Application of KWL Model in the Visualized Curriculum Ideological and Political Education of *IT English* Course

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Abstract: As the increasing emphasis has been placed on the curriculum ideological and political education in higher education, the researcher intends to implement KWL model into the visualized curriculum ideological and political education in *IT English* course. In this study, the method of case analysis is applied to illustrate specific procedures of KWL model in the visualized curriculum ideological and political education. After implementing three steps in unit5 "Cyber Security", 30 respondents are interviewed in person to explore their gains from the case. It is discovered that the application of KWL model is able to innovate students' mindsets, broaden students' horizon, enhance students' awareness for information security, and improve students' language skills. The visualized curriculum ideological and political education is able to cultivate students to be moral people, modern people and Chinese people. This research might have the power to usher in some theoretical and practical implications for researchers who intend to do relative studies in the near future.

1. Introduction

In May 2020, the State Council and the Ministry of Education in China published the "Guidelines for the Curriculum Ideological and Political Education in Colleges and Universities", which further emphasized that the fundamental issue of education is to foster the virtue through education and nurture a new generation with all-round morality [1]. The effectiveness of moral education is the valid test of all work carried out in colleges and universities.

The famous scholar named Ulum once proclaimed that the curriculum ideological and political education should be involved in not only textbooks but also teaching procedures [2]. In addition, the latest edition of "Guidelines for *College English* Teaching" released by the National Steering Committee on College Foreign Language Teaching in 2020 explicitly indicated that the curriculum ideological and political education is required to be integrated into teaching procedures of *College English* course, so that *College English* course can play the essential role in fostering the virtue and cultivating morality in colleges and universities [3].

It is well known that *College English* course in China is a fundamental compulsory course which has longer hours and more credits compared with other professional courses. All of non-English major students are supposed to register *College English* course for more than two semesters before they achieve the bachelor degree. As a result, it is dramatically conducive to integrate the curriculum ideological and political education into *College English* course because of the wider scope of students and larger proportion of credits and hours.

According to the latest edition of "Guidelines for *College English* Teaching" published in 2020, it was claimed that instrumental characteristics rather than grammatical characteristics of *College English* course should be highlighted in ESP courses [3]. *IT English* course belongs to ESP courses, so teaching contents and activities of *IT English* course are designed to focus on solving practical problems with the aid of the language. In other words, *IT English* course has get rid of the utilitarian motivation which means the main purpose of enrolling in *College English* course is to pass various tests such as College English Test Band 4 and College English Test Band 6. Luo Yuxiao has demonstrated that five applied and practical capacities are going to be cultivated in *IT English* course: the capacity to understand their own professional English lectures; the capacity to strike up

conversations on professional topics; the capacity to participate in discussions in international conferences; the capacity to read academic papers or literature related to their majors; and the capacity to write technical reports and papers in English to transmit their achievements in the IT field [4].

With regard to the curriculum ideological and political education, vast amounts of relative studies have been conducted in *College English* course instead of ESP courses. In 2021, Chen Jianbo and Ye Ruijuan made the research to integrate the curriculum ideological and political education into *Medical Englis*h course. They discovered that the core of the curriculum ideological and political education in ESP courses is to cultivate students' critical thinking capacity, guide students to obey professional disciplines, and ultimately become talents who have conscientious, dedicated, pioneering and innovative characteristics [5].

Compared with the general *College English* course, there are extremely few studies related to the curriculum ideological and political education in ESP courses. What's worse, the curriculum ideological and political education of *IT English* course has never been paid attention to. Therefore, the researcher intends to conduct a study to explore the visualized curriculum ideological and political education in *IT English* course on the basis of KWL model, on the grounds that it is extremely indispensable to foster the virtue and morality for students before cultivating them to be capable talents in the field of IT. Undoubtedly, talents with morality in the field of IT are the real essence of the education in colleges and universities, which has the power to boost the advancement and development of the whole scientific and technological industry.

