

The Integration of Information Technology with Senior High English Reading Activities —A Case Study in Southwestern China

Yanhua CHEN^{a*}, Kehaoyu CHEN^b & Chenxi QIN^c

^a*Guilin Middle School, Guangxi, China*

^b*Nanning College of Technology, Nanning, China*

^c*Xiamen University, Xiamen, China*

*1049228807@qq.com

Abstract: Information technology plays a vital role in English teaching. It provides not only multimodal teaching and learning means, platforms but also rich resources for education. This paper describes how to create an IT-supported teaching environment and guide the senior high school students to change ways of learning and improve their English reading activities effectively to have a deep text understanding. This paper also gives some implications for using information technology in English teaching and learning for senior school students.

Keywords: Information technology integration, Senior high English teaching, English reading activities

1. Introduction

The development of information technology provides multimodal means, platforms, rich resources, opportunities for teaching and learning, and using language across time and space. These bring reforms into English education and push forward English teaching theories, teaching and learning methods.

Chinese General Senior High School Curriculum Standards (2020) recommends that teachers deepen the integration of information technology with English teaching and learning to improve English learning efficiency.

Before the year of 2020, most Guilin Middle School English teachers had not attached importance to integrating information technology with English teaching. They had not taken advantage of information technology to expand learning resources and learning channels, nor had they known how to integrate information technology to enhance rich-content learning activities or to change the ways of English learning. Until 2020, all the students had to stay home for online classes due to the COVID-19 epidemic. The teachers had to set up an online learning platform to guide students to learn English, such as having lessons on QQ video, Tencent video or Dingding video. At that time, they realized that information technology had played an essential role in teaching and learning. More English teachers had IT-supported lessons, but they were worried that the students could not effectively achieve the online learning tasks in listening, speaking, reading and writing.

Among the four English skills courses, reading plays a vital role for all students. To find out what the results were in the IT-supported English teaching. Here is a case study of using information technology for English reading activities online course from Guilin Middle School.

2. Research Context

Guilin Middle School, located in Guangxi Province, southwestern China, is one of the key schools in Guilin. There are more than 4000 students in it. The students' English academic achievement levels are not top in all Guilin schools. Their reading ability is insufficient. They lack interest in reading and have little reading skills. And the teachers lack the awareness of integrating information technology with English teaching and learning, which can improve the teaching efficiency. Some do not know how to integrate information technology with English teaching. They prefer using the traditional teaching method to make students understand multimodal texts to an IT-supported English teaching method.

According to *Chinese General Senior High School Curriculum Standards (2020)*, all senior students have three-course categories. They are required courses, elective courses and advanced elective courses; Different course categories have different types of texts. The types of texts for the required courses should be primary and general, while those for the elective courses and the advanced elective courses can have a broader scope and more complex meaning. So, the reading skill requirements and standards are different. We can see the differences from the following Table 1.

Table 1. *Requirements of Reading Skills in General Senior High School English Curriculum*

Course Category	Main Requirements of Reading Skills
Required courses	<ul style="list-style-type: none"> ● Extract the main information and opinions from the text; ● Grasp the ins and outs of the main events described in the text; ● Grasp the structure and linguistic features of the text; ● Understand the content of the text critically; ● Understand the meaning of non-verbal resources such as pictures, images, sounds, symbols, and colors in multimodal texts; ● Carry out out-of-class English reading of at least 1,500 words per week on average.
Elective courses	<ul style="list-style-type: none"> ● Distinguish, analyze, and summarize the major opinions and facts in the text; ● Identify the key content points of the text and the corresponding supporting arguments; ● Infer the implied meaning in the text according to the context; ● Carry out out-of-class English reading of at least 2,500 words per week on average.
Advanced elective courses	<ul style="list-style-type: none"> ● Interpret and evaluate the emotions, attitudes, and values reflected in written texts; ● Make logical inferences according to facts in the text; ● Relate the content of the text to one's own experiences.

3. Participants

The participants are 50 students (26 male, 24 females, aged 16-17) in the second year of Guilin Middle School. They work hard at English, but their listening comprehension, oral English, writing ability are relatively weak; Their reading ability also needs to improve. Usually, their reading skills are mainly confined to test-taking skills. Most students can get the main information and opinions from the text, but they can not grasp the structure and linguistic features of the text, or they can not critically understand the text’s content. Usually, they are not allowed to use the mobile phone at school, but they can use it at home to use the typical social networking application to communicate with others well.

