, ICT related skill and pedagogy training should be offered before they require English teachers to teach in multimedia classrooms, and they should also ensure Internet connection and ICT availability in those classrooms. For teachers themselves, keep an open-minded heart towards new technologies in their daily lives and educational career might be the suitable way to adapt to whatever changes that might occur.

6. Conclusion

Before ICT was introduced into ELT, teaching might involve only teacher, blackboard, and chalk. However, recent research has shown that teaching process can be much more motivating and interesting with the help of ICT. As above review and discussion have illustrated, ICT can offer a helping hand in different domains of ELT. In addition, the discussion also reminds current researchers that more attention and efforts should be paid on ICT and CALL studies, and teachers and schools should also be aware of the benefits and possible challenges when using ICT.

Acknowledgment

This work was supported by Glasgow College, University of Electronic Science and Technology of China, and Sichuan Provincial Education Reform Project (JG2018-183).

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