East Meets West: Teaching BIM in a Study Abroad Class with Chinese & American University Students

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The recent rapid evolution of Building Information Modelling (BIM) software and its adoption among the building disciplines suggests that BIM holds tremendous promise for the future of Architecture, Engineering and Construction (AEC) industry. Meanwhile, many universities in the U.S. have started including international education as part of their core education mission, recognizing that increasing the global competence among the next generation is a national priority and an academic responsibility. In the summer of 2010, students and faculty of the McWhorter School of Building Science at Auburn University participated in a 5-week Special Thesis Study Abroad class in China. As one of the main themes of the class, they collaborated with students and faculty of the College of Civil Engineering at Tongji University, Shanghai, China using BIM as the core subject domain. According to the participating faculty of Tongji University, “this class was the first US-China joint undergraduate thesis in construction education.” The authors believe that the Auburn University participating students received an enriched international experience studying abroad, enhanced their BIM skills, developed their skill sets to work on an international construction management team and experienced first-hand the building challenges in China versus the United States. This paper presents the planning, design, development, implementation and outcomes of this new collaborative BIM study abroad class.

Key Words: BIM, Study Abroad, Construction Management Education, International Education

Introduction

The recent rapid evolution of Building Information Modelling (BIM) software and its adoption among the building disciplines suggests that BIM holds tremendous promise for the future of Architecture, Engineering and Construction (AEC) industry. Due to its many uses and capabilities, contractors and construction associations are at the forefront of the BIM debate (Taylor et al., 2008). According to a survey by McGraw-Hill Construction (2008), BIM is being broadly adopted across the construction industry and its use is expected to exponentially expand across the AEC industry in the coming years. “For construction education, BIM offers the opportunity to unify disparate technologies to provide a coherent Information Technology (IT) skill set for construction students to address the range of problems in the life cycle of a building.” (Azhar et al., 2008) BIM also provides a framework that combines visualization and parametric modeling in a way that allows students to simultaneously consider the interdependent processes of planning, analysis, design and construction (Casey, 2008; Azhar et al., 2008). Despite BIM has been implemented in many construction programs in the US and EU, the rest of the world, for instance China, still keeps BIM out of their main construction curriculum.

Various ways of teaching BIM in its construction management curriculum have been experimented by faculty of the McWhorter School of Building Science at Auburn University. Their 2010 BIM Special Thesis Study Abroad class brought together undergraduate students from the McWhorter School of Building Science at Auburn University (BSCI) and the College of Civil Engineering at Tongji University (TJU), Shanghai, China to understand the global advantages of BIM. Through this international collaboration, 16 BSCI students and 15 TJU students studied, researched and worked on multiple construction-related topics with an emphasis on learning and using building information modelling (BIM) as well as the concepts of sustainable construction, integrated design, building MEP systems, and construction scheduling. Developed by two BSCI faculty members, along with a group of TJU faculty, in this class students modelled one of the European pavilions, constructed for the 2010 Shanghai World Expo, using the Autodesk® BIM Portfolio to:

- Create architectural, structural and MEP models using software based on the Autodesk® Revit® platform
• Create building material quantity take-off and pricing estimates using Autodesk® Quantity Takeoff software
• Perform building design clash detection and 4D construction schedule simulation using Autodesk® Navisworks Manage® software

After working in virtual teams during the 2010 spring semester with their Chinese partners, BSCI students and faculty travelled to Shanghai in May 2010 and studied in residence at Tongji University for three weeks. During that time, students also compared and analyzed the application of BIM in the American construction industry versus the use of BIM in the Chinese construction industry. According to Tongji faculty, “this class was the first US-China joint undergraduate thesis in construction education.” This paper presents the planning, design, development, implementation and outcomes of a new collaborative study abroad class using BIM as the core subject domain.

