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The Fundamental Principles of Writing a Good Academic Paper

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Abstract: The purpose of this paper is to explain the essential principles and requirements for writing a good academic paper. As an editor of the Journal of Aussie-Sino Studies, based on his own experience of writing, teaching, and editing academic papers, the author suggested that an academic paper is basically an argument that tries to persuade the reader of the correctness of a proposition; instead of thinking "research questions", think "position statement"; instead of thinking "literature review", think "logical argument" based on evidence-based premises to support the proposition; instead of "results", think "strength of evidence" and instead of "discussion", think "conclusion".

Keywords: Academic paper, fundamental principles, proposition, logical argument, evidence

1. Introduction

The aim of this paper is to describe the fundamental principles and requirements for writing a good academic paper or thesis. An academic paper is basically an argument that tries to convince the reader of the correctness of a proposition. It is not an essay, or a story, but an argument. It is similar to a debate, but in written form using the same elements. It starts with a stated position on a question to be answered and defended; it develops a logical framework to justify the conclusion and it presents evidence to support that conclusion. Along the way it may raise objections to the stated position and use logic and evidence to refute those objections. However, while it an essential element in a debate it is not the focus or as important, although it should be considered, when writing a thesis.

As a university lecturer in Academic Writing and as an editor and reviewer of papers submitted for publication, I find that many researchers neglect these principles or are ignorant of them. Papers are presented with no clear position statement or purpose; the introduction contains many interesting but irrelevant asides, or lacks logical arguments to support the proposition or makes it obscure with so many irrelevancies; contentious premises are presented as facts without evidence. Often references are not cited properly, (in one recent case references that had no relationship to the subject were cited (I also suspected plagiarism); results are not presented correctly, or the wrong conclusions are made based on chance results or speculation; and conclusions that are not defended adequately or are made not based on the evidence, sometimes not related to the original proposition and sometimes contrary to the evidence or more probable alternative explanations. Most often the leading cause of the above-mentioned problems is that the authors of the papers do not have a full grasp of the subject. Reading and understanding the issues related to the topic to be argued is the first requirement for writing a good quality paper,

2. Proposition

As indicated, a clearly stated position is a prerequisite to focus on the topic in question. A thesis does not debate a question; it answers a proposition.

Accordingly, the aim is to provide justification for that position. Justification is the result of two related elements: a logical argument that is valid or strong and evidence that supports the premises upon which the conclusion is based and secondly, evidence for the correctness of the premises.

3. Logical Argument

A logical argument consists of premises or statements that together justify a conclusion. For example:

Premise 1. Chinese students come from single child families.

Premise 2. Wang is Chinese.

Conclusion. Therefore, Wang is (most probably) a single child.

An invalid argument might be:

P1: All (most) Chinese are from single child families.

P2: Wang is Chinese and is an only child.

C: Therefore, all single children are Chinese.

It is obvious that the second argument fails as there are alternative conclusions: Just because many Chinese families have only one child does not mean that other families may choose to have one child.

A good conclusion should also be falsifiable; that it is not necessarily wrong but open to the possibility that it is wrong. For example: UFOs exist, Abominable Snowmen live in the Himalayas. There is never any evidence, only lack of evidence to show each proposition is mistaken. Therefore, they can never be falsified.

In brief, the first element comprises a number of premises that relate directly to the stated proposition. Premises are derived from authoritative sources, that is from research that has been widely accepted as correct or from the researcher's previous findings and are not shown to be false and that logically result in a tentative conclusion: otherwise called the hypothesis, which is to be justified by the evidence presented by the researcher.

It might seem that the following argument is invalid:

P1: All (most) Chinese have purple hair.

P2: Wang is Chinese.

C: Therefore, Wang has (most probably) purple hair.

In fact, it is a logical argument with a valid conclusion. The major problem is that one of the premises is false, therefore, meaning the conclusion cannot be justified. A quick survey would confirm that most Chinese have black hair!

4. Evidence

This brings us to the second major element of the thesis. To present the evidence to demonstrate the correctness of the premises presented that form the hypothesis and conclusion. Evidence comes in many forms: from ethics and common knowledge to analogy to precedent such as in legal arguments. In science the type of evidence required is rigorous and is based on scientific method such as randomised controlled experiments and statistical analysis.

An example of widely accepted evidence would be: Most Chinese have black hair. While is seems to be correct from observation there are possibly some Chinese (older people, albinos), who do not, but we can be fairly confident Wang would have black hair. Another example that seems to be irrefutable might be: Smoking causes lung cancer. Here we must be careful in that alternative conclusions are available (e.g., air pollution can cause lung cancer), however the overwhelming research evidence indicates that most probably a smoker is a much higher risk of developing lung cancer. In this case, and in others, although it is a well-accepted fact, it is usual to refer to authoritative research in the literature, both for and against to make a strong case for the proposition.

What about the premise: It is wrong to kill another human being? Impossible prove that it is true, and there are obvious exceptions, for example, in war, in self-defence or abortion of an unborn foetus. It could be argued that it depends on the status of the human. For example, a terminally ill person who suffers unbearable pain and who wants a doctor to assist them to die peacefully. However, by consensus and derived from ethics it is generally accepted to be true and a logical conclusion, such that punishment of offenders is justified or even necessary, could rest on this premise.

Other authoritative sources could be the law or social practice. For example, the Chinese constitution guarantees citizens "freedom of religious belief" and practice. Again, although there are exceptions to this, it is almost universally accepted as a right and could form the basis of a logical and correct argument. An argument might take the form:

P1. Mohamed is a practicing Muslim.

P2. Religious freedom is guaranteed under the Chinese Constitution (with reference to the relevant part of the Constitution).

P3. Millions of Muslims freely attend their services and follow observances in China (with references to statistics and previous research).

C. Hypothesis: Therefore, Mohamed is free to practice his religion in China.

The position statement or proposition that "Muslims are free to practice their religion in China" should then be argued by reference to new evidence, such as records of legal challenges to this law and surveys conducted by the researcher, followed by a well-reasoned conclusion.

5. Hypothesis

A hypothesis is a tentative conclusion that is based on the foregoing arguments and premises and which is to be supported by the specific evidence to be presented in the paper, often in the form of the results of new research and analysis, or a replication of previous research.

6. Conclusion

A conclusion should be made based on the evidence that is presented. It should not refer to matters that were not directly related to the proposition or speculate on issues that were not the subject of evidence. It should clearly state how strong it is and whether a firm conclusion can be made or that there is only a probability that it is not false. It should not be made if there is evidence to the contrary that has been included or neglected either knowingly or inadvertently. Finally, its relationship to the premises should be clear and concise for it is upon this that the value of the research is to be judged.

The implications of these principles are that a good research paper should be free of irrelevancies; it should be focussed. There is little room for explanation, history or description A good thesis should present logical arguments with premises that are demonstrably correct, or are probably correct, and a hypothesis that follows from these and a conclusion that has been demonstrated to be most likely to be true based on all the evidence.

Most importantly, statements and premises should refer to the source and should be properly referenced. Not only to provide authorities to validate and support the evidence but to ensure that the original research or source is properly credited and that readers can access that it to verify the accuracy of the arguments.

So, to sum up, I would suggest that instead of thinking "Question", think "Position statement"; instead of thinking "Literature review", think "Logical argument" based on evidence-based premises to support the proposition; instead of "Results", think "Strength of evidence" and instead of "Discussion", think "Conclusion".

However, a thorough knowledge of every aspect of your subject is a fundamental and essential prerequisite to getting it right. And, keeping that in mind, by following these suggestions, at least you will stay focussed, keeping the structure simple and the concepts clear.

Notes

Dr Ross Colquhoun is an editor of the Journal of Aussie-Sino Studies. The information provided in this paper are based on his years of accumulated knowledge and experience. Others may have a different opinion.

Citing references correctly is vitally important for publication of your paper by providing authoritative evidence, avoiding plagiarism and maintaining academic integrity. A particularly good resource can be found at: https://guides.library.uq.edu.au/referencing

A very good website, to get an overview of different forms of writing including a section on logical arguments, can be found at: https://courses.lumenlearning.com/basicreadingandwriting/chapter/outcome-logic-and-structure

Dr Ross also provides workshops and courses on Academic Writing. If your university or faculty would like to learn more about this program, he can be contacted through the Journal of Aussie-Sino Studies http://assuws.com.au.

Action Research on Integrating Chinese Culture into College English Teaching

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Abstract: College English teaching has long focused on Western culture with little importance attached to the integration of Chinese culture into class teaching. This paper reports an action research approach exploring an effective teaching model to integrate Chinese culture into college English teaching. By going through two cycles of action research, the combination of teacher's well-organized in-class teaching with students' after-class autonomous learning proved to be helpful in improving students' comprehensive English application ability, cultivating students' cross-cultural communication ability, and equipping students with the English language competence to spread and promote Chinese culture to the world.

Keywords: Chinese culture, college English teaching, action research

1. Introduction

With the diversification of development in the world, China's global status has been gradually enhanced. Chinese culture is also moving closer to the center of the world stage, setting off a "Chinese culture wave" around the world. In 2014, Chinese Ministry of Education issued the *Guidelines for Perfecting China's Excellent Traditional Culture Education* (Chinese Ministry of Education, 2014), which clearly states that it is imperative to improve students' ability to learn and explore Chinese traditional culture, cultivate students' sense of cultural innovation, and enhance students' sense of responsibility and mission to promote traditional Chinese culture. *The College English Teaching Guide* (Chinese Ministry of Education, 2020) also clearly states that by learning English college students should be able to acquaint themselves with technological progress, management experience and the ideas of foreign countries. Through learning and understanding the world's outstanding culture and civilizations, college students can help to enhance the national strengths in language learning, spread Chinese culture, promote extensive exchanges with people of all countries, and enhance the country's soft power.

In the new era, college English teachers need to shoulder more responsibilities, not only to train students' English application ability, but also to improve students' cross-cultural communication awareness and communication skills. Therefore, it is essential for college English teachers to realize that consciously integrating Chinese culture into students' English learning has become important so that students can improve their knowledge of Chinese culture and their ability to introduce Chinese culture in English and thus take the initiative to spread and promote Chinese traditional culture to the world.

However, Chinese students find it difficult to articulate their culture in English, since a Chinese cultural aphasia exists due to their exposure to Western culture. The term Chinese cultural aphasia, developed by Chinese Professor Cong (2000), refers to the neglect of the native culture in China's English teaching. There are possible causes why educators pay more attention to western culture than native culture. First, many students learn English with the goal of passing the exams and going abroad, so they do not see the value of learning Chinese culture. Second, most English exams do not include Chinese culture. Furthermore, most English teaching materials in universities are written by native English speakers or adapted from the original English, and the teaching materials about Chinese culture are rarely featured. Teachers usually spend a lot of time introducing students to Western culture and customs related to the content of the textbook to help students better understand the context of the material. But because of the limited class time, there is little time left for

teachers to expand on a comparison of Chinese and Western culture and do more related practice. In addition, as most teachers are influenced by traditional teaching concepts and confined by limited class time, most English teachers can only focus on vocabulary, grammar, texts, and British and American culture, with no time for the integration of Chinese culture into English class teaching. All these reasons make it impossible for students to express Chinese culture in English, to promote their cross-cultural communication skills and to further their overall development.

This paper is a report on action research exploring an effective teaching model to integrate Chinese culture into college English teaching, thus improving students' comprehensive English application ability, cultivating students' cross-cultural communication ability, and equipping students with the English language competence to spread and promote Chinese culture to the world.

2. Literature Review

Action research (AR) originated in the United States in the 1940s. Modern action research has been widely used in the field of language education. Wallace (1998) sees action research as a systematic study of educational practices that many participants use to improve their actions and to reflect on the results of those actions. One of the most widely accepted definitions of AR by Carr and Kemmis (1986, p. 220), suggests that AR is a form of self-reflective enquiry undertaken by participants to improve the rationality and justice of their own social or educational practices as well as their understanding of these practices and the situations in which these practices are carried out.

According to Kemmis and McTaggart (1988), AR typically involves four broad phases in a cycle of research: planning, action, observation, and reflection. The first cycle may become a continuing, or iterative, spiral of cycles which recur until the action researcher has achieved a satisfactory outcome and feels it is time to stop.

Chinese Professor Wang Qiang has made a great contribution to the development of AR in China. Wang Qiang (2002) summarizes the definition of action research: AR is a systematic and reflective inquiry activity; teachers explore their own teaching problems and carry out the research; AR requires a series of steps to complete; the aim is to continuously improve teaching so that the best teaching effects can be achieved, and to improve the understanding and perception of the teaching process. The characteristics of action research are action-based, context specific, empirical, participatory, collaborative, aiming for change and improvement. She advocates focusing on curriculum objectives, content, and implementation in action research, and she has guided many English teachers in China to carry out action research. By doing action research, teachers examine their own class teaching, instructional strategies, assessment procedures, and interactions with students to improve their teaching quality and effectiveness. Action research, with an emphasis on teachers' reflection, is also of great significance to teachers' teaching and self-improvement and professional development.

3. Action Research Design

3.1 Research Question

In the preliminary phase of the action research, the author wanted to identify a focus for the study. Thus, the author carried out interviews asking students some questions, such as their difficulty in learning Chinese culture in English, their attitude towards the importance of introducing Chinese culture in English, the knowledge of Chinese culture that they are exposed to in English learning, and the penetration of Chinese culture in current English teaching and so on. The author found that most students did not do well in the exams which included Chinese culture elements, and they were not confident when answering the parts related to Chinese culture. Students are not familiar with the translation of representative Chinese culture vocabulary and feel unable to articulate the meaning of typical words and expressions, such as "union", "lunar calendar", "reunion meal", "firecrackers" and some blessing words. For lack of relevant knowledge, many students are unable to explain the origin and the customs of some Chinse traditional festivals. Most students think there are very little information in textbooks about the differences between Chinese and Western cultural practices, and teachers have not enough class hours to spend on these instructions because of the tight schedule of the curriculum. They agree with the importance of studying Chinese culture in college English classes and expect teachers to supplement the relevant background knowledge of Chinese culture in teaching more often.

From the interviews, the author noted that the principal problems lie in the lack of Chinese culture-related content and limited class teaching time. To better integrate Chinese culture into college English classes, given the current situation, the author confirmed the following as the research question of

this action research: Given limited teaching hours and no Chinese culture related textbooks, how can teachers comprehensively and effectively integrate Chinese culture into college English classes?

3.2 Research Subject

The research subjects were 70 second year students, 37 of them majoring in tourism management and 33 majoring in financial management at Beijing International Studies University. All the students were intermediate English language learners, with at least 10-year English learning experience. All of them had passed the College English Examination Band 4 in China. The author teaches them intensive reading classes.

3.3 Research Method

This study followed an action research approach. The author found the problem of a lack of integration of Chinese culture in her own teaching, introduced changes, and evaluated the results of those changes. The author worked through this process using one preliminary interview stage, two cycles of implementing the action research for changes, in which the author collected data through observation, interviews, questionnaire surveys, the teacher's reflective journals, students' study logs, and teacher and student assessments.

The author wrote class observation notes, a teaching log and reflective journal, reflecting on the problems in her own teaching and students' feedback to make timely adjustments to the action research plan.

The author conducted random one-on-one interviews each month with some students to learn about their learning and difficulties, and at the same time providing students with learning strategy coaching and assistance.

At the beginning of the action research, the author designed a questionnaire survey to identify the focus of the specific research question. At the end of the action research, the author also used a questionnaire survey to obtain students' feedback and to evaluate the action research.

Each month students were required to complete their study logs, keeping a record of their learning content, progress, the difficulties they encountered both in class and after class, and an accumulation of useful expressions, sentences, and passages.

Students' performance in completing written and oral assignments concerning Chinese culture in the semester was assessed, making up 40% of the final score for the course.

4. Implementation of Action Research

In view of the present teaching status quo and the research question raised, the author carried out semester-long action research (from September 2019 to January 2020) with the purpose of effectively integrating Chinese culture into daily college English teaching. The textbook used by the author was "*An Integrated English Course*" published by Shanghai Foreign Language Education Press. All the texts are selected from the original English materials from English speaking countries and covered a wide range of content with little related to Chinese culture. To solve this problem, the author managed to prepare the lessons carefully and find every possible way to supplement the lesson material with culturally relevant content. With limited class teaching time, extra-curricular time was expected of students for autonomous learning. The specific implementation of this action research mainly involved two aspects: teacher's well-organized in-class teaching, and students' after-class autonomous learning.

4.1 The First Cycle of the Action Research

4.1.1. Teacher's well-organized in-class teaching

In an intensive reading class, the teachers usually follow the teaching procedures of before-reading, while-reading, and after-reading phases. To increase the content of Chinese culture in class teaching, the author carefully prepared lessons, employing everything that could be added to the before-reading, while-reading, and after-reading phases. More relevant vocabulary, sample sentences or warming-up questions related to Chinese culture were added in the before-reading activities. During while-reading phase, more comparisons between Western and Chinese cultures were explained when there was any sentence or idea that was related to relevant Chinese culture. After finishing the explanation of the text, the teacher asked students to do more oral or written practice in which students applied what they had just learnt.

Take the text "Space Invader", in Unit 2, Book 4 as an example. The text is concerned with the worsening phenomenon of personal space invasion in Western countries and the causes and the nature of space invasion were also analyzed in the text. The teacher asked the students the following questions in the lead-in session before reading:

1). Is personal space important to you? Why or why not?

2). Do we Chinese have a weaker sense of personal space than Westerners?

3). What do you know of different cultural ideas concerning personal space?

In this way, the teacher guided students to compare the perception of personal space in Chinese and Western cultures and express their own views.

When explaining the main reasons for the smaller personal space in Western countries in the text, the teacher designed a discussion activity for students to talk about this phenomenon in China and to analyze the reasons. By doing so, students not only practiced the newly learned vocabulary of the text while expressing their own ideas, but also compared Chinese and Western behavior.

After the reading, the teacher asked students to have a group talk recalling their own experiences of how their personal space was invaded and how they felt.

The author usually uses the theme of the text as a basis to extract more elements of traditional Chinese culture, and there will be something that can be found related to Chinese culture if teachers think and explore. Another example, the text "A French Four", in Unit 6, Book 4, focuses on how American families living in Paris celebrate Independence Day abroad. After the teacher explained the text in depth in class, students were required to write a composition on China's National Day, covering the meaning of National Day to Chinese, the celebration of National Day, and how to celebrate the National Day if staying abroad. After the teacher graded their compositions, the students were asked to share their compositions in their study groups, do the peer reviews and have more discussion. In this way, students practiced the newly learnt language, deepened their understanding of the theme of the text, and understood the related Chinese culture in depth.

There was another session in class worth mentioning, the Daily Report. At the beginning of each class a student gave a three-minute presentation on Chinese culture with varied themes, such as Chinese festivals, food, customs, places of interest, domestic news and so on. The short session was added to help students accumulate Chinese cultural expressions and provide more topics and materials for after-class group discussions and activities.

4.1.2. Students' after-class autonomous learning

As the study time in class is limited, students should not be satisfied with in-class study only which is far from enough. Autonomous learning is a necessary ability that college students should learn. In this action research, the author tried many ways to motivate students to do more autonomous learning. The author suggested that students should find some reading materials related to Chinese culture that they had interest in. Students were supposed to find some time to read them aloud every day and choose one to have recorded and to hand in the audio to the teacher every month, based on which the teacher would give feedback and count as a part of usual assessment of a student. This helps voluntary and self-motivated students accumulate more Chinese and English expressions and improve their English proficiency and their understanding of Chinese culture.

In the Internet Age, students are faced with vast learning resources, and their learning space has been greatly expanded. The teacher recommended the Chinese culture classes on the website, MOOC of Chinese Universities (www.icourse163.org) to the students who could study together with their study group members, monitoring each other and doing discussion together after taking the online class. At the beginning of the semester, the author also recommended some English learning websites and mobile phone Apps so that students could choose according to their preferences and English level. Students were required to keep a record of their learning content, progress, difficulties they encountered both in class and after class, and accumulate useful expressions, sentences and passages. The teacher checked their study logs every month.

4.1.3. Observation and reflection

During the first two months of the action research, from the author's observation in class, students were active and interested in the in-class activities concerning Chinese culture. The monthly study logs of the students showed that most of them did what the teacher required, but some of students did nothing or very little, so the teacher had some individual interviews with these students to find out the real reasons behind the problems. Some students admitted that they did not know what to choose when faced with so many resources if the teacher did not clearly assign specific learning tasks. For them choosing materials to learn was time-consuming, and the materials they selected might not be necessarily authoritative. They were not accustomed and adapted to managing their own learning. Some students mentioned the lack of learning strategies, for example, some having no idea about how to deal with difficulties in study, how to evaluate their own learning, and some having attitude problems, like putting too much emphasis on learning results and ignoring the process, being negative,

frustrated and wanting to escape from study, and the like. After getting the feedback, the author found that the main problem lay in the self-learning sessions after class. The author realized that if not given immediate help, these students would probably become passive in self-learning, and in the long term lose interest and give up making an effort.

Based on the observation and reflection, the author decided to make some timely adjustments and improvements in the second cycle of the action research.

4.2. The Second Cycle of the Action Research

In response to the problems found in the first cycle, the author conducted a second round of action research. The main adjustments were as follows.

4.2.1. Narrowing down the range of students' self-learning content.

From the third month on, the author gave a list of reading materials about Chinese culture with different difficulty levels for students to choose from, and they were supposed to do the reading and retelling practice by themselves and to keep a record in their study logs. Each month each student should at least submit one audio recording to the teacher as required before.

Besides the English learning websites and mobile phone Apps recommended at the beginning of the semester, the author specifically offered two options for students to choose from in after-class autonomous learning. One was to follow the China Daily's WeChat account which provides Chinese news, in-depth reports and analysis, and to study at least two bilingual news programs on this account and write summaries every week to keep track of the latest developments in China. The other option was to use video clips of the documentary series, "Hello China" from the mobile phone App, English Fun Dubbing. There are altogether 67 videos. The students were expected to complete three of them each week and to share their dubbing with the teacher for feedback. In this way, the differences between students were taken into account so that more effective individualized learning became possible.

To make sure of more effective autonomous learning, the author asked the students to set up their own study groups with their friends so that they may study together, keep an eye on each other, and encourage and help each other in face of some difficulties in study.

4.2.2. Providing training in learning strategies

With the fact that many students lack learning strategies, the author offered some relevant training to help students cope with their difficulties. Learning strategies are processes which are consciously selected by learners and which may result in action taken to enhance the learning of a second or foreign language through the storage, retention, recall, and application of information about the language (Cohen, 1998). Based on the information-processing model, O'Malley and Chamot (1990) divided learning strategies into three main types: metacognitive strategies, cognitive strategies, and social/affective strategies. To be specific, metacognitive strategies involve thinking about the learning process, planning for learning, monitoring comprehension or production while it is taking place, and self-evaluation after the learning activity has been completed. Cognitive strategies are more directly related to individual learning tasks and entail direct manipulation or transformation of the learning materials so that learners can more effectively identify, understand, maintain, and extract information. Social/affective strategies involve interaction with others to maintain smooth communication and ensure the transmission of information.

The author made a 20-minute video providing students with training in learning strategies. Based on problems found in observation and interviews, the instruction of metacognitive, cognitive, and social/affective strategies were given to students, such as consulting a dictionary, questioning, making use of shorthand and imagery, self-monitoring, reducing anxiety, collaborating with peer students, and so on.

The author also set up a class group on WeChat. To break through the limitation of space and time, the author provided timely help to students with problems via WeChat group talk after class.

5. Results of the Action Research

During the 5-month action research, the author persisted in taking class observation notes, regularly collecting students' monthly study logs, having interviews, keeping records of students' unit test results, and sorting and summarizing various types of data.

At the end of the semester, all the students were given a simple questionnaire survey about this action research program of integrating Chinese culture into college English teaching. The survey questions mainly included their attitudes towards the action research activities, their evaluation of the action research results, and the changes brought to them following the completion of the action research. From the results of the questionnaire survey, the author was pleased to find

that 95% of the students held positive attitudes to the action research, 90% of students thought the action research had achieved a satisfactory result with the collaboration of the teacher and the students, and 88% claimed to have mastered more knowledge about Chinese culture with improvement in their self-learning ability to some extent.

Then the author held interviews with 10 students who the author considered to be representative learners during the whole action research process. The interview mainly covered questions about the effect of learning, attitude change, difficulties, suggestions, and so on.

Here are some answers from the students in the interview.

"I like the content related to Chinese culture supplemented by the teacher in class. They were very interesting. Now I feel more confident in talking to my foreign friends when asked to explain something about Chinese culture, like customs and origins of some traditional festivals."

"I have learnt a lot of expressions relevant to Chinese culture, and now I can talk about some traditional Chinese festivals and customs easily. I think in this semester the most helpful to me is the training of learning strategies. Through the training I have realized that it is impossible to be good at English very quickly. I must make a detailed plan for myself trying to make progress step by step. Now I have a new plan for self-learning in the winter vacation."

"Although I know I should keep learning, I can't do it without teacher's pushing."

"I like the exercises in the App, English Fun Dubbing. I have learned a lot of new words and expressions, and my listening and speaking skills have both improved. I will use it more often in my self-learning."

"The teacher's patient guidance, kind attitude and encouragement helped me build up my confidence in learning English."

"By taking the classes, I tend to pay more attention to the study of traditional Chinese culture."

Based on the teacher's observation, the completion of the study logs and after-class assignments, it can be seen that the teaching model of combining teacher's well-organized in-class teaching with students' after-class autonomous learning has improved students' English proficiency in reading, listening, speaking, and writing to varied degrees, and the integration of Chinese culture into English teaching proved to be very helpful for students.

6. Reflection of the Action Research

According to the results of the five-month action research, it is shown that the introduction of Chinese culture into college English teaching improved students' comprehensive English application ability, cultivated students' cross-cultural communication ability, and equipped students with the English language competence to spread and promote Chinese culture to the world.