2. Theoretical Framework

The KWL model, proposed by Ogle in 1986, takes students' original knowledge and experience as the starting point, activates students' mindsets by providing guiding learning materials, generates a strong sense of exploration, and fully reflects students' subjectivity [6]. In this model, the letter "K" refers to "What I know", "W" means "What I want to know", and "L" signifies "What I have learned", which definitely is the step-by-step procedure for students.

According to Khaira, the implementation of KWL model is up to the guidance of teachers [7]. When teachers encourage students to participate in the warming-up activity, the original knowledge and experience is going to be activated. In this process, the interest, curiosity, and motivation of students can be developed. When teachers organize students to be immersed in some situations, the encountered problem might be handled in a cooperative manner. In this process, the guiding learning materials should be within the scope of the zone of proximal development on the basis of analysing students' existing knowledge and experience. When teachers require students to apply professional knowledge and language skills into practical activities, the acquired knowledge will be finally sublimated to be specific visualized outcomes. In this process, the coherence and logic of the acquired knowledge are continuously strengthened, and the learning effectiveness is accordingly enhanced.

According to figure 1, the first step of KWL model is "What I know". Before acquiring the unknown knowledge, students had better brainstorm according to guiding questions or materials from the teacher, and then put forward their opinions. They can communicate with team members to evaluate their original knowledge and make appropriate additions. This step is consistent with the constructivist theory, because the core of the theory indicates that students are the main body of knowledge construction [8]. In the teaching process, teachers cannot ignore the original knowledge in students' minds and force students to accept new knowledge. On the contrary, teachers are supposed to play the role of designers and organisers in order to guide students in the learning process.

The second step of KWL model is "What I want to know". Teachers play the role of scaffolding to set up situations for students, inspire students to propose questions, and encourage them to collaborate to deal with practical problems. On the basis of the previous knowledge and experience, students are supposed to explore the expected knowledge in class. This step is consistent with the theory of the zone of proximal development, since the core of the theory is that students make use

of their prior experience to address current problems, and then collaborate with group members to explore solutions to potential problems. They employ different methods to solve diverse problems, so as to promote their zone of proximal development to achieve a higher leap [9]. In the teaching process, teachers had better analyse students' current knowledge level and consciously provide instructive materials within the scope of the zone of proximal development. This kind of teaching is regarded as a challenge by students, which might improve their enthusiasm for knowledge and promote their inherent potentials for learning.

The last step of KWL model is "What I have learned". Students are required to summarize what language points and technical terms they have achieved. The implementation of this step not only helps students learn the reflective evaluation, but also provides an effective way for teachers to understand the mastery degree of students. In addition, teachers are supposed to encourage students to comprehensively apply what they have harvested in class into practices. This step is consistent with the reflective thinking theory, in that the core of the theory relies on the realization of the coherence and application for knowledge acquired in the second step [10]. In the teaching process, teachers are suggested to direct students sublimate what they have learned via specific visualized activities, which absolutely will enhance the self-efficiency in the learning process.

Figure 1 Three steps of KWL model

Due to the simple operation and rich theoretical basis of KWL model, a large number of scholars at home and abroad have started to apply this model into various teaching studies. In 2012, Wei Liping and Chen Yu implemented KWL model in the English reading class. They discovered that KWL model is able to effectively stimulate students' previous knowledge related to the topic and meanwhile it is able to provide students with more opportunities to expand their extracurricular knowledge [11]. In 2013, Tok confirmed that the application of KWL model in the mathematics teaching is effective in improving students' mathematics achievement with the aid of the quasi-experimental design [12]. In 2015, Liu Langfei published an article in an educational journal, proposing that KWL model is a cognitive teaching model with profound humanistic elements, which can be employed in the language teaching process in order to assure the dominant role of students [13]. In 2018, Raines applied KWL model into the discipline of nursing. Through the observation, the scholar concluded that KWL model can successfully build a bridge between theory and practice in the process of guiding students to become independent critical thinkers and decision makers [14]. In 2021, Liu Feng' e & Wang Zhiyun conducted a study to explore the relationship between KWL model and the cultivation of thinking quality for junior high school students. They summarized that KWL model focuses on the activation of students' schemas and stimulates students' problem awareness. In the process of analysing and summarizing what they have learned, students can not only cultivate their own logical thinking capacity and critical thinking capacity, but also improve their creative thinking capacity, so the cultivation of thinking quality is ultimately

realized [15].