4. Research Design

The teaching material is a reading passage from *New Senior English for China Student’s Book 7* (Elective courses), Unit 2. The topic is “Robots”, and the thematic context is about man and society. The text is a science fiction story, “Satisfaction Guaranteed”, written by a famous American author Issac Asimov. In using types of equipment for teaching, Fraida Dubin and Elite Olshtain (2002) and Jane Sherman (2020) recommend computers, projectors, smartphones, online platforms, social networking app, and online questionnaire design tools may significantly affect some of the activities carried out in class. How to have an IT-supported English reading lesson that helps improve reading. Here is the framework (Figure 1) of the research design.

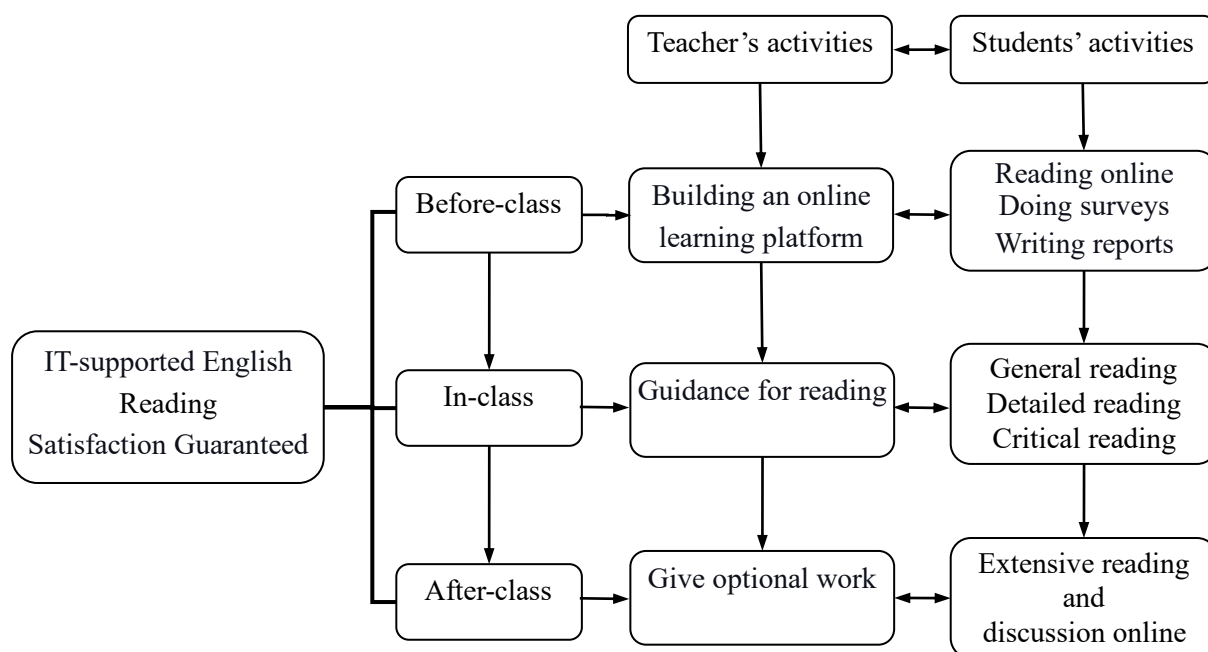


Figure 1. Process and Relationship of Teaching and Learning

Specifically, information technology is used in several aspects of teaching as follows.

(1) Using a social networking application, the teacher builds an online platform for social communication and establishes a teacher-student mobile learning community. The teacher provides

individualized guidance for students and encourages the students to have online, face-to-face interaction.

(2) The teacher builds an online learning platform for the students, which provides learning materials, activity guidance, and text learning suggestions to enable students to learn autonomously.

(3) The students set up activity groups on the online interactive learning platform to conduct cooperative learning activities.

(4) The students read a biography of Isaac Asimov and some science fiction, complete the questionnaire survey through the online questionnaire design tool and process the data.

(5) The groups share their work on the learning platform.