The action research approach achieved satisfactory results, which indicates that the following measures taken in the study are effective. First, the teacher's carefully designed, well-organized in-class teaching activities make it possible that Chinese culture can be integrated throughout the teaching process. The various teaching activities are learner-centered, emphasizing cooperative learning between students, between teachers and students, which can create a good language learning environment, and increase students' participation in class teaching activities, such as, group discussion, role plays, debates and so on. Second, the formative evaluation with the focus on the whole learning process has stimulated the motivation of students to learn English in class and after class. Students' performance in class, completion of assignments and study logs made up 40% of their final scores in the course. Third, the integration of Chinese culture has enriched the teaching content, enhanced students' initiative to learn English and helped to expand students' international perspective and cross-cultural communication ability. Finally, the method of action research has enabled the teacher to do constant reflection and make timely adjustments to respond to arising problems in teaching. This action research approach has benefitted both students and the teacher. The author, as the implementer of the action research and the teacher in the classroom, did observation, discovered problems, designed activities, reflected throughout the teaching process, and made timely adjustments. Action research can not only improve teachers' teaching and research skills, but also enable teachers to develop reflective teaching and critical thinking, which will facilitate their continuous improvement in teaching in the future.

Action research may provide a helpful reference for the integration of Chinese culture into college English teaching, but there are still more work waiting to be explored in the future. Chinese culture is broad and profound, and 5-month learning is far from enough for students. In future action research, the integration

of Chinese culture into English teaching will be further explored, with more content included, such as traditional literature, classic poetry, art and so on. Besides, some action research can be done to find better ways of combining Chinese culture study with the study of students' professional courses, and the ways of motivating students to do more autonomous learning related to Chinese culture. Only with the improvement of their cross-cultural communication skills can students better shoulder the responsibility of spreading Chinese culture to the world.

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Enriching Personal Growth and Communicative Competence through Self-organized Interaction between Native and Non-native Speakers

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Abstract: While studying abroad is one of the suitable opportunities for foreign language (L2) learners to develop their proficiency in the target language, the mere experience of living in a foreign environment does not necessarily help students to become proficient L2 speakers. It has been argued that interaction with other people can enhance study abroad students' personal growth and their proficiency with language skills and communicative competence. The present case study reports on attempts by a self-organized group of international postgraduate students (IPSs) at an Australian university to improve their communicative competence through informal interaction with native speakers. The IPSs formed a weekly peer circle with native speakers to discuss language difficulties and cultural issues they experienced in using the target language (i.e., English). Over time the peer circle grew to include social occasions. For this study, members of the peer circle participated in an interview exploring impacts of the peer circle on their grammatical, sociocultural, and strategic competence. Results from this small-scale study indicated that the participants had positive attitudes toward attending these self-organized circles. They found the program effective in helping them develop their personal skills and promoting their communicative competence at different levels.

Keywords: Native speaker, non-native speaker, communicative competence, personal growth

1. Introduction

Foreign language learners in most cases do not have immediate access to authentic target language, and they are only provided with materials through texts and multi-media. Wildner-Bassett (1990) argues that the kind of communication in foreign language learning contexts, as opposed to second language learning, is artificial. Although the improvement of technology in recent decades has assisted foreign language learners to gain access to authentic materials, the need for real-life interaction with native speakers of the target language cannot be overlooked. For many foreign language learners, studying abroad presents opportunities to engage in real-life communication with native speakers of the target language (Amuzie & Winke, 2009; Freed, 1995; Isabelli, 2004).

There is a general presumption that students who study abroad and are immersed in the target language will become fluent speakers of that language with a native-like accent and speaking style (Kenne, 2014; Segalowitz & Freed, 2004). Nevertheless, research shows that study abroad students' success rate depends on a range of variables, for example, students' identity (Pellegrino, 2005), their motives and desire to interact (Kinginger, 2009).

This study emerged out of a self-organized weekly peer circle program initiated by an IPS at an Australian university. The program, called the Australian Tea Program (henceforth referred to as ATP), was established to create an enabling environment where non-native speakers (IPSs) and native speakers could participate in informal interactions aimed at enhancing communicative competence and interpersonal communication among post-graduate students. In this paper, we describe features of this self-organized program, and report on IPSs' perceptions of the ATP impacts on their personal growth, communicative skills, and their postgraduate candidature experience.

2. Literature Review

To use a target language naturally, non-native speakers (NNS) go through complex processes of achieving communicative competence in the target language, which is likely to happen at different stages of language learning process for different learners (Kinginger, 2009). Achieving communicative competence, according to Pellegrino (2005), is coupled with one's personal growth and impact of the language learning experience on the NNS. This literature review provides a general background of communicative competence and personal-growth, and the relationship between these two conceptions. Following this a review of research on native and non-native interaction, as well as language learning and study abroad will be presented.

2.1 Communicative Competence

The term "communicative competence" emerged from the communicative approaches toward second language teaching and learning in 1980s and describes "a person's ability to communicate in an appropriate way" (García-Carbonell, Rising, Montero, & Watts, 2001, p. 484). In earlier theories mainly led by Chomsky (1965), speech was divided into two parts of competence (which accounted for knowledge of rules and principles), and performance (which accounted for the practical use of the rules). Communicative competence (CC) theories introduced two additional aspects of culture and context to address the significance of sociocultural appropriate utterances (Canale & Swain, 1980). In further developing a theoretical framework of communicative competence, Canale (1983) emphasized the four types of knowledge outlined below (extracted from the Longman Dictionary of Language Teaching and Applied Linguistics):

1. Grammatical competence: knowledge of grammar, vocabulary, phonology, and semantics of a language

2. Sociolinguistic competence: knowledge of the relationship between language and its non-linguistic context, knowing how to use and respond appropriately to different types of speech acts, such as requests, apologies, thanks, and invitations, knowing which address forms should be used with different persons one speaks to and in different situations, and so forth.

3. Discourse competence: that is knowing how to begin and end conversations.

4. Strategic competence: that is, knowledge of communication strategies that can compensate for weakness in other areas (Richard & Schmidt, 2013; p. 90).

The concept of communicative competence indicates that acquisition of wide knowledge of grammar or vocabulary will not essentially help the second language learners to become proficient users of the target language (Canale and Swain, 1980). Sociolinguistic aspects of CC emphasize contextual factors, which affect a NNS's language use in particular situations and conditions. These concepts apply to the language-related experiences of the study abroad language learners.

Many international students, even those who feel confident about their knowledge of grammar and vocabulary, find it difficult to use the target language in an appropriate way (Pellegrino, 2005). Pellegrino (2005) points out that in study abroad situations, linguistic development, cultural understanding, and personal growth take place simultaneously. Dwyer (2004) found that study abroad programs impact on attributes related to individuals' personal growth such as increased self-confidence. As Behrnd and Porzelt (2012) suggest, study abroad programs should not just aim to develop individuals' language skills, but also try to create opportunities for NNS students to engage with the target culture and establish connections with the members of the host culture.

The above findings suggest that personal growth results from interaction with native speakers in a study abroad context. Since interaction with native speakers depends on communicative skills, it may be inferred that personal growth and language learning have a reciprocal relationship in study abroad conditions. In other words, when language learners develop their communicative competence, they can engage more successfully with the target culture and native speakers, and this relationship applies the other way around. Therefore, native speakers play an important role in non-native speakers' language development in the target language environment (Pellegrino, 2005; Pica, 1991).

2.2 Native and Non-native Language Speaker Interaction

In the field of second language learning (L2), several studies have investigated interactions between native and non-native language speakers, and the effect of this kind of interaction on the language learners' linguistic development at different levels (Cheng, 2013; Kinginger, 2009; Pica, 1991; Young & Faux, 2011). Pica (1991) considers that the input received from native speakers can help non-native speakers to

understand what is in the target language and what is not in the target language. This kind of real-life communication provides language learners with contextualized and comprehensible L2 input and repeated L2 exposure (Krashen, 1985; Pellegrino, 2005). Through interactions with native speakers, non-native speakers can enhance their communicative competence at linguistic, sociolinguistics, discursive, and strategic levels.

Studying abroad provides considerable opportunities for second language learners to enhance their language skills. Mere experience of living in a foreign environment, however, does not necessarily help students to become proficient L2 speakers (Kinginger, 2009). While it has been found that international students can develop their language skills by interacting with native speakers, many international students find it difficult to establish and maintain communication with native speakers. The challenge of understanding how international students can establish and maintain communication with native speakers was an initial incentive to conduct the current study.

The present case study reports on the attempts of a self-organized group of international postgraduate students to improve their communicative competence through informal interaction with native speakers. Hence, the research addresses the question of how informal interaction between native speakers (NS) and multicultural non-native speakers (NNS) can enhance the personal growth and communicative competence of NNS. A further aim of the research was to understand participation in a self-organized peer circle may help NNSs to better manage their PhD candidature.

3. Methodology

A pragmatic mixed methods approach (Cresswell & Plano-Clarke, 2010) was adopted in this case study to investigate how informal interaction with Australian colleagues (i.e., native speakers) can affect international postgraduate students' (i.e., non-native speakers) communicative competence, and accordingly their PhD studies. The researchers conducted interviews with international postgraduate students (IPSs) who were members of the Australian Tea Program (ATP). Further details about the methods employed for data collection and analysis are presented in this section.

3.1 Participants

The participants in this study were eight international postgraduate students (IPSs) at University of Tasmania. There were four females and four males, and their ages ranged from 28 to 40 years old. This sample was randomly selected from the international students who participated in the Australian Tea Program (ATP). There were six IPSs from the Faculty of Education, one IPS from the Australian Maritime College (AMC), and one IPS from the Faculty of Arts. The participants were in different years of their candidature, ranging from first year to the third year. Considering the total number of IPSs who usually attended the ATP (usually between 7 and 15), eight participants in this study accounted for the majority of the IPSs who attended the ATP.

3.1.1 Procedure of recruitment of participants

The researchers invited international postgraduate students (IPSs) who had joined the ATP to voluntarily participate in an interview. The study was conducted with ethics approval and information sheets and consent forms were distributed to IPSs during an ATP session. Eight IPSs volunteered to participate and the research team arranged mutually convenient times for conducting individual interviews with IPSs.

3.1.2 Australian Tea Program (ATP)

The Australian Tea Program is a self-organized weekly learning circle with the purpose of enhancing communication and collaboration among postgraduate students in an Australian university. The ATP was initiated at the suggestion of one international postgraduate student who sought to facilitate and enhance communication among postgraduate students. An underlying assumption behind the formation of the ATP was that IPSs tended to experience language related barriers in forming connections and relationships with the other IPSs and Australian colleagues. Therefore, the program began by inviting one interested Australian postgraduate student to attend these circles on a weekly basis on Friday afternoons. This native speaker played the role of the facilitator of the conversation among participants and in the following sessions, other native speakers joined the program as well. Although the number of participants varied from week to week, once the program was well established there were usually between two and four native speakers in attendance.

The program was open to everybody to attend from all faculties throughout the university. Sessions were free of charge and there was no formal membership process, participants simply turned up at the same time each week to the Music Room, which was made available for the purpose of this peer circle. The group commenced initially with five members and over the weeks the number of participants grew. There

were no official announcements or purposeful recruitment efforts for the program; new participants usually heard about it through word-of-mouth from their friends. Unexpectedly after several ATP sessions, some local Australian residents from outside the university who had heard about this program from friends signaled interest in attending these sessions and learning more about other cultures and lifestyles from ATP members. These external participants became members of the ATP; however, they were not included in this study.

Every session in the ATP lasted about one hour, which sometimes extended to two hours as the result of participants‟ interest in continuing the discussion. The ATP initially had a language focus, where IPSs sought help from the native speakers who attended the sessions. There were no predetermined topics or content for the meetings. Each conversation emerged spontaneously because of IPSs' curiosity about a particular Australian phrase, gesture, behavior or a situation experienced by them during the previous week. A list of activities undertaken within the ATP is presented in the results section. In later ATP sessions, the focus shifted from language to culture and social interactions, and IPSs played more active roles by sharing information about their cultures and traditions. However, participants continued to pause the discussion to ask questions related to language usage.

3.2 Interviews

The data were collected through individual interviews with participants. Interviews were semi-structured, each lasting for about 20 minutes. The interview consisted of Likert-scale question at the beginning, which asked participants about their own assessment of their language proficiency before and after residing in Australia, and two closed questions regarding participants' length of stay in Australia, and the frequency of their interaction with native speakers (see appendix 1). In this study, given the limited time and scope of the research, we decided to rely on the participants' own perception of their language proficiency, rather than using language proficiency tests or surveys. Considering the relatively small number of participants (8), we concluded that qualitative data could provide us with a deeper understanding of the phenomenon.

The rest of the interview consisted of open-ended questions exploring the language difficulties that participants had experienced during their stay in Australia, and the possible effects of these difficulties on their candidature. The final questions asked about participants' experience of attending ATP, and how it had possibly affected their communicative skills (in particular) and PhD studies (in general).

The number and content of the interview questions were decided upon in a meeting amongst the research team members. The criteria for development of the questions were contextual factors (e.g., nature of the ATP) and prior research on interaction between native and non-natives speakers (Pica, 1991; Pellegrino, 2005). The interview questions were piloted which resulted in modifications to two of the questions. All the interviews were audio-recorded, and subsequently transcribed.

3.3 Data Analysis

Thematic Analysis (Braun & Clarke, 2006) was employed to analyze the data collected in this study. Through Thematic Analysis (TA), data were coded and analyzed systematically, and patterns of meaning and themes were identified. The focus of data analysis in this study was to find shared meanings and experiences of the participants in the ATP. In this regard, we adopted both inductive (bottom-up) and deductive (top-down) TA approaches to analyze data at two levels: first, to locate themes and patterns of meaning from participants' responses (inductive), and secondly, to analyze data based on the concepts of native and non-native speaker interaction and personal growth principles (deductive).

4. Results

Results of the data analysis are presented under two main categories: firstly, description of participants‟ communicative skills before the ATP, and secondly, the results of the ATP on participants‟ communicative skills. This order helps to initially understand the language and residence (in Australia) background of participants, and then, see how the ATP has affected their communicative skills in relation to these factors. During the interviews, IPSs were encouraged to reflect on their own communicative skills in relation with two different time intervals: firstly, before and after coming to Australia, and secondly, before and after attending the ATP.

4.1 Description of Participants' Communicative Skills before the ATP

The first four (quantitative) questions in the interview, asked about participants' length of residence in Australia, frequency of their communication with native speakers, and assessment of their language proficiency before and after living in Australia. The average length of participants' stay in Australia was

reported to be 11 months, ranging from 4 to 28 months. Regarding the frequency of communication with native speakers, most of the participants chose item four, which indicated multiple times per day, although some participants indicated they communicated with native speakers a few times per week or less. In response to language proficiency questions, participants were asked to choose a response between 1 to 6; 1 indicating extremely low proficiency and 6 standing for high proficiency. Participants‟ average assessment of their language proficiency before coming to Australia was 4.25, which raised to 5.12 after residing in this country. While this increase indicates development in IPSs language proficiency after living for several months in Australia, further open-ended questions were asked to get deeper understanding of the changes.

Question number 5 asked about the most common language difficulties that IPSs faced as they arrived in Australia. The language difficulties reported by the participants are categorized into three main language skills: listening, speaking, and writing. There were not major difficulties reported relating to reading skills, grammar, and vocabulary knowledge.

4.1.1 Listening

The most reported problem with listening skills was attributed to Australian accents and speaking rate. Participants indicated that native speakers speak extremely fast, and their use of colloquial language made comprehension difficult for IPSs. Almost all participants indicated that one of the major challenges they encountered immediately after arriving in the country was the Australian accent. One of the participants said:

> It was exceedingly difficult for me the first day when I arrived, and I got a call, and this guy was talking with a strong Australian accent, using some specific Australian words. And it was difficult for me, I could not understand half of it.

These words resonate with the experience of another respondent who noted that:

> For the first few months when I arrived at Australia, it was too hard for me to understand people's speaking. And day-by-day it improved, I got better.

This participant explained that it had been more difficult for him to communicate with less educated Australians because of their accent. In general, most of the participants of the study agreed that there is not a single Australian accent, and that people from different social statuses have different accents and styles of speaking which made it difficult for IPSs to understand them particularly in informal conversations. As noted by one of the participants: "I find [it] particularly challenging to perceive these things, like idioms, slang, and colloquial words."

4.1.2 Speaking

Speaking skill difficulties reported by participants related to challenges in choosing the appropriate words according to various situations, as well as pronunciation of the words. One of the participants explained the difficulties this way: "When I converse with native people [native speakers], sometimes [I] find lacking in myself in terms of using natural way of expression. For example, the use of connectors, phrases."

No difficulties relating to vocabulary knowledge were reported. A few IPSs mentioned that they found it difficult to articulate some letters in English, which were differently articulated in their native languages. Another area of complexity for IPSs is the connotation of words. There are words in other languages, which are also used in English (Australian), but which have different connotations. One of the respondents said:

> Certain words we use in a different way back in the country, and here in Australia it is used in a different way, so while communicating with the members [of ATP] here we have learnt their way, the way they use English words.

It was also reported that it was difficult for some of the IPSs to decide which particular words were often used together (i.e., collocations) to express a certain notion or feeling in a particular situation.

4.1.3 Writing

Difficulties reported by participants relating to writing skills tended to be in the communicative style of writing (e.g., email), rather than academic writing style (e.g., thesis). Among these language skill areas, writing was the least mentioned. Participants commented that when writing, they usually have time to think, re-write, and use various tools to help them overcome difficulties.

Many participants indicated that a lack of competence in these language skill areas diminished their confidence in communicating with others, which potentially reduced their engagement in extracurricular activities within the university environment. IPSs indicated that better communicative skills could help them to sustain a sense of relaxation and sharing with colleagues and faculty members.

After inquiring into the language related difficulties experienced by IPS, participants were asked what language skills they had improved after residing in Australia (question 6). Most of the

participants reported that they had improved listening and speaking skills. They related the improvement of these two skills to their interactions with others, particularly native speakers. Participants also indicated that their writing and reading skills had improved because of reading books, journals, and other materials, and completing writing assignments for their course.

4.2 Results of the ATP on Participants' Communicative Skills

The Australian Tea Program began with a focus on helping IPSs to enhance their language speaking and listening skills. All the sessions were held without having a predetermined topic, and the topics were emerged mainly out of the participants' immediate experiences inside and outside the university environment. As this was a small-scale study, there are limited claims that can be made as to the development of participants' communicative skills resulting from the ATP. The analysis of the qualitative data suggested that the ATP made some valuable linguistic and sociocultural contributions to IPSs‟ experiences of their PhD candidature.

4.2.1 The ATP from a linguistic angle

In contrast to usual language programs in universities, where materials are formerly developed and organized, the ATP did not follow a certain predetermined structure or framework. Topics discussed in the ATP arose spontaneously and were closely related to the IPSs' immediate needs. The reason for taking such an emergent approach was that participants already had a working command of English language, and thus the initial focus was on difficulties they experienced with the target language. Each session, participants introduced topics that they had encountered difficulties within their various contexts (by way of illustration, topics from a selection of ATP sessions encompassed cultural practices, law, gestures used in speaking, sports, world languages, and different accents of English language).

Speaking was the main language skill that was explicitly practiced in the ATP. IPSs sought help from native speakers by asking questions related to colloquial language, slang, and shortened forms of words, which is a common practice in Australian English which leaves some NNS baffled. (e.g., Macca's stands for McDonald's). Pronunciation was the other language area often practiced in the ATP. This included largely the pronunciation of vowels (especially diphthongs), word stress, and intonation. These practices are closely related to the grammatical competence element under the concept of communicative competence (Canale & Swain, 1980). Another topic of focus during ATP was practicing speech acts, such as requests, apologies, thanks, and invitations, and knowing which address forms should be used with different people in different situations. IPSs indicated that they encountered many situations in their immediate environments where they needed to use these speech acts appropriately. We can associate these practices to Canale and Swain's (1980) sociolinguistic competence notion.

The explicit practice of speaking skills accompanied the practice of listening skills. Through the emergent conversations within the ATP, IPSs experienced contextualized and comprehensible target language input from the native speaker group members (Krashen, 1985). Further, development of colloquial language and pronunciation simultaneously helped IPSs to enhance their comprehension of received target language. Participants reported increased confidence in using English language after attending the ATP:

> Well, the ATP has been very helpful to improve our speaking skills, like by interacting with native speakers you express your feelings, you get engaged with them, you make your presence felt in that group. So, it has, obviously, helped me to improve my confidence.

One of the participants described the role of native speakers in the ATP as follows:

> I think they [native speakers] are important in our group, because when we learn a new language we turn to native speakers as kind of models. And sometimes we have some ideas that we do not know how to express. Or we do not understand, and we always turn to them for help or answers.

4.2.2 The ATP from a sociocultural angle

Sociocultural theories locate relationships and participation at the center of learning. Rogoff (2003) contends "humans develop through their changing participation in the sociocultural activities of their communities, which also change" (p. 368). The ATP provided the space for all IPSs to bring their diverse histories, traditions, and cultural backgrounds into a space in which this diversity was valued. Through their participation in the emergent conversations in the ATP their language speaking confidence grew as their comments in the previous section attest.

As the ATP progressed, its focus shifted from the explicit practice of language skills towards learning about each other and socializing together. IPSs' language enquiries became integrated into their

involvement in social activities within the ATP. New social practices commenced at the suggestion of different members of the ATP, providing opportunities for socializing and learning language and culture concurrently (the two elements are strongly related and linked to each other). Social activities included negotiation of meaning from different cultures through painting (in collaboration with an Elder from an Australian Aboriginal Community), celebrating national days and local events, and sharing food from different nations. These activities promoted negotiation of meaning and communication among postgraduate students in a non-threatening and secure environment. As one of the participants described:

> I think the ATP sometimes provided us with some different versions [of] how to look at the things and how to think about things. And this may help us improving our thinking, like critical thinking, and some other skills: how to understand different cultural diversities, have a contact with people from different cultures, how to communicate with these people.

Mediation, which lies in the heart of sociocultural theory approaches to language acquisition (Lantolf, 2000), was facilitated in the ATP through activities like painting and sharing of national foods. Within these activities, IPSs found the opportunity to socially construct meanings with native speakers and other IPSs. As the formerly quoted participant pointed out, the ATP created a relaxing environment in which members could personally improve their thinking skills and increase their literacy regarding cultural diversity.

One of the main objectives of the ATP was to help IPSs to successfully manage their PhD candidature by facilitating communication and cooperation among themselves and faculty members. The interview results revealed that IPSs found the ATP a secure environment where they could share information about their PhD research topics and receive feedback from their peers as indicated by this respondent's comment:

> Yes, it [ATP] is just that this feeling of sharing a common experience of being a PhD student… What does it mean for you to be a PhD student? How does it feel? How can you deal with it? So, sharing of all these ideas and difficulties, and feeling that you are not alone in this, I think it really helps.

5. Discussion and Conclusion

This study found that the IPSs who were participants in the Australian Tea Program had typically arrived in Australia with a good command of language skills. However, they encountered some language related difficulties during the initial stages of their residence in Australia. This gap may be traced back to the learning system the foreign language learners go through in their home countries. In many foreign language learning contexts, language learners usually do not have immediate access to authentic target language materials and have limited access to practice their language knowledge in real-life situations with native speakers or other language learners who are competent users of that language (Borg, 2006). The time pressure inherent in such real-life conversational situations made the speaking and listening skills the main sources of initial difficulties for IPSs at the time of arrival to Australia. Attributing their difficulties to Australian accents, or frequent use of colloquial language, may indicate that the formal training which many of the IPSs had undertaken before leaving their home country had not sufficiently dealt with the varieties of English language and various genres and registers within it.

Studying abroad does not necessarily help all international students to improve their language skills. Prior research indicates that study abroad students' success rate depends on a range of variables, including their sense of identity, motives, and desire to interact (Kinginger, 2009). In this regard the findings in this study of the ATP were suggestive of positive directions in enabling informal social environments where spontaneous and supportive interactions can take place. The ATP offered opportunities for IPSs to participate in regular English language communication with their peers, enhancing their sense of personal growth and engagement within their immediate community.

Members of the ATP described a range of linguistic benefits of participating in the group, which included improved communicative and comprehension skills and a greater sense of understanding the appropriate use of English. This suggests that the ATP supported ISPs in developing communicative competence (Canal & Swain, 1980) at the level of grammatical competence (defined as knowledge of grammar, vocabulary, phonology, and semantics of a language). IPSs also reported enhanced levels of sociolinguistic, discourse, and strategic competence in better understanding the appropriate use of language in different situations, and strategies for the initiation and maintenance of conversations, and compensating for weaknesses. While participants reported that this enhanced confidence with using English was beneficial

for their studies, it is beyond the scope of this small-scale study to make claims of academic impacts of the ATP.

Socio-cultural benefits of participating in the ATP included feeling more comfortable in the university environment and a greater relaxation and engagement with their peers. Members described being more open to other cultures and ideas which may suggest the development of intercultural competence (Pellegrino, 2005), and overall, this led to members reporting a sense of personal growth. The engagement with colleagues also studying in the postgraduate space offered a range of academic benefits for members of the group. This included having a better understanding of the requirements of being a PhD candidate as well as an enhanced knowledge of postgraduate research within the university more generally. Members reported being able to better manage problems related to their academic life because of being part of the ATP. This study has offered insights into linguistic and sociocultural benefits gained from participation in a self-organized peer circle. Recent research has also explored the impacts of such self-organized peer groups on IPSs‟ cultural wellbeing (Pavlyshyn, Emery, Hedayati & Nur, 2016). There may be value in universities supporting further research into self-organized peer groups to develop understandings about factors that are important for their successful establishment and ongoing sustainability, and to explore the academic impacts of participation in initiatives such as the ATP.

In conclusion, for the Australian educational system, where PhD candidature is mainly research-based, many international postgraduate students have limited interaction with their peers. They usually spend long hours doing research in their private workspace, often with infrequent opportunities to communicate with others, a situation that is particularly prevalent for international postgraduate students. In addition, the style of communication between PhD candidates and faculty members is often professional in nature, with a formality that can limit possibilities for scholarly conversations to emerge. Findings from this study conducted with international postgraduate students in an Australian suggest that participation in a self-organized peer group can enhance PhD candidates' engagement and personal growth, while supporting their development of communicative competence.

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Integrating Chinese Traditional Culture into the English Public Speaking Course: The Strategies and Challenges

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Abstract: With more and more universities introducing English public speaking courses into their curriculum, a lot more discussion and research on the localization of these courses have occurred. Integrating Chinese traditional culture into public speaking courses is part of this effort and its benefits are multi-faceted. This paper elaborates on the significance of integrating Chinese traditional culture into English public speaking, the strategies of the integration, and the challenges and difficulties we face in the process.

