




Vol. 14, No. 5
pp. 109-139
November &
December
2023

Received: 3 March 2022
Received in revised form: 12 May 2022
Accepted: 28 May 2022

Using Multimedia Technology to Improve English Comprehensive Ability

Bo Zhu^{1*} , Kien Tsong Chau² , Nur Azlina Binti Mohamed Mokmin³ , & Ling Wu⁴

Abstract

Due to the advancement of multimedia technology, it is now very common to use tools and equipment for teaching and learning. Understanding how to best utilize the benefits and functions of multimedia technology has now taken the lead in English teaching and learning. The positive contributions that multimedia technology makes to the teaching and learning of English listening, speaking, reading, and writing are highlighted in this essay. It also focuses on strategies and methods to enhance English comprehensive ability in a multimedia environment and highlights issues that need to be addressed. It is advised to focus more on the natural integration of multimedia technology and English teaching, expand the range of English reading, increase interest in English learning, enhance the comprehensive ability of English application, and establish a resource-sharing environment for teachers.

Keywords: multimedia technology, English comprehensive ability, enhancement method, proficiency

¹ Corresponding Author: PhD Centre for Instructional Technology & Multimedia, Universiti Sains Malaysia, Pulau Pinang 11800, Malaysia, Email: zhubo0425@student.usm.my

ORCID: <https://orcid.org/0000-0003-1126-379X>

² PhD Centre for Instructional Technology & Multimedia, Universiti Sains Malaysia, Pulau Pinang 11800, Malaysia, Email: chaukientsong@usm.my; ORCID: <https://orcid.org/0000-0003-1896-7239>

³ Ph.D. Centre for Instructional Technology & Multimedia, Universiti Sains Malaysia, Pulau Pinang 11800, Malaysia, Email: nurazlina@usm.my; ORCID: <https://orcid.org/0000-0003-1411-5557>

⁴ PhD Centre for Instructional Technology & Multimedia, Universiti Sains Malaysia, Pulau Pinang 11800, Malaysia, Email: wulingusm@163.com; ORCID: <https://orcid.org/0000-0002-0050-4247>

1. Introduction

China has always attached great importance to English education, and students start to learn English from kindergarten or even earlier, and listening, reading, writing, and listening are the four major learning components of English (De et al., 2020; Namaziandost et al., 2018; Wang et al., 2023). In the current international context, the demand for English talents is gradually increasing, and the demand for English proficiency is also increasing (Derakhshan & Shakki, 2018). However, there are still many problems in current English education. With the main purpose of exams and blindly catering to the market, students' comprehensive English ability is low, and their practical English application ability is insufficient, resulting in problems such as mute English and deaf English, which will surely exert great influence upon their willingness to communicate in EFL class (Wang & Derakhshan, 2023). With the development of modern technology, multimedia technology has also gained comprehensive innovation. The advent of the network information era has made multimedia technology play a great role and effectiveness in the field of teaching, and also made the teaching efficiency of English listening, reading, writing and listening has been comprehensively improved (Ajisoko, 2020; Al-Obaydi et al., 2023; Derakhshan & Shakki, 2020; Derakhshan & Fathi, 2023; Ding & Hong, 2023; Gonulal, 2020; Wang, Pan & Wang, 2023; Wang, Wang, Pan & Ortega-Martín, 2023). For the development of English teaching, the adoption of multimedia technology-assisted teaching can further expand the relevant teaching resources and information, truly realize the interaction in English classroom teaching, increase students' interest in English through the form of illustration and text, stimulate active learning enthusiasm, and make the whole English teaching more targeted, which is conducive to the improvement of the existing teaching methods and enhance the overall effectiveness of classroom teaching (Azhar & Iqbal, 2018; Cheng et al., 2018; Derakhshan & Shakki, 2021; Guo et al., 2023; Shakki et al., 2020, 2021, 2023; Wang, 2023). At present, there are few reports on the use of multimedia technology to support English language teaching. Therefore, it is important to discuss and analyze the positive role of multimedia technology-assisted teaching in English learning in depth. The following are four aspects of

English teaching: listening, speaking, reading and writing. With the hope of utilizing multimedia technology to greatly promote the quality and efficiency of English language learning and teaching.

2. Improving English Listening Ability through Multimedia Technology

2.1 Problems with Current English Listening Teaching

2.1.1 Outdated Teaching Mode

The role of teachers in teaching English listening is crucial, and their ability to fully utilize multimedia learning to create a real-world language environment for their students can help those students' English listening levels greatly. However, many teachers currently do not have a high level of acceptance and recognition for multimedia and only copy the information from textbooks to multimedia in a basic and mechanical way. They also no longer use board books in the classroom and instead only go over the teaching content on multimedia equipment. This method seems to save teaching time, in fact, not only cannot play the advantages of multimedia flexible teaching, and even pull down the quality of teaching, and reduce the efficiency of teaching (Duan et al., 2018; Gunn et al., 2018). In the current English listening multimedia teaching, many English teachers seem to use multimedia teaching, but the actual teaching effect is not as good as the traditional teaching mode. The reason for this is that they do not fully understand the advantages and characteristics of multimedia teaching, nor do they master the teaching methods of English multimedia. The teachers are simple and mechanical in making multimedia courseware, not playing the real role of multimedia, and neglecting the cultivation of students' sense of language in the classroom, which is not essentially different from the traditional "indoctrination" teaching.

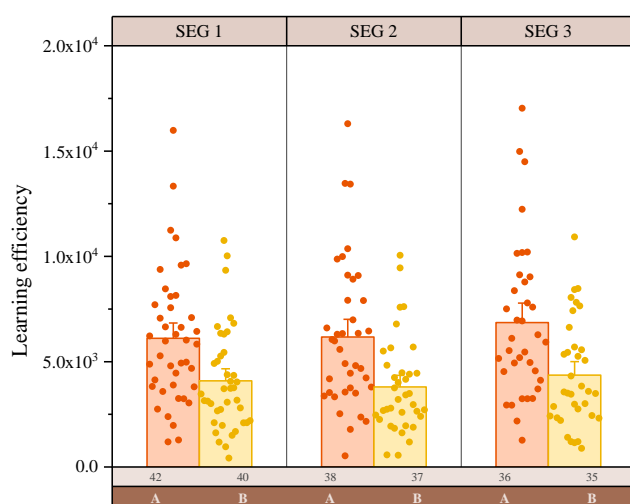
2.1.2 Students' Inability to Adapt to It

The multimedia teaching of English listening can make students truly participate in the classroom, and no longer be a spectator of English listening learning, but the

actual degree of multimedia teaching effect depends largely on students' own ability (Khashimova et al., 2021; Shu, 2020). Usually, multimedia teaching classroom (take the statistical data of 3 multimedia classrooms (SEG 1~3) as an example) is highly open, which may have a lot of information that has little relation to the teaching content, and not all students have certain information filtering ability and good self-learning ability. Indeed, students with better self-learning ability (use "A" for reference) will broaden their horizons and learn more to improve themselves by virtue of this new teaching mode; while some students may be unable to adapt or too adaptable to the highly open multimedia teaching environment (use "B" for reference) causing learning difficulties and making it difficult to improve their English listening skills. We should note that English listening education is a universal education, and its educational principle is to educate as many students as possible. Obviously, this kind of multimedia teaching has caused the "Matthew effect", the stronger the stronger, the weaker the weaker, which is not in line with the principle of English listening education. Figure 1 shows a comparative histogram of students' English learning efficiency under different multimedia teaching modes.

