The relations between students' engagement and teachers' dialogic teaching in Chinese elementary school

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Abstract

Student engagement has received increasing concern in the educational realm. It can influence student academic achievement and reduce dropout rates, yet it can also be affected by a variety of contextual factors, such as teachers, peers, families, communities and culture. In particular, how teachers organise classroom interaction and dialogue is a vital factor in promoting engagement. An approach associated with improving student performance in the classroom is dialogic teaching. The purpose of this study is to investigate the relationship between dialogic teaching and student engagement. The Scheme for Educational Dialogue Analysis (SEDA) is applied to analyse the classroom recordings of 10 Chinese primary school teachers. The results indicate that teachers primarily use dialogues to *invite elaboration or reasoning*, *build on ideas*, *guide direction of dialogue or activity*, and *express or invite ideas*. The in-depth interviews reveal that the teachers' understanding of student engagement is mainly focused on the positive behavioural dimension. In addition, the teachers describe moments of low/high engagement in the lesson. Then, several links between high engagement and dialogic teaching are detected. Limitations and implications are discussed.

Student engagement has been extensively researched the over past three decades given its potential in tackling educational issues such as increasing academic achievement and reducing dropout rates (Fredricks et al., 2016). Initially, the high levels of student boredom and disengagement and the high dropout rates attracted the interest of researchers (National Research Council & Institute of Medicine, 2004). In real school life, many students find schooling boring and they act only to cope with the expectations of their teachers and parents. This phenomenon is also in line with the findings that students' motivation decreases

with increasing grade level (Fredricks & Eccles, 2002). Students' engagement can be strongly influenced by contextual factors (e.g. teachers, peers, families, communities, and cultures) (Fredricks et al., 2004), which can, in turn, affect learning motivation and academic achievements (Sinatra et al., 2015). Among those contextual factors, teachers play a crucial role in promoting pupils' engagement in the classroom (Fredricks et al., 2004). One essential mechanism for promoting engagement is how teachers organise interaction and classroom conversations (Mercer et al., 2009). Across studies on all classroom conversations, *dialogic teaching* proposed by Alexander (2001) has been linked to higher student performance, which emphasizes active, influential, and sustained student participation in classroom conversations (Kim & Wilkinson, 2019). Dialogic teaching involves inviting and encouraging students to participate in the interaction, providing them with open-ended questions, follow-up suggestions, and feedback, which allow students to expand their thinking, justify or clarify their viewpoints, and relate them to their own experiences (Alexander, 2006). It is important to enhance the analysis of the classroom conversations between teachers and students to identify what facilitates or hinders students' engagement in the classroom (Vasalampi et al., 2021). However, this is an underexplored area that how teachers use dialogic teaching strategies to facilitate students' engagement in teaching practices. The present study analysed classroom recordings to capture the teachers' use of dialogic teaching and reviewed with the teachers the moments of high engagement in the classroom. Then it will be possible to figure out how to use dialogic teaching strategies to promote student engagement.

Definition of student engagement

Natriello (1984) defines engagement as student participation in school-offered activities. In contrast to Natriello's emphasis on behavioural aspects, Connell and Wellborn (1991) argue that engagement occurs when psychological needs are met in a cultural context

and are expressed in affective, behaviour and cognition, and vice versa, in disaffection. The diversity of these definitions of engagement is attributable in large part to the different theoretical traditions. There are two main streams, whereby one uses motivational theories such as self-determination and self-regulation to examine the links between contextual factors, patterns of engagement and adaptation. While the other uses school identity, school connectedness and life course theories to explain the role of engagement in the process of dropping out and completing school (Fredricks, 2014).

Despite the absence of agreement on the definition of engagement to date, the consensus is that engagement is multi-dimensionally constructed (Appleton et al., 2008). Although views on the multidimensional nature of engagement vary, the most widely acknowledged and adopted is that engagement is a meta-construct that includes behavioural (e.g. attendance and participation in school), emotional (e.g. a sense of belonging or valuing of the school), and cognitive (e.g. willingness to engage in effortful tasks, purposiveness, strategy use, and self-regulation) dimensions (Fredricks et al., 2004). Further, other scholars have recently proposed alternative dimensions of engagement. For instance, Reeve and Tseng (2011) proposed that agentic engagement suggested students' constructive contribution to the flow of the instruction they receive. In addition, Linnenbrink-Garcia, Rogat, and Koskey (2011) argued that students' emotions and behaviours in group work manifest the socio-behavioural dimension of engagement.