Keywords: Chinese traditional culture, public speaking, localization, strategies

1. Introduction

The English Public Speaking Course (EPSC) has been introduced into Chinese university curriculum since 2005 along with the surge of national public speaking competitions, like the 21st Century Cup, CCTV Cup and the FLTRP Cup. Initially, some universities set up this course to prepare students, both English majors and non-English majors, for those speech contests. Gradually, EPSC has become a sought-after subject in general for its value in the cultivation of talented college students in a globalized world. However, most Chinese students have been reticent to speak English, let alone making an effective English speech in public. Even though the speech contests have witnessed several excellent speakers over the years, most college students find making English speeches challenging and threatening, and the teaching efficiency of the EPSC is not satisfactory. On the one hand, as students are learning English as a foreign language, their language proficiency is not advanced enough for them to communicate their ideas effectively. On the other, they are lacking in interdisciplinary knowledge to supply thoughts and ideas for their speeches. Whereas EPSC mainly focuses on teaching public speaking knowledge and skills, which are theoretically detailed but cannot be fully utilized owing to the fore-mentioned weaknesses of the students, thereby dampening their interest in the subject. As for the nature of this course, scholars have discussed the disciplinary orientation of this course, with many agreeing on taking it as a subject in EFL. So many researchers have suggested incorporating writing, speaking, listening into public speaking to improve efficiency (Tian, 2013). With the integration of different language skills into EPSC, students' language proficiency can be notably improved. However, the "knowledge" part should also be addressed. Otherwise, the speeches they make will still lack profound thinking and substantial content. Only when all the language and public speaking skills are harnessed to recount touching stories, express beautiful thoughts and convey sincere feelings can the speech win the hearts of the audience. But what is the source of those beautiful thoughts and inspiring ideas? This question has been discussed by teachers and researchers both at home and abroad (Tian, 2013; Lucas, 2013; Wang, 2014; Tian, Yang, 2015; Tian, 2018). They have been exploring various ways for localizing EPSC. Lucas (2013, p.178) pointed out that "the complexity and richness of China's cultural heritage had shaped the process of localization. That heritage is so much a part of the students and teachers alike that it ineluctably affects every aspect of the course". In teaching speaking courses, we cannot ignore the fact that when students make speeches, they inevitably talk about their experiences in China, their values, and beliefs as a Chinese, from a Chinese perspective. No matter where or what they speak about, they will invariably trace back to the tapestry of Chinese traditional culture for touching stories, beautiful thoughts, and emotional connection. This can

be clearly seen from the prize-winning speeches in the national speech contests in recent years. As Lucas (2013, p.179) has noted, "Over the years, I have observed many speeches by Chinese students. The speakers, while doubtlessly more knowledgeable about various aspects of Western culture… Their core ideas, principles, references, and values are staunchly Chinese". So, the localization of EPSC cannot be realized fully without the incorporation of Chinese traditional culture, which is the source of the content and the power on all public speaking occasions.

Based on the former research results, this paper elaborates on the significance of integrating Chinese traditional culture into EPSC, the strategies of the integration, and the challenges and difficulties we face in the process.

2. The Significance of Integrating Chinese Traditional Culture into EPSC

In the current era of increasing globalization, the diverse cultures of the world are influenced by the dominant western culture and this may result in a lack of cultural confidence, or even the loss the cultural identity of Chinese college students, especially in English classes. Due to the characteristics of English teaching, students get more access to English culture with the learning materials such as English literary works, English news and songs, English history and society. They can talk about western history, western customs and western festivals in English, while they lack the ability to retell Chinese history and stories in English. However, on the global stage of economic and cultural exchange, the ability to communicate one's own philosophy of conducting business, the moral values behind the external economic and social activities are extremely important. Chinese traditional culture plays an indispensable role in promoting the economic and social development in the era of globalization. Establishing and maintaining Chinese unique national cultural identity has become an important basis for China to improve its influence on the global stage. In view of this social background, EPSC, as a subject to train talented students with strong communication skills in a globalized world, cannot separate the teaching of Chinese traditional culture from the public speaking skills. Rather, it should be more effective to have the two harmonized with each other. Again, the ideas of Lucas should be mentioned in this regard, who observed that "communication, whether in English or any other language, is inherently shaped by culture, (so) every public speaking course should be localized to the country in which it is taught (2013, p. 178)" and adopted his book, The Art of Public Speaking specially for Chinese Learners. Even so, he admitted that it was "a western book at its core (2013, p.178)." The responsibility falls on Chinese teachers, scholars as well as students to redesign the course and work out a "Chinese book" in English for this course. The integration of Chinese traditional culture provides a way out and it can serve as an approach to furthering the localization of the course.

In addition, integrating Chinese traditional culture into EPSC corresponds with the idea of ideological and political education advocated by Chinese president Xi Jinping. In the 2016 national conference on college ideological and political work, President Xi stressed that ideological and political work should be integrated with the whole of teaching so as to realize student cultivation in a comprehensive process. Under the influence of the central government, there has been a shift in concept from foreign language teaching to foreign language education. In all the English language teaching classes, education and cultivation should be executed at every step of teaching. In EPSC, the goal of teaching should not only be equipping students with the power or techniques of speaking in public, but also the cultivation of students with Chinese cultural confidence and cross-culture communication skills. The core values in Chinese culture such as sense of responsibility, honesty, patriotism, filial-piety, collectivism, etc., exemplified through historical stories and present-day heroes will influence young students in a subtle manner and boost their sense of pride in our culture. The 19th National Congress of the Communist Party of China has proposed the strategy of "building stronger cultural confidence and helping socialist culture to flourish." The integration of traditional culture is the implementation of this strategy in EPSC.

Introducing traditional culture into EPSC can enrich the content of teaching and provide food for thought for students. As mentioned in the introduction, a major source of ideas and thoughts lie in the nation's culture. Students, growing up and immersed in their own culture, invariably speak within a Chinese knowledge framework. EPSC should provide students with this knowledge of their own culture in English and combine public speaking skills with their rich cultural inheritance. But as we know from The Art of Public Speaking, the textbook used in most public speaking classes in China, the teaching content is

arranged based on the public speaking skills rather than on discussing topics. For each skill, there are examples and sample speeches from the Chinese context in the adapted edition, but for Chinese students, especially non-English majors, they find the materials difficult to understand and insufficiently relevant to their cultural background. Teachers, on the other hand, should redesign the teaching procedure, find more learning materials, provide new speech topics to arouse their interest and inspire their thinking. Often, they try to seek out teaching materials from China's traditional culture and its embodiment in modern society. The Chinese nation has a history of 5,000 years of civilization. China's traditional culture is extensive and profound. The three aspects, that is, the core ideas of Chinese traditional virtues, and the Chinese humanistic spirit contained in the traditional culture can be a repository for teaching content and a resource for thinking and discussion. Students may rely on the traditional culture for substantial content, rich nutrition, and inspiration to make compelling speeches. Take China's effort during the outbreak of Covid-19 as an example. Students may talk about our national spirit exemplified by every individual Chinese and every small action in the face of the major crisis, talk about the national heroes, like Zhong Nanshan, Zhangdingyu, and many others who embody this spirit, as well as China's sense of responsibility and commitment as a great nation in the world. With deeper understanding and knowledge of Chinese traditional culture, students can better interpret modern China and present speeches with sublime thoughts and penetrating ideas.

3. The Strategies of Integrating Chinese Traditional Culture into EPSC

3.1 Designing the Teaching Objectives

The importance of teaching objectives to a successful class is often devalued by teachers. In fact, designing teaching objectives is the essential task of teaching planning. Clear and explicit teaching objectives play a guiding and stimulating role in all teaching activities including setting teaching plans, selecting teaching content, establishing teaching models and methods, evaluating teaching effects, etc. When we decide to integrate traditional culture with EPSC, we first need to include it in our teaching objectives. In the past, college English classes put an emphasis on language teaching and knowledge about western culture as well as specialized knowledge in a particular subject; public speaking skills in EPSC for instance. In these circumstances, our teaching objectives are limited to the cognitive level with the affective or ideological level being neglected. But as we reach a consensus that language teaching should be transferred to language education, a comprehensive knowledge of both Western countries and China should be introduced, and a healthy and positive value system should be built along the way, we must consider redesigning the teaching objectives for each course. For the EPSC under discussion, we can divide the objectives into three layers. First, it is the public speaking skill and knowledge layer. We may ask what skills students are expected to learn and practice this in class. Second, it is the language dimension. What language skills are involved and will be enhanced in class? Third, is the affective or ideological dimension. These objectives can be set for each class or for the course as a whole. For example, we may consider the following questions.

What knowledge of Chinese traditional culture will be imparted to students?

What similarities and differences between western culture and Chinese culture will be elaborated and discussed?

What values are students expected to build up after this class? Which aspect of students' outlook on life, people and the world may be remodeled after they finish the class or course?

3.2 Selecting Input Resources

As a course in EFL, the teaching of EPS will certainly involve listening, reading, writing and translating as well as speaking skills. Among them, listening and reading provide the language input, which when carrying rich information and ideas are often the starting points of speaking or writing. In EPSC, the listening and reading materials are particularly important as teachers may use them as examples to illustrate a speaking skill, the language scaffold as well as the content base to make speeches. Teachers cannot expect students to speak from nothing. The input materials facilitate their speaking by providing ideas in addition to related vocabulary. Selecting input materials embracing Chinese traditional culture helps achieve this multi-purpose.

First, teachers of EPSC can select input materials with Chinese cultural elements as examples or speech samples. For instance, when we explain how to use examples to support ideas, we can choose one of the Chinese traditional virtues as a cultural educational point. The materials we use to show the function of brief examples, extended examples and hypothetical examples all center upon a virtue, say, the honesty of

Chinese people. We can use one sentence to narrate an instance to show honesty is a traditional value of the Chinese nation. We can also use a series of brief examples to illustrate the same point. Of course, we can recount a detailed story to show the honesty of Chinese people. Those stories of Shang Yang, Ji Bu and Yan Shu are well known among Chinese students, but many students are not able to retell the stories in English spontaneously. If the teacher uses those well-written sample paragraphs in class (see Appendix One), students can not only understand the speaking skill under discussion but also respond emotionally to the content and their cultural confidence can be promoted at the same time. To further enhance this sense of pride in our traditional values, teachers can also take contemporary role models, like Ma Yun or other social elites as examples, to show the cultural inheritance of modern Chinese people. Ma Yun, or Jack Ma built the E-commerce empire based on honesty and trustworthiness. He underscored integrity and honesty in doing business many times on different occasions. During the World Economic Forum Annual Meeting 2018, Ma Yun emphasized that "…when you have 20 million or 2 billion. That is not your money. It is a responsibility. The money people give you is the trust and credit you have" (Ma, 2018). When the interview or speech videos are being played in class, teachers can take the opportunity to instill the traditional values of honesty and integrity into students' minds and show them the continuation of these values in the present. Students can easily identify with and be more inspired by the role models in their own years. Ma Yun's remarks can also be quoted to illustrate the point on the importance of honesty (See Appendix Two). Sample speeches centered upon Chinese traditional cultures can also be used in PSC for students to observe and analyze the application of certain speaking skills. The speeches and answers given by those candidates in the national speech contests, such as the 21st Century Cup, CCTV Cup and FLTRP (Foreign Language Teaching and Research) Cup are very suitable input materials in EPSC. The speeches titled "Round Table" made by the first-prize winner in the FLTRP Cup, 2019 and the speech and answers given by the champion in the 21st Century Cup, 2017 are such examples. Teachers may take advantage of this kind of material to reach three ends: the language input, the exemplification of public speaking skills, and the ideas and values embodied in it.

Besides choosing examples and sample speeches containing traditional culture, teachers can also select materials that are directly related to the traditional culture or the materials that provoke students' thinking from a cross-cultural perspective. This kind of material will help students prepare for upcoming speaking tasks. English articles introducing various aspects of Chinese culture on China Today, documentary films about China made by the BBC, and short English videos about China's image in foreigners' eyes all can be included as EPSC input materials. The writer of this article once chose a video about China's image in foreign people's eyes and designed topics for discussion. Students not only learned expressions to talk about Chinese culture but also knew better about the traditional culture preserved in Chinatowns. And most importantly, they began to reconsider and reflect on their native culture in a different light. In the follow-up discussion, students took an active role to express concerns and gave suggestions on the way of "Chinese Culture Going Out." According to the survey conducted at the end of the course, more than 60 percent of the students were deeply impressed by this lecture, and wanted to discuss related topics further.

To summarize, careful selection of the input materials with Chinese cultural elements play an important role in EPSC in terms of the language, public speaking skills and knowledge and the information and ideas they contain.

3.3 Designing Output Tasks

In EPSC, speaking is the final stage that students will reach and display all their skills and talent, yet it cannot be fulfilled without enough input, oral and written exercises, manuscript writing and revision phases. Professor Tian suggested an "output-driven, integrated teaching approach" to the teaching of PS based on the theories of second language acquisition, such as the output hypothesis, input hypothesis as well as the integration of theory (Tian, 2013). This paper corresponds with Tian's approach, proposing the organic combination of the input and output tasks in teaching PS. Besides, in designing the input and output tasks, the paper suggests the integration of Chinese traditional culture with the teaching content. Based on the input materials we recommended before, the output tasks should be designed correspondingly.

Before we assign the final speech making task to students, we may give students some oral or written work to do based on what they have read, heard or watched. Take my class as an example: I asked students to read some articles from China Today about Chinese traditional festivals before class, played a

video clip in class of a documentary titled “Going Home” made by the BBC. Then I asked them to discuss the video content in groups and consider what festivals they believed were important to Chinese people and why. After that, I explained the knowledge of audience analysis in public speaking. Finally, I gave them the task of introducing a particular Chinese traditional festival to a targeted audience, either Chinese or Western. With all the information they got from class and from the internet, students did a wonderful job, introducing the traditional festivals like the Double Ninth Festival, Qingming Festival, Qixi Festival as well as the Spring Festival, the Dragon-boat Festival, etc. In their explanations, they not only introduced the origin, the significance, and celebrations of the festival, but also made comparisons between the ancient and modern concepts about the festivals and between the Chinese and foreign conventions during the festivals.

The integration of the traditional culture can be realized through the small tasks we give in EPSC. We mentioned using “honesty” as the subject to explain the use of examples in speech in the former part. So, the oral or written tasks can be designed accordingly. Students are required to give instances of Chinese people’s honest behavior in the past and present. They may tell stories briefly at the beginning. Then they can find detailed information about one person on the internet and try to write down an extended story. When we talk about using quotations to support an idea, students may be required to translate some famous Chinese saying from the past, like “人而无信，不知其可也,” meaning “If a man does not keep his word, what is he good for?” or 言必行，行必果, meaning “Promises must be kept, and action must be resolute.” To arouse students’ interest, the teacher can also introduce the couplet written by Louis Cha, or Jin Yong --- “宝可不淘，信不可弃.”. This gift to Taobao presented by the famous novelist embodies the hope and trust of the writer for E-commerce. This exercise does not only provide language material for public speaking but also improve students’ understanding of traditional values. In another lecture, the teacher explained knowledge of a speaker’s voice and body language. In order to let students put the knowledge into use immediately, a relatively easy-to-accomplish task could be assigned. The teacher asked students to talk about something they are familiar with, such as the four-character-idiom stories or folk stories from ancient times. After searching on the internet, they could find a version of the stories and adapted them to their own needs. Then they were able to use the knowledge about the speaker’s voice and body to present the story in an interesting and lively manner. These small tasks, if carefully designed and used constantly in PSC, can improve students’ language proficiency and promote their cultural awareness.

When it comes to the speech topics, teachers may get inspiration from the topics given in the national speech contests, or even “borrow” these topics and let students make speeches in class. The prepared speech topics given in those national speech competitions are usually about China’s past and present, China and the world or global issues facing the world. Let us look at the topic for the prepared speech of the 2015 “FLTRP Cup” English Speaking Contest.

Make a three-minute speech based on the video. Please give your speech a title.

Huize said to Zhuangze: “The prince of Wei gave me a seed of a large kind of gourd. I planted it, and it bore fruit as big as a five-bushel measure. Now had I used this for holding liquids, it would have been too heavy to lift; and had I cut it in half for ladles, the ladles would have been too flat for such purpose. Certainly, it was a huge thing, but I had no use for it and so broke it up." "It was rather you did not know how to use large things! Now as to your five-bushel gourd, why did you not make a float of it, and float about over river and lake? And you complain of its being too flat for holding things! I fear your mind is stuffy inside."

This topic is deeply rooted into Chinese culture, Chinese philosophical thinking and wisdom, to be specific. The conversation is adapted from The Story of a Large Gourd included in The Happy Excursion written by Zhuangze. The design of this topic corresponds with the call for “Chinese Culture Going Out” advocated by president Xi. Students can take different approaches to this topic, from the right attitude towards matters to fixed mindset, from utilitarianism to critical thinking, from expectation to education. Students can brainstorm ideas under teachers’ guidance and elicitation. Then they may decide on their own topic and make a speech.

The following list is the speech topics used in the 21st Century Cup. All of them are well-designed and can be introduced as speech topics in EPSC.

The Impact of Globalization on Traditional Chinese Values, 2005, 21st Century Cup.

Living with Globalization: Learn to Compete in the Global Era, 2008, 21st Century Cup.

Cultural Clashes vs. Coexistence between China

and the West: My Personal Perspective, 2012

The balance of Yin and Yang; a youth perspective, 2015

Globalization: Enough is enough? 2017

Those topics are relevant to students' cultural experience and can elicit strong responses among young students. To make convincing speeches, they need to search information from the internet, accumulate English vocabulary expressing Chinese traditional culture and current global trends. Students can discuss the topics together in class, find their own perspective and work out their own speech manuscripts. Teachers may reserve the watching and appreciating of the live speeches made by the contestants till the end.

4. Challenges and Difficulties

The process of combining Chinese traditional culture education with public speaking is sure to be long and difficult, involving the collective efforts of teachers, researchers, and administrators alike. For the teachers, they are the real implementers of this teaching concept. Only when they have the awareness and willingness to integrate Chinese cultural education with public speaking can students improve their cultural knowledge and awareness. Researchers can support this integration with teaching theories and pedagogical methods, while administrators should provide teachers and researchers with wide platforms and more training programs.

At present, the most difficult task in realizing the integration of Chinese culture with English public speaking is the compilation of a textbook. A textbook is vital to the course. As mentioned above, most universities take The Art of Public Speaking as the textbook for English public speaking course, while choosing other materials to complement it. However, the best way to integrate traditional culture with EPSC is to compile a textbook based on the topics related to Chinese culture and incorporate the public speaking skills with the topics under discussion rather than vice versa. The compilation of such a textbook can rid the course of the problems such as boredom of the students and content-insufficiency. When compiling the textbook, we should first carefully choose the cultural elements that are of interest to students and are related to the Chinese core values as well to the universal values. Second, we should avoid implanting the traditional culture bluntly into the course. We need to unveil the cultural roots through an assortment of news stories both home and abroad, articles written about China both by Chinese and westerners, and videos made by westerners about China past and present. Students should be equipped with a comparative perspective and the power to think critically and comparatively. Last, various tasks should be designed to involve different language skills and prepare students for the final stage of speech making. As public speaking is after all a course in EFL, reading, listening, writing, and even translating play important roles as much as speaking. Those tasks concerning a particular topic related to Chinese culture will work together to bring out the wonderful performances in the speaking section.

Yet compiling such textbook is surely challenging for each individual teacher. It calls for teamwork with a group of teachers dedicated to this project. Besides rich experience in the teaching of EPS, they also need to be familiar with Chinese traditional culture as well as western culture. They will enable establishing a connection between the traditional culture and the present cultural rejuvenation program in China. It is also necessary to invite teachers in the field of ideological and political education to participate in establishing an interdisciplinary teaching and research team.

Besides compiling an appropriate textbook and building an integrative teaching and research team, we should also regard the integration process as a dynamic rather than a static, discrete accomplishment. Teachers need to adjust the teaching materials constantly with the changing needs from students, the requirements of the educational institutions, and the demands of the society. It is the open-ended character of this course, the room for constant modification and innovation that make the integration work most difficult and challenging, yet most inviting and intriguing.

5. Conclusion

Integrating Chinese traditional culture into EPSC is a way to solve the problems we are facing in teaching public speaking, such as the lack of substantial content, which is the starting point for discussion and thinking as well as the overemphasis on western culture. The systematic learning of relatively familiar cultural knowledge will arouse students' interest in learning and build cultural confidence among students. Besides, it is a way to realize our goal of ideological and political education, helping students to establish correct cultural values and inherit the essence of Chinese traditional culture. Teachers can integrate Chinese culture into EPSC by carefully

designing the teaching objectives, selecting input resources, and designing output tasks. However, compilation of an appropriate textbook with such content and teaching purpose can be demanding, entailing concerted effort from teachers, researchers, as well as administrators. What is more challenging are the dynamics facing the teachers in integrating cultural knowledge with public speaking, such as the needs of the students and other curricular or social needs. Yet the process of dealing with those dynamics, of exploring strategies of Chinese cultural integration and the practical application of them will shape the future of English public speaking courses in China.

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Appendix One

Using a brief example to illustrate an idea:

Sample Paragraph: Honesty is the traditional virtue of the Chinese nation from ancient times. We all have heard the story of Shang Yang, an official and reformer in Qin Dynasty, who put up a log and rewarded the person who moved the log to show that the government would keep its promise.

Using a series of brief examples to illustrate an idea：

Sample Paragraph: Honesty is the traditional virtue of the Chinese nation from ancient times. We all have heard the story of Shang Yang, an official and reformer in Qin Dynasty, who put up a log to show people that the government was true to its commitment. We also have heard the story of Ji Bu, a man in late Qin Dynasty, who was known for truthfully keeping his promise, hence the saying---"Ji Bu's promise is worth gold." Then the story of Yan Shu, a famous poet and minister in the northern Song Dynasty, who was known to be honest to the emperor and would never lie to get unearned fame and reputation.

Using an extended example to illustrate an idea:

Sample Paragraph:

In the past, anyone with a noble character has been honest and trustworthy.

Yan Shu, a famous writer, and minister in the northern Song Dynasty, was recommended by the local official as a "child prodigy" to the court at the age of 14. He could have won the office without taking the imperial exam, but he gave up the privilege and took the exam instead. When he sat for the exam, he found the question was familiar. He stood out among thousands of candidates and was able to attend the second round of test. The emperor conducted the test in person and praised him for his excellence during the first test, but Yan Shu told the emperor the truth and asked for a more difficult task in this round. He excelled again and this time the emperor was impressed not only by his talent but also his honesty. After taking office, other newly appointed officials often got together, enjoying their success over the banquet. But Yan Shu always went home immediately after work and spent the night reading books behind closed doors. The emperor heard about this and named him as the mentor of the prince. When Yan Shu went to the emperor, the emperor praised him for his diligence and modesty. Yan Shu said: "I do not to go to a banquet not because I am noble but because my family is poor. I am ashamed of the emperor's praise." Pleased with Yan Shu's honesty and talent, the emperor promoted him to be the prime minister after a few years.

Appendix Two

Use quotation to illustrate an idea:

Sample Paragraph: According to Jack Ma, former executive chairman of Alibaba Group, his company has acted as it should and will unremittingly work on building the trustworthiness of online sellers. Once at a conference themed "Honesty Creates Fortune", Ma Yun commented "There are more than 60 million deals going online every day. That means there are more than 60 million times of trust going online. The two parties involved do not know each other, but the deal can be put through by mutual trust.

The Influence of Information Technology on Traditional Handicraft Teaching

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Abstract: With the rapid development of information technology, to meet the students' diversified teaching presentation of the traditional handicraft course, this paper analyzes the influence of information technology on the teaching of traditional handicraft courses. Based on analyzing the definition of the traditional handicraft, the current situation of inheriting handicrafts in colleges and universities, the new media art, and the traditional handicrafts in Hunan Province, the curriculum design and teaching practice of traditional handicrafts are carried out by using the auxiliary means of information technology. The results of practical courses show that the information technology-assisted teaching has an important impact on the teaching of traditional handicraft courses and has an important reference value for promoting the teaching of traditional handicraft courses.

Keywords: Traditional handicraft, teaching, information technology, network-assisted teaching

1. Introduction

In the 21st century, with the rapid development of globalization and information society, China has realized the transformation process from the traditional industrialized society to the modern economic society based on digital information. With the rapid update and development of all kinds of digital media, digital technology has been applied to all walks of life in society: from news media to entertainment film and television, from education to artistic creation, even medical equipment cannot do without digital technology [1-3]. All these digital information technologies constitute our daily life and forms the digital era in which we currently live. In the current digital era, new media art has become one of the most important oral categories in contemporary visual art. It is the innovative research and practice results of human artistic expression, communication and contact through photography, camera, computer, network, and digital virtual interactive media. At the same time, the development of digital technology has greatly broadened the communication channels of art. More and more visual images and images are reproduced and transmitted in life through video media, mobile devices, and virtual networks, and are combined with contemporary social phenomena and cultural trends, thus forming the era characteristics of visual culture with digital images as the main body. In order to better adapt to this global wave of digital images, the authors believe that through the school art curriculum, students can be better guided to use new media to create digital images, and to interpret and illuminate various visual image symbols and their cultural connotations, so as to improve their creative ability and aesthetic criticism ability.

With the continuous development of science and technology, the application of computers in the field of education is more and more extensive. Art is a visual plastic art; art teaching content needs to be carried out through intuitive pictures. The application of information multimedia technology in art teaching has incomparable advantages over traditional art teaching. The organic combination of multimedia and art teaching plays an irreplaceable role in promoting quality education and improving the quality and efficiency of art classroom teaching.

China's basic pattern of teaching sprouted in the early 20th century. A generation of artists and educators represented by Chen Zhifo and Lei Guiyuan

paid more attention to the research and promotion of Chinese traditional decorative art based on absorbing the design education and research methods of Western decorative art [4-6]. At the end of the 20th century, the rapid development of China's economic model has had a huge impact on the structure of traditional culture. The young generation born in this period have been influenced by modern high-tech civilization since childhood, and lack of practical experience and feelings for traditional culture. Throughout the development process of pattern education, it has been emphasized that the traditional decorative art culture of the Chinese nation is the leading ideology, and strengthening the characteristic education is the development direction. The requirements and development direction of the course are in contrast to the current situation that students are generally unfamiliar with the traditional pattern culture, which is directly reflected in the students' inability to deeply understand and experience the traditional cultural concepts contained in the traditional patterns, which makes the application of traditional element expression techniques like water without a source, which greatly limits the development of innovative thinking [7-11].