Although numerous researches have been accomplished to apply KWL model into various teaching activities, the researcher discovered that there is still rare study related to the application of KWL model in the curriculum ideological and political education. Therefore, based on the introduction to the importance of the curriculum ideological and political education in ESP courses and the necessity of KWL model in teaching activities, it is extremely essential to implement KWL model in the visualized curriculum ideological and political education of *IT English* course.

3. Case analysis

In this study, the researcher thoroughly implements the guidelines that classes are the main channel and teachers are the main force for the curriculum ideological and political education. With the aid of KWL model, the researcher advocates warming-up activities, situational inspirations and acquired knowledge sublimate to profoundly excavate ideological and political elements in teaching materials. The following parts are the specific procedures of KWL model in the visualized curriculum ideological and political education. The researcher regards unit 5 "Cyber Security" as the example.

3.1 Step K: What I Know about Cyber Security

In this step, teachers make use of warming-up activities to activate students' prior knowledge of cyber security, encourage students to have a free talk, and collect a large number of cyber security-related information. The detailed procedures for step K are shown in figure 2.

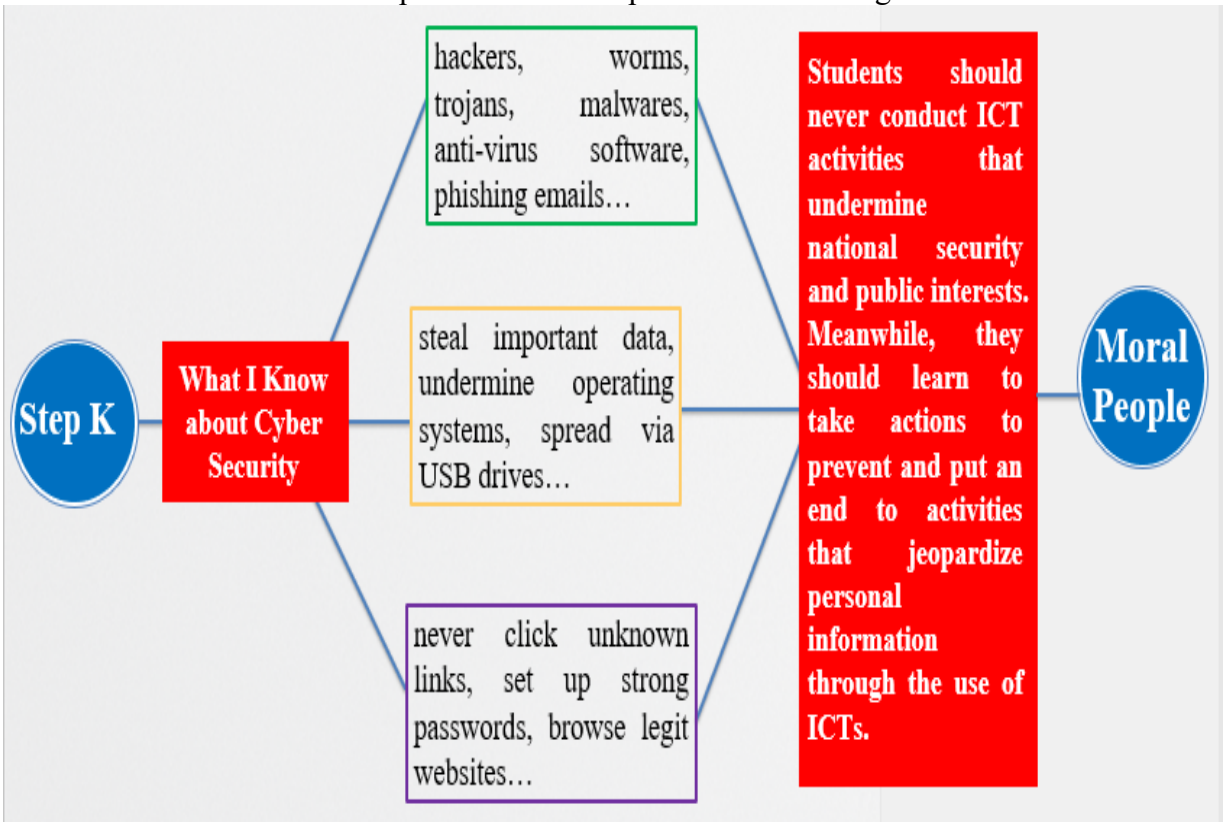

Figure 2 Students' prior knowledge of cyber security

(1)Warming-up activities from teachers:

As we all know, the digital age is upon us. As much as it has blessed us and made collaboration and work easier, faster and more efficient, it also has its downsides. The researcher came up with a list of questions related to cyber security. Students were required to brainstorm and discuss with team members.

Question 1: What are specific types of computer viruses?

