Front-End Analysis Plan

Promoting Deep Learning in English as a Second Language (ESL) from Classroom Discourse Perspective

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IDE 712 Analysis for Human Performance Technology Decisions

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Identifying the Performance Problem

According to a research on the situation of secondary school students’ deep learning in English as a Second Language (ESL) Course (Wang, 2018), few of Chinese secondary school students has reached the level of deep learning. Most of them stayed at surface learning, receiving knowledge passively instead of constructing it. In particular, the students processed information and knowledge with lower-order cognitive skills such as remembering and conducted less communication and low-effect collaboration with others.

Similar story happens in the ESL class of Nanjing Foreign Language School Xianlin Campus (NFLSXC). Despite the invitation of innovative pedagogies, such as Collaborative Learning, Inquiry-based Learning, etc., students’ learning process, however, still remains simple and surface. Although 80% of the students passed the English exam of high school entrance examination, only 40% of them could utilize deep learning methods. To sum up, there is a lack of deep learning in the ESL class of NFLSXC.

Classroom discourse take most part of the class time and is the main resources of students’ learning inside the classroom. Thus, this plan would like to analyze the problem of lacking deep learning in ESL from the classroom discourse perspective.

Context of the Performance Problem

In September 2016, China launched its Core Competencies and Values for Chinese Students’ Development, which marked the necessary qualities and abilities in
knowledge, skills, affections, attitudes and values for life-long development. Key Competencies set up the direction of China’s curriculum revolution. Researches have shown that the development of key competencies and 21st century skills depends on deep learning. Instead of creating new curriculums, the curriculum revolution emphasizes bringing effective and deep learning into classroom, which results in knowledge and skills that can be transferred in real-world situations.

This plan contextualizes the problem in Nanjing Foreign Language School Xianlin Campus (NFLSXC) in China to achieve a detailed analysis and better solution. The NFLSXC is a private school situated in the University Town in Nanjing, Jiangsu Province. It is divided into primary school, secondary school section, high school and international high school sections. The secondary school section has 42 classes with over 1600 students. The school pays particular attention to the teaching of English as a second language. The regular class will be divided into two small classes with a size of less than 20 students when having ESL class. Each classroom is equipped with basic technologies such as screen, the projector and microphone.

**Literature Review**

In order to have a clear construct of deep learning about its definition, benefits, measurements, etc., a literature review was conducted.

**Definitions of Deep Learning**

The concept of deep learning first emerged in 1970s, during which educational psychological research indicates two major learning approaches: ‘surface learning’ and
‘deep learning’ (Marton & Säljö, 1976). The surface learning approach is associated with the repetitive and superficial memorizing of details, while the deep learning approach is characterized by further information processing which leads to understanding and transformation of knowledge and skills. The deep learning approach is often associated with higher learning outcomes and students’ engagement (Biggs, 1991; Phan, 2010).

Along with the influence of globalization as well as the development of science and technologies, the world has a growing need for deep learning which has gone beyond a cognitive approach and has become a learning process leading to core competencies. The National Research Council (NRC) uses the concept ‘deeper learning’ instead of deep learning approach. According to their report, deeper learning is the process through which a person becomes capable of taking what was learned in one situation and applying it to new situations and though the process of deeper learning, students develop 21st century competencies that can be transferred to new situations or problems (NRC, 2012). Together with NRC, the Hewlett Foundation’s Education Program identified six deeper learning competencies in cognitive, intrapersonal and interpersonal areas (Warkentien, Charles, Knapp, & Silver, 2017). On the other hand, the New Pedagogy for Deep Learning (NPDL) has identified six global competencies for deep learning and has defined deep learning as the process of acquiring these six global competencies (Fullan, Quinn, & McEachen, 2018).
China
- Humanistic heritage
- Scientific spirit
- Learning to learn
- Healthy living
- Responsibility
- Creativity

NRC & Hewlett Foundation
- Thinking critically
- Mastering rigorous academic content
- Learning to learn
- Developing academic mindsets
- Working collaboratively
- Communicating effectively

NPDL
- Character
- Citizenship
- Collaboration
- Communication
- Creativity
- Critical Thinking

Table 1. Comparing Competencies Related to Deep Learning

There is no research on the difference between deep learning and deeper learning. Their connotations are quite overlapping. From the table above it is obvious that these competencies are very similar and multi-perspective. Thus the author consider deeper learning as a synonym of deep learning in order to separate this broader concept from deep learning approach.