Hunan's traditional handicraft resources have been accumulated by Miao, Buyi, Dong, Tujia, Gelao, and other ethnic minorities living in Hunan for thousands of years. They have accumulated in the long-term labor and production. They have condensed the simplest feelings of the working people and the characteristics of the local traditional culture. People's yearning for a better life and the worship of gods totem created into graphics and used in all kinds of handicrafts closely related to life. These handicrafts are the perfect combination of pattern art and handicraft skills and are the unique treasure house of pattern resources in Hunan.

The basic pattern course is a compulsory course for art majors in Colleges and universities. Its teaching purpose is to train students to study and master the traditional characteristics of pattern art and folk profound cultural heritage, combined with various modern performance techniques, and applied to art design practice activities for pattern decoration design [12-15]. The modern practical application and design of traditional handicraft patterns are the key and difficult point of the basic pattern course.

In the past, the traditional modeling techniques and the exploration of modeling forms were the main teaching methods. In the teaching practice, based on the above, the content of how to practice the traditional patterns in the carrier application is strengthened, so as to make up for the students' lack of perceptual perception and rational cognition of traditional patterns and patterns and their application. For example, the carrier of traditional patterns includes paper-cut pattern, woodcut print pattern, embroidery pattern, printing and dyeing pattern, brocade pattern in plane modeling; clay sculpture pattern, ceramic pattern, kite pattern are included in three-dimensional modeling, and the design of these patterns has the application characteristics from plane to three-dimensional. The living environment, national emotion, folk custom and use function of these carrier resources will affect the design and creation style, design technique, and expression of design emotion. For another example, the design of paper-cut patterns is mostly used for window decals. According to the knife carving techniques used in the production, the design direction is mainly the application of plane monochrome modeling lines; the design of ceramic patterns is mostly used for cooking utensils of daily necessities, and the design direction is mainly three-dimensional suitable modeling. According to different carriers, different design methods of patterns will play a key role in the conception and expression of design.

2. Current Situation of Inheritance of Traditional Handicrafts in Colleges and Universities in China

In April 2013, in order to promote the inheritance and innovation of Chinese traditional culture in the secondary vocational stage and cultivate high-quality handicraft talents, the China’s Ministry of education, together with the China’s Ministry of culture and other departments, established colleges and universities nationwide as teaching demonstration points for inheriting and innovating traditional national culture, of which traditional handicraft projects account for the majority. Traditional handicraft is not only a precious scientific and cultural heritage, but also the carrier of traditional technology gene, which reflects the historical emotion and aesthetic psychology of craftsmen. It can be said that the traditional handicraft itself is a history of the development of human society reflecting the economy, culture, history, beliefs, and customs between different nationalities and regions. At the same time, each traditional handicraft is closely related to our past life, reflecting the customs, costumes, seasons, and so on. In other words, traditional handicraft is the material carrier of the folk custom phenomenon, and inheriting traditional

handicraft is to explore the folk custom of past life. In fact, a certain traditional handicraft has regional cultural characteristics in the process of spreading in a specific region, which has a far-reaching impact on the formation of local culture and plays an important cultural symbol-function. When referring to this nationality, people first think of a certain traditional craft, such as Dali tie-dye, Fengxiang clay sculpture, etc. Therefore, there are rich educational resources hidden in traditional handicrafts, which have important cultural and educational value and resource significance and can provide rich resources for vocational school curriculum development. However, in the face of such rich and diverse curriculum resources, school development is very weak. It is mainly manifested in the following aspects: first, a large number of cultural curriculum resources contained in traditional handicrafts have been ignored, resulting in the phenomenon of attaching importance to skills, and neglecting culture. Second, the scope and strength of the development of existing resources are not enough, which shows that they are flocking to famous traditional handicrafts and turning a blind eye to some urgently needed inheritance and protection. The third is to completely copy the development model of curriculum resources in ordinary schools, without developing curriculum resources suitable for vocational schools according to the characteristics of vocational education. It can be seen that the contradiction between the rich resources and weak development of traditional handicraft "intangible cultural heritage" Curriculum in vocational schools needs to be solved.

Due to the reduction of traditional craftsmen and the rapid development of modern industry, many traditional crafts cannot be well inherited, resulting in the dating of traditional crafts and the development of national culture. For example, the traditional manual printing and dyeing technology and embroidery technology are less and less used in modern clothing. Instead, they are simple and fast digital printing, computer embroidery and other modern technologies, which lack national traditional cultural connotation. The demand of handicraft market forces the reform of arts and crafts education in Colleges and universities, actively serve the needs of industry, improve the quality of life, and actively participate in the development of cultural and creative industries. When students use traditional handicrafts to design and create, they often lack the inheritance of traditional techniques. They design for design and use for application. They copy mechanically and ignore the cultural connotation, creative techniques, and forms of expression behind traditional crafts, which highlights the lack of students' traditional cultural and artistic accomplishment and the superficial understanding of traditional crafts. In view of this situation, it is necessary to consciously add traditional handicraft courses in art colleges and universities, so that students can have a deep understanding of China's excellent traditional folk art and the deeper cultural connotation behind the traditional handicraft art. While inheriting the traditional culture, they should consciously take the traditional handicraft as the inspiration source of artistic creation. In the face of the social call for craftsmanship spirit, looking forward to the revival of handicraft, eager to express the realistic requirements of craft aesthetics, it is urgent to strengthen the research of handicraft education.

2.1 Development of Traditional Handicraft Curriculum Resources

Compared with the modern concept of time, tradition is a manifestation of the inheritance of historical development. Its forms of expression are various, such as crafts, folk customs, and so on. The book defines "the history, the culture, the culture and so on" Handicraft is an authentic Chinese vocabulary. It is a craft art closely related to people's life and decorative art, with distinct regional characteristics. Handicraft is also people in a specific geographical scope, according to the needs of local special natural materials for transformation, with ecological, primitive and other characteristics. "Traditional handicraft" is also known as "traditional handicraft". The word "tradition" has time definition and cultural meaning, which indicates the times and culture of handicraft. Thomas Huxley, a famous British scholar, thinks: "the finished product of art is the object produced by some abilities contained in human body under the guidance of intelligence. Based on this, we call these things skills. " Therefore, the concept of "traditional handicrafts" has the dual attributes of "material" and "non-material", including "handicrafts" and "handicrafts". It is a kind of labor combining objects and technology. It exists in people's life. It is created because of need, changes with people's life, and is given the definition of beauty because of people's life.

Although the academic circles have paid attention to the traditional handicraft for a long time, there are still big differences in the definition of the concept and connotation of the traditional handicraft in the

domestic academic circle, and there is no unified definition yet. Different academic fields have different definitions of traditional handicraft. In the field of art, it refers to the complete technological varieties and technological processes with a history of more than 100 years. In the field of sociology, it refers to the people's skills of artificial creation in order to meet the material and spiritual needs. Due to the introduction of the concept of "intangible cultural heritage", traditional handicrafts are given new space to re interpret. From the perspective of intangible cultural heritage, traditional handicraft refers to the traditional arts and crafts with distinct national style and regional characteristics handed down from generation to generation. Based on the above-mentioned viewpoints, the author thinks that "traditional handicraft" refers to the handicraft products made by the craftsmen with their hands according to certain procedures and skills and the handicraft itself. According to the concept of "traditional handicraft" defined by "curriculum resource development", we define "traditional handicraft curriculum resource development" as: Based on certain value criteria, according to the teaching and the characteristics of teachers and students in vocational schools, the material and spiritual culture contained in traditional crafts are included in the process of curriculum resource development activities in vocational schools in a certain way. It is beneficial for vocational schools to carry out more abundant courses and cultivate specialized talents.

2.2 Research on the Development of Traditional Handicraft "Intangible Cultural Heritage" Curriculum Resources

From the existing literature, there is little research on the development of traditional handicraft as a kind of "intangible cultural heritage" curriculum resources. In recent years, there are some master's theses on the development of intangible cultural heritage curriculum resources. For example, "the characteristic teaching practice of Guangxi traditional handicraft resources applied to basic pattern courses in Colleges and universities" (Li Yari), "the development and application of Xiaogan carved paper-cut in high school art teaching" (Li Wei), and "Research on the development of bamboo weaving technology in school-based art curriculum of secondary vocational schools" (Zeng Hanhong) Bamboo weaving integrates the specific handicraft skills with the school's art curriculum and teaching, so we can see that the traditional handicraft is worthy of curriculum resources development in schools, and can also be developed. However, there are few articles that really discuss the development mode of handicraft curriculum resources [16]. Li Shutian's master's thesis "Research on the development of Guilin folk handicraft teaching materials" analyzes the current teaching situation of handicraft courses in Guilin through the method of combining theory with practice [17-20]. Through the statistical analysis of the survey object and content, the paper summarizes the current problems and expounds the location the necessity, principle and theoretical basis of the development of folk handicraft school-based teaching materials, as well as the specific process of teaching material construction, etc. Finally, the basic ideas, steps and methods of handicraft curriculum resources development are summarized. This is an academic paper that describes in detail how to develop handicraft curriculum resources, but it only stays at the level of master's thesis. At present, there is no monograph on traditional handicraft curriculum resources. Through the above literature analysis on the development of traditional handicraft curriculum resources, we can see that the current researchers focus on how to integrate a specific handicraft curriculum resources into the subject curriculum, and the research results provide a theoretical basis and practical basis for this study to a certain extent, but there are still many deficiencies. There is neither empirical research nor a unified development model of certain handicraft resources through specific process summary [21-22]. Therefore, in this study, we need to pay attention to the following points: first, the research of hand craft "intangible cultural heritage" curriculum resources can not stay in the shallow level description, need to fully tap the educational value contained in various handicraft "intangible cultural heritage" resources; second, based on Colleges and Universities, further improve the practical operation and use of handcraft course resources; third, need to expand We should broaden the research vision of the intangible cultural heritage curriculum resources of handicrafts and put it into the multi-disciplinary and multi theoretical perspective. To sum up, the author deeply studies the development of intangible cultural heritage curriculum resources.

3. New Media Art

New media art and new media are in the process of continuous change and development, so it is difficult to have a clear definition of new media art. As

far as the development of art itself is concerned, new media art originated from the concept art in 1960s, and influenced by avant-garde arts such as futurism, cubism, and Dadaism, as well as the media and Performing Arts in the 1970s. "Communication", "cooperation" and "participation" are not only the focus of artists in the process of new media art creation, but also the key to affect the aesthetic value, meaning and emotional experience. "New media art" is quite different from "old media" Art (such as traditional painting and sculpture). The concept of new media art is usually connected with communication, mass media, digital technology, virtual network, etc. and its scope covers from conceptual design to visual art, from performance to installation and so on. Generally speaking, the formation and development of new media art is mainly driven by various aesthetic thoughts and artistic concepts, and also promoted by various emerging new technologies and new facilities.

Digital technology not only provides innovation drive for national and social development, but also brings infinite innovation and possibility for art creation. In the current digital era, new media art has become one of the most important oral categories in contemporary visual art. It is the innovative research and practice results of human artistic expression, communication and contact through photography, camera, computer, network, and digital virtual interactive media. At the same time, the development of digital technology has greatly broadened the communication channels of art. More and more visual images and images are reproduced and transmitted in life through video media, mobile devices and virtual networks, and are combined with contemporary social phenomena and cultural trends, thus forming the era characteristics of visual culture with digital images as the main body. In order to better adapt to this global wave of digital images, the author believes that through the school art curriculum, students can be better guided to use new media to create digital images, and to interpret and interpret various visual image symbols and their cultural connotations, so as to improve their creative ability and aesthetic criticism ability. The Second World Conference on Arts Education (2010) was held in Seoul, South Korea in November, 2010. New media art education was held in Seoul, South Korea NDA: goal for the development of Arts education, 2010). The agenda proposes that "the rapid changes in popular culture and digital media are conducive to stimulating new creation at the same time, we should actively use and interpret popular culture and digital media, so that art education can play a new role in the 21st century. At the 33rd International Conference on Art Education (33rd INSEA World Congress, 2011), art education materials from various countries were obtained from UNESCO website. www.unesco.org.citation date: 22.06.2013.education experts stressed that In teaching, teachers should actively use new media such as digital software, network, virtual interactive system to build a new space for art education, and guide young people to use digital platforms such as online museums, art galleries and art websites to carry out teaching activities on the creation and appreciation of new media art works such as digital images and virtual art; INSEA art teaching in Europe The main topic of INSEA regional progress, It is helpful to guide students to carry out interdisciplinary learning and help teenagers understand the relationship between art and flow culture. At the European annual conference held in Canterbury, UK, in June 2013, how new media art can be spread through the Internet and virtual channels, and how students can survive and learn in the world is a key issue for international art education scholars.

The change of art education concept also promotes the innovation of curriculum design and teaching methods. In recent years, Europe and the United States and other developed countries have begun to pay attention to all kinds of visual cultural phenomena related to various images and digital images in the content selection of art curriculum design in primary and secondary schools, which determines that digital photography, digital photography, freeze frame animation, network art and other new Media Arts occupy an important place in the art classroom. Teachers guide students to use investigation, inquiry, dialogue, autonomous learning and other methods in teaching, so that they can establish a dialogue and communication bridge between the subject field and social life issues, and flexibly use new media technologies such as photography, camera, mobile phone, computer, network, etc.; while enriching teaching means and broadening artistic expression channels, teachers can stimulate students' creativity and learning interest, and cultivate students' creativity and learning interest Foster students' visual literacy and media literacy, effectively promote the development of school art education.

4. Curriculum Application of Hunan Traditional Handicraft Resources

In recent years, five famous art colleges and universities in China have successively hosted the exhibition of "modern handicraft College", and Shandong Institute of Arts and crafts has established the first handicraft college in China. In the art and design education of other colleges and universities, many handicraft departments or handicraft laboratories have been established. This shows that the status of handicraft practice education in art design education in Colleges and universities is gradually getting more attention. Therefore, it is proposed that the application of Hunan traditional handicraft resources to the teaching of basic pattern course in Colleges and universities can strengthen the practical teaching link of students and make up for the situation that "art is more important than technology" in basic pattern design. In the past, the teaching methods of basic pattern design courses are mainly based on paper drawing, ignoring the application training of design practice. The result is the limitation of two-dimensional paper space, which greatly restricts students' creativity and design thinking. Students often pay more attention to the external expression of patterns but ignore how to recognize the internal depth and strength of patterns in the application process of pattern design, and then explore the performance of visual soul of basic pattern design, which leads to the serious disconnection between design and application. Students cannot test the effect of design through practical application training. This situation of "attaching importance to art but neglecting technology" also causes many potential teaching problems, such as students' low interest in learning and unclear learning purpose.

There are rich and colorful traditional handicraft resources in Hunan, such as Miao dyeing technology, Maonan flower bamboo hat weaving technology, Dong embroidery technology and so on. After many investigations and interviews, the author found that although the inheritance of these skills is facing severe tests, there are still many scattered folk labor artists operating these ancestral crafts in their spare time. These valuable resources are used in the teaching practice class of basic patterns. On the one hand, through the teaching of students' skills and the actual use of patterns, the purpose and purpose of design can be clearly defined in the design process. On the other hand, in the process of practical production, students can further reflect on and test the design scheme of paper surface, make corresponding adjustments and more three-dimensional thinking according to the production techniques and materials, which greatly enriches and integrates the design means and design effects. Through the strengthening of the teaching content in this stage, students can further carry out targeted design practice and production activities. In the process of practical operation, students can realize the transformation from pattern design to application value, so as to truly understand and test the application degree of the learned skills, which greatly makes up for the students' situation of "attaching importance to art but neglecting technology".

At present, the traditional training methods of handicraft talents include higher vocational skills training, teaching in learning centers, master apprentice teaching, family teaching and so on. Taking Wuxi Polytechnic of technology as an example, according to the college's professional characteristics, it selectively selects traditional handicraft resources such as pottery, blue calico and embroidery for research and study, so as to cultivate skilled and practical talents with high level. Restricted by cultural level and artistic accomplishment, traditional craftsmen often design products out of touch with the times, which is also one of the key factors causing the continuous shrinkage of traditional handicrafts. The teachers and students of art design major in Colleges and universities have good innovation ability, active design thinking and good at breaking the conventional thinking inertia. They combine traditional handicraft with modern creativity organically, which makes the traditional handicraft inherit the traditional craftsmanship and keep pace with the times, and produce products in line with the contemporary aesthetics. This paper takes the teaching practice process of traditional costume handicraft, basic pattern and clothing accessories design as an example, This paper puts forward the concrete methods of using traditional handicraft resources to enrich teaching content, using practical value to expand teaching methods, inheriting traditional handicraft under ecological concept, and enriching teaching organization form. It tries to use computer embroidery technology to effectively combine traditional handicraft technology with modern computer embroidery technology, so as to form a benign tin embroidery art resource in art education of our college interaction.

Advantages of information multimedia technology in traditional manual painting teaching

With the development of society and the progress of science and technology, there is a new content of computer art painting. Using computer can easily draw many artistic effects that can not be achieved by hand drawing method, but also can save time, save materials, easy to modify and save. What's more, it can improve students' painting efficiency and cultivate their innovative ability, which is in line with the purpose of quality education. The basic teaching of computer drawing includes pattern, plane composition, color composition and so on. Computer painting can be copied, pasted, flipped, and reversed in painting. If the performance is repeated and symmetrical, it can be displayed by copying and pasting, and the painting can be completed with a click of the mouse, and the effect of the picture is bright and neat. For example, in pattern teaching, it is difficult for students to master and understand the patterns such as single pattern, two-way continuous pattern and four-way continuous pattern in pattern teaching. Moreover, it is impossible for all students to see the drawing process by the teacher's demonstration, which will affect the teaching effect. However, it is easy to generate two-way and four-way continuous graphics in the computer by using multimedia. The pattern design methods are classified and demonstrated by drawing software. Through the method of arrangement and combination, copy and paste, a series of patterns are designed, and the methods and steps can be demonstrated intuitively and vividly through the large screen or networked computer, especially the key and difficult parts can be decomposed and displayed in detail. Let students gradually understand and master the design method from the dynamic and transformation and appreciate the infinite fun of pattern change. A series of principles and methods, such as point, line, surface, repeated composition, gradual composition, and emission composition, can be demonstrated in the computer. Students can complete the classroom homework through computer operation. Another example is "color basis" teaching, which uses computers to show students the colorful color world in life, which is full of visual impact and appeal, and brings students into a colorful world, and their emotions are immediately mobilized. Then, the animation demonstration is used to further reveal the principle and law of color. When teaching the coordination of colors, the pictures with different color matching effects are displayed, such as sharp contrast, soft and harmonious, or quiet and simple, with different background music to blend feelings and scenes. No need to repeat, the students have realized the wonderful color matching and produced rich associations.

5. Traditional Handicraft Course Design and Teaching Practice Under Information Technology

5.1 Curriculum Design Ideas

This course is based on the topic of creative cultural products. The purpose of this course is to introduce the latest Internet, computer software, 3D printing and other new media technologies into the design of cultural products with traditional elements, to stimulate students' personalized creativity and design desire, and to cultivate students' network literacy. At the same time, each student is treated as a small designer in the process of design, the students' sense of creativity and creativity can be transformed into the ability to solve problems in the process of design.

In addition, in the late stage of product design, students are instructed to use mobile phones, digital cameras, DV and other digital imaging equipment to shoot and produce product advertising, hold virtual product conferences throughout the school, and display and share works. Through the network publicity, charity sale and other communication activities, students can be guided to give feedback to the teachers and students of the funded projects for their artful works and cultivate their gratitude and love for art learning.

5.2 Teaching Process

This course is divided into ten classes, and the teaching process is arranged as follows:

The first and second class hours: the class defines the teaching theme, that is, the combination of new media and traditional Chinese elements, and the development of cultural products related to modern social life; the class is divided into copywriting and picture groups to guide students to play their creativity, improve the preliminary design of products around the teaching content, and complete the text and pictures of the project within the "roll call time" of crowdfunding website We also actively advocate that teachers and students of the whole school should subsidize this creative project, and each person can subsidize a small part of the funds, so that the project can be started smoothly.

Lesson LAN and class 4: stimulate students' creativity, arrange students to divide into groups to

complete the preliminary sketch design work of products with medium profit system, such as purple clay pot and ceramic cup, by hand drawing, APP model download, computer soft side making, etc.

Class 5: the teacher instructs students to use 3DMAX or other software to process the design materials created in the early stage, and further optimize the preliminary design sketch in the computer production process, and complete the most important 3D modeling link with the joint efforts of teachers and students; in the spare time, the teacher will design and model the finished works to professional 3D printing can be carried out in the printing place (you can also try to take students to visit or experience the 3D printing process on site), so as to realize the process of converting ideas into products. As shown in Figure 1.

Lesson 8 and class 9: instruct students to work in small groups through acting, creating plot and other methods, using digital camera, DV and other equipment to publicize and shoot the works, highlight the importance of the works to people's lives, and complete the MV or small advertisement about the products.

Class 10: hold a simulated product promotion conference in the whole school to show the works and give back the works to the teachers and students of the funded projects to express the gratitude of students for HP; the harvest and deficiency of students in the process of exchange and learning are discussed, and how to better use the traditional elements in modern social life, so as to make the traditional Chinese culture get the correct inheritance and development Exhibition.

5.3 The Influence of Information Technology on Traditional Handicraft Teaching

Due to the combination of new media information technology and traditional handicraft culture elements, this course has the following three innovations:

First, in terms of teaching philosophy, it integrates Chinese traditional elements with new media, and emphasizes the innovation, aesthetics and practicability of design works, so as to activate Chinese traditional elements by using modern scientific and technological means, and comply with the latest requirements of the times and the development of science and technology media for art education and development under the background of the h Industrial Revolution.

Second, in the selection of teaching content, the topic of cultural and creative products that are popular and familiar to students is the theme. Each student can display his imagination and express his own opinions around this theme. In terms of teaching methods, we boldly introduce teaching resources such as criminal printing, virtual interactive application software and crowdfunding website, so as to fully stimulate students' interest in learning and let students design w-designs The identity of the teacher plays the role of imagination, shows individual talent, and finally transforms the creativity into visible and tangible products. When students hold the finished works in the palm of their hands, this kind of joy and pride is incomparable with the traditional teaching methods. In the learning process of the course, middle school students generally said that the teaching content of the course was "too creative", "unheard of before 3D printing" and "we can create products of no inferior quality than those bought in other stores". This shows that the teaching content of criminal printing expands students' artistic vision, stimulates their creativity and interest in art creation, and is welcomed by students.

Third, in the display link, through the shooting of video ads, simulated product promotion meetings, Taobao online charity sale and other online and offline comprehensive three-dimensional forms, it breaks the original single exhibition, comment and other display methods, and helps to better achieve the teaching objectives.

6. Conclusion

The purpose of the introduction of information technology-assisted teaching into the classroom is to enrich teaching means and improve the effect of classroom teaching. It is necessary to use multimedia closely around the purpose of classroom teaching. As for what media to use and where to use in a class, we should have careful consideration before class. We must never misuse the media for the sake of decoration and good-looking. If it is used improperly, it will distract students' attention and interfere with learning. This is an important problem that should be fully paid attention to in the teaching of information technology. The application of information technology teaching means should be fully integrated into classroom teaching, and it cannot give people the feeling of just watching the media demonstration, that is, the application of multimedia should be integrated with the teaching activities of teachers and the learning activities of students. The blind pursuit of the perfection of courseware making weakens the effectiveness of media teaching, which can only win

the host and the guest and is useless. In a word, information technology-assisted teaching is the performance of social progress, which provides direction and practice for the development of social informatization and the realization of high-level audio-visual teaching for the traditional arts and crafts courses. It is conducive to promoting the development of quality education and providing an excellent environment and effective method for training comprehensive talents.

Figure 1. A schematic diagram of 3DMAX software demonstration for students

Figure 2. Purple clay pot made by students using 3D printing technology

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A Case Study on Constructing High-quality Online Courses: Taking “International Trade Practice” as an Example

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Abstract: The comprehensive reform of the teaching system of Open Universities in China requires that the high-quality online courses should be integrated into the teaching construction of distance and open education and plays an exemplary role in the course construction. Taking the course "International Trade Practice" in open education as an example, this paper reports a case study on the construction practices of the network high-quality courses at Zhejiang Open University, such as the determination of the network high-quality courses, the organization of the course construction, the process control of the course management, the implementation of the course construction contents, etc., and the paper summaries experiences of the network high-quality curriculum construction.

Keywords: Quality courses, online courses, open education, International Trade Practice

1. Introduction: A Necessity for High-quality Online Courses

The curriculum is the most basic unit in teaching, and the construction of curriculum resources is one of the most basic problems in the development of teaching reform in China. Since the China’s Ministry of Education implemented the "quality project" in 2003, more and more attention has been paid to the construction of curriculum resources. The Outline of China’s National Plan for Medium-and Long-term Education Reform and Development (2010–2020) clearly points out that: it is necessary to strengthen the development and application of high-quality educational resources; strengthen the construction of network teaching resources system; introduce international high-quality digital teaching resources; develop online learning courses; establish an open and flexible public service platform for educational resources; and promote the popularization and sharing of high-quality educational resources (CPCNC, 2010). A high-quality curriculum refers to the curriculum unit with a high-quality teaching team, curriculum system, teaching content, teaching conditions, and teaching management, which plays an exemplary role in the course construction. In terms of the system of Open Universities in China, it is a comprehensive reform to integrate high-quality courses into the teaching construction of the open education, and improving the university is the inevitable trend of the overall teaching quality (Liu, 2016).

Foreign trade is one of the three carriages driven by the economy. With the continuous advancement of economic globalization and integration, the international economic situation is becoming more and more complex, and the cooperation and competition between countries become more and more frequent. Therefore, understanding and mastering the specific operation practice of international trade has important practical significance for the development of individuals and enterprises. The course of International Trade Practice is the main course of Business Administration Major at Zhejiang Open University, and a professional basic course of international economy and trade major of adult college at the University. To adapt to the new changes of the current international economic situation and the learning needs of specific learning objects, the construction and reform of the existing curriculum are imminent to the Open Universities.