Figure 1

A Comparative Histogram of Students' English Learning Efficiency under Different Multimedia Teaching Modes



2.2 The Application of Multimedia in College English Listening Teaching

2.2.1 Introducing "Scaffolding Teaching Mode"

Scaffolding teaching is learner-centered, which is a kind of conceptual framework to help learners build a new knowledge system based on their original knowledge, and the concepts in the framework are for learners to better understand the knowledge (Liu et al., 2019; Murillo et al., 2019; Pan et al., 2023; Wang et al., 2022). Therefore, English teachers must break down complex learning tasks in advance and gradually guide students to a deeper understanding of knowledge. The specific aspects of scaffolded teaching are as follows: (1) Build a "scaffold". The teacher builds a conceptual framework around the topic of this ELA lesson. (2) Enter the context. Teachers can use multimedia equipment to play some audio and video to lead students into a certain listening learning situation. (3) Independent exploration. The teacher asks questions about the topic and lets the students analyze it independently. At the beginning of the exploration, teachers play some clues with the help of multimedia equipment to inspire and guide students, and then gradually let students explore independently. Through good teacher-student interaction and multimedia technology support in this session, students are helped to learn along the conceptual framework in a meaningful way. (4) Collaborative learning. Through group discussion, students' opinions are pooled and the results of collective thinking are shared. Finally, students are allowed to use multimedia equipment to fully display the results of the discussion and complete the construction of the conceptual framework of the knowledge learned. (5) Effectiveness evaluation. Teachers can finally use multimedia equipment to show the results of listening learning evaluation in a comprehensive and three-dimensional way, so that students can more intuitively recognize the problems in their own listening learning.

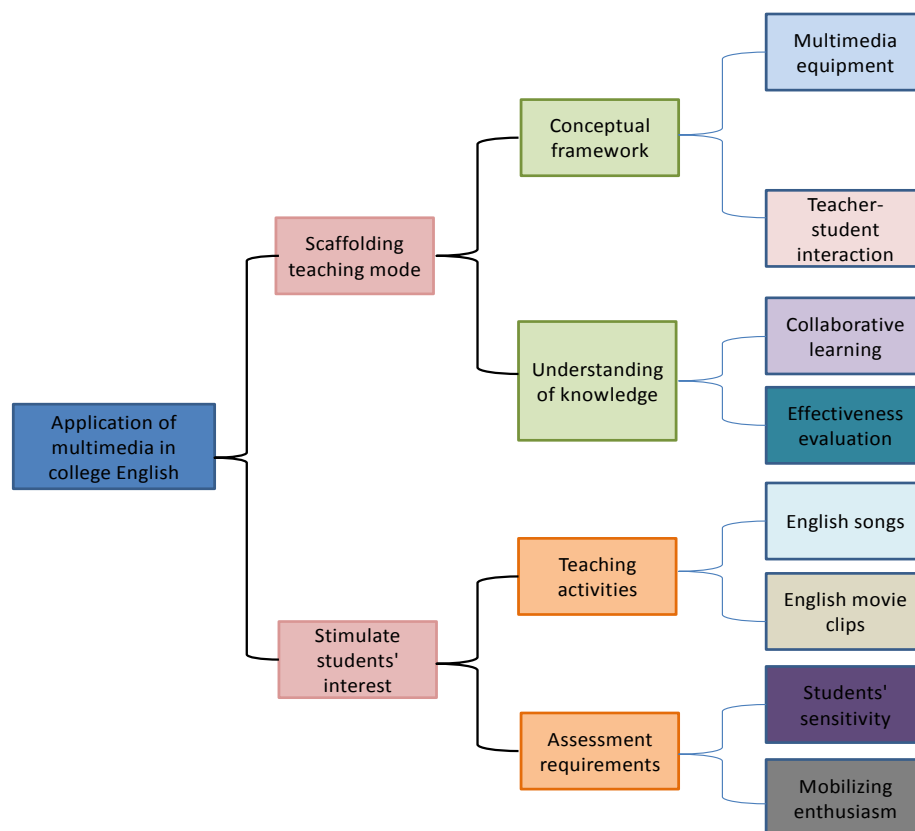
2.2.2 Stimulating Students' Interest in Learning

The creation of learning objectives is a critical component of any educational activities that include students learning English listening. The creation of teaching objectives should take into account students' interests in addition to the Ministry of

Education's assessment standards. In English listening classes, teachers should not only operate multimedia equipment and understand students' learning but more importantly, they should stimulate students' interest in English. Teachers can make full use of the multimedia equipment to play some English songs or movie clips, etc. to stimulate students' interest in learning English and develop their English logic. At the same time, students can also use multimedia devices to re-voice the images or select video clips to perform. These teaching methods improve students' sensitivity to listening to English while giving full play to their individual talents and mobilizing their enthusiasm for learning English. Students can truly participate in the classroom with the help of multimedia equipment and become the main body of the English listening classroom. Figure 2 shows the wireframe of application of multimedia in college English listening teaching.

Figure 2

Wireframe of Application of Multimedia in College English Listening Teaching



3. Multimedia technology for the improvement of English Speaking ability

3.1 Advantages of Teaching Spoken English in a Multimedia Environment

3.1.1 High Input of Linguistic Information and Strong Influence

One of the advantages of multimedia technology is a large amount of language information input and its strong influence (Borghi et al., 2019; El-Dakhs et al., 2022). The multimedia environment has greatly changed the traditional method of people's access to information and has the characteristics of large input volume in terms of information input, which can complete the processing and transmission of multimedia information associated with the content, in line with the way people read in the information age. At the same time, multimedia technology also has strong infectious power, preparing a lot of text, pictures, audio, video and other materials on the courseware, not only can make many difficult to understand the teaching content become vivid and interesting, but also conducive to students' acceptance of the language and understanding of cultural background knowledge, for English teaching, English speaking teaching in multimedia environment can deepen students' understanding of English knowledge.