Considering all these descriptions and definitions, deep learning in this plan refers to the process that learners construct knowledge critically on the base of understanding, in order to transfer and apply it into real-world situations, leading to the development of learners’ comprehensive competencies.

Significance of Deep Learning

From the definition and competencies of deep learning, we can easily understand why we need deep learning in our education. Firstly, deep learning is related with high motivation, especially intrinsic motivation, leading to a long-term learning with high engagement and continuous passion. Secondly, deep learning is related to higher-order thinking levels, in which learners achieve cognitive improvement through self-
reflection and modification. Thirdly, deep learning is related to effective communication and collaboration with others, which develops learners’ intrapersonal skills.

Besides academic achievement and core competencies, deep learning builds positive mental health and resilience, because learners’ cognitive, emotional, social and physical needs are being met through deep learning (Fullan, Quinn, & McEachen, 2018). Since deep learning using performance-based assessments and the learning is authentic and personalized, it is also supposed to promote educational equity (Noguera, Darling-Hammond, & Friedlaender, 2015).

Measurement of Deep Learning

Survey

Based on the ‘student approaches to learning’ (SAL) theory, Biggs related deep learning approaches with learners’ motivation and strategies and developed Study Process Questionnaire (SPQ) (Biggs, 1987a) and its school-level companion, the Learning Process Questionnaire (LPQ) (Biggs, 1987b). Then with further study and findings, there appears to be a need for a shorter two-factor version of the SPQ which addresses deep and surface approaches only and can be conducted quickly and easily by a regular teacher for use in monitoring teaching contexts, thus the Revised Two-factor Study Process Questionnaire (R-SPQ-2F) was developed (Biggs, 2001).

Eye tracking

Eye tracking origins from the concept that eye-movement data can provide valuable information about the cognitive process of the learner, because longer fixation
durations means more processing time. Empirical research has shown that there is a direct correlation between the length of eye fixation behavior and the depth of learning (She & Chen, 2009). Although using eye tracking to measure deep learning is a good combination of scientific technology and education, it has a high requirement of technology and equipment, and could be utilized limitedly in learning with media (Dai & Wang, 2017).

**Concept map**

Concept map has powerful utility for the demonstration of learning. It can be used to display individual knowledge structures for comparison at different stages of the learning process: deep, surface and non-learning (Hey, 2007). Chen, Allen and Jonassen has also used collaborative concept mapping to study the impact of learners' conflict resolution on their deep learning (Chen, Allen, & Jonassen, 2017).

**Comprehensive assessment**

Along with the enrichment of connotation and extension of deep learning, more and more institutions and programs began to evaluate deep learning from multi-perspectives with a variety of methods. For example, NPDL has developed Deep Learning Progressions for each of their deep learning competencies, which has broken each competency into dimensions including skills, capabilities and attitudes (Fullan, Quinn, & McEachen, 2018). NPDL suggests using this rubric on the base of a wide range of evidences and indicators. Similarly, the Study of Deeper Learning (SDL) Program of Hewlett Foundation has taken the comprehensive assessment to measure deep learning. In their report, a balanced and coherent system of assessment with both
formative and summative assessment was required to support deep learning (Rothman, 2018).

Plan for Seeking Solutions

There are many factors that could contribute to the lack of deep learning in the ESL course of NFLSXC. Since we want to examine the problem from classroom discourse perspective, discourses between teacher and students and among students should be studied separately. By the way, only public discourse will be considered, which means that the murmuring of students themselves, or small talks not related to the course content will not be included. Harless (1970) categorized human performance problems into 3 categories: skill/knowledge, environmental and motivational. Thus, a combination of 2 categories should fit well with the research surrounding deep learning in order to seek for the causes and solutions. Refer to Table 1 for example of each causes.