Pedagogical Design and Development of the BIM Special Thesis Study Abroad Class

Interestingly, the initial interaction between McWhorter School of Building Science at Auburn University (BSCI) and Tongji University (TJU) began when one of BSCI’s 2009 China Study Abroad students went to TJU to do an interview with one of the Building Engineering faculty for his 2009 Research-based Special Thesis on Re-cycled Concrete. He came back to the BSCI faculty and was really excited about TJU because their academic structure lines up closely with BSCI’s College of Architecture, Design and Construction units. TJU has a college of Architecture & Urban Planning and a College of Civil Engineering (Building Engineering is one of 5 departments). After the 2009 class, one BSCI faculty visited with the TJU Building Engineering faculty in July 2009 to see if there was any interest in their students/faculty collaborating with BSCI students/faculty for the 2010 China study abroad class. The response from TJU was extremely encouraging and its faculty were excited about participating in this international collaborative thesis class. Through emails, telephone calls and Skype videoconferencing, in fall 2009 BSCI faculty worked closely with TJU faculty and set up the following themes and preliminary requirements for the class.

General Class Information

This five-week special thesis study abroad class involved scholarly work equal to or in excess of the traditional BSCI Building Science undergraduate thesis class. Participation in the 2010 BSCI Summer Study Abroad Program in China class provided students the following academic credits:

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2010</td>
<td>BSCI 5970</td>
<td>Research Methods &amp; Study Abroad Prep.</td>
<td>2</td>
</tr>
<tr>
<td>Summer 2010</td>
<td>BSCI 4990</td>
<td>Special Thesis</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>BSCI 4400</td>
<td>Construction (Temporary) Structures</td>
<td>2</td>
</tr>
</tbody>
</table>

Thesis Project Themes & Requirements

Two Undergraduate Senior Thesis themes were offered to BSCI and TJU students who participated in this class. Each student was able to decide the theme of his/her own thesis in early December of 2009. The detailed requirements of each thesis theme are listed below:

1. **Theme-I: Group-based, Building Information Modeling (BIM) Thesis.** The overall goal is to create comprehensive BIM models of the construction project, extract material quantities from the BIM models, estimate construction costs, and create a construction schedule. A comparison between American and Chinese construction practices will be developed by each group.
   - **Building Project for BIM Thesis.**
     - One commercial project provided by TJU would be assigned to each student group.
   - **BIM Model Requirements:**
     - A comprehensive architectural BIM model of the project shall be developed in Revit Architecture 2010 by each group.
     - A structural BIM model shall be developed in Revit Structure 2010 by each group.
     - A simplified MEP (Mechanical-Electrical-Plumbing) BIM model shall be developed in Revit MEP 2010 by each group.
iv. Using Autodesk NavisWorks Manage to detect and resolve interferences among the Architectural, Structural and MEP models.

- Construction Estimate - Building Material Quantity Take-off & Pricing Requirements.
  i. The Quantity Take-off (QTO) of the main building materials shall be extracted from the BIM models. The QTO shall be organized and reported in a professional manner.
  ii. Material & Methods shall be priced using standard procedures (Labor, Material, Subcontractor, Equipment), appropriate crew sizes, etc. Pricing will be done per:
     1. U.S. construction practices – BSCI students
     2. Chinese construction practices – TJU students.
     3. Comparison developed.

- Construction Schedule Requirements (US vs. China):
  i. Critical Path Method (CPM) schedule shall be developed.
  ii. (Optional) Interface between Revit & MS Project (BIM virtual schedule)

2. Theme-II: Individual Research Thesis. The goal of this thesis is to allow students to choose their own thesis research topic and then conduct a case-study. Create a compare & contrast case-study on a specific design/construction topic selected by a student and approved by the faculty.

Participating Students

McWhorter School of Building Science at Auburn University students on track to graduate in the 2010 spring, summer, or fall semester were eligible to apply for this class. To qualify, BSCI students were required to attend the Study Abroad Preparation course during the spring 2010 semester that would meet 2 hours a week (cooperative education students participated in the course via video conferencing since they were working at their co-op positions during the spring semester). In addition, students who initially planned to graduate during the Summer Semester 2010 had to complete all their coursework by the end of spring 2010 semester, except for the two courses that they would be taking on the abroad trip. There were also other application requirements for student applicants according to BSCI University’s Study Abroad Policy, such as minimum GPA of 2.5, a major medical health insurance plan, and a good standing at BSCI University.

