Opening the Journey of Exploring Cultural Geography for Students ----- A Case Study of Librarians and Teachers' Collaborative Cognitive Education

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Abstract

In modern society, how to improve students' cognitive abilities is an important challenge facing high schools. The school library as the information center of the school should fully play its role in addressing this challenge. With the help of Evergreen Education Foundation, the library team of Danfeng High School located in a rural county of western China, initiated the collaboration with subject teachers to guide students in learning. After several years of experiments, we found that the inquiry-based learning projects jointly developed by librarians and teachers can help improve students' cognitive abilities. This paper studied an example of these projects, "Cultural Differences and Geographical Environment" project, co-developed by a geography teacher and a librarian. By reviewing the project process and assessing its outcomes, we summarized the design factors contributed to the improvement of the students' cognitive abilities, and reflected upon what can be done better, to benefit the future development.

Keywords: high school library, inquiry-based learning, librarians and teachers' collaboration, cognitive education, geography education

1. Background

Danfeng High School is the only high school in Danfeng County, Southeast Shaanxi Province. In the traditional saying, the county is known as a rocky mountain area with "90% mountains, 5% water, and 5% farmland". In the past, the school library was passive in participating in students' cognitive education, considering it as simply subject teachers' responsibility. However, since 2002, the school library has partnered with the Evergreen Education Foundation (EEF) and played a more active role. At first with the help of EEF, the library implemented automated circulation and grew its collection significantly. In 2009, the librarians and subject teachers started to apply for the one-year small projects under EEF, starting with reading programs and later evolving into inquiry-based learning programs. In the past five years, Danfeng High School applied and developed over ten small projects including themed reading and writing, inquiry-based learning in physics and geography, and exploration of local culture. Librarians and teachers collaborated in searching the best solution to assist cognitive education.

After the implementation of the New Curriculum Standard, there are quite a number of independent research topics and materials in the textbooks but all are selective. (Chen & Pu,

2004) In the past, due to the lack of textbooks, teaching hardware and methods, teachers generally did not attempt to try those independent researches. We started such attempts on the platform provided by EEF small projects. In 2013, two authors of this paper (a geography teacher and a librarian) designed a small project titled " *Cultural Differences and Geographical Environment",* based on the chapter *Local Culture and City Development* in high school geography textbook No. 2. The project aims to guide students to explore the geographical factors leading to various cultural phenomena, and experience the joy of independent study and accumulate related methods.

2. Methodology

Based on the EEF small project framework, the design, implementation and evaluation of the project adopted the methodology of outcome-based planning and evaluation (IMLS & IUPUI, 2006): first of all, we set clear expected objectives/outcomes in terms of changes of the target population in knowledge, skills, emotions, attitudes, status. According to Bloom's taxonomy of cognitive educational objectives, objectives in cognitive education can be categorized into remembering, understanding, applying, analyzing, evaluating, and creating. (Krathwohl, 2002) EFF small projects are encouraged to go after cognitive educational objectives at higher levels. Concrete activities are designed and implemented to achieve these objectives. How much the objectives are achieved is assessed by work products of these activities. During this process, we emphasize learning by doing. With the project team experiencing, reflecting, abstracting, applying and back to experiencing, so on and so forth, the project design is under constant improvements.

Below we inspect the impact and design of this project. By reflecting on the project process, and inferring from the assessment results, we find out what design factors have helped achieve the outcomes, what are the defects in our design, and possible improvements, in order to provide a reference for the library-assisted subject and cognitive education in the future.

3. Project Design and Process

First of all, we (the geography teacher and the librarian) selected and purchased related geography books and books on inquiry-based learning methods. The librarian organized old resources and newly purchased ones and put them on special shelves for this project. We organized a kick-off meeting and training for the students, explaining core ideas of geography study, introducing the concept and process of EEF small projects, introducing the planned learning activities and related books in the library, finally assigning the first learning task. Twenty students enrolled in the project.

The learning tasks of this project are so designed that the students can build their cognitive capability from the lower level to the higher level, at the same time gradually deepening their understanding of the relationship between the cultural differences and the geographical environment.

Task 1: Students learn by themselves the characteristics of the culture and its relationship with the geographical environment, and write a study report (corresponding levels of cognitive educational objectives: remembering, understanding).

What is culture? What are the characteristics and types of cultural landscape? What is the relationship between culture and geographical environment? Students spent three weeks in studying the questions above by themselves in the library, based on the courseware provided

by the geography teacher and guided by the librarian. Students were requested to submit study reports to answer these questions and give examples. However, reports version one were not of good quality, especially some reports were literature works full of viewpoints without any evidence. Therefore, the geography teacher provided comments and suggestions for each report, and divided students into study groups with students who wrote good reports assigned into each group to help others, and the teacher provided office hours. This aimed to develop students' abilities of reflection and collaborative learning. The revised versions were better. However, because we neglected the training of citation rules for the students, all the reports were weak in this respect.