Question 2: What are threats of computer viruses?

Question 3: How to avoid being infected with computer viruses?

(2)Responses from students:

Students actively discussed above questions with members and then three representatives of groups presented their answers on the stage.

Representative 1: There are three types of computer viruses. Computer viruses can actually be viruses, worms or Trojans. These bugs hitch a ride when something, like a file, is shared between computers. This often happens via attachments in an email or shared USB drives.

Representative 2: If cybercriminals make viruses to your computer, they can erase your files, send emails without your permission or even communicate sensitive information to criminals. Like a sick human, it's sometimes hard to tell if your computer is infected with viruses.

Representative 3: The best defence is to install anti-virus software which prevents viruses from getting to your computer and removes them when they are found. In addition, computer systems should be updated regularly and illegit websites should never been clicked.

After warming-up activities, teachers have the power to learn students' existing knowledge for cyber security and then guide students to establish correct values related to information security. For instance, students should never conduct ICT activities that undermine national security and public interests. Meanwhile, they should learn to take actions to prevent and put an end to activities that jeopardize personal information through the use of ICT. Only in this way, can students become the moral people who participate in legal online activities.

3.2 Step W: What I Want to Know about Cyber Security

In this step, teachers play the role of scaffolding to create situations for students, inspire students to propose questions, and encourage students to work in teams to solve practical problems. The detailed procedures for step W are shown in figure 3.