<table>
<thead>
<tr>
<th>Skills/Knowledge Factors</th>
<th>Teacher-Student Discourse</th>
<th>Student-Student Discourse</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Teachers’ knowledge &amp; skills about designing questions</td>
<td>• Students’ communication skills</td>
</tr>
<tr>
<td></td>
<td>• Teachers’ knowledge about higher-order thinking skills</td>
<td>• Students’ knowledge about classroom talking regulations</td>
</tr>
<tr>
<td></td>
<td>• Students’ preparation for the class</td>
<td>• Students’ knowledge about the topic</td>
</tr>
</tbody>
</table>
Therefore, with this framework, a front-and-end analysis (FEA) can be planned to help improve students’ deep learning problem in ESL course of NFLSXC. According to literature, deep learning leads to cognitive competencies, interpersonal competencies and intrapersonal competencies. Since the plan focus on classroom discourse, most of the attention will be paid to cognitive competencies and interpersonal competencies. In other words, in order to seek solutions for promoting deep learning in classroom discourse, the following two questions need to be answered:

1. To what extent does teacher-student discourse stimulate and develop students’ cognitive competencies?

2. To what extent does student-student discourse stimulate and develop students’ interpersonal competencies?
Selection of Approaches, Procedures and Instrumentation

In order to examine the current situation of students’ deep learning level and classroom discourse, various data collection instruments should be used. In addition, to identify what kind of classroom discourse could promote deep learning, a focus group discussion will be needed.

Survey

In order to understand the current learning approach used by students is deep or not, a survey questionnaire can be used. The R-SPQ-2F (Biggs, 2001) may be chosen to be used by school. The R-SPQ-2F is a survey of 20 items on a 5-point Likert scale, designed to evaluate learners’ learning approaches. The survey will be given in its Chinese version to all the ESL students of 8th grade to have a general ideal of students’ learning depth. When potential solution conducted, for example a training on teachers, the survey will be given out again to see if the solution works.

Classroom Observation

In order to understand the current classroom discourse characters and models, 3 ESL class of 8th grade will be selected randomly to be observed. The observation will mainly focus on classroom discourse, however learning environment and other information will also be recorded during the observation. With the consent of teachers and students, the observation could be recorded as a video for further analysis.

An observation checklist of behaviors will be developed, including the following aspects:

- Time of teachers’ lecturing, students’ discussion, silence, etc.
Types of teachers’ questions: Convergent? Open-ended? Situated?
Types of students’ answers: Active? Passive? Well-organized?
Frequency and types of students’ questions to teachers
Frequency and types of teachers’ feedback to students
Students’ different role in discussion

Interview

Interviews can be conducted with individual students and teachers after the observation to learn more about actual classroom situations exist at NFLSXC. They can also help to clarify the findings from the survey and observation. What’s more, interview is an important resource about motivational factors.

Students will be asked about their willingness to answer questions or ask questions to teacher, as well as their interest to share ideas in group discussions. Students’ feelings about teachers’ different kinds of questions will also be asked. Furthermore, students will be required to explain how they think about a complicated question discussed in the class that has been observed, to better understand their deep learning levels and strategies.

After the class observation, teachers will be interviewed to get a general ideal of the course design, what kind of instructional strategies they employ and why. It’s important to understand if teachers have knowledge about deep learning competencies and if they try to cultivate these competencies in their classroom.

Focus Group

Focus Groups can be used to understand more about what kind of classroom
discourse could promote deep learning. ESL teachers who participate in curriculum development will be selected to form the focus group, because they usually have an advanced understanding of what the course needs. Educational experts from the universities near the school will also be invited to the focus group. The discussion will cover the following topics:

- Characteristics of questions stimulating higher order thinking
- Characteristics of discussion topics stimulating critical thinking
- The way teacher listening to students’ answers and giving feedbacks
- The way to manage and guide group discussion

### Possible Causes and Solution Identified

#### Possible Causes

Below are hypothesized causes of lack of deep learning in ESL course of NFLSXC. The causes are sorted according to Harless’s (1970) categories of human performance problems.