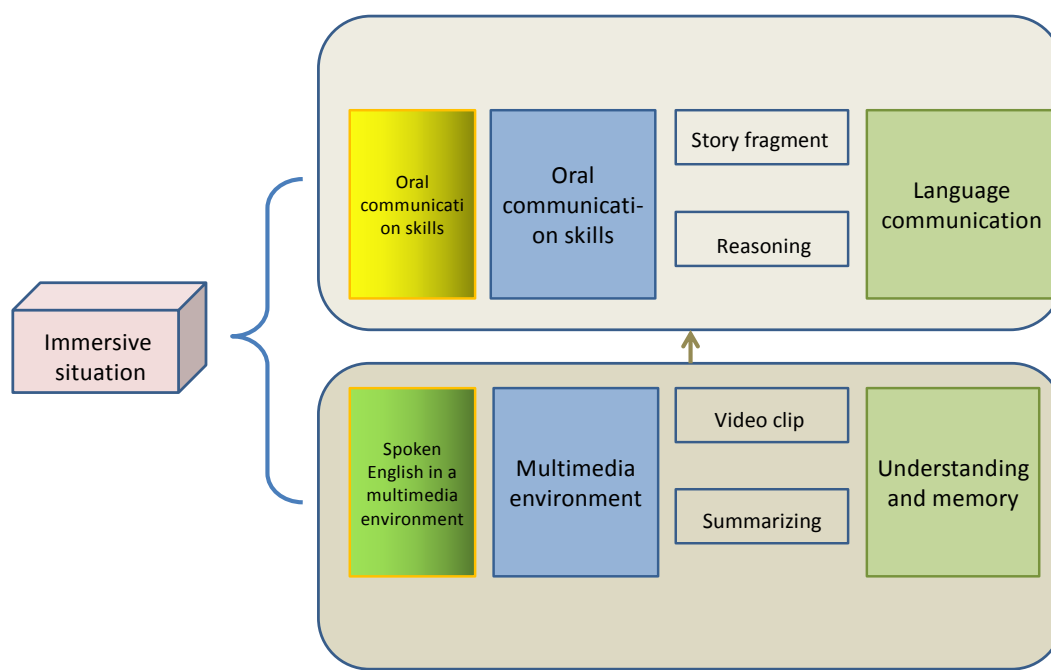
3.1.2 A Rich and Diverse English Language-stimulating Environment

The rich and diverse English language-stimulating environment is another advantage of multimedia technology. The multimedia teaching environment integrates sound, light and color to provide vivid three-dimensional moods and situation (Bakalova, 2021). The use of a rich and diverse English language stimulating environment in English-speaking teaching is conducive to the development of students' oral communication skills and their imaginative and creative thinking. For English classroom teaching, the rich and diverse English language stimulation for students through the information content carried by media software is of great help in improving students' English listening and speaking skills. Students can obtain sufficient sensory stimulation and stimulate their interest in learning, thus improving the efficiency of classroom teaching.

3.2 Strategies for Developing Students' English Oral Communication Skills in a Multimedia Environment

3.2.1 Setting up an Immersive Situation

Setting immersive situations is the key to developing students' English oral communication skills in a multimedia environment. In the process of teaching spoken English, the use of network multimedia technology creates a real communicative environment for students, so that they can really feel the importance of communicating in English in contextual settings, improve their awareness of spoken English, and thus become active in their attitude toward learning spoken English. Specifically, in terms of setting up immersive situations to develop students' communicative competence in spoken English in a multimedia environment, for example, when teaching about shopping, a story fragment or video clip can be played first, with the volume turned off, and after watching it, students are asked to speculate on the language communication that the characters in the film will make or guess what might happen next in the story based on the images observed on the screen. The use of this contextual model serves to establish the suspense to a certain extent, and students explore the progress of the story with questions. While enlivening the classroom atmosphere, the strategies of reproducing, stating, summarizing, and reasoning not only deepen students' understanding and memory of the spoken content they have learned, but also contribute to the completion of the task of learning spoken English (in Figure 3).

Figure 3*Logic Diagram of Immersive Learning English*

3.2.2 Conducting Mutual Learning Cooperation

Conducting mutual learning cooperation is also an important part of developing students' English oral communication skills in a multimedia environment (Guan et al., 2018; Wang, 2022). In oral English teaching, cooperative learning is essential, and English teachers should apply the concept of cooperative learning to the actual teaching to cultivate communication and cooperation between students and students. For example, students can be divided into group A and group B. Let group A students only see pictures without sound through multimedia; group B students only hear sound without pictures. After the demonstration, let the students in group AB and group B work together to integrate what they see or hear into a complete storyline, making sure that each student speaks to practice speaking. In this process, English teachers should play the leading role of teachers to guide students' shortcomings in oral communication and to promote students to learn spoken English more efficiently

on their own in cooperative learning (Al-Sobhi and Preece, 2018).

3.2.3 Stimulating the Interest of Human-computer Dialogue

The role of stimulating the interest of human-computer dialogue in developing English oral communication skills in a multimedia environment should not be ignored. This mode refers to the use of network multimedia technology so that students can communicate directly with the computer in spoken English and the computer gives timely feedback. In teaching spoken English, students can be given a video clip to watch, using some software that can block subtitles, eliminating extra-visual sounds leaving only background music, and letting students simulate with the moving images. Have students listen the first time, narrate the second time and have it recorded by the computer, and then the computer gives a grade. This model can help students eliminate their nervousness, anxiety and even fear about learning spoken English, build up their self-confidence in learning spoken English, thus gradually improve their ability to learn spoken English independently and awaken their potential to learn spoken English independently.

4. Multimedia Technology for the Improvement of English Reading Ability

4.1 Problems in English Reading Teaching

4.1.1 The General Lack of Reading Ability

According to the survey, 43% of students spend less than 10 minutes reading outside English class every day. Students lack interest in reading English, and their reading sources are mostly textbooks and exercises, such as completing and filling in the blanks, reading comprehension, etc., mostly for test-taking purposes, and rarely cater to students' own interests are rarely catered to.

4.1.2 Reading Speed is Too Slow

According to the survey, 49% of the students are not satisfied with their current

reading speed, and 65% of them are at an intermediate level, i.e., between 50 and 100 words per minute. There are still a small percentage of students who read too slowly and have reading difficulties.

4.1.3 Lack of Reading Skills

English reading involves skills such as finding, skipping, and predicting information, and only 57% of students reported being familiar with and able to use some of them. Students generally reflect that teachers only emphasize the amount of reading in their teaching, and rarely or even do they explain reading skills.

4.1.4 Poor Comprehension Skills

Problems with vocabulary, complex sentences and cultural background contributed to students' difficulty in comprehending the content of texts, with 42% and 37% of students citing inadequate vocabulary and long and difficult sentences with complex structures as the biggest obstacles, respectively. In addition, cultural differences were also cited as a major reason. The data suggest that there are diverse causes of reading difficulties and that the right remedy should be applied in the teaching process.

4.2 Inappropriate School Reading Curriculum and Teachers' Reading Teaching Strategies

4.2.1 Teaching Content

In the current high school English reading teaching classroom, 34% of students think that teachers focus on the explanation of vocabulary and grammar, teachers' classroom teaching content and process are uniform, teaching activities lack of interest, students are prone to fatigue psychology, which hinders the development of reading ability.

4.2.2 Teaching Mode

77% of the students reflected that their classroom mode was that the teacher gave the main lecture and the students took notes. In this process, it is difficult for teachers to be informed of students' actual obstacles in reading. Most teachers have not changed their mindset to place themselves at the center of the classroom. In fact, students prefer to take the lead in learning and achieve a teacher-directed, student-centered reading classroom.

4.3 Advantages of Combining Reading Instruction and Multimedia

4.3.1 Increasing Learning Interest and Improve Learning Effect

Multimedia teaching can visualize, concretize and extend the content of textbooks, increase the interest and diversity of the classroom, improve students' attention, and stimulate the enthusiasm and motivation of learning.

4.3.2 Deepening Learning Impression and Enhancing Learning Memory

Multimedia brings information from multiple senses to students, breaking the traditional mode of monotonous presentation of board books, enabling students to watch, listen, talk and remember, so that they can better understand and master what they have learned.