Apart from the above, the various experiments and studies conducted have also attested in favour of the effectiveness of student engagement. Dropout is a process that occurs over time (Appleton et al., 2008), and engagement can be a key indicator to capturing the earliest signs of the gradual process of student disengagement from school (Finn, 1989). Hence researchers have identified student engagement as an influential thrust in dropout intervention efforts (Christenson et al., 2001). An experimental project involving students in

a high-risk area (where less than 50% of students complete high school in four years) lasting four or five years, conducted by Sinclair and others (2005) resulted in lower dropout rates and more sustained school attendance among students in the randomly assigned treatment group after the intervention of the Check & Connect model of student engagement. Additionally, a growing body of studies has proved the positive relationship between student engagement and academic achievement (Gunuc, 2014; King, 2015; Wang & Holcombe, 2010). The results of King's (2015) study indicated that student engagement was a positive predictor of subsequent academic achievement. In addition, a short longitudinal study among 1046 secondary school students from diverse ethnic backgrounds on the East Coast of the United States, examined the relationships between perceptions of the school environment, school engagement and academic achievement. Results showed that through the three types of school engagement, students' perceptions of the school environment influenced their academic achievement either directly or indirectly (Wang & Holcombe, 2010).

Teacher practices promoting student engagement

Engagement is malleable and responsive (Fredricks et al., 2016), that is, it can be altered owing to interacting with the surroundings. In addition to external influences such as family, community and culture, there are facilitators of engagement (Appleton et al., 2008) in educational contexts, both at the school level and in classroom settings. Notable factors that occur in the classroom are teacher support, peers, classroom structure, autonomy support and task characteristics. In this regard, the role of teachers is crucial, as they can influence students in both academic and interpersonal ways through three types of engagement: behavioural, emotional and cognitive (Fredricks et al., 2004). As a result, numerous related studies are emerging. For instance, a study from the perspective of self-determination theory reveals the relationship between teachers' patterns of motivational teaching behaviour and positive student engagement. That is, asking motivational questions and providing positive

feedback and support can lead to positive student engagement (Cents-Boonstra et al., 2021). Yet the deployment of classroom discourse in these patterns of motivational teaching behaviours can aptly be associated with another pedagogical approach——dialogic teaching that has proven to be effective in promoting student engagement in the classroom (Kim & Wilkinson, 2019). Dialogic teaching involves inviting and encouraging students to participate in the interaction, providing them with open-ended questions, follow-up suggestions, and feedback (Alexander, 2006). However, there is limited research linking the two concepts together. Thus, the necessity to observe the link between student engagement and teachers' use of dialogic teaching in actual classrooms arises.

Development of dialogic teaching

The research on classroom talk is vast, diverse and long-standing. A dialogic model of interaction is productive in promoting student engagement and developing reasoning skills and creativity (Mercer et al., 1999; Mercer & Littleton, 2007). If the teacher's linguistic emphasis shifts from "transmission" to "engagement" and "understanding", then the goals of teaching will alter as well, that is, to improve students' understanding, develop their thinking, and increase their engagement (Biesta, 2004; Calcagni & Lago, 2018). As is well known, language is not only a medium of communication but also a vehicle for thinking. The language theories of Vygotsky and Bakhtin are widely employed. Vygotsky's sociocultural theory posits that language is a symbolic system of shared participation and personal development (Calcagni & Lago, 2018). Individual and collective engagement can be stimulated through language. Likewise, Bakhtin's (1981, 1986) theory of dialogism emphasises the dialogic nature of language use. Specifically, the utterance is in a living cycle of communication, as it not only reacts to the words before and after it but also refutes, affirms, complements or relies on other utterances (Bakhtin, 1981). Interaction between

teacher-student conversations and student-student conversations is probably the ideal state of classroom dialogue.