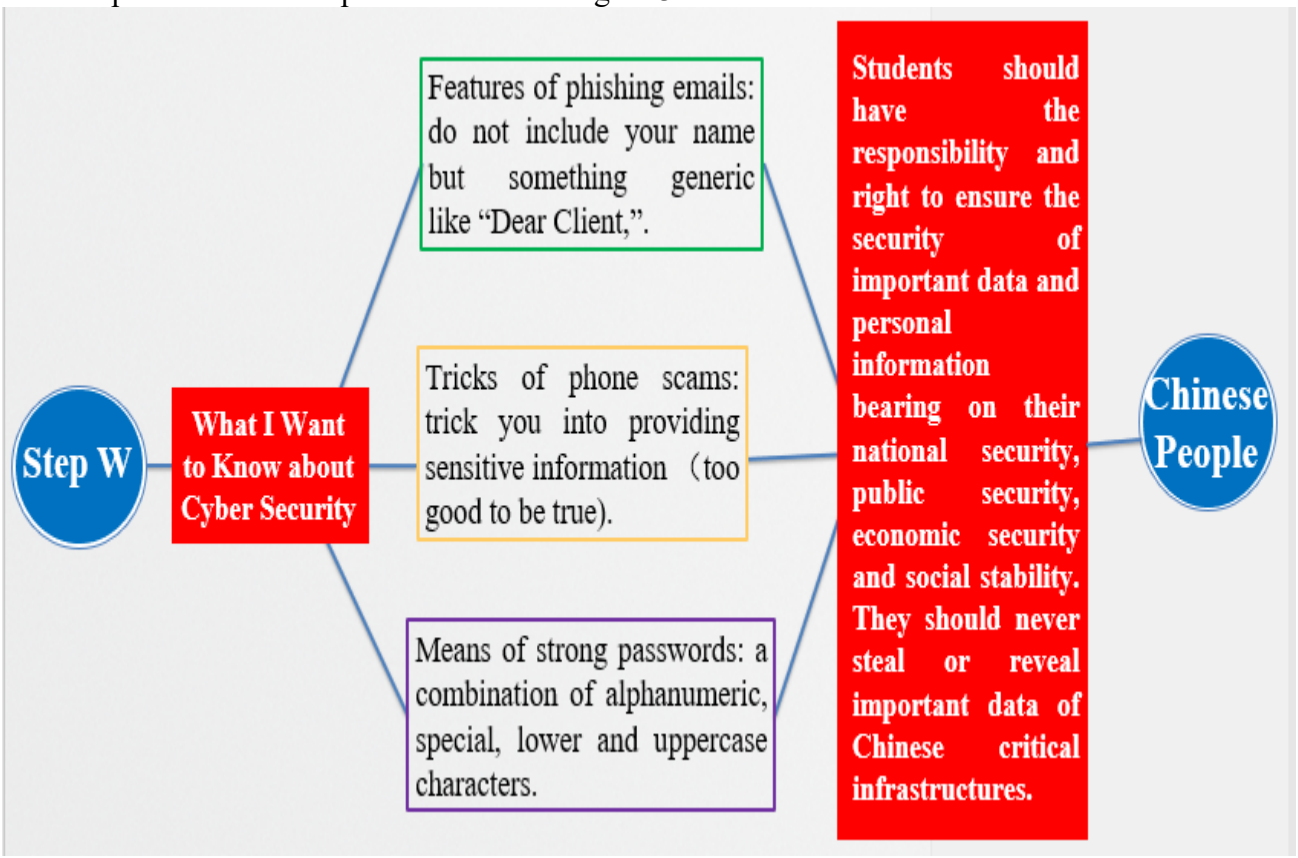

Figure 3 Students' expected knowledge of cyber security

(1)Situations created by teachers:

With the accelerated development of the information and technology, emails, messages and passwords are becoming increasingly indispensable for people, because they are able to realize the city-crossing or even country-crossing connection in the business, the culture, the military force and

the diplomacy. However, cybercriminals have produced phishing emails, phone scams and password cracking systems, which is dramatically taking a toll on the daily production and life. The researcher provided three situations and students were required to analyse issues in order to put forward solutions with team members.

Situation 1: What are features of the phishing email in figure 4?

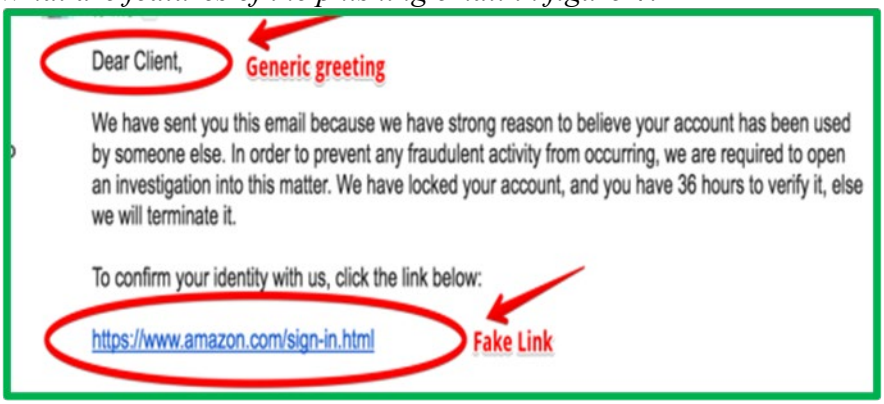

Figure 4 A sample of phishing email

Situation 2: What are tricks of the phone scam in figure 5?