Task 2: Find photos of cultural landscapes with regional characteristics and analyze their geographical backgrounds (corresponding levels of cognitive educational objectives: understanding, applying).

Ask students to spend three weeks taking photos of cultural landscapes. Select some photos and analyze their geographical backgrounds with the students in class.

Task 3: Select cultural phenomena such as architecture, food, costumes, and customs, especially those familiar to students, to analyze how the geographical environment contributed into its formation and write essays (corresponding levels of cognitive educational objectives: applying, analyzing).

In the next eight weeks, students selected research topics, did research in the library and wrote essays. Three major questions raised by the students and helped by the librarian were: 1) how to select the topic: We suggested they study the most familiar and interesting phenomena around them, starting from small things. So a student chose the Mausoleum culture in the ancient capital Xianyang, while another student from Bamboo Grove Pass as known as Little Jiangnan (the south of the lower reaches of the Yangtze River), chose the folk house culture in his hometown; 2) how to search and organize materials: The librarian taught students to come up with a keyword list from the research topic, search keywords online by search engines, classify and organize the materials found, and extract useful viewpoints and evidences for analysis; 3) how to analyze and write essays: make students understand there are many factors influencing culture, such as political, economical and geographical factors. In the essay they need to analyze the geographical factors. As for the structure and flow of the essay, students can go from phenomenon to cause then to conclusion. They could also use new structure and flow if they can control it well. As for the contents, they need to provide details and adequate evidences. The language used should be concise, plain and accurate, avoiding adopting the lyrical style.

Task 2 was a transitional task added after Task 3 had been going on for three weeks. By then we found students had difficulty in handling the research in Task 3, after they just gained basic understanding via Task 1.

Task 4: Students observe and experience the culture of destinations during travel, and analyze the geographical factors contributing to typical cultural phenomena there (corresponding levels of cognitive educational objectives: applying, analyzing).

In June 2013, seven students in our project group were about to go for summer travelling with their families. So we added another activity to our project, asking these young travelers to analyze the influence of the geographical environment on culture in these destinations. Before they went on these trips, The geography teacher tutored them on how to do background research on geography and culture of a region, including referring to books and magazines

such as *The History of Chinese Culture --- Regional Cultures*, *National Geography of China,* and understanding the natural geographical environment in all aspects including location, landforms, climate, water, earth, plants, and understanding the regional culture including architecture, costumes, agriculture and industry, food, folk customs, arts and so on. However, students were not required to write a report. After the fall semester began in September 2013, we organized a meeting for these students to exchange their observations and thoughts. After the meeting, students spent their spare time on research in the library and writing their final research reports.

4. Outcome-based Evaluation and Reflection

4.1 Success Factors

Looking back, we summarized the following success factors of this project.

1）Inquiry-based learning on topics from daily life

This project enabled students to do inquiry-based learning on topics from daily life, and trained them in applying knowledge. Students entered into the research process with interest and questions, and used their knowledge and methods to answer these questions, which is the biggest difference between this project and traditional spoon-feeding teaching methods. They developed both interest in geography and confidence through this project. For example, the student who researched on the folk house culture in his hometown commented, “I will read more, observe more, relate more. Knowledge is actually from life. Knowledge is around us. “. He also said, “It is not always necessary for the teacher to impart knowledge to students, but he/she should let them study independently and experience the process of learning. As a matter of fact, the knowledge acquired by us ourselves leaves a deeper impression on ourselves.” He mentioned that he would like to organize such learning activity by himself in the future.

2）Teachers moving away from the habit of spoon feeding students

From Task 1, the geography teacher abandoned the old teaching style of lectures, by only providing the framework and resources for students to study by themselves. After we discovered that the understandings of the students were far from our expectations through their study reports, we introduced student study groups and added more office hours. We found that these new learning methods, while mobilizing students, helped us discover students’ specific deficiencies and work towards improving them.

3）Setting realistic goals based on students’ current status

Because our students had hardly any research training and experience, it is impossible for them to gain good research ability through one or two projects. Taking this into consideration, in this project, instead of setting a high expectation, and giving them too difficult tasks to handle on one shot, we set up realistic goals and pushed them forward one step at a time, to avoid causing them too much frustration. For most of the students, the gap between their current level and the expectation appeared surmountable so they were motivated to catch up.