Drawing on these two theoretical underpinnings, multiple models of dialogue education have been generated (Cui & Teo, 2021). Nystrand et al.'s (1997) seminal use of dialogically organized instruction indicates that teachers coherently organise their teaching by applying three discourse moves: uptake, authentic questions, and high-level evaluation. In addition, Mercer (1995) proposed three types of talk in the classroom: disputational talk, cumulative talk and exploratory talk. Building on this, the model *Thinking Together* is proposed, which emphasizes exploratory talk and aims at enabling students to explore ideas and think together (Mercer & Dawes, 2008). In addition, scholars argue that classroom conversations should be accountable to the learning community, standards of reasoning and knowledge as *Accountable Talk* (Michaels et al., 2008). It consists of five productive talk moves: "revoicing, repeating, reasoning, adding on and using wait time" (Chapin et al., 2009, p. 13).

Alexander (2001) presents his model of dialogic teaching after observing and thoroughly analysing a wide range of primary classrooms. It appears to be more teacher-friendly and practical than the models mentioned above (Cui & Teo, 2021). Dialogic teaching allows students to expand their thinking, justify or clarify their viewpoints, and relate them to their own experiences through five principles of classroom talk: collective, reciprocal, supportive, cumulative, and purposeful (Alexander, 2006). In addition, Rojas-Drummond et al. (2013) designed a classroom talk analysis tool based on Alexander's five key principles. Subsequently, Hennessy et al. (2016) collaborated further to develop the Scheme for Educational Dialogue Analysis (SEDA), which has been widely used by scholars in research on classroom dialogues. In a large-scale 20-week randomised controlled trial (RCT) project, a dialogic teaching intervention was delivered to nearly 5,000 Year 5 (Year 4) students and

208 teachers in UK primary schools. The results showed that students in the intervention group were not only two months ahead of students in the control group in terms of academic achievement, but also that classroom talk changed significantly, and student engagement increased (Alexander, 2018).

Although dialogic teaching has been validated in practice by anecdotal studies, it is not widely prevalent in the classroom. The reason may be that teachers do not yet comprehend sufficiently about dialogic teaching (Cui & Teo, 2021), or that it is a pedagogical approach that requires dedicated training (Alexander, 2018). Approximately 85% of conversations in elementary classrooms are in the form of scripted patterns of Initiated -Response-Feedback (IRF) (Mercer et al., 2009), consisting of mostly closed-ended questions and evaluations of student responses. However, by coding the "conversational actions" that occur in math, English, and science in 36 classrooms in UK elementary school, it was found that effective dialogic instructional strategies are not as scarce as assumed, but there is significant variation in their relative emergence (Vrikki et al., 2018). Such inconsistent findings call for a more diverse sample and a more in-depth and nuanced analysis. The classroom recordings and in-depth interviews collected from Chinese primary school teachers in this study may contribute to filling such research gap.

Furthermore, Vasalampi (2021) and colleagues surveyed 7 teachers and 140 students from grades 4 to 9 in Finland and demonstrated that teachers using dialogic teaching in the classroom positively promoted student engagement in the classroom after the relevant professional development (PD) program. This study emphasises the positive relationship between teacher training and outcomes (Vasalampi et al., 2021). However, if the interaction of the classroom conversations is presented, a more realistic picture of the relationship between dialogic teaching and student engagement might be demonstrated. Besides, their study adopted students' self-ratings as the assessment method of student engagement, which

is by far the most widespread (Fredricks et al., 2016). Dialogic teaching also has an essential principle of reciprocal, as students' engagement will in turn stimulate the teacher's usage of dialogue (Alexander, 2020). Therefore, it may not be comprehensive to gain an understanding of engagement from the student's perspective solely. Interpreting student engagement from the teacher's perspective can yield a novel insight.