4.3.3 Providing Space for Practice and Promote Communication between Teachers and Students

Teachers present various forms of tasks, provide a wide space for practice, and create a rich context, which is conducive to teacher-student communication and student learning. To sum up, multimedia teaching can introduce new lessons through scenarios, stimulate students' interest; change abstract into concrete, help students understand; turn words into emotions, cultivate students' sentiment, combine sound and shape, graphics and text, and combine motion and static, which

is a promising new form of teaching.

Given reading teaching and multimedia environment, the team of improving learning interest is defined as a set $\chi = \{\kappa_j\}_{j=1, \dots, J}$, where J is the number of 14 students, and the English learning situation (u, v) of the j th a -student in the multimedia environment is denoted by the vector $\kappa_j \in x$. The team of deepening the learning impression consists of a multi-stage sensory information with a multi-label classifier $\phi_t(\kappa)$ at each stage providing confidence $S_{jt} \in R^{w \times h}$ for each student j , where w and h are the breadth and depth of the learning situation, respectively, and t denotes the t th stage. The first stage of the reading teaching and multimedia uses a promising new form of teaching to provide confidence scores:

$$\varphi_t = \partial(\kappa | I) + \lim_{x \rightarrow \infty} (\kappa | I) \quad (1)$$

$$\varphi_t \rightarrow \left\{ s_1^j(\kappa_j = \kappa) + \sqrt{s_1^j(\kappa_j = \kappa)} \right\}_{j=1, \dots, J+1} \quad (2)$$

$$\varphi_t = \partial(\kappa | I) \rightarrow \left\{ s_1^j(\kappa_j = \kappa) + \sqrt{s_1^j(\kappa_j = \kappa)} \right\}_{j=1, \dots, J+1} \quad (3)$$

All subsequent stages generate new confidence scores using the contextual information from the previous stage:

$$\varphi_t > \partial \left[\kappa | I, \sqrt{\psi(\kappa, S_{t-1})} \right] \quad (4)$$

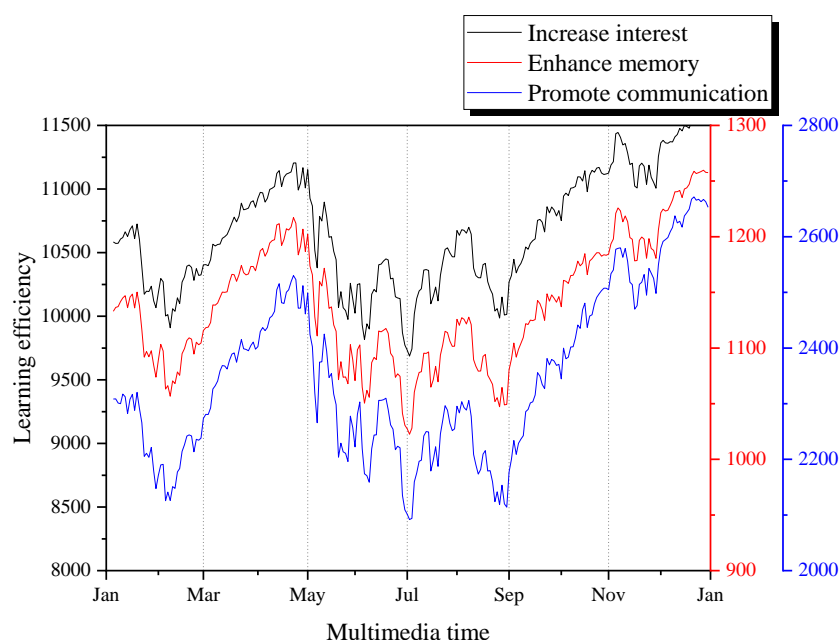
$$\partial \left[\kappa | I, \sqrt{\psi(\kappa, S_{t-1})} \right] \rightarrow \left\{ s_t^j(\kappa_j = \kappa) \right\}_{j=1, \dots, J+1} \quad (5)$$

$$\varphi_t > \partial \left[\kappa | I, \sqrt{\psi(\kappa, S_{t-1})} \right] \rightarrow \left\{ s_t^j(\kappa_j = \kappa) \right\}_{j=1, \dots, J+1} \quad (6)$$

where: $S_t \in R^{w \times h \times (J+1)}$ corresponds to the confidence score map of all students and the background of stage t ; $\psi(\kappa, S_{t-1})$ denotes the teacher-student communication from the confidence map S_{t-1} to English learning situation x . According to the above formula, we can get the curve distribution of the introduction time of multimedia, teaching effectiveness and advantages, as illustrated in Figure 4.

Figure 4

The Curve Diagram of Advantages of Combining Reading Instruction and Multimedia



4.4 The Use of Multimedia in English Reading

The best stimulus for learning is the interest in the learning material. Multimedia is a combination of "sound, color, picture and music".

The multimedia combines "sound, color, picture and music" to show the teaching contents vividly (Fang, 2021). The curriculum reform requires English teaching to cultivate students' knowledge, skills, emotional attitude, cultural awareness, and learning strategies, and to develop students' comprehensive language skills. Teachers are required to make full use of multimedia to provide rich materials for students to engage in a purposeful reading practice, enhance their understanding of language information, focus on cultivating the awareness of independent, inquiry and cooperative learning, develop learning habits and apply learning strategies. The following is an example of the use of multimedia in the English reading classroom, taking the Oxford English Reading section "The Curse

of Mummy" as an example.

4.4.1 Introduction--Showing the Background Knowledge Related to the Text, Creating a Reading Context, and Eliminating the Reading Barriers Caused by Cultural Differences.

The reading material is based on the ancient Egyptian kingdom, which contains different background knowledge about religion, history, customs, etc. Lack of knowledge may lead to misunderstanding. To help students enter the reading situation, we can show some pictures of pyramids and sphinxes with the help of multimedia.

Then show Seven Wonders of Ancient Egypt and other documentaries showing the history of ancient Greek civilization to synchronize audio-visual speech, so that students are in three-dimensional space, multi-sensory access to information. The virtual reality can make the reading content story-like and situational, and the students can be the people in the drama, the sightseers or the authors themselves, laying the foundation for understanding the text.

4.4.2 Lecture – The Use of Multimedia Courseware, Condensing the Amount of Information in the Article, Guiding Students to Form the Thinking Procedures, Thinking Methods and Thinking Rules for Reading and Comprehending Chapters.

(1) Emphasizing on teaching discourse. Teachers should develop students' ability to analyze the structure of discourse, find the entry point of linguistic information, and integrate the content, main idea, and author's intention from keywords. For example, when helping students to understand the context of the text as a whole, teachers can use slides to design a framework structure chart.

(2) Paying attention to the regulation of the reading process. Teachers should analyze and guide students' psychological state, way of thinking, reading methods and reading habits in the reading process, and pay attention to the use of learning strategies to improve the scientific nature of teaching. For example, when

developing skimming skills, slides can be used to set linking questions.

4.4.3 Output - Using Multimedia to Cultivate Students' Outlook on Life, Worldview and Values, and Sublimate the Humanistic Spirit.