Through a competitive process in September, 2009, 16 BSCI students were selected to participate in this class. 15 TJU students were selected by their faculty through a similar process.

Group Collaboration and Group Assignments

The basic idea of collaboration between BSCI and TJU students was to encourage each set of BSCI-TJU pairing groups (for instance, BSCI’s group-1 and TJU’s group-1) to communicate, share information and help each other on a group’s own BIM project, rather than allowing them to complete one project together. Besides the basic thesis requirements, each group from the same institution also received a “Special Group Assignment” focusing on one unique construction related topic. See Table-1 for a listing of these special group assignments given to BSCI students.

BIM Thesis Guidelines and Grading Rules

A series of comprehensive 2010 BIM Special Thesis Study Abroad Guidelines was developed by BSCI faculty. Similar guidelines were also developed by TJU based on the BSCI’s Guidelines for its students and faculty to use. Although students would present the thesis results to an American-Chinese joint faculty jury, their grades would only be given by the faculty from their own institution that also followed the grading rules of their own institution. Since the BIM thesis is group based, BSCI faculty designed a grading matrix consisting of two elements to evaluate each student’s performance in a BIM group:

- 70% of student grade is based on the quality of the thesis project his/her group turns in. In other words, every student of the same BIM group receives the same grade on this portion.
- 30% of student grade is based on an evaluation provided by his/her peers in the same group. A Students Peer Evaluation Form was designed by BSCI faculty and used to quantify this part of grade. The objective of this form was to allow a student to assess each group member’s performance in five categories, including: contribution; motivation and work ethic; communication with other members of the
thesis group; collaboration with other members of the thesis group; and collaboration with TJU student partners.

Table 1

2010 BIM Study Abroad Class group assignments for BSCI students

<table>
<thead>
<tr>
<th>Group Name</th>
<th>Thesis Type</th>
<th># of Students</th>
<th>Students</th>
<th>Special Group Assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BIM</td>
<td>4</td>
<td>all</td>
<td>Research on Sustainable Aspects</td>
</tr>
<tr>
<td>2</td>
<td>BIM</td>
<td>3</td>
<td>all</td>
<td>Detailed MEP Design and Analysis</td>
</tr>
<tr>
<td>3</td>
<td>BIM</td>
<td>3</td>
<td>all</td>
<td>Construction Schedule Simulation in NavisWorks</td>
</tr>
<tr>
<td>4</td>
<td>BIM</td>
<td>3</td>
<td>all</td>
<td>Energy Consumption Analysis</td>
</tr>
<tr>
<td>5</td>
<td>Research</td>
<td>3</td>
<td>student-1</td>
<td>Rainwater Harvesting</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>student-2</td>
<td>Concrete Testing &amp; Quality Control</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>student-3</td>
<td>Sustainable Construction on Shanghai World Expo</td>
</tr>
</tbody>
</table>

Selection of the Building Project for BIM Thesis

Since BSCI’s class was planning to visit TJU for the collaboration. The faculty from both universities agreed to choose an on-going or recently finished building project in Shanghai, China for the BIM thesis. The following list of requirements was initially used for selecting the BIM thesis construction projects.

- TJU would provide a list of projects for consideration.
- Design and construction documentations, including plans and specifications, must be in English.
- Design of the projects must be 100% done.

The final short list of the projects and their basic information provided by TJU are listed in Table-2. After review of the design and construction documents and few rounds of discussions between BSCI and TJU faculty, the 2010 Shanghai World Expo Pavilion-B was selected as the building project for the BIM thesis class.