4.2 Results of Evaluation

Using rubrics to evaluate how well the expected outcomes are achieved, we can see:

How well did Tasks 1 to 3 achieve Outcome 1 “All students demonstrate the understanding of the relationship between cultural differences and geographical environment”? For all 20 students participated in the project, though 65% of the students demonstrated basic understanding based on reading and remembering in Task 1, (by explaining culture and cultural landscape, also giving examples in their study reports), but in Task 2 only 25% students found qualified photos of cultural landscapes with regional geographical characteristics. Worse yet, in Task 3, only 35% delivered a clear and relatively comprehensive analysis of the influence of the geographical environment on cultural phenomena. As we can see, with research and mentoring from the teacher and the librarian, only about half of the students could go from the initial level of remembering to the levels of applying and analyzing. The reason is that even if the research topic is small and familiar to the students, the students need to be equipped with the geographical theory and geographical analysis capability, as well as general research capability in order to accomplish it. However, the status of our students is: 1) their research capability is very weak, shown by their first version study reports. For example, the report titled “*Diverse Festival Culture”* was a collection of excerpts and listings of cultural phenomena without any analysis. Another report titled “*Civilization—the Pearl Created by Geography”* was a prose; 2) Lack of knowledge on geographical theories and weak geographical analysis capability. Students have been memorizing the textbook contents without analyzing the phenomena in their daily lives using what they’ve learned, hence their ability of applying and practicing is weak.

How well did Task 4 achieve Outcome 2 “The seven student travelers demonstrate the ability of sensing and then analyzing the relationship between culture and geographical environment”? The seven students showed huge individual differences, with only 29% showing good sensitivity in capturing cultural phenomena with geographical characteristics, and only 14% being able to provide a relatively comprehensive and accurate analysis. The insensitivity is due to both the lack of experience and insufficient preparation. Since working products were not mandated from the background research, some students did it quick and dirty. The bad quality of analysis can be attributed to the lack of knowledge on geographical theories and weak geographical analysis capability, also the general research literacy. The teacher and the librarian also failed to provide in-depth tutoring to these students.

How well did Tasks 1-4 achieve Outcome 3 “All the students demonstrate the improvement of information literacy”? Only 35% of the students selected topics that were clearly expressed and feasible; 55% of the students selected topics that were too big and beyond their research abilities; 10% of the students selected topics that were blurry and not clearly expressed. As for information search, 85% of the students used two types of resources, books and online Wikipedia-like articles; 15% of the students solely relied on the online articles. As for analysis and expression, only 20% of the students could analyze logically and relatively comprehensively centered around the topic in the essay; 70% of the students could only list a bunch of information about the topic without making logical arguments; 10% of the students produced a totally confusing essay. The reasons are as follows: 1) Students were in lack of systematical training on information literacy. For example, in selecting topics, though some students who actively raised questions were given extra tutoring by the librarian, those who did not realize the problems of their topics or were simply too shy missed the opportunity of being corrected at the very beginning. In information search and organization, on one hand, students could only work on the project in their spare time due to the pressure from the exams; on the other hand, due to the lack of systematical training, students had no systematical and effective search strategies, nor were they able to identify the relevance of information well. 2) The lack of systematical training on information literacy reflected the teacher’s and the librarian’s insufficient knowledge on information literacy theories. For example, because the librarian and the geography teacher are themselves weak in information search strategies

and citation rules, and they did not train and tutor students in these aspects, or pose related requirements in expected outcomes of this project.

How well did Task 4 achieve Outcome 4 “The several student travelers demonstrate the improvement of communicative ability”? Only 14% of the students were able to make statements and show evidence; 57% of the students could not understand questions or comments from others accurately; 86% of the students had no eye contact with others, which hindered the interaction. The reasons are: 1) the exam-oriented education system has been ignoring the cultivation of oral presentation skills, resulting in students being unable to speak while able to write; 2) the project neglected the design of collaborative learning and did not provide practicing opportunities to the students; 3) the geography teacher and librarian did not provide adequate tutoring in this aspect.

From the above analysis, we derive the aspects that we need to pay attention to or improve next:

1）The geography teacher should facilitate students to accumulate geographical knowledge and theories, and improve geographical analytical ability. Encourage students to read more, think more and exchange more with each other, besides studying the textbook. Students can read quality geography magazines and watch good TV programs on geography to broaden their horizon and awaken their interest. Meanwhile, besides reading they are also encouraged to travel to different places to observe, ask, listen and explore.
2）We need to have a stringent implementation of the outcome-based planning and evaluation. Making rubrics is the key, in which through setting the expected outcomes, accurate and highly operable measuring standards, we derive the learning activities needed, and guide the teachers and students in formative assessment. Moreover, we keep adjusting the rubrics and improving the design based on the results of formative assessment. In current rubrics of this project, the evaluating dimensions for information literacy outcome are incomplete, missing the assessment of information search strategy and citation. This oversight will be corrected in the future.
3）The training and guidance of the outcome-based design and evaluation need to be systematic and comprehensive. Besides teachers, students should also be familiar with the backward design methodology and do self assessment with the rubrics. They can also reflect upon whether each teaching activity has reached its expected objective, to improve their ability of independent learning. The idea of outcome-based planning and evaluation is brand new to students. It is difficult for the teachers to grasp, let alone students. So the training and continuous guidance of the process, methods and principles needs to be stressed.
4）Pay attention to the training of teachers/librarians in research literacy, and help the librarians master the systematic training of research literacy for the students. Librarians and teachers also need to familiarize themselves with pedagogy that allow students to actively construct knowledge: inquiry-based learning, collaborative learning, interdisciplinary research, learning through real work in life, etc.
5）As the facilitators of the inquiry-based learning, the teachers and librarians need to pay attention to refine the design of training and tutoring. On one hand, the systematic training is essential for students, and the teachers and librarians should play different but complementary roles in the training of subject-specific knowledge and methods, and general research literacy. On the other hand, a fine tutoring design is needed to help students successfully apply these methods. In this project, without the training of research methodologies, and insufficient design of intermediary work product and formative tutoring, some students languished at late stage of this project. In addition,

