

# Mediated Metacognitive Engagement in Flipped Learning

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**Abstract**—The need for maximizing learning is increasing in the schooling system in China. Cognition development and the ability of cognition management were both crucial for effective teaching and learning. Thinking of one's thinking is termed as metacognition. This research aimed to explore how English language teachers and their students mutually develop and engage in metacognitive thinking using dialogic inquiry within the flipped learning context in a junior secondary school in China. A flipped inquiry-based teaching intervention designed to explore classroom dialogue with a view to enhance students' metacognitive learning. We conduct this research to develop teachers' professional understanding of metacognitive engagement in flipped learning classrooms in China. To enhance this, the study uses a qualitative research method within a sociocultural paradigm to explore the processes that enable teachers to engage in mediational metacognitive thinking with each other and their students using dialogic inquiry within the flipped learning context in a junior secondary school in China. The findings from the study provides insight into the process of how teachers were trained, how they enact their professional understanding in classroom practice and how mutual influence work between teachers and their students in the process of metacognitive engagement in a flipped inquiry-based dialogic teaching context. The results of the research showed that using dialogue with the guidance of the framework is a successful trial, especially in the problem-solving process.

**Index Terms**—flipped learning, dialogic, metacognition, inquiry, intervention, professional learning, classroom practice, qualitative research

## I. INTRODUCTION

The schooling system in China is highly competitive and academically oriented with an emphasis on educational achievements from a young age. For a developing country, the number of places available in the key schools is highly inadequate compared to the number of students applying for admission, since the vast majority of parents hope and expect that their children will secure admission in the key school. The Ministry of Education dominates summative assessment. In order to meet these requirements, students need to get fully prepared for the high school entrance examination and pass the Provincial Exam (ZhongKao) and the National

Exam (Gaokao) before they can secure admission to highly regarded senior high schools and universities. These factors bring great pressure to parents, teachers, and students. As a result, more than 80 percent of students go to bed later than 10 pm every day Liu, Tang, Cao, Zhuang, Zhu, Wu, Wang, Cai, Zhang and Chen [1], [2], [3]. Thus, experts and parents have called for reasonable amounts of homework and an evaluation system for students based on more than just examinations, teachers advise parents not to focus on competition [1]. The action is needed. As a researcher, this motivates me to research the circumstances of the education of school-age children. In the present study, I aim to investigate the ways in which teachers can use dialogue as a tool to facilitate students' metacognitive thinking, thus, maximize students' learning in a junior secondary school in China. Metacognition stands for one's ability to think about ones' thinking [4]-[6].

## II. LITERATURE REVIEW

This section presents a review of the literature to outline the nature of metacognitive engagement in a flipped inquiry-based dialogic teaching classroom, with a view to identifying any research gaps. There were two strands of research that were discussed. The first strand of the literature review will focus on the studies related to the flipped learning context and the development process of the proposed flipped inquiry-based dialogic teaching approach. This thread will focus on what and why this proposed teaching approach were used as one part of an intervention framework in the study. The second strand of the literature review will focus on the research of metacognition for the main purpose of this study to facilitate the students' metacognitive engagement.

Metacognition enables students and teachers to engage actively in the process if learning by providing them with a thinking tool [5]. Metacognition benefits students to think about their thinking that further helps them to be in charge of their thinking. Vygotsky (1978, 1981, 1983, and 1934/1988) emphasized metacognitive mediation, which is a mechanism of children's acquisition of semiotic tools of self-regulation using self-planning, self-monitoring, self-checking, and self-evaluating [7]. Literature informs us that metacognition has been researched a lot recently across the world including China [8]-[15]. However, the role of dialogue in the context of flipped learning has not been explored for

understanding students' metacognitive engagement. In my classroom experiences teaching junior secondary school English, I found classroom dialogue to be one of the most engaging and effective ways to facilitate the learning of students in a forward direction. However, even though many educators and researchers have emphasized the importance of classroom dialogue in teaching and learning over the past decades, there were still concerns that need to be explored further. For example, in my review of the literature, I discovered that there were fewer studies on using dialogic teaching to facilitate metacognitive thinking in English classroom in a junior secondary school in China. Moreover, inquiry learning has also been adopted to facilitate flipped learning (called In-flip) [16], where videos can be viewed in class during the students' inquiry process as they need the information, to acquire new knowledge or reinforce knowledge because of the availability and accessibility of technological support for students in the classroom [16, 17]. In the proposed study, the researcher attempts to develop an innovative pedagogical approach, that is informed from flipped learning [16] and dialogic inquiry learning [18]. In the proposed research, a dialogic inquiry teaching intervention were designed to maximize the power of classroom dialogue to enhance students' metacognitive engagement and learning. In order to develop the intervention, the researcher will collect data using qualitative methods. This understanding should inform future effective teaching and learning of metacognition in flipped learning classrooms.