Cultivating the humanistic spirit is the call of the times and the base for deepening the reform of English teaching (Du, 2020; Sun et al., 2021). Educator Chekhov said, "Once the education of students touches the emotional and volitional sphere of students and their spiritual needs, this pedagogy can play an efficient role." After teaching the content of the text, the teacher can create an animation showing the main character's adventure inside the pyramid and ask students to retell it and discuss the qualities of the main character in small groups. The process is the application of language for communication and the active and active construction of knowledge structures, in which the emotional attitude toward English learning is corrected, the cultural awareness of the individual is developed, and the outlook on life, worldview, and opinion about values are revised and improved. According to Chekhov, the knowledge structure W_j is constructed to represent the deviation from each student's language communication G to the students' oral repetition (each deviation i corresponds to a coefficient, representing the x and y coordinates of the position deviation respectively), and then the emotion and attitude of English learning F_k are fused to select the real English learning effect f_k from the predicted deviation h_k . The mathematical relationship is as follows, and illustrated in Figure 5.

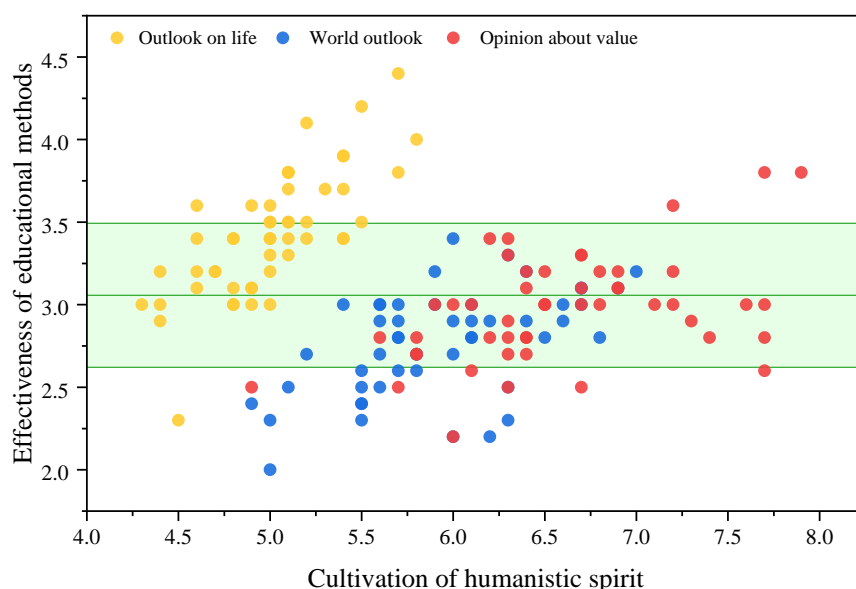
$$W_j = G \int [x_j + F_k(x_j) - x_i] h_k(x_j) dx \quad (7)$$

$$f_k(x_k) = \sum_j \frac{1}{\pi R^2} W_j \quad (8)$$

$$f_k(x_k) = \sum_j \frac{1}{\pi R^2} G \int [x_j + F_k(x_j) - x_i] h_k(x_j) dx \quad (9)$$

Figure 5

The Relationship Between the Cultivation of Humanistic Spirit and Outlook on Life, World Outlook and Values



4.5 Extended Reading

In addition to the basic curriculum, schools that are in a position to do so can add extended courses to supplement extracurricular reading, making full use of multimedia to turn abstraction into concrete, dryness into vividness, and to synthesize the advantages of symbols, language, words, sounds, and images to comprehensively improve students' comprehensive language skills.

4.5.1 School-based Courses

School-based courses, such as English drama courses, are conducted to select classic works and introduce them with movies so that students can understand the main plot. Teachers introduce background cultural knowledge to broaden students' knowledge and increase their vocabulary, phrases and sentence patterns. The course ends with students performing the drama to better internalize what they have learned.

4.5.2 English Reading Instruction Courses

Regular English reading instruction courses are conducted. Discovery and exploration or collaborative teaching methods can be used, with multimedia as the technical support to provide an environment for resource display and cooperative communication, where students discover the difficulties in the reading process in depth and teachers provide methods to assist in solving problems.

4.5.3 Web-based Remote Interactive Courses

The web-based remote interactive courses are mainly used in the weekend, summer and winter holidays and other time periods that are prone to learning discontinuity, breaking the disadvantages of traditional teaching that is easily restricted by time and space.

Through the network platform, students can receive teaching anytime and anywhere, interact with teachers and improve learning efficiency.

4.5.4 Extracurricular Reading Program

In order to solve the problems of students' small amount of extracurricular reading and narrow reading scope, teachers can regularly draw up extracurricular reading plans for students, compile supplementary reading materials, recommend movies, documentaries, news, speeches, etc., to fit students' own interests, adapt to students' psychological development, and improve their reading ability.

5. Multimedia Technology for the Improvement of English Writing Ability

5.1 The Positive Role of Multimedia Technology in Basic English Writing

5.1.1 Stimulating Students' Interest and Enthusiasm in Learning English Writing

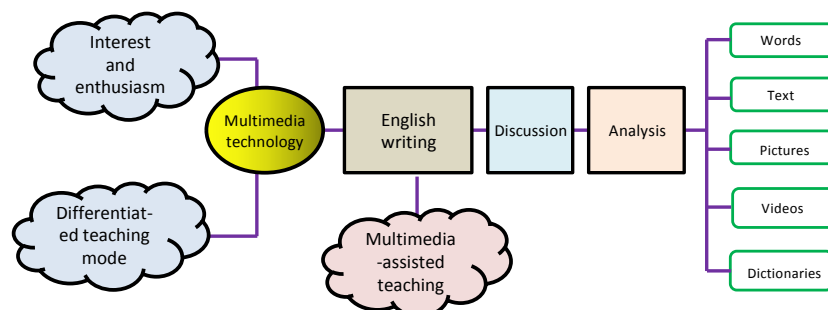
For a long time, English writing has been one of the difficult points for students to learn English, and students will often become bored and resist, so it is crucial to stimulate students' interest in basic English writing (Aprianto and Purwati, 2020;

Sakkir and Dollah, 2019). Through the use of multimedia-assisted teaching, different forms of text, pictures and videos are combined together so that students can acquire richer knowledge content when learning basic English writing, and then complete the accumulation of English vocabulary and increase the content of corresponding writing materials. For example, when assigning a writing assignment on the topic of "My Hometown", the teacher will present the city's landmarks, large parks and pedestrian shopping streets on the multimedia screen with the help of pictures and videos collected and downloaded from the Internet in advance, so as to attract students' attention and increase their interest in English writing. This will increase their interest in English writing, so that they can actively participate in the practice of basic English writing and accumulate the material content of writing through repeated practice.

5.1.2 Achieving the Best Results with a Differentiated Teaching Mode

The ability of different students to accept, comprehend, and apply English writing varies, as we are all aware, and the use of multimedia-assisted teaching, with network technology serving as the technical support, realizes differentiated instruction for students and maximizes the effectiveness of basic English writing classroom instruction. Teachers and students can more freely choose the precise subject they need to learn by depending on multimedia technologies and resources.

The task of consolidating knowledge about basic English writing is accomplished. In the process, students are able to choose the parts that are of greater interest for discussion and analysis. For example, students can systematically learn and practice their favorite writing style, so that they can master more different English writing styles and systematically learn about various writing topics to make up for their shortcomings and improve their overall ability in basic English writing. Figure 6 illustrates the structure diagram of the role of multimedia technology in basic English writing.