Practice in Chinese elementary school

Fredricks et al. (2004) suggest that engagement research requires more diversity in participants' backgrounds, as the previous samples were predominantly Western white middle class. China, as a large and distinctive educational system, would make an invaluable contribution to the diversity of the study. Further, the Chinese public has been highly concerned about education and has expressed dissatisfaction with the quality of education. Investigation of student engagement, a key element of effective educational practice, is to a large extent absent from China's quality assessment framework and toolkit (Ross et al., 2011). More specifically, there is still a predominant reliance on standardised tests to evaluate the outcomes of students, teachers and institutions in China. Instead, student engagement, a key indicator of student effort during the educational experience, has been neglected (Ross et al., 2011). Although there are several studies on student engagement, the majority are about students in universities and secondary schools (Zhang et al., 2015; Yin, 2018; Bear et al., 2018) with very few involving primary school students. However, in a questionnaire survey of 1,137 primary and secondary school students in Tianjin, the overall detection rate of aversion to school was 27.7% (Meng et al., 2010). Meanwhile, based on the teacher's observations, it is especially evident in Chinese elementary schools, where students in upper grades answer questions in class significantly less frequently than students in grades 1-2. Likewise, the research on dialogic teaching in China is rare. It is presumed that the most

prevalent talk in Chinese classrooms is authoritative and monolithic, which features with a teacher-centred lecture or recitation (Shi et al., 2021).

The present study

Considering the current scarcity of research on dialogic teaching in Chinese elementary schools, the limited teachers' perception of student engagement, and the ambiguous links between dialogic teaching and student engagement, the purpose of this research is to investigate the relations between student engagement and teachers' dialogic teaching in Chinese elementary classroom. To observe the links, the study focuses on the participants' subjects in Chinese and English. This is because, in subjects concerning language, teachers are more inclined to use language to stimulate students' thinking and encourage their participation. The research was done by analysing and coding teachers' classroom recordings and interviewing the teachers' interpretation of student engagement (including descriptions of the students' engagement at the time). To answer that, the following questions were investigated:

1. How do teachers apply dialogic teaching in the classroom?

2. How do teachers describe student engagement in the classroom?

3. What are observable linkages between the application of dialogic teaching and student engagement?

Method

Research design

For the conduction of the research, a qualitative method was used. Although it implies that the generalisation of the findings may be limited (Johnson, 1994), it could offer a deeper insight into the particular phenomenon (Merriam & Tisdell, 2016). The data collection process included recording classroom talks, teachers' interviews and focus group meeting. These three steps were conducted in sequence. The first step was to record the teachers' classes with their permission, followed by coding the classroom recordings. Then a semi-

structured personal interview was conducted with the teacher. Finally, after the initial results were generated, the focus group meeting was organised to member check the results of the study. In addition, the qualitative content analysis approach (QCA) was applied to analyse the data to examine the fine-grained turn of the conversation (Braun & Clarke, 2021). The thematic analysis approach (TA) was used to analyse the interview transcriptions. The classroom recordings, interviews and focus groups meeting were conducted at different times in order to complement and substantiate each other, which contributed to ensuring the construct validity of the study (Yin, 2009).

Participants

The study took place in Chinese primary schools because of the researcher's relevant background and the limited research in China. Three different types of schools (i.e., public, private and innovation school) were selected for a broader understanding of the application of dialogic teaching. In the context of Chinese primary schools, the difference between public and private schools is whether they receive financial support from the government, they both follow the national curriculum. Innovative schools are a type of private school, and the distinction is that they use their self-designed curriculum. After obtaining consent for the data collection from the school, I adopted a convenience sampling approach to recruit 10 teachers with the support of three school headmasters, which is sufficient for providing in-depth understanding and experience from three different data sources. Most articles suggest that 5 to 50 participants are adequate in a qualitative study (Dworkin, 2012). Given the gender imbalance in China's primary school teacher population, the majority of the participants in this study were female, with only one male. After informing the teachers of the study and getting their active consent, the data collection process began. The names of the participants were presented under pseudonyms in the article. Detailed information about the participants is shown in Table 1.