A theoretical framework provides the mean to understand any natural phenomenon. One of the planned outcomes of this research is to provide strategies for secondary school teachers (and their students) to facilitate metacognitive development. The following theoretical framework, is informed by sociocultural theory (Vygotsky, 1978), Flavell metacognition theory [4], Pintrich [19]'s informal assessment dialogue and incorporates flipped inquiry [16], [20] based dialogic [21] teaching and learning, within the context of teaching [6], [22] relating Anderson [5]'s interpretation in second language learning. It was used to inform interventions in a flipped training workshop, for teachers' evolving classroom practice.

### III. METHODOLOGY

This study used qualitative research methods within a sociocultural paradigm. For knowing "How do English language teachers and their students mutually engage in mediated metacognitive thinking using dialogic teaching within a flipped learning context in a junior secondary school in China?" This study conducted using the Case Study methodology with Intervention. Procedures of data collection designed to get evidence and information were introduced in the following section.

#### A. Procedures of Data Collection

Data collection occurs during 2019. There were three phases of data collection, comprising of observation,

workshop, and interviews. There were two types of research participants - teachers and students.



Figure 1. Visualized procedures of data collection

#### Phase 1: Classroom Observation

The first phase of data collection occurred in the first week of May 2019. The researcher observed the classroom teaching of the two English language teachers from Year 7 in one junior secondary school. This approach aligns with the purpose of the first phase of this study, as it was designed for assisting the researcher in understanding what was happening and informing the workshops in the second phase.

#### Phase 2: Flipped training workshops

During the third week of May, Phase 2 commenced directly after the observations in Phase 1 comprising of workshops followed by observation of classroom teaching practices. Flipped inquiry learning based dialogic teaching workshops conducts to train teachers on how to facilitate students' metacognitive engagement. Phase 2 is a reflective design: therefore, each workshop follows with classroom practice and further researcher observation, which aimed to assist teachers' enactment of FIL. It aimed to assist researcher evaluation of the previous workshop and preparation for the following one. WeChat has become an integral part of daily life among Chinese consumers Lien, Cao and Zhou [23]. The data collected from the WeChat group aimed to inform the researcher of the thoughts of teachers' and their training, learning and teaching process and experiences.

#### Phase 3: Interviews

After 6 weeks of workshops and modified classroom practice, the third phase of data collection commenced in the second week of July, where teachers and students were required to participate in an interview. Interviews of both teachers and students' aimed to gain insight into mutually influencing aspects. Focus group interview conducted with students who were purposefully selected from three participant classes [24], [25].

### IV. DATA ANALYSIS

Part of the dialogue that happens in-between teacher and student. ( T= teacher:S=student: (.....)= analysis) :

.....

T: why do you worry about that?

*(I am trying to get the information where she was)*

S: Multiple-choice question always makes me confused about the problem-solving process.

T: Can you give me a specific problem that you encountered in the test?

*(For bridging the development from cognition to metacognition, is a domain specific but not domain general. If the dialogue can be situated in a specific problem, then it is easy for the teacher to know what the students already know, and what kind of help can provide)*

S: For example, I am struggling with the multiple-choice questions in an English language test. I make mistakes whenever I encounter the choices that two out of four answers both fit that situation.

T: Yes, it is a very good question. You were thinking of your thinking. Well-done.

*(I listened to her very carefully, and try to stand in her position to answer this question. I asked her in a stance of provocative, as I know I cannot just tell her the answer but to explore and work out in a dialogic way, So I am trying to evaluate the where she is now, cognitively speaking, and where I can come to and walk her to the destination of our common purpose)*

S: Yes. Thanks. I am thinking of the process of solving this kind of problems. I think both of the answers all fit the questions but the right answer only has one. I always stuck there for which one I need is the right answer, this waste my time....

*(From here, we can know that this student knows well about the metacognitive knowledge. She categorized the problems based on the experiences into one chunk knowing her weakness)*

T: No worry, this is a common situation that happens to anyone who solves this kind of problem. Even though I am a Ph.D. student, I also feel confused when two of the choices seems all fit the answer. However, there were ways to work it out.

*(For knowing where she is, I am aiming to put myself in the same cognitive level, and then conduct an inquiry learning together using dialogic assessment to work out this problem together)*

S: Really? I want to know what kind of problem you would encounter and in what ways you solve it?

*(We can say this is kind of assessment, she want to know where the teachers were, and if I really have encountered the same problems with her, and she is intending to know the metacognitive skills to solve the problem)*

T: When I am writing my proposal last year, I was also always struggling with which directions were better to head towards. Such as I was writing the part of teacher development for effective learning, I wrote two of the knowledge of flipped training and flipped

curriculum in my literature review. However, my supervisors told me that I have to choose one to hit the point of your purpose.

S: You mean that flipped training and flipped curriculum all benefits for effective learning.

T: Yes, I think so. Two of the parts were all-important for teachers: however, I chose flipped training and after I put myself in a position of the target reader. The reader is expecting to see what kind of communication happens in classroom practice but not the curriculum setting.