2. Criteria for High-Quality Online Courses

In 2015, to further deepen the teaching reform, promote the basic construction of teaching, improve the quality of teaching, standardize the construction and management of high-quality courses, and ensure the effectiveness of curriculum construction, Zhejiang

Open University specially formulated "Measures for the Construction and Management of High-quality Courses", and since that year, the University has organized the annual application of quality curriculum construction projects. The application materials include the following criteria:

First, the status of the teaching staff includes the age, education background, professional title, subject specialty, the development trend of the person in charge of the course construction, and the teaching staff construction plan. High-quality courses require applicants and main participants to have more than 3 years of teaching and support service experience, have the title of lecturer (or intermediate), have remarkable teaching, and research achievements, and have strong teaching reform research and curriculum construction ability.

Second, the curriculum foundation emphasizes the position and role of curriculum in the process of talent cultivation and describes the main historical reform and practical effect of curriculum development in the school. It is required that the applied courses have been opened for more than three years in succession. The course selection rate of the whole province is relatively high, the multimedia teaching courseware is basically complete, and the teaching and academic level are high, which has been highly praised by teachers and experts.

Third, the guiding ideology for the construction of high-quality courses should be guided by modern education ideas, based on the optimization of teaching contents, and embody the deep integration of teachers' teaching ideas and modern educational technology. Through the construction of a high-quality curriculum, we should establish a stable and high-level curriculum construction team, form a batch of teaching reform practice achievements, build a series of high-quality curriculum resources, and comprehensively improve the teaching quality of the school.

Fourth, the assumption of curriculum construction includes the construction of teaching documents including syllabus; the selection or compilation of main teaching materials and auxiliary teaching materials; the reform of teaching contents and methods; whether the Internet plus aided teaching method (Zhang, 2016); the experiment and training situation, whether to set up comprehensive or designing experiments, training projects, and the construction of series courses.

Fifth, the Course construction period is generally 3 years. During the construction process, relevant teaching innovation teams, teaching reform, resource construction projects, etc. are applied and approved by the project organization and implementation department.

Sixth, the main measures of curriculum construction: Based on the basic requirements of high-quality curriculum construction, specific measures are put forward.

Last, the supporting conditions of curriculum construction: based on tapping the potential and increasing efficiency, the requirements of hardware and software construction should be put forward realistically.

Based on the above criteria, the course of international trade practice was established as a high-quality course of the school in 2015, which was one of the first 21 high-quality online courses established by the University in that year.

3. Organization of Curriculum Construction

The construction of high-quality courses is planned by the school, and the academic affairs office is responsible for the application and review. The teaching center of the university organizes and guides the teachers to discuss and declare. The specific construction is based on the teaching and research section. The organization of high-quality curriculum construction is the school teaching work Steering Committee. The director is the vice president in charge of teaching, and the secretary-general is the director of the academic affairs office. The office is set up in the academic affairs office, whose responsibility is to be responsible for the layout planning, process management, acceptance, and other work of high-quality courses in the whole school. The teaching center has set up a leading group for the construction of high-quality courses, which is composed of the director of the center, the director of the teaching and research section and relevant teachers and is responsible for the planning and implementation of high-quality courses. The director is responsible for the construction of a high-quality curriculum, and the headteacher is responsible for the construction of the high-quality curriculum, and the headteacher is responsible for the construction of a high-quality curriculum. In accordance with the requirements of the University, a high-quality course construction group for International Trade Practice was established. Its members were composed of a scientific and high-quality course construction group based on the principle of combining provincial-level RTVU with

grassroots RTVU, and combining academic degrees, and professional titles.

4. Process Control of High-quality Courses

In the daily work of high-quality curriculum construction, the responsible person is responsible for formulating and implementing the planning, operation, and self-evaluation of the high-quality curriculum construction, leading the team members to cooperate with each other, organizing the teaching discussion among the team members, improving and adjusting the teaching methods in time, ensuring the smooth implementation of the course construction, and completing the series of digital resources construction tasks according to the plan. The person in charge of high-quality curriculum construction shall seriously organize the implementation according to the implementation plan, conduct self-examination in the middle and end of the semester, and in the middle of the project construction, the project leader shall timely submit the mid-term inspection report of high-quality curriculum construction to the school, including the progress of curriculum construction, stage achievements, etc. If the interim inspection report is not submitted in time or the report submitted is seriously inconsistent with the actual situation, the school will make rectification within a time limit. After the completion of the project, the project leader should submit the summary report of the high-quality curriculum construction project in time and apply for the project acceptance.

5. Implementation of the Criteria

High-quality courses adhere to the concept of "student-centered" and "curriculum construction as the starting point", and gradually promote and classify the construction, highlight the characteristics of the curriculum, and drive the system strength, industry strength, specialty construction, and discipline construction with the curriculum construction. The specific construction ideas are shown in Figure 1.

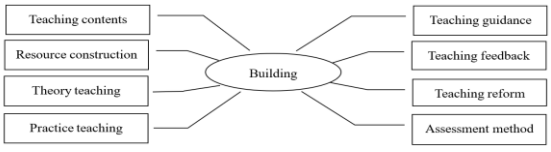

Figure 1: Building ideas

With the course of International Trade Practice being established as a high-quality course, the construction group determined the content of the course construction after full demonstration, mainly including teaching content, resource construction, theoretical teaching and so on.

(1) The teaching content is modular. Since September 2012, the course was adopted self-compiled and revised teaching materials. Based on the analysis of the teaching content, the chapters are classified according to the characteristics of the teaching materials, forming an interconnected module, forming a system, and conducting thematic teaching and guidance. To make it easier for learners to master the relevant knowledge of international trade practice, modular thematic teaching is adopted. The course is divided into theory and practice, and some special topics are set up. There are corresponding exercises at the back of each chapter, to consolidate the knowledge points.

(2) One-stop resource construction was used to improve the existing curriculum resources including course description, teaching plan, teaching progress, syllabus, course implementation plan, daily homework, unit guidance, the question bank, network courseware, electronic manuscript, reference material, final review, video courseware, micro lesson, case library, pictures, etc. In the process of resource construction, the availability and utilization of resources should be realized as much as possible. Students can obtain the learning materials required by the course for the first time, reduce the time cost of learning resource search, and realize the one-stop resource service (Zhang, 2017).

(3) Three-dimensional theory teaching. In theory teaching, the mufti-directional and three-dimensional way is adopted including face-to-face tutoring, group discussion, multimedia courseware, electronic manuscript, case analysis, reference materials, simulation practice, audio-visual video, picture data, relevant website, etc., to improve students' ability to master the knowledge points of the course.

(4) Practice teaching is auxiliary. The International Trade Practice course is practical, so it is necessary to strengthen the practical teaching link and improve students' participation ability and practical ability. The course establishes a case database, provides many cases for teachers and students to learn for reference, to complete the lack of cases and practical deficiencies. The combination of online and offline interaction is realized in the course practice teaching (as shown in Figure 2.). Students can improve

their understanding and grasp of the course through the simulated operation of practical cases; and strengthen the topic discussion, model practice, social survey, picture browsing, website link, and other links, to improve students' rational understanding and practical ability.

Figure 2: Online teaching practice

(5) Dynamic teaching guidance. As a host teacher, one of the important aspects is to do a good job in the guidance of the course, to help students learn. The guidance process runs through the whole learning process, including real-time and non-real time. From the beginning to the end of the term, it provides rich learning materials, online resources, auxiliary courseware, reference materials, website links, etc. to help students learn.

(6) Teaching feedback is interactive. To test the effect of teaching and learning and promote the long process of teaching and learning, feedback is essential. Through the establishment of course QQ group, WeChat group or nail group, discussion area, group discussion, teaching and research activities, two-way video, etc., the existing problems in teaching can be solved, and the communication between teachers and students, students and students can be facilitated, and the mutual learning process can be promoted, which truly reflects the online and offline interactive teaching mode.

(7) Parallel teaching reform. Thinking in the teaching process and improving the teaching quality in the research of curriculum reform is to complement each other and improve the team's ability of teaching and scientific research cooperation. Through the teaching team, actively carry out teaching and research, based on mutual learning, carry out the exchange of teaching information and teaching experience, explore teaching methods, establish a resource sharing mechanism, learn from each other's strengths to complement each other, and jointly improve, to apply the achievements of teaching reform and scientific research into practical teaching management and improve the transformation ability.

(8) Flexible assessment methods. After detailed argumentation, the research group of curriculum construction has built the theoretical test question bank and the skill test question bank respectively, which can all realize the paperless examination, and the computer can automatically set out the test paper and mark the paper automatically. It can carry out the phased test and the overall test of the course. For different types of students, the course adopts different assessment methods. For the students of open education, because they are In-service Learning, at present, the examination adopts a 100% final examination. There are more than 300 objective questions, including single choice questions, multiple-choice questions and judgment questions. There are 53 sets of test papers. Students are required to practice and prepare for the examination according to their learning conditions. For adult college students, they are off-the-job learning, pay attention to the process supervision and management of formative learning, improve the enthusiasm and initiative of students to participate in learning independently. The form of assessment is the combination of formative assessment and summative assessment. The formative examination results are assessed by teachers according to their usual learning performance, accounting for 50% of the total score; the final assessment is comprehensive. The comprehensive skills of nuclear students are mainly written examination, which accounts for 50% of the total score. In the test questions, students' ability to master basic knowledge and learning flexibility are comprehensively evaluated, and some technical problems of students with strong ability can also be evaluated.

6. Findings of the Construction of High-quality Courses

Through a case study on the construction and implementation of the high-quality network course of International Trade Practice, the research group has actively explored and boldly innovated, and has gained the following findings of the construction of high-quality course:

First, it is necessary to take the advanced open education ideas as the carrier, adhere to the "service as the purpose, employment as the guide, take the road of

combining production, teaching and research", construct the teaching content with the application as the main purpose, the theory should be applicable and sufficient, and the practice teaching reform should be the core of the curriculum construction, the curriculum teaching should be changed from knowledge instruction to skill training, and cultivate high skilled people with innovative curriculum construction.

Second, the construction of a high-quality curriculum must be regarded as a unified whole. The construction of a high-quality curriculum includes teachers, students, teaching documents, teaching materials, teaching technology resources, teaching system, and other elements; a high-quality curriculum teaching should consider the complete teaching, discussion, homework, practice, assessment, teaching materials, and other links. When considering the construction of a high-quality curriculum, we must have the overall concept and vision. If we only regard the high-quality curriculum as the publication of several high-quality textbooks, and do not consider the teacher education and improve the quality of teachers, and do not consider the improvement of teaching technology and teaching system, the construction of high-quality curriculum will not achieve the desired effect, and it is difficult to show the spirit of open university teaching Lively, diverse, open, high quality and personalized features (Xu, et al, 2020)。

Third, there is a need to strengthen the construction of teaching staff. High-quality curriculum construction should adhere to the formation of echelon and relay team, pay special attention to the cultivation of double qualified teachers, and take the construction of double qualified teams as the key measure to improve the teaching quality.

Fourth, there is also a need to strengthen the construction of teaching documents. According to the quality management system, implement the concept of process assurance quality, build, and improve the quality standards and work norms of each link, and standardize the quality records of teachers and students.

Finally, as an Open University, we need to strengthen the interaction between online and offline teaching and do a good job in information collection, analysis, and feedback. To promote long-distance open education, we should use the combination of online and offline methods to achieve teaching interaction, improve the effect of practical teaching; and timely collect teaching information for analysis, timely feedback, form a good mechanism, and constantly improve the quality of teaching.

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Research on the Issues and Measures in Managing a Cultural Exhibition Hall of “Nightingale + Etiquette”

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Abstract: In 2020 we celebrated two centuries of Florence Nightingale's birth and observed the rebirth of Nightingale’s spirit to fight the new crown pneumonia epidemic. This paper is a report of research to explore the problems and measures in managing a new Cultural Exhibition Hall of "Nightingale + Etiquette" at Guilin Medical University, which is a vital carrier to display nursing culture, integrating education, propaganda, scientific research, display, and management functions. We investigated the management problems from the management system, management methods, talent and technology issues, other aspects of improvement measures, the educational function, and cultural value. The purpose of the paper is to provide ideas and references for the future international development of higher nursing education in China.

Keywords: Culture Exhibition Hall; Nightingale + Etiquette; management; problems; measures

1. Introduction

The year 2020 marks the 200th anniversary of Florence Nightingale's birth. Under the new crown pneumonia epidemic, the excellent nursing culture is displayed on the front line, and Nightingale's spirit is alive again. Wuhan's epidemic situation makes us realize that it is necessary to train nurses professionally and study nursing history systematically and deeply. Only when we study and understand the past of nursing can we better understand our present society's nursing and promote the development of nursing education. This paper reports the issues and measures in managing a new Cultural Exhibition Hall of "Nightingale + Etiquette", which was completed in September 2020 by Guilin Medical College. Numerous achievements have been achieved through building the Hall, but under the influence of various factors, there existed considerable shortcomings in the management process, we found that the management model needs to be further improved, and the management system needs to be innovated and perfected. It is widely recognized that the cultural exhibition hall of colleges and universities is a cultural relic protection institution and an educational institution. The hall collects the past but must face the future, the purpose of this study is to provide ideas and references for the future international development of higher nursing education in China.

2、The Importance of Management of Cultural Exhibition Hall of “Nightingale + Etiquette”

2.1 Promote the Connotation of "Cultural Education"

Education is an essential function of serving schools and society in colleges and universities' cultural exhibition hall. It takes to display and exhibition as its prominent position, provides cultural services to the public through various means, and promotes the promotion of the sharing of campus cultural achievements. And then enhance the cultural exhibition hall public serviceability. In the form of a modern art exhibition hall, the cultural exhibition hall, to a certain extent, protects the cultural rights and interests of teachers and students and the masses of the people. It embodies the display function, the educational function, the propaganda function, the scientific research function, and the cultural function. On the one hand, the way of thinking, values, and codes of conduct in Chinese traditional culture, which are passed down from generation to generation, has a

strong historical and hereditary nature; on the other hand, they have vivid reality and variability. It affects and restricts teachers and students and provides the historical basis and realistic foundation for promoting the connotation construction of "cultural education" on campus.

2.2 Promote the Communication and Mutual Learning

Chinese education emphasizes that cultural confidence represents a fundamental and profound force that sustains a country and a nation's development. The unique concept, wisdom, tolerance, and romantic charm of Chinese culture have enhanced confidence and pride rooted in Chinese people's hearts and the nation. But we need to be broad-minded and strive to remove all barriers to cultural exchanges. We need to be inclusive and always seek nourishment from other civilizations to promote the joint development of Asian civilizations through exchanges and mutual learning. Promote the construction of international communication capacity, tell Chinese stories well, show true, three-dimensional, and comprehensive China, and soft power of national culture[1].

Florence. Nightingale is known as the mother of modern care, and her legacy affects care and health care around the world and continues to this day. Florence Nightingale's legacy not only remains – but has never been more critical. The full scope of her influence on contemporary nurses, nursing care and nursing research, and, for example, on social and health reform, including sanitation, hygiene, hospital design, and statistics, is often not fully appreciated. Although she is best known as the founder of modern nursing, having established a curriculum and training school for nurses, her pioneering health reforms have probably been her most enduring legacy[2]. Indeed, she had the vision of a modern public healthcare system that encompassed nursing and was based on health promotion and disease prevention. Her vision invites 21st Century nurses to become leaders in promoting global health and wellness and overall citizenship for health[2].

Chinese traditional etiquette culture is a rich heritage inherited from history and the crystallization of the Chinese nation's wisdom. The collection in the Cultural Exhibition Hall is the witness of the splendid civilization of the nation. Through them, students can be well educated in family and national feelings and lay a solid foundation for life; Universities should pay attention to cultivate the spirit of patriotism, strengthen the education of national etiquette, intensify the education and publicity of etiquette, highlight the value of times of traditional Chinese etiquette culture and establish a right image and state of etiquette.

Nightingale's life dedication inherits the profession, the culture, the spirit needs each generation nurse person, each nurse person thorough study and the understanding, to enhance the self-cultivation and the connotation. These collections continue to develop, not only in scale but also in complexity and depth, reflecting the diversity of nursing practice, making the masses of teachers and students more systematic, comprehensive, and intuitive understanding of the history and connotation of the nursing development, conducive to the consolidation of professional ideas, to build their core literacy and improve their comprehensive quality [12] .

The history of nursing in modern China, like a complete textbook, has an irreplaceable reference for the nursing clinic, teaching, and management. The history of modern nursing science after the founding of New China also leaves us with experience worth thinking about and studying. In the future, the development of nursing in China is worth discussing. Liu Yanping[3] believes that if we extend the tentacles of nursing history research to the world, it is not difficult to see our gaps and advantages. She recommends that Chinese nursing should go to the world and be in line with advanced international nursing because this is part of the precious heritage of human history and culture.

2.3 Promotion of Sustainable Development

Under the background of significant data era, the Cultural Exhibition Hall is embodied in the organic combination of nursing culture and etiquette culture, strengthen foreign exchanges, spread the beauty of etiquette, and further shape the white angel's image in the new era. It is beneficial to improve the exhibition hall's attention and popularity, give full play to the excellent radiation and demonstration role of colleges and universities, and promote the sustainable development of the exhibition education.

3. Issues Existing in the Management of the Exhibition Hall

3.1 Relatively Out-dated Management

At present, the exhibition hall has just been put into use; manual management cannot meet the increasing number of exhibits and visits to the school and off-campus services. In the background of big data today, it is necessary to invest more human resources, material resources, funds, and modern science and

technology to give full play to the education, propaganda, scientific research, and display functions of the exhibition hall.

3.2 Incomplete Management System

The exhibition hall does not focus on planning and building, ignoring the exhibition hall's management system. The display of exhibition products lacks individual rationality and safety, there are no professional managers in the exhibition hall, the work content and behavior are lack standardization, and a relatively perfect management system has not been formed. Once the emergency is encountered, it cannot be dealt with scientifically and effectively in time.

3.3 Relatively Few Professionals

The Culture Exhibition Hall of “Nightingale + Etiquette” is an essential window for the dissemination and image display of the University's foreign culture, and the commentator is the communicator of Universities cultural publicity. The work of the exhibition hall has higher requirements for the staff and professional knowledge. Not only to be familiar with the characteristics of all kinds of exhibition materials in the exhibition hall, but also to have a deep understanding of how to preserve, manage and maintain the exhibits, the flow of visits and matters needing attention, but also to have an excellent ability to explain and speak. With the increasing number of visitors, it is urgent to cultivate diverse campus cultural interpreters with high political consciousness, strong professional skills, and strong adaptability.

3.4 Relatively Low Technical Strength

The protection and safety protection of the exhibition hall collection need technical support, but most of the exhibition hall's anti-theft and management systems are not perfect. Due to insufficient investment in exhibition hall funds, the daily maintenance and repair of the exhibition hall's collection and equipment are restricted by economic conditions. For example, the preservation of some exhibits has higher requirements for luminosity and temperature, and the current equipment of the exhibition hall cannot meet the requirements of storing exhibition products, which is easy to damage the exhibition products. Besides, the exhibition hall exhibits limited resources and should increase publicity and collect more exhibits.

4、Measures to Improve the Management of the Hall

4.1 Clarify Relevant Management Measures

The Cultural Exhibition Hall of "Nightingale + Etiquette" is not only an open, public welfare open place but also a collection of education, publicity, scientific research, display, management functions as one. Because there are many kinds of exhibits, most of them are non-renewable; scattered, not high concentration degree; besides, the management level is low, the management staffs are insufficient, and the management model is not scientific, so we should follow the principle of "protection first, rational utilization and strengthening management" in the process of management. Draw more from the relevant management measures of museums[4]. Establish a sound management system and clarify responsibilities of management personnel.

4.2 Diversify the Management Methods

4.2.1 "9 S" Intensive management model

In the Cultural Exhibition Hall maintenance guarantee intensive management model, we try to quote the advanced "9 S" management concept. "9 S" is a modern enterprise advanced management model [5], "9 S" Management originated in Japan, including finishing (Seiri), rectifying (Seiton), cleaning (Seiso), cleaning (Seiketsu), saving (Saving), safety (Safety), service (Service), satisfaction (Satisfaction), accomplishment (Shitsuke), nine aspects."9 S" Not only pay attention to the cultivation and improvement of individual accomplishment but also emphasize the unity and cooperation between each other. Combining intensive management can give full play to the subjective initiative of exhibition hall personnel, so that everyone knows, participates in all staff, improves service consciousness and work efficiency, reduces maintenance cost, and improves service satisfaction, to promote the scientific, standardized, and efficient operation of cultural exhibition hall management. [5]

4.2.2 Optimize the allocation of resources

Cultural relics' trusteeship integrates social, cultural relics resources. The trusteeship [6] of cultural relics is a form of registration of social scattered cultural relics,[7] provides wisdom and a scheme for establishing a sound management system of the exhibition hall. The exhibition hall is only a small cultural exhibition hall, and the utilization of resources is not optimized. Compared with other large museums, there is a big gap. Therefore, we can adopt the cultural relic trusteeship model, establish cooperative relations with other museums and exhibition halls, hold regular inter-library exchange meetings, promote mutual learning, and maximize resource sharing.

4.2.3 “Belt and Road” platform

The implementation of the Belt and Road

Initiative provides new opportunities for the development of nursing. The overall layout, based on the current, focus on the future. Strengthen nursing education and exchange and cooperation with countries along Belt and Road, strengthen foreign exchanges, carry forward Nightingale's spirit, inherit and carry forward the tradition of excellent Chinese civilization and etiquette, let more people deeply understand the history and connotation of nursing development. Gradually towards internationalization and the realization of multiculturalism, to achieve the effect of cultural exchange and sharing.

4.3 Increase the Training of Personnel

4.3.1 Establish long-term mechanism [9].

The selection of volunteers mainly absorbs the voluntary service for the public teachers and students and social forces. To establish and improve the volunteer recruitment system, volunteer trial training system, and outstanding volunteer system selection. Establish reasonable organization and post setting (information department, administration department, planning department, explanation department, do their respective duties, division of labor, and cooperation. The commentator and cultural relic protection technicians play an essential role in managing the cultural exhibition hall. The staff should not only improve their moral quality but also improve their professional accomplishment [10] . Give full play to the volunteers' enthusiasm and regularly organize and carry out targeted and diversified popular science activities and professional training to improve their working ability and improve the exhibition hall's management level. In cooperation with Guilin City Museum and Feihu Park in the Guilin area, we will use our spare time to go to these museums for training. We will always adhere to the dominant position of Marxist ideology, identify with Chinese traditional culture, actively absorb the beneficial elements of heterogeneous culture and values brought by our students, realize the diversity of university campus culture, and save social development strength.

4.3.2 Improve the efficiency of the hall management

The exhibition design uses the brand-new design idea, strives to break through the traditional, boring exhibition and presentation pattern, makes full use of the modern exhibition and presentation technology and the technique, gives the audience an enjoyable, interactive visitor experience. Taking big data as the background, integrating all kinds of high-tech information science and technology, making the exhibition hall more attractive, through the combination of video, sound, animation, and other media applications, deeply excavate the background and significance contained in the exhibition display object, and bring the audience a sense of visual shock of high-tech. Based on the numbers of medical colleges and universities, the cultural exhibition hall with entertainment, teaching, and scientific research is built. Student activity center, domestic and foreign mutual reference, using the combination of online and offline management mode, to achieve intelligent service, intelligent protection, intelligent management. The information technology comprehensive, systematic, accurate collection and arrangement of exhibition hall exhibits information, building network knowledge base. By combining physical exhibits with virtual experience through AR technology, we can enhance the relationship between exhibits and visitors and expand the platform for teachers, students, and alumni to communicate together at different ages [10] . Increase publicity, further enhance the participation of visitors "cloud exhibition hall, "[8] so that the community from all walks of life can more accurately and conveniently understand the exhibition hall culture, to improve the management efficiency of the exhibition hall, improve the ability to provide information services for teachers and students.

The Cultural Exhibition Hall strengthens the students' consciousness of cultural subjects and cultural innovation through thematic activities. For example, developing a "social classroom" series of courses and nursing freshmen's vocational, ideological education lectures, school teachers, and exhibition hall educators to discuss the curriculum content and teaching form. This series of courses organically integrates nursing, medicine, humanities, etiquette, science, music, dance, art, calligraphy, sports, labor skills, moral character, and improves students' practical ability and cultivating innovative spirit in teaching [13]。

At Guilin Medical University, the liberal arts and sciences are interlinked, and students are good at the humanities. The Cultural Exhibition Hall of “Nightingale + Etiquette” enables students to understand the development history and connotation of the nursing profession vividly, promote Nightingale's spirit, and inherit and carry forward the traditional Chinese etiquette culture and strengthen the professional etiquette cultivation of nursing students.

5、Conclusion

To sum up, the Cultural Exhibition Hall of

"Nightingale + Etiquette" realizes the cross-border of humanities and science and technology. It should conform to the needs of the development of the times, innovate the management system and working methods, improve the service quality and level of the cultural exhibition hall in an all-round way, and promote the healthy and sustainable development of the cultural exhibition hall. The younger generation of nurses visits the Nightingale Etiquette Culture Exhibition Hall because understanding their knowledge roots will bring nurses a sense of belonging, dignity, professional identity, motivation, and enhance the power of career development. Nightingale etiquette's presentation is of historical significance and educational significance in shaping midwifery and nursing students' professional attitudes. It also shows these students an example of humanity, courage, and professionalism.

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Effect of Heat-sensitive Moxibustion Therapy on Children with NoVs Diarrhea

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Abstract: Objective To observe and study the clinical effect of heat-sensitive moxibustion therapy on diarrhea caused by NoVs in children. **Methods** From January 2019 to January 2020, a total of 60 children were diagnosed with NoVs infection in inpatient/outpatient departments of University of Chinese Academy of Sciences Shenzhen Hospital and were divided into observation group (Heat-sensitive Moxibustion Group) and control group (Basic Western Medicine Treatment Group) by random number table, with 30 cases in each group. Results The total effective rate of heat-sensitive heat-sensitive moxibustion therapy in children with NoVs diarrhea was significantly higher than that in the control group, and the difference between the two groups was statistically significant ($P<0.05$). The antipyretic time of the observation group was (3.45±0.90) d, the normal time of stool routine examination was (2.52±0.92) d and the normal time of defecation was (2.15±1.24). Compared with the control group, $P<0.05$. The serum INF-γ and il-2 in the observation group were significantly lower than those before treatment and the difference was statistically significant ($P<0.05$). The changes in the control group were not obvious and there was no statistical difference ($P>0.05$). **Conclusions** Heat-sensitive moxibustion has played an important role in the treatment of NoVs diarrhea in children. It can effectively improve the defecation status of patients, regulate the serum INF-γ and IL-2 levels of patients, and provide a definite therapeutic scheme for the treatment of NoVs infection in children. It is worth popularizing in clinics.