Table 2

Short list of construction projects for BIM thesis provided by TJU for consideration

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Type</th>
<th>Levels</th>
<th>Structure Type</th>
<th>Size (ft²)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shopping Mall</td>
<td>Commercial</td>
<td>2</td>
<td>Concrete &amp; masonry</td>
<td>70,000</td>
<td>Finished</td>
</tr>
<tr>
<td>Elemental school classroom bldg</td>
<td>Commercial</td>
<td>3</td>
<td>Concrete &amp; masonry</td>
<td>70,000</td>
<td>Finished</td>
</tr>
<tr>
<td>Elemental school coliseum</td>
<td>Commercial</td>
<td>1</td>
<td>Concrete &amp; masonry</td>
<td>20,000</td>
<td>Finished</td>
</tr>
<tr>
<td>University student dorm</td>
<td>Commercial</td>
<td>6</td>
<td>Concrete &amp; masonry</td>
<td>50,000</td>
<td>Finished</td>
</tr>
<tr>
<td>University student dining hall</td>
<td>Commercial</td>
<td>n/a</td>
<td>Concrete &amp; masonry</td>
<td>30,000</td>
<td>Finished</td>
</tr>
<tr>
<td>New community development</td>
<td>Residential</td>
<td>18 &amp; 14</td>
<td>Concrete</td>
<td>1.5 mil</td>
<td>Under construction</td>
</tr>
<tr>
<td>2010 Shanghai World Expo Pavilion-A</td>
<td>Commercial</td>
<td>3</td>
<td>Steel &amp; concrete</td>
<td>30,000</td>
<td>Under construction</td>
</tr>
<tr>
<td>2010 Shanghai World Expo Pavilion-B</td>
<td>Commercial</td>
<td>6</td>
<td>Steel &amp; concrete</td>
<td>80,000</td>
<td>Under construction</td>
</tr>
</tbody>
</table>

Class and Collaboration Timeline

The following timeline was followed by the class:

- First teleconference meeting between BSCI and TJU faculty in second week of November 2009 to finalized the class themes and requirements.
- Projects selected by the end of November 2009.
- Student group and faculty advisor assignment in the first week of December 2009.
- Getting the BIM software programs for participating students by middle of December 2009.
- All the students started working on projects & collaboration from December 2009 to early May 2010.
- BSCI class arrives at TJU, Shanghai on May 21st, 2010, and stayed in residence on TJU campus for 3 weeks for collaboration.
- Thesis presentations and American-Chinese joint faculty jury of all the projects on June 7th and 8th, 2010.
Communication

English was chosen as the official language of communication for the class. Student/faculty started collaborating during the fall 2009 semester in a virtual environment. The means of communication used by faculty and students for collaboration included bi-weekly teleconference meeting between BSCI and TJU faculty, Email, and Skype.

References Shared between BSCI and TJU

BSCI faculty provided references to help TJU faculty understand their senior thesis class and their study abroad programs. Some of these references are listed below:

- A conference proceedings paper on the 2009 BSCI China Study Abroad class.
- An example of individual China Study abroad research thesis from the 2009 class.
- Reference materials and guidelines on construction estimating and pricing in the US.
- Samples of past BSCI’s traditional and BIM theses.

Implementation of the BIM Special Thesis Study Abroad Class

2010 Spring Preparation (Prep.) Class

In order to assist BSCI students in developing a quality special thesis and getting ready for the trip to China, a Special Thesis Prep. Class was taught in the spring 2010 semester. This class met two hours a week and consisted of lecture, demonstration, and hands-on guided instruction on the computer. The objectives of this class included:

- **Special Thesis**: Upon completion of this class, the majority of work for each student’s thesis should be finished and checked by the instructor.
- **Travel and Planning**: Upon completion of this class, students should have gained some knowledge about Chinese culture, Chinese customs, and international travel.
- **Paperwork**: Upon completion of this class, all required paperwork, forms, visas, etc. for the Study Abroad class and travel to China should be finished.

A comprehensive BIM special thesis milestone list (see Table-3) was also developed and used in this Prep. class to assure that students were on the right pace to develop a quality BIM thesis.