Table 1

Characteristics of 10 Participants from 3 Schools

	School type	Subject	Grade	Classroom size: *N students*	Years of experience
Miss Guan	Public	English	Grade 4	35	5.5
Miss Zhan	Public	Chinese	Grade 5	39	7
Miss Yan	Private	English	Grade 5	21	5
Miss Cheng	Private	English	Grade 5	35	5
Miss Zhou	Private	English	Grade 5	32	6
Miss Li	Innovation	Chinese	Grade 1	14	8.5
Miss Tang	Innovation	Chinese	Grade 1	15	5
Miss Zhang	Innovation	Chinese	Grade 2	24	5
Mr Li	Innovation	Chinese	Grade 3	17	8
Miss Yue	Innovation	Chinese	Grade 4	21	4

Data collection

Classroom recording. The 10 teachers recorded a lesson via carry-on recording devices which were provided by me during the first month of the new semester. Then the participants had sufficient time to grasp the use of the equipment and choose a lesson. I confirmed with each teacher in advance which lesson would be used for the recording. For the sake of ensuring rich and interactive classroom dialogues, I suggested that teachers recorded classes about teaching new texts, excluding practice lessons with little teacher-student interaction or revision lessons that focus on retelling and recitation. When they received the recording device, they could try it out and check its functionality of the device. After the recording was done, they sent the recording file via email. In addition, the main aim of the study is to explore how the teachers use dialogic teaching, so only the teacher wore a recording device. This approach may result in the unclear recording of the student's voice, but

these do not have a great impact on answering the first research questions. All recordings were transcribed verbatim for coding and analysis.

Individual interviews. Semi-structured interviews were conducted after initially coding the transcripts, and lasted about half an hour. I asked the interviewed teachers to check the results of the initial coding and to fine-tune them based on the teachers' feedback. The interview protocol refinement (IPR) framework was applied to strengthen the reliability of the interview and capture the experiences of participants to generate rich and meaningful data (Castillo-Montoya, 2016). First, I examined the consistency of the interview questions with the research questions through a matrix. Then the interview questions were designed based on the principles of inquiry-based conversation. Next, I went through the *Activity Checklist* to reflect on the questions and make modifications. Finally, a teacher who shared similar characteristics with the participants was invited to conduct a pilot interview (Castillo-Montoya, 2016). After piloting, the interview questions were fine-tuned and finalised to contain three sections. These are 1) the teacher's experiences with dialogic teaching, 2) views and experiences with student engagement, and 3) explanations and clarifications of particular moments in the classroom recordings. Examples of interview questions include: *What do you think about dialogic teaching? What did you think of the level of student engagement in this lesson? Were there any moments of high engagement/ or low engagement that stood out to you?* An outline of the interview question was sent to the interviewee before the formal meeting, which can make the answers during the interview more efficient and in-depth. All interviews were audio-recorded and transcribed verbatim.

Focus group. At the end of the data collection stage, a focus group meeting was held for member check, which can also assure internal validity and credibility (Merriam & Tisdell, 2016). The researcher informed all participants of the initial findings on dialogic teaching, student engagement and the observed linkages between the two and solicited their feedback.

It is an essential way to exclude misinterpretation of participants' experiences by the researcher and to avoid bias in the study (Merriam & Tisdell, 2016). Initial findings of the study were sent to participants in advance as a manuscript to facilitate respondents' understanding of the content, but they were not asked to give formal written comments. It is presumed that discussion and exchange in focus groups will stimulate more collisions of ideas than if each teacher were to give a written comment individually. Because the manuscript was written in English, I explained the initial findings in Chinese in the first 15 minutes of the meeting. Then each member was asked for comments or complements, and if there were none, they were allowed to simply say "Pass". The meeting lasted about one hour. I fine-tuned the findings based on their suggestions.

Data Analysis

Qualitative content analysis approach (QCA) was used to code the classroom talk and analyse the interview content. It allows the researcher to recognise the similarities and disparities between the 10 teachers' narratives of their experiences, and this can in turn be clustered under distinct themes (Braun & Clarke, 2021).

First research question. To answer the first research question, the classroom dialogues were coded based on SEDA, proposed by Hennessy et al. (2016), which can be associated with dialogic teaching. It focuses on the 'communicative act'(CA) and dialogic sequences at a fine-grain level within lessons. The analysis of CA at the micro-level allows us to systematically analyse what all the participants in the classroom do and say during their conversational interactions. It contributes to answering questions such as: which parts of a lesson or types of activities are more dialogic? In short, SEDA allows us to identify dialogicality in classroom interaction (Hennessy et al., 2016). In addition, the framework demonstrates its fitness for use in a range of educational settings through examples of its application in two different educational contexts (Hennessy et al., 2016). Thus, SEDA seems

appropriate for the analysis of dialogue in Chinese primary school classrooms. The whole coding scheme is shown in Table 2. Each communication act in a teacher's conversation was coded according to this scheme unless it was irrelevant. The use of more than one code in a single turn is also permitted (Hennessy et al., 2016). The frequency of each CA occurrence was then calculated. By comparing the differences between the different coding clusters, a picture of the teacher's application of dialogic teaching in the classroom could be presented. Hence, the first research question was addressed.