Keywords: Heat-sensitive moxibustion; children; NoVs; viral diarrhea

1. Introduction

As one of the main pathogens of acute and epidemic viral gastroenteritis, Norovirus (NoVs) is highly infectious, with high morbidity and mortality, and often leads to large-scale outbreaks in closed or semi-enclosed environments, such as kindergartens, schools, etc. All age groups with infection symptoms, including the elderly and infants, suffer from serious health hazards. There is no specific treatment for NoVs. The key to treatment is to correct symptoms of dehydration caused by vomiting and diarrhea [2].

2. Materials and Methods

2.1 Clinical Materials

A total of 60 children who were diagnosed with NoVs infection in inpatient/outpatient departments of University of Chinese Academy of Sciences Shenzhen Hospital from January 2019 - January 2020 were selected and randomized into observation group (n=30) and control group (n=30). Observation group: There were 18 male patients and 12 female patients aged 5-12 with a average age of 8.2±2.1; Control group: There were 19 male patients and 11 female patients aged 5-13 with a average age of 8.3±1.9; There was no significant difference in age, sex and course of disease between the two groups ($p>0.05$).

2.2 Methods

Observation group: Heat-sensitive moxibustion with moxa mainly detects the heat-sensitive acupoints in the abdomen (including Ren channel, spleen channel, stomach channel and liver channel). Three most sensitive acupoints were selected at each time at the detected thermosensitive points and moxibustion was given in four steps (Convolution, Quezhuo, Back and forth, Mild moxibustion). The treatmnent began on the date of inclusion with 1 time a day and 3 days a course. Control group: Conventional therapy in western medicine (refer to Zhu Futang textbook of pediatrics, edition 7 P1298): Intestinal mucosal protectants: Montmorillonite powder (Smecta, Beaufour Ipsen

Pharmaceutical Co., Ltd.). Children under 1: 1/2 bag/time, t.i.d. po; Children aged 1～2: 2/3 bags/time, t.i.d. po; Children aged 2～3: 1 bag/time, t.i.d. Microecologics: Combined Clostridium Butyricum and Bifidobacterium Powders (Chang Le Kang): 1 bag/time, b.i.d. po. 3 days 1 course.

2.3 Observation index

After 3 days of treatment, the clinical recovery of the two groups was observed: The stool times, characters, symptoms and signs returned to normal completely, and the abnormal physical and chemical indexes returned to normal. Significantly effective: The number of stool decreased significantly (less than 1/3 before treatment), and the symptoms, signs and physical and chemical abnormalities were improved. Effective: Before treatment, the number of stool decreased to less than 1/2, the characters, symptoms, signs, physical and chemical abnormal indicators were improved; Ineffective: Failure to meet the above criteria [3]. Serum was collected before and after treatment, and the changes of INF-γ and IL-2 in serum were detected.

2.4 Statistical method

SPSS25.0 calculating data were used. "%" indicated enumeration data tested with X2; "$x \pm s$" indicated measurement data tested with t. P<0.05 indicated data difference.

3. Results

3.1 Comparison of Therapeutic Effects between Two Groups

The total effective rate of treatment in the observation group (93.33%) was higher than that in the control group (70%) (p＜0.05). (Please see Appendix 1: Table 1 for details)

3.2 Comparison of Symptom Recovery Time Index between Two Groups

The antipyretic time of the observation group was (3.45±0.90) d, the normal time of stool routine examination was (2.52±0.92) d and the normal time of defecation was (2.15±1.24). Compared with the control group, the difference was statistically significant (P＜0.05). (Please see Appendix 2: Table 2 for details)

3.3 Changes in INF-γ and IL-2 in Serum before and after Treatment

The study in this paper suggested that the serum INF-γ and il-2 in the observation group were significantly lower than those before treatment and the difference was statistically significant (P＜0.05). The changes in the control group were not obvious and there was no statistical difference (P＞0.05). (Please see Appendix 3: Table 3 for details)

4. Discussion

About 200,000 people worldwide die from NoVs infection each year. NoVs is estimated to cause more than 50％ of cases of viral gastroenteritis worldwide [4]. The disease poses a heavy burden on children's families and social medical care. Despite the progress made in the development of NoVs, there is no effective vaccine against the virus. The reasons are as follows: ① Genetic diversity of viruses, low cross-reactivity among different genotypes, lack of understanding of its infection, immunology and evolutionary mechanisms [5]; ② Lack of perfect animal models, difficult to carry out comprehensive efficacy and safety evaluation, vaccine stability and immune duration; ③ Imperfect culture in vitro, difficult to develop inactivated or attenuated vaccines [6]. In terms of treatment, there are no specific drugs for NoVs infection. Clinical treatment mainly focuses on symptomatic treatment and supportive treatment. The key to treatment is the rehydration therapy of diarrhea and dehydration. In severe cases, acidosis and abnormal electrolyte metabolism should be corrected [7]. In terms of treatment, there are no specific drugs for NoVs infection. Clinical treatment mainly focuses on symptomatic treatment and supportive treatment. The key to treatment is the rehydration therapy of diarrhea and dehydration. In severe cases, acidosis and abnormal electrolyte metabolism should be corrected [8].

Chinese medicine believes that the occurrence of this disease is due to the cold evil between autumn and winter, changeable temperature in morning and evening. For children with deficiency of spleen and stomach, the evil of wind and cold is easy to break the spleen and stomach in case of insufficient cold temperature modulation or taking cold drinks [9]. The spleen mainly transports and transforms water dampness, likes the warm and hates the cold. The cold on spleen may stagnate qi movement and transport without order. The sewage flows into the large intestine and forms the diarrhea disease. Therefore, cold dampness in spleen is the basic pathogenesis of this disease. Chinese medicine has the advantage of modern treatment in improving NOV clinical symptoms and treatment, which not only provides a new way of thinking for clinical miscellaneous diseases, but also makes full use of the characteristics of Chinese herbal medicine, acupuncture, massage and

other internal and external treatment methods, acupoint massage application, enema therapy and other traditional Chinese medicine treatments. It embodies the concept of the whole treatment of traditional Chinese medicine [10-11]. Heat-sensitive moxibustion is a new therapy developed on the basis of moxibustion. Because of its special discovery, small stimulation and good therapeutic effect, it has better curative effect than ordinary moxibustion, and is used in the treatment and rehabilitation of many clinical chronic diseases. There will be more and more research on heat sensitive moxibustion in the future. Heat-sensitive moxibustion will also attract more and more attention [12-13]. It was found that the total effective rate of NoVs infection treated with heat-sensitive moxibustion therapy was 93.3%, which was significantly higher than that of the control group (70.0%). Moreover, by monitoring the changes of serum INF-γ and IL-2 before and after treatment, it can be found that the serum INF-γ and IL-2 of children treated with heat-sensitive moxibustion therapy were significantly lower than those before treatment. However, the control group did not change significantly before and after the treatment by conventional western medicine. The results showed that heat-sensitive moxibustion therapy could improve symptoms and effectively regulate serum INF-γ and IL-2 level of patients [14].

To sum up, heat-sensitive moxibustion has achieved a definite curative effect in the treatment of children with NoVs infection, provided a research basis for further exploring the mechanism of heat-sensitive moxibustion in the treatment of this disease, and broadened the treatment ideas for clinical workers.

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Appendix 1: Table 1

Table 1 Comparison of therapeutic effects between two groups (%)

Group	Cases	Conspicuous effect (%)	Effective (%)	Ineffective (%)	Total effective rate (%)
Observation group	30	13（43.33）	15（50.00）	2（6.66）	28（93.33）
Control group	30	9（30.00）	12（46.67）	9（30.00）	21（70.00）
X^2					5.454
p					0.045

Appendix 2: Table 2

Table 2: Comparison of recovery time index data between two groups: (d)

Group	Cases	Normal defecation frequency	Normal stool routine examination	Antipyretic time
Observation group	30	2.15±1.24	2.52±0.92	3.45±0.90
Control group	30	4.73±1.29	3.15±1.04	5.42±0.92
t		10.20	3.21	10.82
P		0.000	0.002	0.000

Notes: Comparison between observation group and control group suggested P＜0.05.

Appendix 3: Table 3

Table 3 Changes in INF-γ and IL-2 in serum before and after treatment (x±s)

Group	Cases	INF-γ		IL-2	
		Before treatment	After treatment	Before treatment	After treatment
Observation group	30	42.23±4.46	29.32±4.31	29.34±0.93	20.34±0.87
Control group	30	41.24±4.16	34.52±4.21	29.63±1.03	24.63±0.93
t		1.100	5.853	1.417	22.847
p		＞0.05	＜0.05	＞0.05	＜0.05

Study on the Water Purification Effect of the Constructed Wetland of Zhujiahe River Near Qiong Lake

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Abstract: Abstract: In this paper, through the determined of TN, TP, BOD_5 , and CODcr in the Zhujia River artificial wetland entrance near the Qionghai lake, grit chamber, and export content, the purification effect of the Zhujia River artificial wetland water quality indexes was studied. The experiment results showed that the water quality in the wet season was the best, followed by the normal water period, and the dry season was the worst. The water quality in the dry season was severe eutrophication, water quality in the wet period and normal water period was basically between the rich nutrition and eutrophication. Water purification effect was presented in the wet period > normal water period > dry season. The water purification capacity showed that abundant water the TN purification rates were 3.89%, 25.68%, 41.35% , while TP were 21.92%, 28.13%, 50.17% , the BOD were 24.88%, 28.97%, 41.36% respectively, and the COD were 9.03%, 9.73%, 12.45%. The artificial wetland purification effect of COD was not obvious.

Keywords: Qionghai; Zhujiahe constructed wetland; water purification eutrophication

1. Introduction

Qionghai wetland is one of the unique living environment and natural ecological landscape in the land and water ecosystem on earth, which is rich in biodiversity[1]. Qionghai Lake is the second largest freshwater lake in Sichuan Province[2], with a geographical location of 27°47'~27°52'N , 102°16'~102°20'E.[3] Qionghai Lake is listed as a drinking water source protection area and scenic spot in Sichuan Province. Qionghai wetland, located in Xichang, Sichuan Province, is a plateau lake wetland, which is of great significance in the protection of important genetic resources and closed wetland ecosystem[4], and plays an important role in regulating climate, purifying the environment, storing flood, and preventing drought[5]. Zhujiahe river is one of the headstream rivers of Qionghai lake. It flows through Chuanxing Town, Xiaoyu village and Zhujiahe village, enters Zhujiahe artificial wetland and flows into Qionghai lake. Due to a large amount of domestic sewage discharge, it has a certain adverse impact on the water quality of Qionghai lake. To purify the water quality, Zhujia River constructed wetland is built in the lower reaches of Zhujia river.

With the development of economy and the improvement of people's living standards, the environmental pollution caused by rural domestic sewage is becoming more and more serious, which has become an important factor affecting the quality of water environment. Xichang's unique climate and natural conditions create rich and unique rural tourism resources in Xichang. Flowers, melons and fruits, freshwater fishing grounds and so on are the resource advantages for developing rural tourism, such as peach blossom in Chuanxing Town, peach and loquat in Chuanxing Town, freshwater fish fishing ground in Qionghai Lake, etc., which can attract countless tourists to come to enjoy flowers, taste fruits, pick, fish and experience [6]. The domestic sewage produced by residents in Zhujia river basin is directly discharged into Zhujia river. After field investigation, it was found that the vegetation type of Zhujiahe constructed wetland was single, and the biological treatment pool was only Eichhornia crassipes, which covered the whole pond. In this case, the effectiveness of Zhujiahe constructed wetland is worth exploring. According to the announcement of environmental quality in Liangshan Prefecture, the water quality of Qionghai River into the lake should meet the class III surface water quality standard.

In recent years, with the acceleration of

urbanization and the development of rural economy, the discharge of urban and rural domestic sewage is increasing. However, the traditional secondary treatment technology has extraordinarily little removal of nitrogen and phosphorus in domestic sewage. Due to its high price, the three-stage treatment technology is difficult to be popularized on a large scale. The constructed wetland, with its characteristics of low investment, good effect, convenient operation and maintenance, and high pollutant removal rate, provides a new idea for solving the purification problem of domestic sewage [7-8]. With the increase of economic development activities around Qionghai Lake, pollution has also intensified, and the protection of Qionghai Lake has been highly valued by the government [9]. At present, there are many research on wetland construction, restoration and replacement, but there is no report on whether the operation and maintenance and function of wetland are normal after completion. Therefore, through the measurement of total nitrogen (TN), total phosphorus (TP), five-day biochemical oxygen demand (BOD5) and chemical oxygen demand (CODcr) in Zhujiahe constructed wetland, which is one of the main rivers flowing through the main urban area of Qionghai Lake Basin, this paper analyzes the purification rate of TN, TP, BOD and COD by Zhujiahe constructed wetland. In order to provide theoretical reference for optimizing purification performance and operation and maintenance management of Zhujiahe constructed wetland.

2. Materials and Methods

2.1 Test Materials

2.1.1 Sampling method

Sampling points are set at the entrance, grit chamber and outlet of Zhujiahe River in Qionghai phase III. The layout of sampling points is shown in Fig. 1 (Please see Appendix 1). When the water surface width is less than or equal to 50 meters, only one thalweg vertical line is set; when the water depth is less than 0.5 meters, set sampling points at 1 / 2 of the water depth; when the water depth is greater than 0.5 meters, the subsurface water samples are collected at about 0.5 meters below the water surface. The sampling time of this experiment is March, June and September of dry, flat and abundant water periods.

2.1.2 Sample pretreatment and preservation

After the water sample is brought back to the laboratory, a small amount of sulfuric acid (< 2mol / L) is added to make the pH ≤ 2, and then it is stored in the refrigerator at a temperature of less than 10 ℃. The water sample of BOD5 is treated according to its determination method.

2.2 Test Method

In this project, TN, TP, BOD5 and CODcr indexes of Zhujiahe constructed wetland in different periods were determined and analyzed to evaluate the water purification effect. The determination methods, drugs and main instruments are shown in Table 1 (Please see Appendix 4).

2.2.1 Evaluation method of water quality standard

The water quality evaluation method adopts single factor index evaluation method [14], and single factor pollution index method is used to evaluate the monitoring results. Each water quality factor is evaluated separately, and the results of reaching the standard and exceeding multiple of each water quality factor are obtained by using statistics and model calculation. The evaluation formula of single factor index is as follows:

The standard index of single water quality parameter i at j point is as follows:

$$S_{ij}=C_{ij/Csi} \quad (1)$$

Where：S_{ij}——Pollution index of a pollutant；

C_{ij}——The actual concentration of a pollutant，mg / L；

C_{si}——Evaluation standard of a pollutant，mg / L

The water quality of Qionghai wetland should meet the corresponding requirements of environmental quality standard for surface water and class III standard for surface water quality [15], with TP≤1.0mg/L 、 TN≤0.2mg/L 、 BOD_5≤/4mg/L 、 COD≤20mg/L. In this project, C_{si} is evaluated according to the standard limit value corresponding to class III standard.

2.2.2 Eutrophication evaluation criteria

This study analyzed the eutrophication reference lake and reservoir eutrophication evaluation standard[16]. China's lakes and reservoirs are mainly phytoplankton type, and the occurrence of eutrophication is mainly caused by the increase of phosphorus, nitrogen and other nutrients in the lakes and reservoirs, which leads to the excessive propagation of algae [17]. Therefore, TN and TP are used for evaluation of the project. The index of nutrition is shown in Table 2 (Please see Appendix 5).

2.2.3 Purification rate analysis

In this study, formula (2) is used to evaluate the total purification rate of wetland, the purification rate of grit chamber and the purification rate of biological tank in dry, flat and abundant periods. The calculation formula of pollutant purification rate is as follows:

$$r(\%)=[(Q_{Start}-Q_{End})/Q_{Start}]*100 \quad (2)$$

where：r——purification rate of pollutants；

Q_{Start} ——amount of pollutants at upstream sampling point，mg / L；

Q_{End} ——amount of pollutants at downstream sampling point，mg / L；

3 Results and Analysis

3.1 Water Quality Standard Analysis

The water quality of intake, grit chamber and outlet of Zhujiahe constructed wetland was measured and the pollution index was calculated. The results are shown in Table 3 (Please see Appendix 6).

When the pollution index of the water quality factor is less than or equal to 1, it indicates that the concentration of the water quality factor in the evaluated water body meets the requirements of water area function and water environment quality standard [14]. According to the analysis of the standard of TN、TP、BOD_5、CODcr in dry, flat and wet periods of Zhujiahe constructed wetland, only BOD_5 outlet S_{ij} = 0.87 < 1 in wet season, and the pollution index of water quality factors in other periods did not meet the requirements of water function standard. Among them, TN exceeded the standard by 19.25, 19.15 and 14.85 times in water intake, grit chamber and water outlet respectively in dry season, and TP exceeded 12.62, 12.37 and 12.09 times in dry season. The over standard times of COD in outlet water are large in dry, normal and wet periods. The nitrogen and phosphorus content of wetland entrance is the highest in dry season, and the natural precipitation is less in this period. The residents along the river dump domestic waste water, which leads to poor water quality in normal water period. The N content at the entrance of wetland in wet season was higher than that in normal water period. According to the field survey, there are a large area of farmland in the upstream of the constructed wetland to plant rice and lotus root. Before the harvest period, the water will be stored and nitrogen and phosphorus fertilizer will be applied. From August to September, the canal will be opened to release water, which will cause the high nitrogen and phosphorus content at the entrance of the constructed wetland in the wet season.

3.2 Analysis of Eutrophication Degree

In this study, TN and TP were used to evaluate eutrophication, and the evaluation results are shown in Table 4 (Please see Appendix 7).

The results showed that the water quality showed severe eutrophication in the dry season. The first reason was that the amount of water in the dry season was small, which was basically domestic sewage from upstream residents, and the eutrophication degree was high. Secondly, the decomposition of aquatic plants such as Eichhornia crassipes and other aquatic plants in the dry season and a large amount of sediment deposition caused by scouring in the high-water period of last year caused endogenous pollution at the river bottom; the eutrophication degree in the normal water period was lower than that in the dry season. In the wet season, the eutrophication degree of the intake is high. After wetland purification, the eutrophication degree is reduced, and finally the eutrophication is from moderate eutrophication to eutrophication. The possible reason are that there is a large amount of rainfall in the wet season, which leads to non-point source pollution and the high eutrophication degree of water intake is caused by the opening of irrigation channel.

3.3 Analysis of Purification Rate

3.3.1 Analysis of TN Purification Rate

The change of TN purification rate in Zhujiahe constructed wetland in each sampling period is shown in Fig. 2 (Please see appendix 2).

It can be seen from the figure that the purification capacity of water quality is the weakest in dry season, with the total purification rate of 3.89%, and the purification rate of grit chamber and biological treatment tank are 1.84% and 2.09% respectively. This may be due to the small amount of water in the dry season, which affects the concentration of TN in the water body; secondly, the dry season of Xichang is from January to February, during which the water hyacinth and other aquatic plants are in the withering period, and their growth ability is weak, so the water purification capacity is weak; the water hyacinth and other aquatic plants are dead and not salvaged in time, forming internal source pollution. The total purification rate was 25.68% in the normal water period. The water purification period of Xichang was from April to June, and the growth period of

Eichhornia crassipes was from May to September. At the end of normal water period, the water purification capacity of Eichhornia crassipes has been improved obviously. In wet season, the total purification rate was 41.35%, in which the purification rate of grit chamber was significantly higher than that in other periods. September was the rainy season in Xichang. A large amount of sediment carrying nitrogen was brought by scouring, which entered the sedimentation tank for slow flow water settlement and had a strong removal effect on nitrogen.

According to the statistical results of Vymazal, the purification rate of total nitrogen was 40%～55%, and the removal load was 250 ～ 630gN/(m^2·yr)[18~19]. Compared with the same period, the purification rate of Zhujiahe constructed wetland can meet the basic requirements in wet season, while it needs to be improved in dry and normal water periods.

3.3.2 Analysis of TP purification rate

The change of TP purification rate in Zhujiahe constructed wetland in each sampling period is shown in Figure 3 (Please see Appendix 3).

It can be seen from the figure that the total purification rate is 21.92% in dry season, 28.13% in normal season and 50.17% in wet season. The change of total water purification capacity is the same as that of total nitrogen, which is not stated here. Different from TN removal efficiency, the purification rate of biological pond was higher than that of grit chamber in wet season, which indicated that P was enriched in Eichhornia crassipes growth period.

The statistical results of Vymazal showed that the purification rate of total phosphorus was 40%～60% and the removal load was 45～75gP/(m^2·yr)[18~19]. Generally speaking, P purification rate is considerable in high water period, but it needs to be improved in dry and normal water periods. The key point is to improve the purification rate of grit chamber.

3.3.3 Analysis of BOD_5 purification rate

The change of BOD_5 purification rate in each sampling period of Zhujiahe constructed wetland is shown in Figure 4.

It can be seen from the figure that the total purification rate increases gradually in dry, flat and abundant periods. The total purification efficiency was 24.88%, 28.97% and 41.36% respectively, and the purification rate of grit chamber and biological tank was 10 ~ 20% in each period. Generally speaking, the purification rate of BOD in Zhujiahe constructed wetland needs to be improved. At the same time, through the redox test, 50ml of water sample is taken, adding phenolphthalein (1g/L), neutralizing water sample, adding 0.5ml sulfuric acid (2mol/L), potassium iodide (about 0.5g) and starch (10g/L), it remains colorless after adding 0.2ml iodine (0.005mol/L) solution and shaking for 30s. The results showed that there were reducing substances in the water samples.

3.3.4 Analysis of COD purification rate

The change of COD purification rate in each sampling period of Zhujiahe constructed wetland is shown in Fig. 5.

It can be seen from the figure that the total purification rate is low in the dry season, normal water period and wet season, and the highest purification rate is 12.45% in the wet season; the purification rate of the grit chamber is higher than that of the biological tank, but it is not ideal, and the purification rate of the biological tank is 0%, 0% and 0.46% in the three sampling periods of the dry season, normal water period and wet season. In the three periods, the effect of COD purification is not obvious, which may be due to the presence of some non-biodegradable organic substances in the water.

4. Conclusion and Discussion

4.1 Conclusion

The results show that: the water quality is the best in the wet season, followed by the normal water period, and the worst in the dry season; the water quality in the dry season is heavily eutrophic, and the water quality in the normal and high water periods is basically between moderate eutrophication and eutrophication; the purification effect of wetland is in the order of wet season > normal season > dry season; the purification rate of TP is 21.92%, 28.13% and 50.17% in dry, normal and wet periods respectively; The TN purification rate was 3.89%, 25.68% and 41.35% in dry season, normal season and wet season respectively. The purification rate of BOD was 24.88%, 28.97% and 41.36% in dry season, normal water period and high water period, respectively. The purification rate of COD was 9.03%, 9.73% and 12.45% in dry season, normal water period and high water period, respectively. The water purification efficiency of sedimentation tank and biological tank needs to be improved in dry season and normal water period. This result is consistent with the field observation phenomenon during sampling. During the sampling, it is found that the water quality is poor in the dry season, there is obvious odor at the wetland entrance and grit chamber, the water quality is turbid and there are a lot

of suspended substances. The water quality at the outlet of the wetland is obviously improved after the treatment of aquatic organisms, and the water quality is relatively clear. Compared with the dry season, the suspended matter in the water body is reduced, and there is slight odor. The growth of aquatic plants is more prosperous than that in the dry season, and the effluent quality is better. During the wet season, the suspended particles in the upstream water decreased, the water flow was large, and there was slight odor phenomenon. The aquatic plants grew densely and the outlet water quality was good.

Therefore, the purification efficiency of TN, TP and BOD by Constructed Wetland of Zhujiahe River in Qionghai Lake is good, and the purification rate of COD needs to be improved.

4.2 Discussion

In view of the current water quality of Qionghai Lake and the scientific research results, the following suggestions are put forward:

(1) The pollution source of Zhujiahe constructed wetland is mainly from the direct discharge of domestic sewage. Therefore, we should start from the source to reduce the direct discharge of domestic sewage from upstream into Zhujiahe river.

(2) Workers should be organized to clean the biological treatment tank regularly to avoid excessive growth of Eichhornia crassipes.

(3) The main aquatic plants in Zhujiahe constructed wetland are Eichhornia crassipes, and the species is relatively single. Therefore, we should increase the planting of submerged plants to improve the wetland purification efficiency.

(4) Aquatic plants with vigorous growth period from January to June and from September to December can be introduced. They can be introduced when they are suitable for the environment of Qionghai in Xichang and will not damage other aquatic plants.