4.1 The Application of Information Technology Before-class

Different activities give students opportunities to get feedback on their reading performance (Jack C. Richards, 2002; Jim Scrivener, 2004). Before the class, the students were asked to work autonomously or work in groups. At first, they were asked to surf the Internet to read a biography of Isaac Asimov and some science fiction written by Isaac Asimov. Then they needed to work in groups to design a questionnaire in Chinese using the online design tool, surveyed the online social communication platform. Next, they were asked to use the online automatic statistics tools to obtain people's opinions on how much they knew about robots and whether robots were helpful for human beings. Finally, the group needed to write a simple survey report in English and upload it to the group platform. It was convenient for teachers to regulate and evaluate students' learning activities and conduct interactive peer evaluations. The teacher provided evaluation criteria for the survey report on the interactive learning platform.

When they finished above all, all the students were asked to read the article "Satisfaction Guaranteed" on the interactive learning platform, following the fast-reading prompts to grasp the theme and main idea. After that, they needed to conduct a second reading for the details. The students were asked to look up some new words on the Internet if they had any trouble in reading.

Meanwhile, the teacher showed twelve statements linked to the interactive learning platform for the students to decide whether the statements were true or false. To know the results of students' judgements, the teacher used the online automatic statistics tools to deal with the data. The teacher could evaluate whether the students fully understood the text or not from the data.

4.2 The Application of Information Technology In-class

At the beginning of the class, the representative of each group was supposed to make a short report based on the social survey done before class. For example, group 1 had interviewed some people of different ages. The students used the online automatic statistics tools to deal with the survey results presented in Table 2. According to the survey results (Table 2), the representative made a short report with the effects on the PowerPoint: This group interviewed 200 people aged 11-50. They were from four groups with different ideas. In the ages 11-20 group and ages 21-30 group, those who believe robots are helpful for human beings take up 85.2% and 87.1%, those who don't think so take up 14.8% and 12.9%. In the ages 31-40 group and 41-50 group, those who believe robots are helpful for human beings just take up 75.3% and 56.4%, those who don't think so take up 24.7% and 43.6%. It seems that the youth are more confident about robots using than the older ages. From Table 2, we can see different eras have different opinions on robots.

Table 2. *Different Opinions on Robots*

Whether robots are helpful for human beings or not?	Ages 11-20	Ages 21-30	Ages 31-40	Ages 41-50
The Number of people were interviewed.	50	50	50	50
Helpful (%)	85.2	87.1	75.3	56.4
Unhelpful (%)	14.8	12.9	24.7	43.6

In this part, most of the students found it inspiring and meaningful to have IT-supported learning.

Next, the students were asked to answer the four questions in Table 3 within two minutes and give their reasons for answers “Yes” or “No”. Very soon, and the teacher got the data of their solutions with the automatic statistics tools’ help. The results were shown in Table 3.

Table 3. *Different Opinions on Robots*

Questions	Yes (%)	No (%)
1.Do you think a robot can think for itself?	35.6	64.4
2.Do you think a robot to have feelings?	56.9	43.1
3.Do you think a robot has its own needs and desires?	35.2	64.8
4.Do you think a robot can look and feel like a human being?	65.7	34.3

According to the data, the teacher knows 64.4% of students think a robot can not think for itself and 64.8% of students believe a robot does not have its own needs and desires. While 56.9% of students consider a robot has feelings and 65.7% of students think a robot can look and feel like a human being. From this activity, the teacher also knows that the students have their imagination and creative ideas, which were suitable for them to achieve deep thinking and learning.

Then, they came to reading. The students were asked to complete the general task, detailed reading individual and then conducted critical reading. They were to work on the learning platform to list Tony’s characteristics in Table 4, similar to human beings or different from human beings. Ten minutes later, the suggested answers were showed on the platform in Table 4. Then the students were asked to make a description of robot Tony online in their own words.

Table 4. *Tony’s Characteristics*

Characteristics	Similar	Different
Physical	Looks like a human being. Body and skin soft and warm. Hair and fingernails realistic. Voice like a human’s.	Facial expressions never change. Quicker reactions (She fell off a ladder, and even though Tony was in the next room, he managed to catch her in time.)
Mental	Able to make suggestions and predictions. Able to make a plan and follow it through. Has good communication skill.	Behaviour not appropriate (Tony brought her breakfast and then asked her whether she needed help dressing.)