Second research question. As for the second research question pertaining to student engagement, the interview transcripts were scanned to generate initial codes. Noteworthy, the analysis of student engagement focuses on behavioural dimension at the whole class level rather than the individual, such as the number of students responding to a particular question. This is because data is from the teacher's perspective, who is usually concerned with the entire class in a lesson. The next step of analysis was to categorize similar codes under the same theme, ensuring that all data related to the theme is extracted before the themes can be defined and named. Extracts or quotes can be used to illustrate the theme. These themes could be named as *teachers' understanding of student engagement, teachers' description of general engagement in the lesson, teachers' presentation of high/low engagement moments* and *corresponding reasons.*

Third research question. To answer the third research question, both classroom recordings and individual interviews were used for analysis. When the 10 teachers' narrative moments of high engagement in the lesson were presented, I reviewed their classroom recordings to identify which of these moments were related to dialogic teaching. Further, I analysed the corresponding classroom extracts to explore how the teachers used dialogic teaching strategies to promote student engagement and attempted to draw linkages between them. Hence, the deep dive and deduction lead to the answer to the third research question.

Table 2

Scheme for Educational Dialogue Analysis (SEDA) (Hennessy et al., 2016)

Code cluster	Communication Act	Example
I-Invite elaboration or reasoning	I1- Ask for explanation or justification of another's contribution I2- Invite building on / elaboration / (dis)agreement / evaluation of another's contribution or view I3- Invite possibility thinking based on another's contribution I4- Ask for explanation or justification I5- Invite possibility thinking or prediction I6- Ask for elaboration or clarification	1. Who can tell me why they might disagree with X? 2. Can anyone add to what X said? 3. What do you think about what X said? 4. What questions does X's suggestion lead you to? 5. Why do you think that? What evidence do you have for that? 6. What would happen if there was no book in the world?
R-Make reasoning explicit	R1- Explain or justify another's contribution R2- Explain or justify own contribution R3- Speculate or predict on the basis of another's contribution R4- Speculate or predict	1. As X said, it's horrible because you can't communicate with others if there is no book in the world. 2. I like dogs because they are cute. 3.If the "green" in the poem is meant to be rivers, as X have just suggested, Y, then what does "move" mean?
B-Build on ideas	B1- Build on / explain / clarify others' contributions B2- Clarify/ elaborate own contribution	1. X made an excellent contribution to solving this question by using personification and explaining why.
P Positioning and Coordinating	P1- Synthesise ideas P2- Compare/ Evaluate alternative views P3- Propose resolution P4- Acknowledge shift in position P5- Challenge viewpoint P6- State (dis)agreement/ position	1. You have found a good example. First, the reason to support the opinion, and then rethink the opinion, last one is drawing the conclusion. Who can apply such structure to rewrite these sentences? 2. I see what you mean, but are you sure that C is probably right, not B?
C-Connect	C1- Refer back C2- Make learning trajectory explicit C3- Link learning to wider contexts C4- Invite inquiry beyond the lesson	1. Last lesson, we learned how to find a nice sentence, didn't we? 2. Maybe there are some reasons you can find after class, then we can share them tomorrow.

G-Guide direction of dialogue or activity	G1- Encourage student- student dialogue G2- Propose action or inquiry activity G3- Introduce authoritative perspective G4- Provide informative feedback G5- Focusing G6- Allow thinking time	1. So please, in your group, discuss the reason why people in Thailand like eating insects? 2. X, could you explain this question to Y? 3. Attention, we need put these hearts into the right places, and these hearts mean…… 2. There's no rush, take your time.
RD-Reflect on dialogue or activity	RD1- Talk about talk RD2- Reflect on learning process/ purpose/ value RD3- Invite reflection about process/ purpose/ value of learning	1. Take charge of each role in the group, speaker, listener and time controller. 2.If you keep talking, and others have no time to speak. How will others feel?
E-Express or invite ideas	E1- Invite opinions /beliefs/ideas E2- Make other relevant contribution	1. What do you know about Thailand? 2. I think that's a good point.