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Appendix 1 (Fig. 1)

Fig. 1 Location of sampling points

Appendix 2 (Fig. 2)

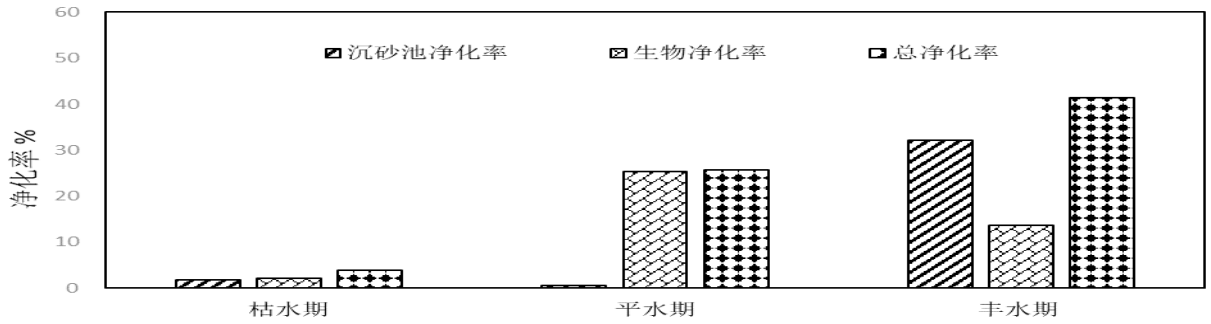

Fig. 2 Purification rate of TN

Appendix 3 (Fig. 3)

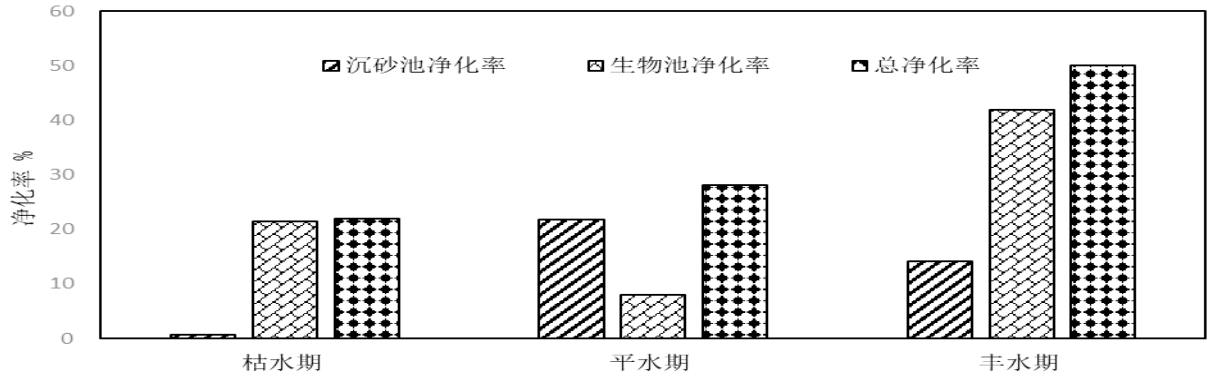

Fig. 3 Purification rate of TP

Appendix 4 (Table 1)

Table 1 Determination methods, drugs and main instruments and equipment

Measurement items	determination methods	drugs	main instruments and equipment
TN	potassium persulfate oxidation method[10]	special consumables for total nitrogen (high grade pure), hydrochloric acid, potassium nitrate	ultraviolet spectrophotometer; High-Pressure Steam Sterilization Pot
TP	ammonium molybdate spectrophotometry method[11]	special consumables for total phosphorus (high grade pure), potassium persulfate	visible spectrophotometer; High-Pressure Steam Sterilization Pot
BOD	dilution and inoculation[12]	concentrated sulfuric acid, sodium hydroxide, sodium azide, ferric chloride hexahydrate, sodium sulfite, manganese sulfate, potassium iodide, iodine, starch, phenolphthalein, ethanol	electronic balance; oven
COD	potassium dichromate method[13]	potassium dichromate, silver sulfate, concentrated sulfuric acid, phenanthroline, ferrous sulfate, ammonium ferrous sulfate	COD rapid detector; electronic balance

Appendix 5 (Table 2)

Table 2 Eutrophication evaluation criteria for lakes and reservoirs

Nutritional status	SD/ m^2	TP/(mg/L)	TN/(mg/L)	chla/(mg/m^3)	BOD_5/(mg/L)	COD_{Mn}/(mg/L)
Poor nutrition	2.0	0.01	0.12	5	1.5	2.0
Nutrition in poverty	1.5	0.025	0.30	10	2.0	3.0
Moderate nutrition	1.0	0.05	0.60	15	3.0	4.0
Moderate eutrophication	0.7	0.10	1.20	25	5.0	7.0
Eutrophication	0.4	0.50	6.00	100	15	20
Heavy eutrophication	<0.1	>0.50	>6.00	>100	>1	>20

Appendix 6 (Table 3)

Table 3 Determination results and pollution index

water quality index	sampling period	wetland entrance		wetland grit chamber		wetland outlet	
		concentrationmg/L	pollution index	concentrationmg/L	pollution index	concentrationmg/L	pollution index
TN	dry season	13.62	13.62	13.37	13.37	13.09	13.09
	normal water period	4.05	4.05	4.03	4.03	3.01	3.01
	wet period	6.94	6.94	4.71	4.71	4.07	4.07
TP	dry season	4.05	20.25	4.03	20.15	3.17	15.85
	normal water period	0.32	1.60	0.25	1.25	0.23	1.15
	wet period	0.68	3.40	0.59	2.95	0.34	1.70
BOD_5	dry season	20.50	5.13	17.50	4.38	15.40	3.85
	normal water period	14.50	3.63	12.90	3.23	10.30	2.58
	wet period	5.90	1.48	4.70	1.18	3.46	0.87
COD	dry season	198.40	9.92	177.92	8.90	180.48	9.02
	normal water period	185.12	9.26	166.40	8.32	167.11	8.36
	wet period	143.42	7.17	126.14	6.31	125.57	6.28

Appendix 7 (Table 4)

Table 4 Eutrophication evaluation results

water quality index	Sampling period	wetland entrance mg/L	eutrophication degree	wetland grit chamber mg/L	eutrophication degree	wetland outlet mg/L	eutrophication degree
TN	dry season	13.62	Heavy eutrophication	13.37	Heavy eutrophication	13.09	Heavy eutrophication
	normal water period	4.05	Eutrophication	4.03	Eutrophication	3.01	Eutrophication
	wet period	6.94	Heavy eutrophication	4.71	Eutrophication	4.07	Eutrophication
TP	dry season	4.05	Heavy eutrophication	4.03	Heavy eutrophication	3.17	Heavy eutrophication
	normal water period	0.32	Eutrophication	0.25	Eutrophication	0.23	Eutrophication
	wet period	0.68	Heavy eutrophication	0.59	Heavy eutrophication	0.34	Eutrophication

From Disembodied Cognition to Embodied Cognition: The Cognitive View of the Unity of Knowledge, Emotion, Meaning, and Environment

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Abstract: This paper reviews the development of Cognitive Science from disembodied cognition to embodied cognition. It suggests that from the 1960s, traditional psychological behaviorism was replaced by cognitivism. With the breakthrough of symbolism and computationalism, the first cognitive revolution came into being. Then, based on Piaget's cognitive structuralism, cognitive psychologist Bruner created social constructivism; from the perspective of educational psychology, he promoted the integration of science and humanities, opened a new path of cultural psychology, and set off the second upsurge of the cognitive revolution. From the 1980s, cognitive science integrated the connectivism trend of neuroscience achievements and relied on the great help of the emerging artificial intelligence discipline, which triggered the ideological trend of embodied cognition and showed a deeper and broader prospect of human intelligence research in the field of cognitive science.

Keywords: Cognitive Science; the first cognitive revolution; the second cognitive revolution; disembodied cognition; embodied cognition

1. Introduction: From Disembodied Cognition to Social Construction

1.1 The First Cognitive Revolution: Disembodied Cognition

Behaviorism is one of the most influential schools in modern psychology, which is characterized by rejecting people's free will and refusing to recognize the existence of mental phenomena. It advocates that psychology should only study behavior, not consciousness and mind. After the 1960s, the field of psychology began to pay attention to the study of the cognitive mind, devoted to exploring the nature and laws of the cognitive process that cannot be observed in the human brain, and reversed the research trend of behaviorism ignoring the internal psychological activities, which known as the "first cognitive revolution".

The theory of disembodied cognition is the main representative of the first cognitive revolution. Early disembodied cognition is a revolution of behaviorism, affirming the authenticity of the human psychological process and the subjectivity of consciousness. The theory of disembodied cognition regards human cognition as the process of information transmission, storage, and processing by the human brain, which is similar to the principle of computer symbol processing, that is, the operation of computer and human cognition are both a computational process. The basis of computer operation is to set logic programs for symbolic operation according to a set of rational rules provided by people. Therefore, we can regard the brain as the hardware of the computer and the thinking as the software of the computer, and the cognitive process can be regarded as the process of software operation. Because the program and hardware are separated from each other in physical form, although the software runs on the hardware, the same software can run on different computers, and the two functions are independent. Therefore, in essence, cognition can also be separated from the body, which is called disembodied cognition[5]. The theory of disembodied cognition regards the body only as the receptor of stimulation and the effector of behavior and regards cognition as the formal system of processing and manipulating symbols. Although it emphasizes the initiative of "consciousness", it denies the initiative of human beings and completely separates human beings from thinking.

The ideological origin of disembodied cognition comes from the dualism of body and mind in western culture. According to the principle of mind-body dualism, concepts, categories, rules, and other abstract symbols are regarded as the highest development stage of the mind, which does not need the participation of the body. The body is only regarded as a container. However, since the 1980s, the second cognitive revolution has sprung up, and the paradigm of information processing has given way to all kinds of post cognitivism thoughts, including cultural constructivism first and embodied cognition later, all of which pose new challenges to the

theory of disembodied cognition.

1.2 The Second Cognitive Revolution: The Study of Mind and Meaning by Cultural Constructivism

In the first cognitive revolution, cognitive psychology changed from "stimulus-response" of behaviorism to "cognitive structure", and then evolved into "symbolic operation" of pure rationality. Its research ideas and methods are becoming more and more logical and mechanized, while the integrity and subjectivity of human beings are gradually lost, and the existence of human beings is facing the crisis of complete materialization. In response to this trend, cognitive psychology has finally brewed a second cognitive revolution with the goal of "meaning construction". Its main appeal is to arouse people's questions about the meaning of mind and life. They pointed out that although the external symbol used for information processing is an objective existence, the internal meaning is subjective, which is the role of the individual mind. The role of the mind is to connect the subjective existence with the objective action so that the meaning can be shared.

In the 1950s, the Swiss psychologist Piaget created the school of cognitivism and began to explore the problem of consciousness again. He created the experimental method of combining speculation and behavior observation and put forward the concept of cognitive schema. In his early psychological academic career, Bruner tended to take Piaget's cognitivism as the cornerstone of his structuralist epistemology. With the decline of behaviorism and mechanism in the field of psychology, the field of cognitive psychology began to pay attention to the study of human subjectivity. Drawing on the symbolic representation theory of linguistics and the narrative theory of culturology, Bruner regards the mind as a narrative process of "meaning interpretation" based on social culture, which opens the narrative turn in the field of psychology[3]. The narrative mode of meaning is mainly in the form of storytelling, which interprets psychological activities in the context of human cultural practice. It not only studies individual cognition on the basis of brain science and cognitive neuroscience but also pays attention to the cultural connotation of education from the macro-level of philosophy and sociology, so as to realize the scientific reconstruction of the cognitive psychological system.[1]

The important feature of the second cognitive revolution is the deep thinking of daily language from the perspective of social activities. Compared with the scientific language of precise logical reasoning, everyday language contains specific images and emotions and appeals to all kinds of poetic spirituality, and metaphorical imagination. Social constructionists believe that although the mind exists in the individual, it is essentially a social phenomenon, and the mind and narrative emerge from the language. In the final analysis, psychological research is inseparable from the use of language, and the world is constructed through discourse. The essence of the second cognitive revolution lies in: firstly, many psychological phenomena have the characteristics of discourse; secondly, the use of symbol system comes from the exchange process of interpersonal discourse in a specific humanistic environment.[15]

2. The Second Generation of Cognitive Science----Embodied Cognition

2.1 From Connectionism to Embodied Cognition

Since the 1980s, the development of neuroscience has changed with each passing day. With the help of modern science and technology, the cognitive black box of the human brain has been dissected and observed layer by layer, gradually lifting the veil of mystery, and the human cognitive mechanism has begun to have a clear scientific explanation. These scientific results suggest that cognitive psychologists believe that the human cognition is actually based on the neural network structure and runs in a parallel processing model, rather than a computer-based serial symbol processing mode. For this reason, cognitive psychologists put forward the cognitive model of connectionism. The connectionist model holds that the human cognitive process cannot be simply compared to a serial symbol processing model. The human brain is a parallel information processing system composed of 100 billion neurons connected with each other and cognition emerges in neural network connection and parallel distributed processing. Therefore, the goal of connectionism is to simulate the parallel processing mode of the brain nervous system and to construct an artificial neural network with distributed characteristics. Although there are obvious differences between connectionism and symbolic processing, both theories focus on the internal psychological process, and agree with the computational and extrinsic nature of cognition in essence. It was not until the "second generation of cognitive science" revolution came, the connectionism integrating the latest achievements of neuroscience, and relying on the powerful help of the emerging artificial intelligence discipline, that the theoretical basis of extrinsic cognition was really shaken, and embodied cognition became the focus topic, which launched a new research approach for cognitive psychology.[4]

Embodied cognition is a typical representative of the second generation of cognitive science. Embodied cognition holds that subject cognition is not only the home of the central nervous system of the brain, but also the participation of the physiological system of the whole-body. It is the result of the comprehensive effect of the physiological structure of the whole-body and the sensory-motor schema of the body. At the same time, the interaction between the external environment and the body also has an important impact on cognition. Therefore, embodied cognition theory can be understood as that cognition is based on neurophysical structure and sensorimotor system and is formed through whole body experience. Human anatomical structure determines our way of thinking and the final picture of the world in our cognition.[2]

2.2 The Characteristics of Embodied Cognition

As mentioned above, embodied cognition liberates cognition from the inner brain. It is believed that human body structure and function determine the types and forms of cognition. On the other

hand, the role of the external environment is also the focus of embodied cognition theory. Cognition is not only shaped by physiological structure but also the result of interaction between body and environment. Therefore, the characteristics of embodied cognition can be summarized into three aspects.

The first feature is the physiological specificity of cognitive style. The way and steps of cognition are largely determined by the physiological and physical properties of the body. Such three-dimensional cognitive styles as up, down, left and right are spatial perception with reference to the body; perceptual semiotics theory also believes that specific sensory experience has a direct impact on perceptual symbols. The nervous system in the sensorimotor area constantly obtains information from the outside world and processes the sensory information into perceptual information. The information is processed in different brain functional areas through a variety of sensory channels. For example, visual signals are processed by the visual central system, somatosensory signals are controlled by the somatic motor center, and so on. Therefore, human cognition has the characteristics of channel specialization. For example, in the study of depth perception, it is found that when people observe objects, due to the different angles of observation, there are different distance feelings between the left and right eyes and the observed objects, forming a relatively different visual difference on the retina, which constitutes human depth perception. In addition, the relative position difference between the body and the head also strengthens the experience of depth perception. When the body position and posture change, the new displacement changes make the subject get more training and experience and deepen the subject's depth perception. It can be seen that all kinds of human sensory thresholds are determined by the biological structure of the body, and the physical properties of the body directly participate in the cognitive process. Philosophers even assume that bats use the sonar system to understand the world, and the concepts and categories of their perception of the world are essentially different from ours. We do not have the body structure of bats, so human beings can never understand the subjective experience of bats.[7]

The second feature is the physiological attribute of cognitive content. The physical properties of the body not only determine the way of cognition but also directly determine the content of cognition. In particular, many abstract rational concepts are completely dependent on the body's sensory experience. Embodied cognitive theory points out that human abstract thinking originates from analogical perceptual reasoning, abstract concepts arise from the transfer of familiar things, and the most familiar thing is one's own body [8]. The concepts we first acquired are all related to the communication between our bodies and the external environment. For example, the concepts of up and down, left and right, front and back are all centered on the body and there are direct body sensation concepts such as cold, hot, warm, and cool, based on these archetypal concepts, we have developed more abstract concepts. For example, we use enthusiasm, indifference, and elation to describe the emotional state. In other words, abstract concepts mainly come from the metaphor of body sensory-motor schema, rather than a transcendental form of the symbol processing. Such abstract concepts as progress and backwardness originate from the special structure of the human body. The human eyes can see the front, and the "front" means safety and control, thus producing positive and abstract concepts such as "advance" and "progress"; while the two eyes cannot see the rear, so the "rear" is unsafe, thus producing negative and abstract concepts such as "retreat" and "fall back". It can be imagined that if the physiological structure of the two eyes is designed to be observed both in the front and in the rear, the concept of "backward" may not be set as a derogatory term in our social culture. The particularity of body structure also determines the experience of cognition. Therefore, different subjects face the same cognitive object, resulting in different cognitive results, and the difference of body feeling and cognitive experience has the characteristics of dispersion, that is, the subject's different experience on one thing will be transferred to the cognition of another thing. In 2009, the Dutch psychologist's experiment showed that body weight directly affected the object's evaluation of the importance of things. It is obvious that a subject with a heavy tablet has a higher evaluation of the value of a foreign currency than a subject with a light tablet. Therefore, neuroscience demonstrates that the body shapes cognition, and mind and cognition also affect the body and its mechanism. A large number of psychosomatic diseases strongly prove this.

The third feature is the cognitive unity of cognition, body, and environment. Cognition is not asserted by computationalism. It is only a simple set of instructions for the input and output of neural signals in the central nervous system. We should also consider the environment of the cognitive as a variable because the external world itself stores the relevant information of perception, memory, reasoning, and other cognitive processes.[9] Cognition is the cognition of the body, and the structure and nature of the body is the product of evolution shaped by the environment. Cognition, body, and environment are inseparable whole. Heidegger's concept of "human being exists in the world" is the embodiment of the overall relationship among the three. In cognitive operation, the body is embedded in the environment, so the environment is also a part of the body, and even the social environment including culture, history, social customs, and moral norms are integrated into the media of the body. Therefore, we not only use the information in the brain but also use the information stored in the environment.[16] Reasoning, judgment, language, and other high-level cognitive activities are completed through the practical activities of the body. For example, when solving multiplication problems, calculators, paper, pencils, and even the lights and decorations in the room are tightly integrated into the cognitive action, and paper and pencils are an integral part of the whole calculation process. For example, when the idea of solving a problem is deadlocked, a pencil with a different color may

produce new inspiration. Because of this, abstract thinking is metaphorical in nature. Metaphor is to map the content of one conceptual domain to another by analogy. For example, "time is money" and so on. The reason for metaphorical thinking is based on the unity of cognition and physical environment, which is the characteristic of embodied cognition. Because our embodied cognition is embedded in the vast social and natural environment, we can make abstract thinking switch freely in various seemingly unrelated scenes and make flexible analogy and grafting of various concepts.

3. Scientific Demonstration of Embodied Cognition Theory

3.1 Mirror Neuron Theory in Neuropsychology

The rise of cognitive neuropsychology confirms that the formation of conceptual knowledge depends not only on the symbolic representation but also on the participation of physical characteristics, especially the sensory-motor system plays an incredible role in the generation of abstract concepts. In recent years, the most exciting achievement of neuroscience is the discovery of the mirror neuron phenomenon. In 1996, Professor Rizorati of the University of Parma in Italy first discovered a special type of neurons in the F5 region of the premotor cortex of rhesus monkeys. When the monkey is moving, this kind of neurons will produce the excitatory response of discharge. The wonderful thing is that when the monkey sees other monkeys or even humans doing similar actions, this kind of neurons will also produce the excitatory discharge, that is, these neurons can be activated only by visual stimulation. Like a mirror, these neurons can map other people's actions. They named these neurons mirror neurons. This discovery lays a physiological foundation for embodied cognition research. [12]The most important function of mirror neurons is to make people have a sense of empathy, that is, to infer the intention and purpose of others' actions with their own action knowledge. When the volunteers saw the disgusting and uncomfortable expressions of the characters in the video, they also activated the same cortical response and felt that they also smelled the bad smell. Therefore, mirror neurons are also the basis of human imitation behavior. The discovery of mirror neurons subverts the information processing theory of traditional cognitive psychology. Further studies by cognitive psychologists have found that the cognitive subject must understand the purpose of action in order to activate mirror neurons. That is to say, the observer must understand the purpose and significance of the action, and practice the action in person, then he can see that other individuals activate their own mirror neurons when they practice the same action. This characteristic of human behavior once again strongly proves the embodiment of cognition, that is, people know the world around them through their own body feelings.

3.2 Psychological Experiment of Embodied Cognition

Embodied cognition not only has the abstract speculative color of philosophy but also completes solid scientific evidence. Modern cognitive psychology has proved some theoretical characteristics of embodied cognition through a large number of empirical experiments. Psychological experiments on embodied cognition mainly include three kinds of experiments: the cognitive influence of environmental physical attributes, the metaphorical effect of emotional concepts, and the cognitive influence of the motion perception system.

The experiment of the cognitive judgment of environmental physical attributes proves that the human cognitive reasoning judgment is affected by the sensory experience caused by external stimulation. For example, when a person holding hot coffee was asked to judge a neutral character, the subjects were more likely to think that the character was friendly and generous, while the subjects holding cold coffee were more likely to think that the character was cold. [13]At the same time, the human is the product of evolution, the structure and function of the body is the result of human adaptation to the environment. Through experimental observation, developmental psychologists demonstrate that the interaction between children's body structure and physical environment can develop abstract thinking such as classification and judgment. Researchers found that when a one-year-old baby is faced with a toy in front of him, he will stretch out his hand to grasp the toy. In the beginning, he will experience many failures, until he gradually realizes the relationship between his arm and the physical environment as well as the physical properties of the toy and comprehensively grasps the appropriate physical elements such as orientation, strength, timing, etc., so as to finally accurately grasp the toy. In this process, by analyzing the characteristics of physical environment and attributes, infants gradually develop the abstract thinking ability of classification, and judgment. It can be seen that without the interaction between body and physical environment children's advanced cognition cannot be developed.

The metaphorical experiment of emotional concepts shows that the emotional concepts we use, such as enthusiasm, indifference and elation come directly from people's physical experience of cold, heat, warmth, and coolness. The physical experience is expressed through language and then develops more abstract concepts. The essence of these abstract concepts is to metaphorize our social emotions with sensory experience.

Experiments on the cognitive effects of the motion perception system have proved that there is a close relationship between body approaching and avoidance actions and cognitive and emotional states. For example, in the process of human evolution, the body forward means that it is approaching a safe object, and it is in a relaxed state psychologically. The pause and retreat mean facing danger and psychological tension. After a long evolutionary process, when we face the same neutral situation, the forward of the body leads to a relaxed psychological state, which produces a safe reasoning evaluation of the situation, while the backward of the body will produce a nervous, and alert psychology to a neutral environment. Cognitive judgment and motor state are closely

intertwined.[14]

4. Dialectical Unity of Embodied Cognition and Disembodied Cognition

The way of scientific development is always forward in the form of dialectical unity. Disembodied cognition is the opposite of behaviorism, and embodied cognition is the opposite of disembodied cognition. But whether it is the cognition from the body or the cognition from the body, it must follow Marx's dialectical materialism world view, that is, there are universal objective laws and causal relations between nature and human society. Therefore, there is a dialectical relationship and structure between embodied cognition and disembodied cognition.

First of all, in the process of learning, cognition, emotion, body, will, situation and other elements play a comprehensive cognitive function, following the principle of the unity of knowledge, emotion, will, and situation. Research shows that the learning of painting, music, athletes, and even mathematics knowledge involves emotion, feeling and sports experience, as well as the perception of body position in the environmental space.[11] Learning and physical activity are inseparable. Some scholars are trying to integrate the two generations of cognitive science and put forward the theory of symbolic interaction. According to the theory, important symbolic information such as word frequency, word order and syntactic structure can help individuals quickly complete some less difficult concept processing tasks. However, when deep concept processing is needed, the perceptual experience about the object will be activated automatically to obtain complete information about the concept.

From a larger perspective, social environment, cultural environment, and natural environment can also influence the learning process through the body. The learning process is restricted by situational factors, not only the operation of abstract symbols. [10]Therefore, the concepts of imitation, projective identity and empathy in psychoanalysis are closely related to the social dimension of emotion. In the process of growing up, children will unconsciously imitate their parents' behavior, thus internalizing their parents' image, and gradually forming their own personality, which shows the powerful social function of embodied cognition.

The task of cognitive science is to grasp the whole picture of the occurrence, development, and change of human cognition. Therefore, our learning should try to situate knowledge, root the mind in the body, root the body in the environment, make the best use of the internal cognitive structure and external environmental conditions, so as to achieve the dynamic balance among cognition, body and environment, and finally realize the unity of objectivity, and value of scientific development.

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Critical Thinking in Education: A Review

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Abstract: National governments and employers have argued that it is important for all sectors of education to prepare individuals who are able to think well and for themselves. 'Good thinking' and 'thinking well' are commonly used terms bound up with what is called 'critical thinking' in the research literature. Evidence is presented in this paper, however, which suggests that not all students may be good at critical thinking; nor do some teachers appear to teach students 'good thinking' skills. A review of the research literature in this area was undertaken and the methods and conceptions of teaching likely to inhibit and enhance critical thinking are outlined, as well as what is required to improve students' thinking skills. Ways forward in teaching critical thinking, and in helping students to learn to think well and for themselves, are described and discussed.

Keywords: Critical thinking, critical reasoning, education, teaching and learning

1. Introduction: 'Good Thinking' – An Avowed Aim of Education

While the contemporary education curriculum is a highly contested arena, there seems to be consensus that it should help students to think well and to think for themselves. National government policy as well as employers are demanding that education, no matter in what discipline or at which level, ought to enable graduates to think 'smarter' than was the case in the past. This position has recently received a new impetus, because as these stakeholders have observed, national development is tied up with education outcomes and because the pace of globalization with increased economic competition is unrelenting. One effect of this change is that secondary and tertiary education graduates now more often find themselves in workplaces where they are exposed to large-scale social, techno logical and social change.

What all of this might mean for 'good thinking', 'thinking well' or 'thinking smarter' than before is explored and contested in a growing philosophically and psychologically informed literature on helping students to engage in thinking for themselves (e.g., Bonnett, 1995; Gardner and Johnson, 1996; Hyland and Johnston, 1988; Perkins, 1993). In another body of literature concerned with learning and teaching in education, it is implied that 'good thinking' in any area involves being able to identify questions worth pursuing, being able to pursue one's questions through self-directed search and interrogation of knowledge, a sense that knowledge is contestable and being able to present evidence to support one's arguments. This burgeoning literature describes teaching approaches claimed to be optimal for developing such abilities (e.g., Boekaerts, 1997; Cederbloom and Paulsen, 1991; Entwistle, 1994; Gibbs, 1992; Laurillard, 1993; Ramsden, 1992; Tait and Knight, 1996; Wisker and Brown, 1996).