Figure 6*Structure Diagram of the Role of Multimedia Technology in Basic English Writing*

5.2 Measures for the Application of Multimedia-assisted Teaching in Basic English Writing

5.2.1 Paying Attention to the Use of Multimedia Teaching Methods and Create an Environment for Basic English Writing.

When carrying out the classroom teaching of basic English writing, teachers firstly present the key words and pictures involved in writing on the multimedia screen, and play a story clip for students to guide them into a good learning atmosphere, and students can get valuable writing materials from the content they watch; secondly, set up targeted English writing exercises, and students can precisely use the corresponding writing materials after repeated writing training. After repeated writing training, students can precisely use the corresponding English grammar and sentence patterns, so that practice makes perfect. In addition, teachers should focus on stimulating students' interest in English writing when using multimedia teaching methods (Amin et al., 2018). In the past, students were not enthusiastic about English writing and were weak in their ability to use English vocabulary and grammar. For this reason, teachers should use more multimedia technology and related equipment tools in the English writing classroom to create a strong writing environment for students, promote students' active participation in learning, actively cooperate with teachers' work, and use vivid and imaginative forms of presenting English writing knowledge so that students can form a new experience in the process of learning.

5.2.2 Increasing the Application of Human-computer Interaction Multimedia Teaching Methods

When carrying out basic English teaching, teachers should increase the application of human-computer interactive multimedia teaching methods to enhance teacher-student and student-student interaction and communication in the English writing classroom. Specifically, first of all, teachers should scientifically design the corresponding teaching contents and set specific practice assignments to scientifically train students' basic English writing skills. At the same time, in this process, with the help of different multimedia technologies and teaching tools, they can share more learning resources for students, create a good classroom learning environment, achieve good human-computer interaction, and make students gain something. Secondly, teachers can use computers and other tools to build an online communication and discussion platform between teachers and students and between students and students, and use many forms of social media such as QQ, WeChat and microblogs to guide students to actively participate in the training of basic English writing. In addition, teachers should divide students into scientific groups and let different groups of students join the WeChat communication platform to share their English writing experiences through regular communication, so as to improve students' cooperative learning ability. The teacher plays the role of guiding, supervising, discussing and evaluating in this process, and answering students' questions in English writing in class in a timely manner.

5.2.3 Strengthening the English Writing Module Training with Multimedia Teaching

For the teaching of English writing in college, there are many problems such as lack of clear and reasonable writing structure and running out of topics, so teachers should use multimedia teaching to strengthen the training of students' writing modules. Generally speaking, there are two different types of constructions about parts of speech: the former is about the coherence between different statements, and the latter is about the potential structure within the text or statements.

The former deals with the coherence between different utterances, while the

latter deals with the underlying constructions within the text or utterance. Teachers use multimedia teaching modes to practice the construction of parts of speech with students to achieve the set teaching objectives (Qin and Zhang, 2019). For example, the teacher's explanation of writing English topic sentences covers the coherence between paragraphs and different statements, and the students learn and practice to systematically master the specific structure of different topics, helping them to sort out their knowledge of English structure. When writing narrative essays, teachers can list in detail the time, place, people and events involved, and use pictures and videos to immerse students in the writing atmosphere and provide them with proper inspiration and guidance. The teacher can identify the important arguments from the textbook when explaining the reasoning of the essay, and then complete the verification and explanation. Since many students do not have a clear understanding of what is relevant in basic English writing, teachers need to use multimedia textbooks in the form of courseware to allow students to watch, understand, and use them directly to form some reference.

In addition, teachers should also do a good job of evaluating English writing, using multimedia teaching methods to show students the corresponding writing models and specific student work, so as to form a certain contrast, helping students to find out the gap between their own composition and the model text, to grasp the need for improvement, after the teacher's accurate evaluation, so that students quickly grasp the key and difficult points of English writing, in order to achieve the established English The teacher's accurate evaluation allows students to quickly grasp the key points and difficulties of English writing in order to achieve the established goals of teaching English writing.

The English writing effectiveness (Q) is chosen to measure the comparability between the corresponding writing models and specific student work, and the formula is:

$$R_i = \sum_i \sum_i \ln \left\{ -d_{pi}^2 / 2S_p^2 \sigma_i^2 \right\} \delta \quad (10)$$

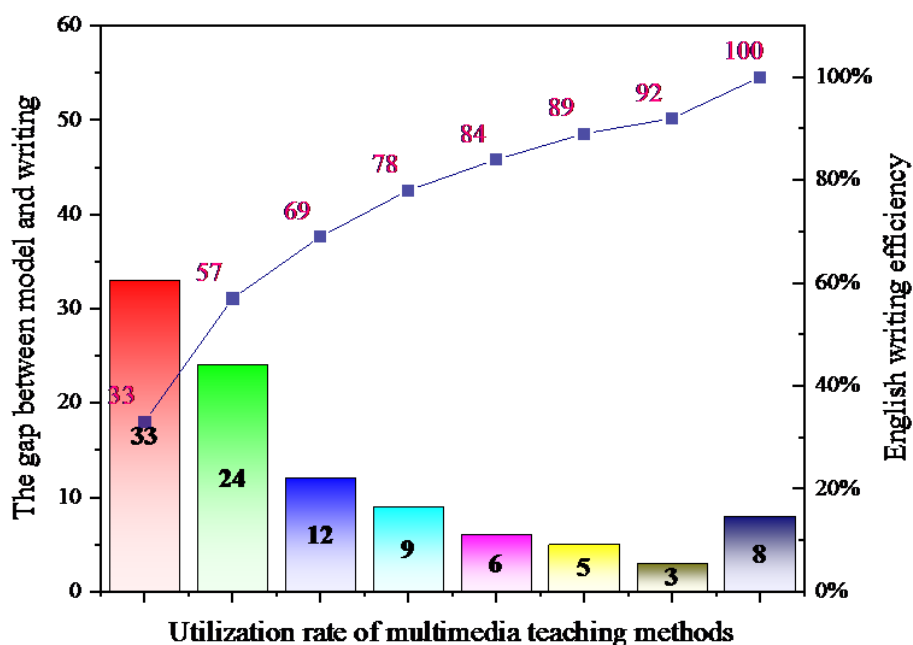
$$Q = \frac{R_i}{\sum \delta} \quad (11)$$

$$Q = \frac{\sum_i \sum_i \ln \left\{ -d_{pi}^2 / 2S_p^2 \sigma_i^2 \right\} \delta}{\sum \delta} \quad (12)$$

Where: p is the ID of the certain student; i is the ID of the key point of the real level of English Writing, d_{pi} denotes the Euclidean distance between the i -th writing models predicted by the p -th students and the specific student work; S^2 denotes the pixel area occupied by the p -th student target bounding box; σ denotes the normalization factor of the i -th key point; v denotes whether the i -th teacher's accurate evaluation of the i -th student is real or not; δ is the selection function of goals of teaching English writing. According to the above formula, it is easy to see that the use of multimedia means can effectively improve students' writing ability and significantly narrow the gap between the sample writing and students' own works (See Figure 7 for details).