used to the spoon feeding methods, our students expected the teacher to give them the answers directly from time to time. Therefore, teachers/librarians should accumulate skills to help the students move away from this habit.

6） Teachers and librarians pay attention to the design of collaborative learning. The project adopted study group in Task 1, and discussion meeting in Task 4, but the element of collaborative learning was not designed into the project from the very beginning, which was not good for the exchange between the students and team motivation. We intend to use collaborative learning as the basic form of inquiry-based geography learning project, and use detailed intermediary working products, such as the group role assignment, individual group member's output, and group meeting minutes to observe and guide students' collaboration. In addition, we will pay attention to organizing discussion and reflection. For example, teachers can facilitate sessions in which student groups assess each other's work products and progress, answer questions, and do case study.

5. Conclusion

Reflecting upon the process and outcomes of the "Cultural differences and geographical environment" project, we realized two design factors are critical. 1) With topics from daily life, an inquiry-based and collaborative learning process can help the students regain their initiative; 2) The guidance and support from librarians and teachers need to be systematic and specific at the same time. Being systematic entails that the knowledge provided by the teachers and librarians needs to cover both aspects of the methodology and domain knowledge, while the methodology includes not only the subject-specific methodology which is the expertise of the subject teachers, but also the general research methodology, which should be built as the librarian's expertise. Being specific means that based on the cognitive characteristics of rural high school students, step by step guidance is needed on how to apply the methodology, and illustrative and timely guidance is needed to keep their exploratory spirit high.

Moving forward, we plan to study the relationship between local culture and geographical environment of the Danfeng County. For a long historical period, with Wuguan Pass, a natural barrier and the strategic passage between Qin (roughly Shaanxi province today) and Chu (roughly Hunan and Hubei provinces today) regions, Danfeng has been a military fortress, as well as a port connecting Han River and Qin land, which results in the culture of merchant fleet, horse caravan, celadon trade and salt trade. Starting from the historical relics including guild halls and archives, students can research the history and the changes of social life in this county, study the geographical environment and its changes, finding out the relationship between them.

We think that the primary goal of secondary school education is cognitive education, and that the method and ability of acquiring knowledge is more important than the knowledge itself. After several years' exploration, we found that by collaborating and guiding students to do inquiry-based learning using the library, librarians and subject teachers can improve traditional spoon feeding teaching method, and effectively enhance students' cognitive ability. Now that the teachers, librarians and students have savored the sweetness of inquiry-based learning, it is time to start forming the path of cognitive education development for our school by reflecting upon the past experience. Moreover, due to the teachers and librarians are still weak in theories and practices of cognitive education, both parties should collaborate and share, while actively seeking the intellectual inputs from the outside world.

6. References

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Biographical note

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Shucheng Liu, from Danfeng County, Shaanxi Province, is currently a geography teacher in the Danfeng High School. After graduating from the Geography Department, Shaanxi Baoji University of Arts and Sciences, he became a high school geography teacher in 1994.

He is interested in geography pedagogy reform and inquiry-based learning. In 2010 he participated in the Evergreen small project “Librarians Collaborating with Teachers for Guidance”, and guided the students to study the integrality and differences of natural environment. In 2012 he was the main investigator of the Evergreen small project “The Relationship between Cultural differences and Geographical Environment".

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She has been actively participating in the Evergreen library program since Spring 2002. She was the main investigator of four Evergreen small projects including “Growing up with Reading” in 2009, “Librarians Collaborating with Teachers for Guidance” in 2010, “Kindergartens’ Family Education” in 2011, and “Women’s Saloon” in 2012, and is currently participating in “Oral History of Danfeng High School” project in 2013.

Her two papers “Expanding the Library Services and Protecting the Local Culture” and “Piloting the Collaboration between Librarians and Teachers to Guide Students in Using Library Resources” were published in the Proceedings of Information Technology in Education Conference (ITIE) in 2008 and 2010 respectively.