The purpose of this paper is to integrate ideas in bodies of literature concerned with 'good thinking' or in helping students to think well in a way which makes sense to teachers and which could be implemented in all sectors of education within existing resources. The authors recognize that the nature of thinking is contested, and they acknowledge that the notion of 'far' transfer, for instance, from one discipline domain to another, is problematic (Drew, 1998; Garnhamand Oakhill, 1994). The term 'critical thinking' is used in the paper not only as defined in the literature, but also as a way of summarizing some of the major generic abilities being emphasized in recent government papers on higher education in the UK, Australia, New Zealand, North America and elsewhere.

The idea that education and training should help students to develop the dispositions or attitudes deemed to be associated with critical thinking, as well as the ability to think well, has been connected with employers' alleged desires for school, university and college graduates who are curious, critical, analytic reflective thinkers – problem-solvers who are quick to learn, as well as flexible and able to add value to their organizations (Harvey *et al*., 1997).

Generic abilities

This notion has been expressed recently, in the UK, in the 1996 Dearing Report on higher education, and 'generic' abilities through terms such as 'key skills' (Higher Education Quality Council, 1995, 1996). According to the Higher Education Quality Council, graduates are expected to learn not only the content and methods of a discipline, but also to develop 'generic' abilities which can be deployed flexibly in a wide range of work and life contexts. The UK Quality Assessment Agency has indicated an interest in requiring higher education institutions to include provision for developing 'key skills', one of which is 'learning to learn'.

In the Australian context, the teaching and learning of a range of 'generic competencies' are seen to be at the core of life-long learning to improve students' flexibility and adaptability when they enter the workforce. These competencies are represented, for example, by knowledge and skills relating to: collecting, analysing and organizing information; planning activities; problem-solving; communicating information; working with others; and using technology (Mayer, 1992). These competencies, in most instances, parallel those developed in the UK (NCVQ core skills), New Zealand (Essential skills) and the USA (Workplace know-how skills). Future national and global success in business and industry, or so it is said by government in these places, is dependent on the ability of teachers, lecturers and tutors to teach knowledge, skills and attitudes relevant to these generic competencies, as well as those more specific to their own subject-matter content domain or discipline area.

Conceptions of Critical Thinking

In the literature on the nature of 'good thinking' and how it might be taught, the term 'critical thinking' is often used to describe competencies which seem to be applicable to teaching–learning in context but also to learning in many workplace contexts. These include, for example, the skills of argument (Kuhn, 1991). The term 'critical thinking' is used in a body of research literature to describe reasonable, reflective thinking, focusing on task, people or belief (Ennis, 1993). It is a definition which attempts to exclude creative thinking.

As it is conceived, critical thinking involves abilities in addition to certain dis- positions. They are brought to bear in identifying a problem and its associated assumptions; clarifying and focusing the problem; and analysing, understanding and making use of inferences, inductive and deductive logic, as well as judging the validity and reliability of the assumptions, sources of data or information available (e.g., Kennedy, Fisher and Ennis, 1991). Evaluation is seen as a core ability. Attitudes or dispositions such as a 'spirit of inquiry' are also seen by some writers in the field as very important (e.g., Ennis, 1993; Perkins, Jay and Tishman, 1993). For instance, Ennis's view of critical thinking involves broad dispositions, transferable over various domains such as being 'open-minded', 'drawing un- warranted assumptions cautiously' and 'weighing the credibility of evidence'. These abilities and dispositions occur within a global perspective in which thinking is conceptualized as a type of reasoned argument with an explicitly social dimension (Kuhn, 1991).

2. Some Recent Research Evidence from Tertiary Education

Kember (1997), after reviewing the available published research evidence, suggested that teaching approaches in tertiary education may be influenced by an interplay of factors. For example, one factor, curriculum design, was seen to influence university and college lecturers to focus on subject-matter content when teaching rather than on the development of critical thinking. This may be because content is usually specified far more fully than potentially generalizable abilities. It seems too that lecturers are offered little help in clarifying what is encompassed in the notion of 'good' thinking. Thus, they are not clear on what it is they are supposed to be helping students to develop. Not surprisingly, lack of clarity about the nature of critical thinking leads to confusion about how good thinking might be assessed; assessment and evaluation of critical thinking has been sorely neglected worldwide (e.g., Kennedy *et al*., 1991). Ongoing confusion about these matters seems sometimes to lead to teaching approaches to problem-solving which are unlikely to develop more widely transferable generalizable critical thinking abilities and dispositions.

Research in the UK further education sector, where the development of work-related thinking has been emphasized since the late 1980s, provides examples of teaching which is inconsistent with this aim. Teaching behaviors likely to develop critical thinking were found to be rare in Social Care courses. This was a surprising finding, given that the courses in this area were an induction into a profession which values critical inquiry (Anderson *et al*., 1997). Bloomer (1998) reported a similar finding based on his

research of a range of programmes leading to General National Vocational Qualifications (GNVQ). In these courses students engaged in much activity, although it rarely included critical inquiry.

Nevertheless, there appears to be a dearth of published research which examines the development of critical thinking during degree-level courses. In a study of critical thinking involving 256 Scottish and Australian university students studying education, an attempt was made to measure critical thinking using the Smith–Whetton *Critical Reasoning Test* (CRT), a reasonably valid and reliable standardized psychological test with versions available for both countries (Pithers and Soden, 1999). Mean CRT scores were compared for course entrants with degrees and those who had no degree, as well as for stage (year) of course. Overall, it was found that there was no significant between-group CRT differences for graduate vs non-graduate students or for stage of the course.

In fact, graduate entrants had CRT scores not significantly higher than non- graduates. Nor did final stage (Years 2 and 3) students, on average, perform significantly better than Stage 1 students. Overall, these results suggest that the sort of critical thinking measured by the CRT, based on Ennis's (1993) conception which is outlined shortly, was not being well developed in the tertiary education course examined in both countries. Nor did the critical thinking abilities and dis- positions measured by the CRT appear to have been developed significantly by the students during their previous study at degree level. Furthermore, CRT mean scores for these students were not significantly higher than the normative sample means provided in the CRT Manual (Smith and Whetton, 1992) for school leavers who had taken examinations qualifying them for university entry (e.g., in the UK, A-levels; in Australia, HSC-level).

In a subsequent paper (in preparation) the authors report instances of critical thinking in a sample (n = 40) of essays for a similar degree course whose pro- gramme aims included the development of abilities encompassed by the term critical thinking; these abilities were described explicitly in course descriptors issued to lecturers and students. Instances of critical thinking were rare and there was a high frequency of assertions without justification. Lecturers, tutors and students seemed not to share an understanding of what it means to think critically. These findings, perhaps, should not be viewed as surprising, given the published literature over a relatively long period about the practices which inhibit critical thinking (e.g., Raths *et al*., 1966; Sternberg, 1987). Evidence that students enter higher education with underdeveloped ability to think critically is another argument for finding effective measures to promote this ability.

Kuhn (1991) supposed that thinking as argument was variably implicated in the beliefs people hold, the judgements they make and the conclusions they arrive at; it was at the heart of everyday thinking. Among Kuhn's 'skills of argument' are the ability to propose opinions alternative to one's own and to know what evidence would support these, to provide evidence that simultaneously supports one's own opinions while rebutting the alternatives and to weigh the goodness of one's own evidence and that of others. Kuhn provided evidence that none of these abilities is widespread in the adult population in the USA, even among those who have had a college education.

In a UK intervention, Anderson *et al*. (1997) demonstrated that students' thinking, as conceptualized in Kuhn's model, could be significantly improved (over that of a control group) in the normal curriculum by embedding measures reflecting the main themes in the literature reviewed in this paper. The improved quantity and quality of justifications the students incorporated into their report writing by the fourth month of the intervention were still observable at the end of the academic year.

Many writers have emphasized that thinking and content are intimately connected (e.g., Biggs and Collins, 1982; Laurillard, 1993; Ramsden, 1992). These workers imply that learning to think involves learning to use content in successively more sophisticated ways in understanding the world. Barnet (1994, p. 153) suggested that an educational goal should be the development of wisdom, defined as 'a form of deep reflection, collective exchange, and a recognition even a critique of inner values. Bonnett (1995) argued that any view of 'good thinking' which fails to affirm the sanctity of content is likely to be deficient. Indeed, there is sound empirical evidence that good knowledge and good thinking are inextricably bound up (Bereiter and Scardamalia, 1993; Chi, Glaser and Farr, 1988). It seems important therefore that critical thinking is taught in the course of teaching discipline knowledge. Blending these ideas with the descriptions of critical thinking already outlined, it seems that one straightforward and effective measure lecturers and teachers could deploy in their teaching is to put far more emphasis on the particular forms of reasoning within their own

discipline area and to give examples of how these forms of reasoning can be applied both within and outside of that discipline.

Another important strand in the discourse on 'good thinking' which helps to unify the ideas previously outlined is the notion of self-regulation of thinking (e.g., Schunk and Zimmerman, 1994). The assumption is that this metacognitive ability, for instance, involving perception, critique, judgement and decision- making, allows people to orchestrate and self-regulate their own learning strategies and those abilities encompassed in the term 'critical thinking'.

3. Teaching Approaches Which Seem to Inhibit or Enhance Students' Ability to Think Well

Ways to Inhibit Students' Critical Thinking

Historically, the published literature on teaching thinking has concentrated on methods which are likely to hinder rather than enhance 'good' thinking. Researchers such as Raths et al. (1966) and, more recently, Sternberg (1987) have discussed theories and practices which tend to inhibit or cause the outright failure of the development of students' critical thinking abilities and dispositions. This literature serves to further inform teachers about what they should not think and do.

For instance, Raths et al. (1966) described the links between thinking and behaviour and provided evidence that some students engage in 'thoughtless' or 'unwise' behaviours as their primary behavioural patterns. These researchers argued that such individual patterns of behaviour can and should be changed, substituting more 'thoughtful' and 'wise' behaviours for the maladaptive patterns. Rath's good thinking operations included: comparing, interpreting, observing, summarizing and classifying; suggesting hypotheses; taking decisions; creating; criticizing and evaluating; designing investigations; identifying assumptions; and coding, gathering and organizing data or information, as well as applying principles to new situations. This list is very similar to more modern ideas (see Ennis, 1993) of what constitutes critical thinking (except for the imagining and creating aspects). Rath's idea that there should be no new subject called 'critical thinking', rather that it should be conceived as a means of teaching–learning in any subject area, resonates too with well-regarded modern research (e.g., Perkins, 1993).

Raths et al. (1966) saw teacher–student interaction as the place where thinking could be best promoted, and in that sense they identified, via their research, eight behavioural patterns (they called them 'types', which suggests more permanent and immutable student attributes) that identified deficits in good thinking. These were learners who: (1) act without thinking (impulsive); (2) need help at each step (overdependent); (3) use goal-incompatible strategies (do not perceive cause effect relationships); (4) have difficulty with comprehension (miss meaning); (5) are convinced of the 'rightness' of their beliefs (dogmatism); (6) operate within narrow rule sets (rigidity/inflexibility); (7) are fearful (not con dent); and (8) condemn good thinking as a waste of time (anti-intellectual).

Raths et al. went on to discuss the types of teacher behaviour which they argued inhibit good thinking. For example, any teacher, no matter at what level, who simply agrees or disagrees, just demonstrates and explains, cuts off student responses, uses reproof rather than praise, shakes the learner's confidence in the value of new ideas or uses basically only retrieval or recall types of questions inhibits thinking. Furthermore, their argument examined the sort of student teachers tend to reward best: the quiet non-thinker. These researchers argued that school-based educational programmes that advocated more effective instructional courses rarely provided the means by which students could learn 'good thinking' practices. It seems as we reach the twenty- first century that for many education students, in these respects, not a lot has changed.

More recently, Sternberg (1987) has argued that in teaching critical thinking, there are more ways to fail than to succeed. Unlike Raths et al. (1966), with their focus on the teaching–learning interface, however, he argued that many teaching programmes in school education are doomed in this area in the planning phase. He stated that eight teacher fallacies obstruct the teaching and learning of 'generic critical thinking'. The first of these concerns lecturers who believe they have nothing to learn from students: in the area of critical thinking, the teacher is also a learner who needs to be receptive to new ideas. The second fallacy is that critical thinking is solely the lecturer's job: this is a belief that they must think out the responses and these should be presented smoothly and slickly, using the best available technology. The point to be made here which resonates with the current advocacy of problem-based learning as a means of enhancing students' thinking is that the teacher needs to be involved in this process sometimes more as a facilitator than as an instructor.

The third fallacy is that there is a 'correct programme' for the delivery of critical thinking. Sternberg (1987) made the useful point that there is no one correct thinking programme: it depends on the programme goals and the content. It also depends, of course, on the context or culture in which the learner's thinking is to be situated. A fourth fallacy is that the choice of a critical thinking programme is based on a number of binary choices (e.g., holistic or process-based, flexible delivery vs face-to-face); usually what will be effective is a combination of approaches from a wide range. A fifth fallacy is that what really is important is the 'right' answer, when plainly it is the thinking behind the answer which is important. Related to the foregoing conception is a sixth fallacy that discussion is a means to an end. Critical thinking may prove to be an end in itself. The seventh fallacy is the notion of mastery-learning (e.g., the student is expected to be 90 per cent correct, 90 per cent of the time) which implies (unreasonably) some ceiling on good thinking: usually thinking and performance can be further improved. Sternberg's final fallacy is that the role of a course in critical thinking is to teach critical thinking.

Most writers in the field seem to be agreed on the point that to promote critical thinking the students must learn to teach themselves to reflect and refine the strategies, to develop their metacognitive knowledge and skills (e.g., weigh evidence, look for interrelatedness or interrelationships, develop stable hypotheses). The school teacher, like those at other educational levels, can only facilitate this individual process. Nevertheless, too often it seems to be the teacher or lecturer who sets the problem(s) and shows the student how to pose it and solve it and then leaves the student to solve similar problems, often with model answers provided as feedback. There appears to be little doubt that Sternberg's eight obstructive fallacies about critical thinking are worthy of consideration and action at the curriculum design stage to ensure planned changes that enhance rather than inhibit critical thinking.

Enhancing Critical Thinking

The notion that abilities encompassed by the term critical thinking should be taught in separate 'add-on' courses has given way because of emerging literature which supports the notion that such abilities can be developed more effectively in the course of teaching subject-matter content. Langer (1997) is one of the researchers who is concerned with teachers presenting content 'mindfully'. Langer's view, like some of the others outlined, is that teachers should learn to teach from multiple perspectives and focus on link- ages and similarities of content. For example, during a course in high school history a teacher might point to, ask questions about and discuss similar causes underlying the world wars, in a range of areas such as economic, political, militaristic and social, as well as covering the specific causes of a particular war. Alternatively, during a poetry course, while studying the Romantic poets, common themes (e.g., their views of Nature and its beauty, significance for individuals) written about by different poets of this period (e.g. Keats, Wordsworth, Coleridge, Byron) could be examined and compared and, perhaps, linked to student research on the life experiences of the different poets and how this experience may have led them to their poetic conceptions of Nature and its influence. In this way, in each respective subject, some themes could be explored in a wider perspective. This, it is assumed, will encourage student sensitivity, novelty and awareness of thinking in different contexts. In such a scenario, the learners are active; they ask questions, seek information, link it to a relevant question and are able to tolerate ambiguity and uncertainty.

A way forward to enhance students' critical thinking, according to Langer, is to change the myths on which current educational practice is based. These myths are similar to the critical thinking inhibitors earlier outlined. By rejecting the myths, it is possible to consider notions such as looking for novel approaches, the notion that the 'truth' may be fluid and context dependent and that the learner needs to develop more control and independence over their own learning.

It seems that students' and teachers' thinking might be enhanced if they were to avoid those fallacies, myths or thinking defects that are seen to hinder the development of critical thinking. There are other specific ideas which course- development teams could adopt and that are likely to enhance critical thinking. Raths et al. (1966) indicated a range of teaching techniques which, according to their follow-up research, brought about changes in students' thinking. The more important of these involved having the students consciously reflect on their core ideas and encouraging them to analyse these ideas. Students, for example, can be assisted to analyse their ideas via the teacher asking for examples, similarities, assumptions, inconsistencies/alternatives; by questioning prior assumptions; by using classification; and by deciding what data or information support the idea.

Furthermore, an outcome of this work is the idea that the teacher should aim to challenge current student ideas. For example, by facilitating the generation of hypotheses, the interpretation of information or data, specification of criteria or helping students to understand the judgmental processes for applying principles to new situations or for making predictions. A classroom question about why the dinosaurs died out about 65 million years ago could ask for students to gather what secondary information they could find about the various hypotheses on this issue (e.g., asteroid/comet strike with fast global environmental change, or alternatively, gradually changing warmer, drier global conditions). Students could be helped to devise the questions, gather information, question, discuss and weigh the different types of evidence and its validity and, perhaps, come to a tentative conclusion. A similar process might attend an answer to a primary school topic of how something works (e.g., how do birds fly?) or why something exists or behaves in the way that it does (e.g., how does a snake catch its prey and 'eat' it, or why butter ies exist or why it rains and how erosion is caused).

4. Metacognitive Approaches to Generalize 'Good Thinking'

A related strand of theorizing has generated extensive empirical data which has considerable potential for informing the teaching of 'good thinking' (e.g., Jarvela, 1995; McGuinness, 1993; Perkins and Grotzer, 1997). As McGuinness (1993, p.311) has pointed out, a variety of methods are used to teach thinking, all of which rely on metacognition to some extent: 'all methods try to make the students' thought processes more explicit, thus enabling them to clarify and reflect upon their thinking and gain more self-control.' Within this strand are ideas about how teachers might help students to learn to think in the course of learning their discipline (e.g., Bliss, Askew and Macrae, 1996; De Corte, 1996; Perkins, 1993). These ideas include modelling ways of thinking, 'scaffolding' students' attempts to understand and use concepts and encouraging students to reflect on the strengths and weaknesses of the thinking processes they are using.

'Scaffolding' has been the focus of some research (e.g. Perkins, 1989; Wood and Wood, 1996). The concept encapsulates many ideas about what teachers can do to enhance critical thinking. It is a teaching concept associated with assessing through dialogue the level of a student's thinking and moving it on through a systematic series of questions. For example, if students were handing in essays or reports which suggested that they have only an embryonic notion of analysis, the 'scaffolder' might routinely organize tutorial sessions around problematic assumptions in the students' prescribed reading or writing. In one of these sessions, the learners could be directly asked to increase the number of counter- arguments they can mount and to evaluate evidence for and against 'my side'/'other side' arguments.

'Scaffolding' comes into play when students cannot make any reasonable response to such questions: the 'scaffolder' might then point out the assumptions underlying the issue and use a series of questions to lead the students to under- stand why they are problematic. For instance, if a student wrote that taxes should not be used to subsidize child care, the tutor might ask why good child care might benefit the state. They might then move on to pressing the students to bring in evidence to the next tutorial session which can be validated. Derived from the way that Vygotsky (1978) described a person's potential for development, scaffolding is intended to facilitate the learner's 'zone of proximal development', which in this example is a more critical way of thinking. Unfortunately, Bliss, Askew and Macrae (1996), after analysing their video data of high school teaching, concluded that teachers did not notice most of the opportunities which arose to 'scaffold' students' thinking in the traditional disciplines.

An account of a research study in which scaffolding was used in a systematic way, and which could be adapted for tutorial work, can be found in Perkins (1989). A useful source of ideas and materials for teachers and lecturers who want to place more emphasis on critical thinking can be found in Bensley (1998). The conception of critical thinking underlying this text is that critical thinking skills are taught as the student learns the concepts and completes the work of a particular discipline. This book purports to help with teaching the sorts of critical thinking involved in evaluating psychological research and in engaging in psychological informed analysis of the issues. The work includes explicit modelling of 'good thinking' and a sequence of activities designed to ensure that students become skilled in thinking with and about psychological theories (see Soden's forthcoming review of this text in Psychology Review). All of this material could be adapted for other disciplines, particularly in social science. The chapter entitled 'Do we perceive the world as we know it?' illustrates what

lecturers might do in their own subject area: a brief text introducing epistemological questions about the topic, in this case the influence of perception on what we know, is interspersed with activities such as generating hypotheses about illusions and 'questioning observations with evidence'. Throughout the text there are activities designed to encourage exploration of problems using psychological theories, and a form for answering critical reading questions is designed for use throughout the course. Texts such as the foregoing are quite useful not only for the discipline- based information that they contain, but because they provide examples, in a more general sense, of some generic methods for improving students' critical thinking and 'metacognitive' skills.

This need for help in generalizing thinking is supported by a recent review of studies of the transfer of learning (Garnham and Oakhill, 1994). It was concluded here that any transfer is usually within the domain in which the thinking was learned. It is worth considering whether this apparent lack of transfer is inherent in thinking or happens because of poor pedagogical practices in promoting generalization of abilities. A minimum condition for generalizing thinking is that the forms of thinking were learned in the first place. Yet many studies cast doubt on this assumption. It seems likely that mostly course design simply does not emphasize approaches which encourage good thinking, and that there are insufficient opportunities for students to practise analysis, critique, synthesis and other aspects of thinking.

The transfer of good thinking to a new context seems to be more likely when the teaching approach is similar to that described in Cowan (1994). For several years, he has been experimenting with an approach in which 'the central task of the tutor, working with a pair of students, was to help each student to unearth from their experiences of studying science a list of examples of relevant transferable skills taken from past and future studies' (p. 57). Cowan acknowledged that some abilities learned through studying science have wider generalizability than others to tasks outside this discipline. It is important to note that this attempt to teach students to generalize their thinking beyond their discipline proceeded in parallel with work designed to improve understanding of fundamental discipline-specific principles and possibly enhanced such understanding.

Schwartz and Parks (1994) have produced some ideas in education for realizing the messages in the literature which has been reviewed. These ideas are easily integrated into a wide range of disciplines. For example, students might be asked to read a brief article making certain claims: their task is to suggest ways of investigating the validity of these claims, implementing their suggestions and, finally, reaching conclusions about the validity of the article.

It is difficult to conceive of any broad type of thinking that has no significant application outside a particular discipline. For example, the thinking involved in designing experiments, and gathering and interpreting evidence, has applications beyond any particular discipline. Similarly, learning to look for contested conceptions of any phenomenon seems widely applicable. If an aim of teaching–learning is to equip students to generalize forms of reasoning in any discipline domain, then it would seem sensible for teachers and lecturers to make much more systematic use of the sorts of explicit modelling and scaffolding just outlined.

These approaches can be used in ways which are consistent with conceptions of thinking encapsulated in Glaser and Chi's (1988) summary of differences between experts and novices as 'primarily reflecting the expert's possession of an organised body of conceptual and procedural knowledge that can be readily accessed and used with superior monitoring and self-regulation skills' (p. xxi). The changing nature of work may mean that breadth of knowledge is becoming more important and that secondary or tertiary education graduates may need to start acquiring knowledge of other disciplines as soon as they enter the workplace. It seems unlikely that broad forms of thinking, such as those involved in hypothesis generation and testing, have to be learned from scratch each time the graduate has to learn knowledge from another discipline. Self-regulation of one's cognitive abilities is likely to be widely generalizable. Thus all the abilities and dis- positions encompassed by the term 'critical thinking' are likely to facilitate the comparatively fast rate of assimilation required in academic study and in many occupations.

5. Ways forward

Research evidence suggests that learning to think well needs to be acknowledged explicitly as an aim and appropriate changes made to courses. Lonka and Ahola (1995) interpreted their results as suggesting that there are two qualitatively different ways of progressing in psychology studies: high-quality active learning, which may be slow in the beginning, but provides qualitatively better results in the long run, and

highly structured lecture/tutorial teaching, which is related to success in early phases of studying. There would seem to be benefits in over- hauling the entire degree curriculum, so that the amount of first-year discipline-specific knowledge could be reduced to allow the students time to engage in activities which are likely to develop their thinking in the ways discussed in this paper. The question of how much discipline knowledge is good for students needs to be revisited.

Research suggests too at all educational levels that staff development initiatives may need to focus more on teachers' conceptions of learning and teaching if they are to deploy the teaching approaches suggested in a generative way. In fact some empirical research indicates quite strong relationships between teachers' conceptions and teaching approaches (Kember, 1997). Teachers or lecturers who are simply following guidelines in curriculum documents do not seem to teach thinking well. Kember proposes that conceptions of teaching can be summarized in terms of two broad orientations labelled teacher-centred/content- oriented and student-centred/learning-oriented. The teacher-centred orientation includes conceptions that teaching is about imparting information or transmitting structured knowledge, whereas the student-centred orientation includes beliefs that teaching is about facilitating understandings, promoting conceptual change and intellectual development.

Plainly, the student-centred orientation is more consistent with approaches outlined above for developing students' thinking. According to Prosser, Trigwell and Taylor's (1994) research, there is significant scope for helping lecturers and teachers to expand their conceptions of learning and teaching in this direction. Students' conceptions of learning are also likely to be an important influence on the outcomes of lecturers' efforts to implement a 'thinking curriculum' in tertiary education. Indeed, affecting students' conceptions is an important plank in any initiative.

Some types of self-managed, technology-based learning may be useful, but the process of analysis, critical review, evaluation and synthesis included in most notions of good thinking is likely to be enhanced through the sort of human dialogue characteristic of well-run class or small-group tutorials. Critical thinking and problem-solving in the workplace, or in life, are not isolated activities. Usually it is influenced by the context and culture in which it is 'situated'. Indeed sensitivity to this culture may be another important characteristic or disposition of 'good thinking'.

The growing enthusiasm in education for problem-based learning (PBL) seems promising for developing critical thinking, in that this approach seems to offer a structure for incorporating the messages in the literature reviewed in this paper. Well-designed problem-based courses are likely to encourage learners to think critically about content since courses start with problems rather than with a programme of lectures and tutorials aimed at teaching students a body of knowledge. For example, students are required to establish what the main issues are within the problems, how the problem might be resolved, how any proposed resolution might be evaluated and what knowledge they need to interrogate before they can construct a way forward. However, PBL cannot be put into place effectively in a piecemeal way. It requires funding and a commitment from course teams to redesign whole programmes with radical changes in content, the pro- duction of student learning resources and a staff development programme which inducts educators into the messages from the literature on teaching thinking.

If all education sectors aim to and are to prepare graduates for a new millennium in which the ability to think well is at a premium, it will be important not only to pay attention to the ideas reviewed here, but also to recognize that the interests, expectations and wishes of the students will impact on their learning and plan programmes accordingly.

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