Figure 7

Graph of the Relationship between Multimedia Penetration and Students' English Writing Ability



6. Problems that Should be Noted in English Teaching in Multimedia Environment

6.1 *Playing the Leading Role of English Teachers*

In the multimedia environment, new requirements are also put forward for English teachers. In the process of students learning English, the leading role of teachers will help college students to learn English better and then improve their comprehensive English ability. In the process of teaching English, English teachers play a leading role in teaching, being the guide, organizer and manager in the independent learning mode of English. As English teachers, they should be aware of the important and difficult contents of English learning, carry out targeted teaching activities to answer students' questions and solve their problems, and guide students to master the strategies to learn English effectively.

6.2 *Giving Full Play to Students' Subjective Initiative*

Although the Internet is full of various information and materials related to independent English learning, which makes it easy for students to conduct independent learning according to their own situation to adjust the shortage of classroom learning content, it can also bring some negative influences, thus hindering the process of independent learning. Bringing into play the subjective initiative of college students is also a problem that should be paid attention to in teaching English to students in a multimedia environment. In English teaching, students are the main body of learning English, and in the face of the huge amount of English knowledge in the multimedia environment, they should give full play to their subjective initiative, take the initiative to choose relevant knowledge that is beneficial to English learning, and actively explore the strategies of learning English.

6.3 *Overcoming the Limitations of Network Multimedia*

Overcoming the limitations of network multimedia should not be neglected for

students to improve their comprehensive English ability. The limitations of network multimedia are as follows: blindly pursuing "high technology", making courseware become the exhibition and stack of the latest technology, and excessively pursuing both voice and emotion. The interactivity is poor. In order to improve the information content of classroom teaching, the teaching method of filling the classroom with words and people is often used, which is not conducive to students' thinking. Part of the content is separated from the textbook, which makes students feel at a loss (Wang & Hemchua, 2022). Prolonged screen play and poor air flow can easily cause students' visual and mental fatigue, and reduce students' enthusiasm and learning efficiency. In the process of using network multimedia to assist English independent learning, network multimedia has a wide range of radiation, a large contact area, and involves more contents. Faced with the vast English knowledge, how to make analysis, judgment and summarization of information, it is necessary to have the ability to overcome the limitations of network multimedia. If these limitations are not overcome, the effect of independent English learning will be greatly reduced.

7. Conclusion

In the current international context, the demand for English talents (who are proficient in English and can combine English with professional knowledge) is gradually increasing, and the demand for English ability is also increasing. However, there are still many problems in the current English education. Taking the examination as the main purpose and blindly catering to the market have led to the low comprehensive English language ability of students, the lack of English practical application ability, and the emergence of dumb English (students cannot speak English), deaf English (students cannot understand English from ears) and other problems. In the "Internet plus" era, first of all, we should deeply understand its advantages and the revolutionary changes that may bring to English teaching. It is advised to focus more on the natural integration of multimedia technology and English teaching, expand the range of English reading, increase interest in English

learning, enhance the comprehensive ability of English application, and establish a resource-sharing environment for teachers. Teachers should assess the English learning environment, employ multimedia sensibly in accordance with students' requirements and the English teaching context, enhance teaching concepts and models, implement new teaching techniques, and enhance students' all-around English proficiency.

References

- Ajisoko, P. (2020). The use of Duolingo apps to improve English vocabulary learning. *International Journal of Emerging Technologies in Learning (iJET)*, 15(7), 149–155.
- Al-Obaydi, L. H., & Pikhart, M., Shakki, F. (2023). Digital gaming as a panacea for incidental L2 acquisition in an EFL context. *Applied Research on English Language*, 12(1), 73–94. [https://doi: 10.22108/are.2022.135344.2001](https://doi.org/10.22108/are.2022.135344.2001)
- Al-Sobhi, B. M. S., & Preece, A. S. (2018). Teaching English speaking skills to the Arab students in the Saudi school in Kuala Lumpur: Problems and solutions. *International Journal of Education and Literacy Studies*, 6(1), 1–11.
- Amin, M., Azim, M., & Kalam, M. (2018). The benefit of using multimedia projector in English Language teaching classroo. *International Journal of Social Sciences & Humanities*, 3(1), 62–76.
- Aprianto, E., & Purwati, O. (2020). Multimedia-assisted learning in a flipped classroom: a case study of autonomous learning on EFL university students. *International Journal of Emerging Technologies in Learning (IJET)*, 15(24), 114–127.
- Azhar, K. A., & Iqbal, N. (2018). Effectiveness of Google classroom: Teachers' perceptions. *Prizren Social Science Journal*, 2(2), 52. <https://www.cceol.com/search/article-detail?id=940663>
- Bakalova, M. (2021). Learning emotion concepts: Further thoughts on emotional granularity. *Balkan Journal of Philosophy*, 13(2), 175–180.

- Borghi, A. M., Barca, L., & Binkofski, F., et al. (2019). Words as social tools: Language, sociality and inner grounding in abstract concepts. *Physics of Life Reviews*, 29, 120–153.
- Cheng, A., Nadkarni, V. M., & Mancini, M. B., et al. (2018). Resuscitation education science: Educational strategies to improve outcomes from cardiac arrest: A scientific statement from the American Heart Association. *Circulation*, 138(6), 82–122.
- De, W. V., Brysbaert, M., & Eyckmans, J. (2020). Learning English through out-of-school exposure. Which levels of language proficiency are attained and which types of input are important?. *Bilingualism, Language and Cognition*, 23(1), 171–185. <https://www.webofscience.com/wos/woscc/full-record/WOS:000513935500030>
- Derakhshan, A., Shakki, F. (2018). An investigation into the relationship between Iranian EFL high- and low-proficient learners and their learning styles. *Sage Open*, 8(4). <https://doi.org/10.1177/2158244018809408>.
- Derakhshan, A., & Shakki, F. (2020). [Review of the book *Worldwide English Language Education Today: Ideologies, Policies, and Practices*, by A. Al-Issa & S. A. Mirhosseini]. *System*, 90. <https://doi.org/10.1016/j.system.2020.102224>
- Derakhshan, A., & Shakki, F. (2021). A meta-analytic study of instructed second language pragmatics: A case of the speech act of request. *Journal of Research in Applied Linguistics*, 12(1), 15–32. <https://doi.org/10.22055/RALS.2021.16722>
- Derakhshan, A., & Fathi, J. (2023). Grit and foreign language enjoyment as predictors of EFL learners online engagement: The mediating role of online learning self efficacy. *The Asia-Pacific Education Researcher*, <https://doi.org/10.1007/s40299-023-00745-x>
- Ding, L., Hong, Z. (2023). On the relationship between pre-service teachers' sense of self-efficacy and emotions in the integration of technology in their teacher developmental programs. *Asia-Pacific Edu Res.* <https://doi.org/10.1007/s40299-023-00758-6>
- Du, Y. (2020). Study on cultivating college students' English autonomous learning