2010 Summer Study Abroad Class

BSCI faculty had spent tremendous amount of time on developing the class’s China itinerary to assure that it would meet the overall objectives of the students’ thesis along with considerations of feasibility, and availability of local contacts, travel, and cost. Due to the thorough planning and experience gained from previous their Special Thesis Study Abroad programs (to China and Europe), BSCI faculty members were able to organize the entire trip and finalize the class itinerary before leaving for China. The 5-week class itinerary included three weeks of in-residence on TJU campus in Shanghai for collaborating on thesis, teaching the Temporary Structures class, visiting Shanghai World Expo and construction sites, and then followed by one week of cultural visits in Lijiang, Yunnan Province and one week in Beijing.

The collaboration on thesis between BSCI and TJU students actually started in Spring 2010 before the BSCI group arrived at China. Students were using the computer communication program Skype to chat with their partners from the other country. Most BSCI students agreed that it was easy to get the Chinese students on-board with Skype and had a few conversations before they reached China. They could also send files to each other, which helped both groups, learn from each other’s BIM models and make improvements.
Table 3
2010 BIM Special Thesis milestones

<table>
<thead>
<tr>
<th>Due Date</th>
<th>Milestones</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Jan. 25</td>
<td>• BIM software installation on personal PC complete</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>• Project template setup in Revit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Linking/Importing AutoCAD drawings to BIM models complete</td>
<td></td>
</tr>
<tr>
<td>2 Feb. 8</td>
<td>• Modeling of foundation, columns, beams, walls, floors, and roof complete</td>
<td>150</td>
</tr>
<tr>
<td>3 Feb. 22</td>
<td>• Modeling of stairs, doors, windows, ceilings, and all the interior features complete</td>
<td>120</td>
</tr>
<tr>
<td>4 Mar. 8</td>
<td>• Completion of Architectural and Structural models and annotations</td>
<td>120</td>
</tr>
<tr>
<td></td>
<td>• MEP model setup complete</td>
<td></td>
</tr>
<tr>
<td>5 Mar. 29</td>
<td>• Project assumptions complete</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>• BIM material quantity takeoff with the alternate complete</td>
<td></td>
</tr>
<tr>
<td>6 Apr. 12</td>
<td>• Complete material quantity takeoff of the project</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>• Completion of pricing, recap sheet and bid calculation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Completion of a brief MEP model</td>
<td></td>
</tr>
<tr>
<td>7 Apr. 26</td>
<td>• A brief description of MEP systems complete</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>• Collision Log &amp; Resolution complete</td>
<td></td>
</tr>
<tr>
<td>8 May 7</td>
<td>• Rough logical diagram schedule complete</td>
<td>60</td>
</tr>
<tr>
<td>9 May 21 – Jun. 8 (in China)</td>
<td>• Completion of each group’s “Special Assignment”</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>• Completion of Structural Assessment</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Visual and conceptual assessment of typical vertical, and lateral load paths</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Project Photos</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Report for the Results and Analysis of Comparing with TJU Group’s BIM Thesis</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Additional Work (extra credit)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Final Paperless Thesis Package Completion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Thesis Group Presentation</td>
<td></td>
</tr>
</tbody>
</table>

Total Points of the BIM Thesis: 1,200

Figure-1. Renderings created by BSCI students for their BIM thesis
Once all the BSCI and TJU groups were working side by side in China, each group was given a set of questions to present during the final thesis presentation comparing the US construction techniques vs. the Chinese construction techniques. Since the class got a classroom/studio on TJU campus designated for the collaboration, all the BSCI and TJU groups were able to meet and discuss questions in detail in this classroom, therefore to collaborate on their BIM thesis. Outside of the classroom, American and Chinese students also had academic and social activities together, for instance, construction site visits, visit of 2010 Shanghai World Expo, visit of Autodesk’s Research and Development Center in Shanghai, and group meals, etc. In addition, in their spare time, students interacted and collaborated culturally - TJU students introduced BSCI students to the Chinese university life, such as: where and what they ate, what activities they enjoyed, how to interact with the non-English speaking people, their perceptions and attitudes, and of course a little of their language.