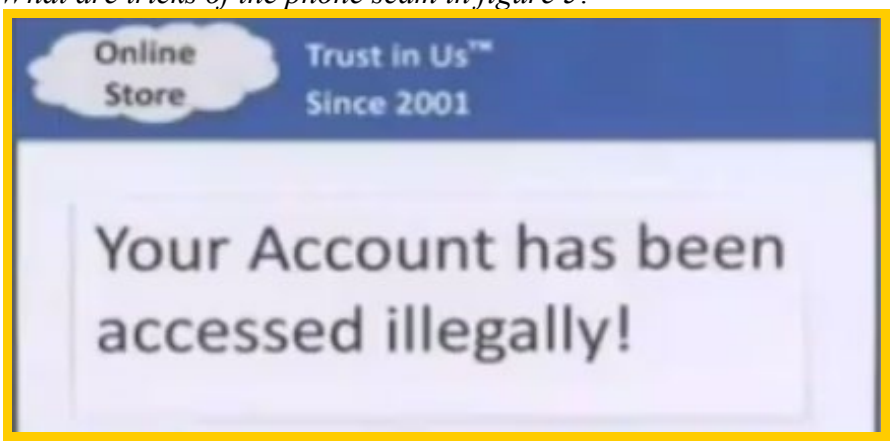

Figure 5 A sample of phone scam

Situation 3: How to set up strong passwords to avoid being cracked according to figure 6?

Figure 6 A sample of password setting

(2)Responses from students:

Students actively discussed above situations with members and then other three representatives of groups shared their opinions on the stage.

Representative 1: Phishing emails are emails designed to look like legitimate messages from actual banks, businesses, and other organizations. In reality, they are crafted messages from cybercriminals intended to steal your identity, personal information, or money. Phishing emails usually do not include your name but something generic like "Dear Client".

Representative 2: Phone scams are text messages or phone calls designed to trick you into providing sensitive information to unauthentic authorities. When you receive messages from unknown persons, you had better check out for typos and watch out for "Too good to be true".

Representative 3: In order to avoid being cracked by password cracking systems, your passwords should be at least 10 characters long. They should be a combination of alphanumeric, special, lower and uppercase characters. Simple birth dates, English names and dictionary words should not be used. What's more the two-factor authentication is extremely indispensable.

After immersing in those situations, teachers are able to help students solve practical problems related to cyber security and then encourage students to take the responsibility and right to ensure the security of important data and personal information bearing on their national security, public security, economic security and social stability. What's more, students should never steal or reveal important data of Chinese critical infrastructures. Only in this way, can students become the real Chinese people who have the strong sense of mission for their country.

3.3 Step L: What I Have Learned about Cyber Security

In this step, teachers sort out and summarize contents discussed in class, so as to help students review the language points they have learned and encourage students to comprehensively apply language skills into specific practices. The detailed procedures for step L are shown in figure 7.