- ability under the flipped classroom model. *English Language Teaching*, 13(6), 13–19.
- Duan, X., Du, X., & Yu, K. (2018) School culture and school effectiveness: The mediating effect of teachers' job satisfaction. *International Journal of Learning, Teaching and Educational Research*, 17(5), 15–25.
- El-Dakhs, D. A. S., Khan, S. K., & Al-Khodair, M. (2022). Do foreign language learners mine input texts for multiword expressions? The case of writing story retellings. *Ampersand*, 9, 100080.
- Fang, P. (2021). Optimization of music teaching in colleges and universities based on multimedia technology. *Advances in Educational Technology and Psychology*, 5(5), 47–57.
- Guan, N., Song, J., & Li, D. (2018). On the advantages of computer multimedia-aided English teaching. *Procedia Computer Science*, 131, 727–732.
- Guo, Y., Wang, Y., & Ortega-Martín, J. (2023). The impact of blended learning-based scaffolding techniques on learners' self-efficacy and willingness to communicate. *Porta Linguarum*, 40, 253–273. doi: <https://doi.org/10.30827/portalin.vi40.27061>
- Gonulal, T. (2020). Improving listening skills with extensive listening using podcasts and vodcasts. *International Journal of Contemporary Educational Research*, 7(1), 311–320.
- Gunn, A. (2018). Metrics and methodologies for measuring teaching quality in higher education: Developing the teaching excellence framework (TEF). *Educational Review*, 70(2), 129–148.
- Khashimova, D., Niyazova, N., & Nasirova, U., et al. (2021). The role of electronic literature in the formation of speech skills and abilities of learners and students in teaching Russian language with the Uzbek language of learning (on the example of electronic multimedia textbook in Russian language). *Journal of Language and Linguistic Studies*, 17(1), 445–461.
- Liu, Q., Huang, Z., & Yin, Y., et al. (2019). Ekt: Exercise-aware knowledge tracing

- for student performance prediction. *IEEE Transactions on Knowledge and Data Engineering*, 33(1), 100–115.
- Murillo-Zamorano, L. R., Sánchez, J. Á. L., & Godoy-Caballero, A. L. (2019). How the flipped classroom affects knowledge, skills, and engagement in higher education: Effects on students' satisfaction. *Computers & Education*, 141, 103608.
- Namaziandost, E., Sabzevari, A., & Hashemifardnia, A. (2018). The effect of cultural materials on listening comprehension among Iranian upper-intermediate EFL learners: In reference to gender. *Cogent Education*, 5(1), 1560601. <https://www.webofscience.com/wos/woscc/full-record/WOS:000455374300001>
- Pan, Z., Wang, Y., & Derakhshan, A. (2023). Unpacking Chinese EFL students' academic engagement and psychological well-being: The roles of language teachers' affective scaffolding. *Journal of Psycholinguistic Research*. <http://dx.doi.org/10.1007/s10936-023-09974-z>
- Qin, L., & Zhang L. J. (2019). English as a foreign language writers' metacognitive strategy knowledge of writing and their writing performance in multimedia environments. *Journal of Writing Research*, 11(2), 393–413. <https://www.webofscience.com/wos/woscc/full-record/WOS:000514827500006>
- Sakkir, G., & Dollah, S. (2019). Measuring students' writing skills using Facebook group application in EFL context. *International Journal of Humanities and Innovation (IJHI)*, 2019, 2(3), 69–74.
- Shakki, F., Naeini, J., Mazandarani, O., & Derakhshan, A. (2020). Instructed second language English pragmatics in the Iranian context. *Journal of Teaching Language Skills*, 39(1), 201–252. <https://doi.org/10.22099/jtls.2020.38481.2886>.
- Shakki, F., Naeini, J., Mazandarani, O., & Derakhshan, A. (2021). Instructed second language pragmatics for the speech act of apology in an Iranian EFL context: A meta-analysis. *Applied Research on English Language*, 10(3), 77–104. <https://doi.org/10.22108/are.2021.128213.1709>
- Shakki, F., Naeini, J., Mazandarani, O., & Derakhshan, A. (2023). A meta-analysis

- on the instructed second language pragmatics for the speech acts of apology, request, and refusal in an Iranian EFL context. *Language Related Research*, 13(6), 461–510. <https://doi.org/10.52547/LRR.13.6.15>
- Shu, Y. (2020). Experimental data analysis of college English teaching based on computer multimedia technology. *Computer-Aided Design and Applications*, 17(S2), 46–56.
- Sun, Z., Anbarasan, M., & Praveen, K. D. (2021). Design of online intelligent English teaching platform based on artificial intelligence techniques. *Computational Intelligence*, 37(3), 1166–1180. <https://www.webofscience.com/wos/woscc/full-record/WOS:000573495900001>
- Wang, L. (2020). Research and practice of reform on college English teaching under the environment of information technology. *Theory and practice in language studies*, 10(4), 453–458.
- Wang Y., Derakhshan A., & Pan, Z. (2022). Positioning an agenda on a loving pedagogy in second language acquisition: Conceptualization, practice, and research. *Frontiers in Psychology*, 13, 894190. <https://doi.org/10.3389/fpsyg.2022.894190>.
- Wang, Y., & Hemchua, S. (2022). Can we learn about culture by EFL textbook images?: A semiotic approach perspective. *Language Related Research*, 13(3), 479–499. <https://doi.org/10.29252/LRR.13.3.18>.
- Wang, Y. (2023). Probing into the boredom of online instruction among Chinese English language teachers during the Covid-19 pandemic. *Current Psychology*, 43(1), 1–15. <https://doi.org/10.1007/s12144-022-04223-3>
- Wang, Y., & Derakhshan, A. (2023). Enhancing Chinese and Iranian EFL students' willingness to attend classes: The role of teacher confirmation and caring. *Porta Linguarum*, 39(1), 165–192. <http://doi.org/10.30827/portalin.vi39.23625>.
- Wang, Y., Pan, Z. W., & Wang, M. Z. (2023). The moderating effect of participation in online learning on EFL teachers' teaching ability. *Heliyon*, 9(3)e13890: 1–12. <https://doi.org/10.1016/j.heliyon.2023.e13890>.

Wang, Y., Derakhshan, A., Pan, Z., & Ghiasvand, F. (2023). Chinese EFL teachers' writing assessment feedback literacy: A scale development and validation study. *Assessing Writing*, 56, 1–16. <https://doi.org/10.1016/j.asw.2023.100726>.

Wang, Y. L., Wang, Y. X., Pan, Z. W. & Ortega-Martín, J. L. (2023). The predicting role of EFL students' achievement emotions and technological self-efficacy in their technology acceptance, *The Asia-Pacific Education Researcher*. [https://doi: 10.1007/s40299-023-00750-0](https://doi.org/10.1007/s40299-023-00750-0).

About the Authors

Bo Zhu was born in Shandong, China, in 1990. From 2009 to 2013, she studied in Qingdao University and received her bachelor's degree in 2013. From 2013 to 2014, she worked in Qingdao Broadcasting and Television Station, Shandong. From 2014 to 2017, she studied in Qingdao University and received her Master's degree in 2017. Currently, she studies for PhD in Centre for Instructional Technology & Multimedia, Universiti Sains Malaysia. Her research interest includes Educational technology and Multimedia design.

Kien Tsong Chau present Senior Lecturer, Centre for Instructional Technology and Multimedia, Universiti Sains Malaysia. His research interest includes Educational Technology, English Teaching Technology and Visual Communication.

Nur Azlina Binti Mohamed Mokmin present Senior Lecturer, Centre for Instructional Technology and Multimedia, Universiti Sains Malaysia. Her research interest includes Personalized System Developemnt, Artificial Intelligence, TVET Education and Mathematics Education.

Ling Wu was born in JiangSu, China, in 1992. PhD student in Universiti Sains Malaysia. Her research interest includes Innovation research, visual communication, educational technology and multimedia.