Through this critical reading, the students would have a deep impression of Tony. They could understand what the robot Tony looked like and why it still needed to be improved. And they also understood what the last paragraph mean in the text: *“The company was very pleased with Tony’s report on his three weeks with Claire. Tony had protected a human being from harm. He had prevented Claire from harming herself through her sense of failure. He had opened the curtain that night so that the other women would see him and Claire, knowing that there was no risk to Claire’s marriage. But even though Tony had been so clever, he would have to be rebuilt-you can’t have women falling in love with the machine.”*

Finally, the exciting moment came. The teacher asked students to design a new type of robot with the help of information technology for a robot design competition. The design must follow Issac Asimov’s three laws for robots: The first law: A robot must not injure human beings or allow them to be damaged. The second law: A robot must obey the orders given by human beings (as long as human beings are not injured). The third law: A robot must protect its existence (as long as humans are not harmed and the robot does not disobey human beings). Each group carried out the following tasks:

- (1) Make a list of the robot’s purpose and the abilities you want your robot to have;
- (2) Make a list of the parts of the body with instructions;
- (3) Draw the robot on the PowerPoint and name its parts, also with instructions beside each part (The teacher will offer some help if necessary);
- (4) Uploaded the “New Robot” to the platform for peer evaluation.
- (5) Make a presentation to the whole class about their “New Robot”.

Points for reference:

- (1) What kind of robot is it (industrial robot, household robot or entertainment robot)?
- (2) What function does each part of the robot have?
- (3) Whether the robot has feelings or not and why.

4.3 The Application of Information Technology After-class

To carry out more language practice activities through multiple channels and methods. The teacher gave some optional tasks to the students:

- (1) Surf the Internet to learn more about robots and science fiction.
- (2) Reread the text and discuss on the online social communication platform: How would you feel if you had a robot like Tony in your house?
- (3) Revise their group report about their “New Robot” and discuss whether the “New Robot” has positive or negative effects in daily life.

5. Finding and Discussion

Through online learning, with the help of information technology, the teacher set up an interactive platform for students’ mobile learning community and learning activities, expanded learning resources, and integrated out-of-class learning time into the lesson. The teacher has effectively completed rich-content learning activities that would have been impossible in traditional teaching and changed the students’ ways of learning, improve students’ English learning. Details can be seen from the following three aspects.

(1) Personalized learning is guaranteed. Each student selects a reading time, speed, and frequency on the interactive learning platform.

(2) Autonomous learning and cooperative learning are implemented. Students complete four activities, individually, a group questionnaire survey, critical reading and giving reports.

(3) Deep learning has been made possible. This lesson has witnessed the deep learning process as the pursuits are gradually carried out. Firstly, the reading activities go from general reading to detailed reading, and then to critical reading. Secondly, the thinking activities proceed step by step, moving from one's own opinion to other people's opinion, description of robot Tony. And finally, the students' design activities. In addition, through online social platforms, interactive learning platforms, and online questionnaire design tools, the teacher has obtained various data to effectively monitor and evaluate students' reading and learning activities.

6. Implications for Further Research

Based on the case study above, we can see the advantages of using information technology in English teaching and learning. To better drive the reform of IT-supported senior English education. We offer the following ideas.

(1) Teachers should focus on the information technology functions in teaching and learning and guide students to conduct active and individualized inquiry-based learning activities to achieve deep understanding. For example, teachers can use various media to design mobile learning and teaching activities or guide students to use electronic dictionaries and other learning tools. They can use digital technology to develop personalized learning platforms. Teachers can make full use of the reading texts extracted from new media to increase the amount of themed reading, conduct the teaching of writing through online discussion forums, and conduct Internet-based peer evaluation.

(2) Teachers should give students sufficient guidance to autonomously select and utilize online resources according to their own learning needs and interest and carry out language practice activities through multiple channels and methods. They should also realize that modern information technology is not a substitute for authentic and lively in-class language learning activities that feature interpersonal interaction, exchanges of viewpoints, and emotional communication.

(3) Teachers should fully understand that the use of modern information technology in English teaching should be focused, appropriate, reasonable, and effective. When teachers assign online learning tasks, they should first browse the relevant websites to ensure that the online information is safe, healthy, and available. And then, the students can use the online tools safely.

(4) Those schools and regions with inadequate teacher resources should strive to create conditions for effective use of distant education resources to improve English teaching. For example, teachers can guide the students to use Baicizhan, a perfect English study application, to learn English.

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