**Skill/Knowledge**

- Teachers lack of deep learning knowledge (do not know what it is)
- Teachers lack of questions designing skills (do not know how to design questions in appropriate sequence to guide students’ thinking, and to stimulate students’ higher order thinking)
- Teachers lack of skills of providing feedbacks
- Students lack of deep learning methods (cannot transfer knowledge or
achieve higher order thinking when studying materials)

- Students lack of interpersonal skills (ex. Communication skills, cooperation skills, so that they can not engage in the classroom discourses)

- Students lack of knowledge of classroom rules (ex. Do not know when should talk and when should not)

- Students lack of content knowledge (do not know the material so that they cannot learn deeper)

**Environmental**

- Lack of technology support in the classroom (Teachers voice cannot be heard by everyone, slides or projector cannot exhibit materials appropriately, etc.)

- Too much content materials to leave time for students’ deep learning (lack of enough time for reflection or discussion)

- Stable desks and chairs, which is not supportive for group work

- Lack of group discussion scaffolds (ex. Concept map, guiding questions)

- School environment as a whole not supporting deep learning

- Educational system as a whole not supporting deep learning (ex. Focus on the scores and standardized tests)

- Lack of parental or community support and involvement

**Motivational**

- Teachers lack of attention to promote deep learning through guiding questions and providing feedbacks

- Teachers lack of motivation to design their own units plan (only following
some templates which may not fit the classroom situation)

- Teachers feel deep learning useless
- Students’ unwillingness in answering questions
- Students’ unwillingness in sharing thought in group discussion
- Students unwillingness in giving peer feedback in group discussion
- Students frustration with teachers’ feedbacks
- Students feel the schoolwork too difficult
- Students feel the schoolwork less challenging
- Students feel the learning in school useless
- Lack of strong teacher-student relationships

Possible Solutions

Given the hypothesized causes above, the potential solutions are listed according to the same category system. Some solutions may appear more than one time.

**Skill/Knowledge**

- Introduction of deep learning and its value to teachers and administrators, through brochure, meeting, pilot school visiting, etc.
- Professional development to help teacher design their questions and organize their classes, including workshop, seminar, etc.
- Tutoring programs to develop students’ deep learning skills
- Group projects to develop students’ interpersonal skills

**Environmental**

- Build accessibility to technology support of each classroom
• Provide movable desks and chairs

• Provide at least two vacant class time per week for group activities, students’
discussion or reflection

• Provide scaffolding tools, such as concept map

• Increase parental involvement with the construction of communication
channels between school and parents, including social media, parents’
meetings, school websites, etc.

• Increase community involvement with close cooperation between schools and
universities in the same district.

• Build an encouraging, autonomy and caring school culture

Motivational

• Workshops or seminars for teachers to let them value deep learning, and the
important role of classroom discourse in deep learning

• Tutoring program to encourage students learning from peers

• Counseling support for students lack of confidence, self-efficacy or motivation.

• Shared objectives and values between teachers and students

• Personalized instructions for students who feels too difficult or less
challenging

• Class activities or English festivals to build a good teacher-student relationship

• More relationship between learning content and real-world problems to make
knowledge transfer
Final Presentation

The FEA plan will be shared with the ESL leader team of the school, as well as the administration, and relative classes’ heading teachers. The format will include a PowerPoint Presentation with a written summary of the problem, the investigation results and the suggestions of solution.

The plan will be further reviewed and adjusted to adapt to the school situation, in order to guide an effective and efficient implementation of the FEA plan. When putting into implementation, students’ acceptance may diverse crossing different grades, thus pilot test could be done in the first year of secondary or high school, for new students may be more willing to engage in the new deep learning project and they haven’t be exposed to the traditional environment for a long time. When outcomes of pilot test turns out, further diffusion plan could be designed.
Reference