On July 7th and 8th, 2010, each BSCI and TJU BIM thesis group made an one-hour presentation of its thesis project and the answers of the collaborative thesis questions before an BSCI-TJU joint faculty jury and the entire class. Each BIM group’s presentation consisted of three portions as shown below:

- Part-I (30 minutes) - Demonstration of the summarized results and highlights of thesis project, including: models, estimate, schedule, collisions and resolutions, project photos, additional work, and lessons learned.
- Part-II (20 minutes) – Demonstration of the summarized results of the collaborative thesis questions.
- Part-III (10 minutes) – Questions and answers, and discussion.

Students presented some impressive BIM projects. Figure-1 shows four renderings created by BSCI students in Autodesk Revit for their BIM thesis.

**Class Outcomes and Lessons Learned**

In the summer of 2010, students and faculty of the McWhorter School of Building Science at Auburn University (BSCI) participated in a 5-week Special Thesis Study Abroad class in China. As one of the main themes of the class, they collaborated with students and faculty of the College of Civil Engineering at Tongji University, Shanghai, China using BIM as the core subject domain. According to the participating faculty from Tongji University, “this class was the first US-China joint undergraduate thesis in construction education.” From BSCI University faculty stand point, the main objectives of this class have been satisfied. These objectives included:

- Improve students’ knowledge of BIM
- Provide opportunities to collaborate with an international team on a large project
- Exposure students to different construction methods, materials and equipment
- Help students obtain understanding of globalization
- Allow students to experience different cultures, currencies, transportation systems and languages
- Provide opportunities to view monumental and historical architecture

The authors believe that through participating in this class the BSCI students received an enriched international experience studying abroad, enhanced their BIM skills, developed their skill sets to work on an international construction management team and experienced first-hand the building challenges in China versus the United States.

According to reports submitted by BSCI students at the end of the class, all BSCI students valued this collaborative Special Thesis Study Abroad class as a good learning experience. Five weeks in China was a sufficient time to allow students to complete their thesis project and become immersed in the local culture. The class taught them how to successfully collaborate with an international team on a large project, introduced them to a new culture, and gave them basic understanding of Chinese construction practices. This international collaborative thesis also gave students a head start in what is quickly becoming a more globalized construction industry. In addition, this class gave more BSCI’s Building Science students the opportunity to participate in a thesis fully involved with BIM, which may give them an advantage over their peers at other institutions.

Some of the quotes made by BSCI students in their final class report are listed below.

- “Visiting China has enabled me to learn the local culture and get a different perspective on my own country. America certainly seems to be the land of plenty after visiting China. Learning the
different construction methods and safety practices will hopefully be useful in my future career. This has been an excellent journey and I look forward to traveling to Asia in the future.”

- “It has been quite a culture shock but I believe that understanding different cultures, especially China’s, can benefit us in global business in the future.”
- “It was a unique opportunity to work together with a group of structural engineers to learn how they approach problems and find solutions. Each group had its strengths and weaknesses and was able to overcome our lack of expertise by working together.”
- “The Tongji Group’s strengths involved structural design, calculations, load tracing, hoisting, and unit prices. BSCI’s group assisted in scheduling, management cost, project fees, BIM modeling, pricing, and overall construction management practices. Together, both groups were able to create an extensive BIM model, project estimate, schedule, and sustainable aspects report.”
- “Discussing the differences in each country’s estimating techniques was the most interesting part of the collaboration for me.”
- “The lengthened stay (in Shanghai) has made the group adapt to the everyday life of the Chinese for the most part. I have gained knowledge not only of the construction process, but of the culture as well.”

Since this was BSCI Building Science’s first collaborative group based BIM thesis study abroad class, there were also some lessons learned. For instance, because of the differentiation of educational perspective, the BIM Thesis Guidelines used by BSCI and the one used by TJU were not exactly the same, which caused students some difficulties when collaborating and comparing the results. To avoid this type of problems in future collaborative study abroad class, more thorough and flexible guidelines need to be developed. The class developers may also consider collaborating on feasible portions of the thesis projects only while keeping the rest independent to fulfill the thesis requirements of their own institution. Another main issue raised in the class was oral language difficulties between the Chinese and American students. In the future, hopefully this can be conquered with better communication, better preparation, and more use of written documents.

References