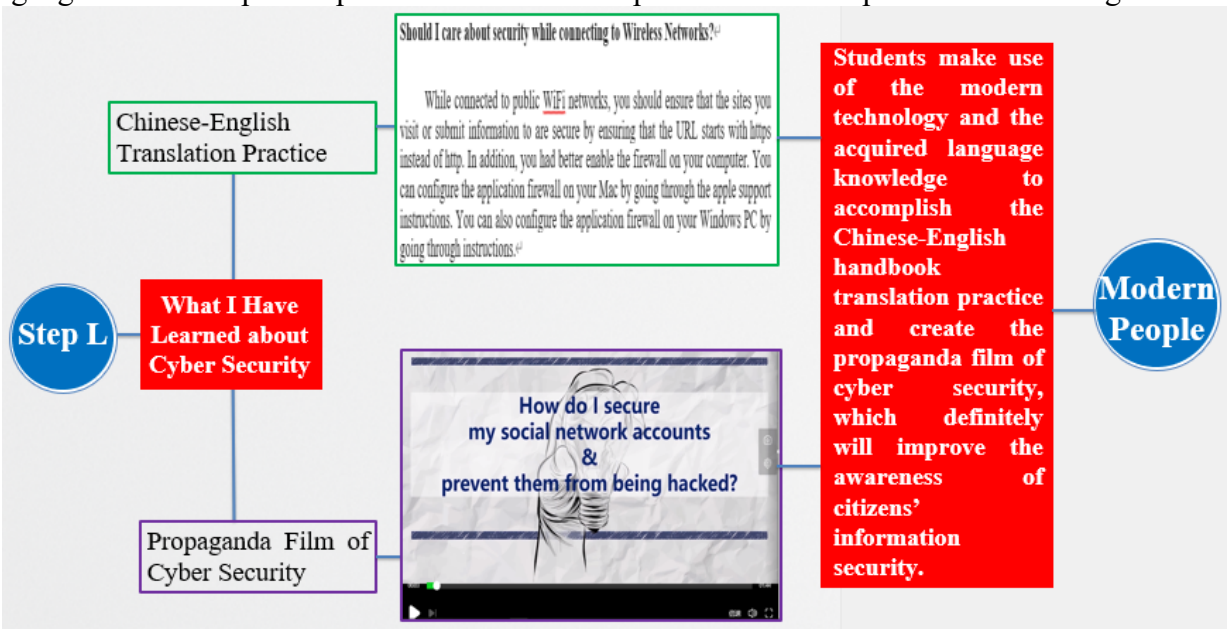

Figure 7 Students' acquired knowledge of cyber security

When language points and technical terms related to cyber security are explained, teachers guide students to apply what they have acquired into practical activities. Through the Chinese-English handbook translation practice and the propaganda film practice, students have the chance to sublimated the information obtained in the class.

In terms of the security of wireless networks in the handbook, students have accomplished the following translation: *"While connected to public WiFi networks, you should ensure that the sites you visit or submit information to are secure by ensuring that the URL starts with https instead of http. In addition, you had better enable the firewall on your computer. You can configure the application firewall on your Mac by going through the apple support instructions. You can also configure the application firewall on your Windows PC by going through instructions."*.

With regard to the security of the social network accounts, students have produced a short video clip with the following contents: *"Netizens should not use the same password across multiple online services and they had better set up two-factor authentication if it's available on the social network. If they have the financial support, it is better for them use a professional password manager such as LastPass or 1Password to store and also generate secure passwords."*.

When comprehensive language application practices are accomplished, teachers have the power

to learn students' mastery degree of contents in class and meanwhile students are able to improve their English writing, translating and speaking skills. Not only that, practical activities promote students to become the modern people who have the ability to improve citizens' awareness for information security.

4. Conclusions

After implementing KWL model in the visualized curriculum ideological and political education, 30 respondents enrolling in *IT English* course are interviewed by the researcher. The first interview question is "What are your gains from the KWL model?". 21 respondents put the stress on the creative thinking capacity because they maintain that discussions with team members are beneficial for sparking novel ideas. 24 respondents claim that they have expanded their horizon about cyber security. Before the class, they merely have the simple knowledge such as hackers, trojans and worms, but after the class, they can use technical terms to deal with translation and propaganda film practices. 27 respondents confirm that English skills including writing, speaking, and translating have been greatly enhanced and the awareness for phishing emails, phone scams and free WIFI has been dramatically strengthened. When the second interview question "What are your gains from the visualized curriculum ideological and political education?" was proposed, all of respondents shared the affirmative reply that they are not only educated to be moral people by teachers, but also active to be modern people to promote cyber security among citizens. The reason is that they, as Chinese people, should have the strong sense of responsibility and mission for the country.

On the basis of the case analysis and the face-to face interview, it can be concluded that the application of KWL model in the teaching process has the power to boost the innovation of thinking, the expansion of horizon, the enhancement of awareness, and the improvement of language skills. The visualized curriculum ideological and political education in the teaching process is in the position to cultivate students to be moral people, modern people and real Chinese people.

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