S: It is great. I think I get some strategies from what you were doing, that is, see things in an opposite way.

T: Excellent, you mean it. So tell me, When you encountered that question, what you have done to solve it.

*(Provoke her to think of the thinking of that time through this we find out a way for this. I was a mediation at that time, I take that kind of responsibility).*

S: I know every word of the passage. I understood the storyline in the passage narrated by the author. However, I still have no decision of the choices. I tried all the strategies that you told us like putting these two choices into the blanket to make sense of the whole sentence. They all seemed fit very well. I tried to read the previous sentences and the following sentences to find the causal- relations. It did not work. In addition, I even reread the key points of each paragraph....

*(I was listening and my assessment kept changing following her statement, we know that she has enough knowledge of cognition and metacognitive knowledge like self-knowledge, knowledge of the task, knowledge of the strategies and even she tried some metacognitive skills.)*

T: Have you heard a saying 'try to see things in other peoples' position'?

*(From the way she elaborated, I know where she is in the cognition zone. helping her to realize the thinking of her thing is my task. So I cannot say, this here, we need some higher-level thinking or metacognition. As junior secondary school students, they have no content knowledge as the abstractive conception, however, I am trying to provoke in another way from her previous knowledge that the real-life experience. )*

S: Yes, I heard from my parents often,

T: What is your own understanding of it?

S: They educated me that self-centred is not good. It is better to consider other people's feeling by placing yourself in their position.

T: Yes, great, you mean it. Therefore, what will happen when you try to understand others for pretending that you were them.

S: *No matter when I encountered some arguments with my friend, I always tell myself that if someone does the same thing to me, I will also feel not very good, so that we always say sorry and forgive each other.*

T: *Yes, you were right. So can we relate this into the problem solving? For example, Do you still remember the previous question we encountered last time, it was about a girl was shopping in the supermarket. She saw a man took most all of the milk into his trolley...*

S.: *Oh, yes, teacher, I remembered that question very clearly, I made mistakes there. The following question, in the end was: the girl felt \_\_\_\_ when she saw the man took so many bottles of milk. A. happy, B. excited C. surprised D. sad. I chose B; however, the right answer was C.*

T: *Exactly, So can you imagine that you were that girl and you were shopping with your mom, then you happened to see a man was buying so many milk, what would be your feeling? Will you feel excited or surprise when you see someone do that?*

S:I *Think surprise is more reasonable to me. Thus, so did the girl. Thanks, teacher, I think now I got a tool of thinking for the next week test, I will try to place myself in the author's position and reconstruction the storyline, to lead myself with the third voice as if you were beside me. Right?*

T: *Great. You were right. Yes, to think of your thinking and be awwereness of the thinking. Trying to be an independent thinker and monitor things well in the problem solving*

In this process, the teacher participant did dialogic assessment with the girl to know where she was, and where she could lead her to go. Then she tried to use the knowledge she had to process the cognition development to a higher level, from domain specific to domain-general, to give her a tool of thinking to guide herself through Mediation, cognition, and metacognition to maximize learning.

## V. RESULTS

Qualitative researchers use inductive processes and techniques for data analysis, which means collected data were synthesized, coded and categorized into themes to identify the emerging patterns [26]. For this study, the data of recorded classroom practice, workshop practice, online chatting record, documents, and interviews were transcribed, organized and synthesized, based on the sources. The data collection has commenced for almost 2 months, there were six workshops and each workshop equipped with pre-and post- class observations for reflections. The data showed that teachers who have been trained to use the framework to teach in class were more likely to aware the dialogic relationship with the students on class. Students who were taught by the trained teachers in the workshops reacted positively, they

pointed out that their teachers become more logic and interactive.

## VI. CONCLUSIONS

Teacher's professional learning is crucial for effective teaching and learning. Cognition knowledge is important like concepts and content knowledge in knowledge The aim of this research is to make a significant contribution to teaching and learning at junior secondary school level in China. The focus is not just on students' learning language, but also to encourage students to think about what happens during the language learning process and develop their metacognitive thinking. It also may contribute to the existing body of knowledge about teachers and students' metacognitive engagement in a flipped inquiry-based dialogic teaching context in China. The study highlighted the complexities of dialogue that shape learners' sense-making in the flipped inquiry context and influence future effective pedagogical practices in the second language classroom to general subjects. The current research has explored and clarified the effect of the framework using in terms of the problem solving. However, more empirical research is in need to address the application of the research in the domain of normal new content knowledge delivery in other subjects. We can know that more advanced students have a need for metacognitive learning. They want to be an independent learner and take the responsibility of learning. I strongly recommend further research on providing a visual framework for this to for the novice teacher in the professional development to guide them to teach in an effective way to maximize learning.

## CONFLICT OF INTEREST

The author declares no conflict of interest.

## AUTHOR CONTRIBUTIONS

As the independent author, I have confirmed the final version.

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