Results

The results are presented in three parts in line with three research questions. To study teachers' application of dialogic teaching in primary classrooms, we present the cluster frequencies derived from the analysis of classroom recordings by means of SEDA, as well as teachers' perceptions of dialogic teaching from interviews. In the second section, we present the interviewed teachers' descriptions of student engagement. Finally, the links between dialogic teaching and student engagement are revealed through a thematic analysis of the classroom recordings and personal interviews.

Teachers' application of dialogic teaching

Overall picture of dialogic teaching

The frequency of the SEDA clusters in the teacher's dialogue per lesson is presented in Table 3. In general, the data indicated that the teachers' conversations in the 10 recorded lessons are fairly dialogic. Six teachers have over 50% of conversation turns qualified with dialogic CA, signifying dialogic teaching (Hennessy et al., 2016). Each conversation turn refers to one round of dialogue between the student and the teacher. Each turn of the teacher's discourse may contain more than one CA. The highest rate was 72.9% and the lowest was 34.8%. Among the eight clusters related to dialogic teaching in SEDA, the ones that appeared more frequently in the classrooms of the 10 respondents are I (i.e. Invite elaboration or reasoning), B (i.e., Build on ideas), G (i.e., Guide direction of dialogue or activity) and E(i.e., Express or invite ideas), and with less frequency are R (i.e., Make reasoning explicit), C (i.e., Connect), P(i.e., Positioning and Coordinating) and RD (i.e., Reflect on dialogue or activity).

Table 3

Frequency of Cluster in SEDA coded per lesson

	English Teacher				Chinese Teacher					
	Miss Guan	Miss Yan	Miss Cheng	Miss Zhou	Miss Li	Miss Tang	Miss Zhang	Mr Li	Miss Yue	Miss Zhan
I (244 in total) Invite elaboration or reasoning	15	19	12	26	31	28	41	17	24	31
R (9 in total) Make reasoning explicit	0	2	0	0	0	2	1	1	3	0
B (86 in total) Build on ideas	14	3	3	6	11	13	8	8	9	11
P (42 in total) Positioning and Coordinating	2	6	1	3	3	2	6	9	5	5
C (68 in total) Connect	3	7	1	5	4	9	4	14	15	6
G (176 in total) Guide direction of dialogue or activity	14	21	18	23	16	18	12	23	18	13
RD (84 in total) Reflect on dialogue or activity	2	5	1	5	6	9	5	27	21	3
E (154 in total) Express or invite ideas	15	23	21	19	19	13	6	15	6	17
Total of CA	65 CA	86 CA	57 CA	87 CA	90 CA	94 CA	83 CA	114 CA	101 CA	86 CA
Ratio *How many turns were coded with dialogic CA ?*	54/155 34.8%	77/149 51.7%	46/93 49.5%	70/144 48.6%	75/112 67.0%	80/162 49.4%	62/122 50.8%	93/161 57.8%	87/123 70.7%	78/107 72.9%

Note: The table presenting the frequency of 33 CA is shown in Appendix A

Typical pattern of dialogic teaching

Although almost none of the teachers had heard of the term dialogic teaching, after my brief explanation, they all mentioned that they often used similar dialogic approaches to facilitate students' thinking in their daily teaching. Excerpt 1(see Table 4) below presents how the English teacher, Miss Zhou, implemented dialogic teaching in the class, as well as the SEDA codes. This lesson is about "Food from around the world" in Grade 5. In the Turn 50, the teacher asked a factual question to invite the students to express their knowledge, which can be coded as E1 (Invite opinions/beliefs/ideas). This question is easy, and most of the students were willing to raise their hands to answer. Next turn was asking for the expression of students' prior knowledge about Thailand. According to the teacher's description, the students at this moment were keen to show off their knowledge and actively participate in the classroom. E1(149 times) was the most frequent dialogic CA in the teachers' talk. This indicated that teachers commonly used these simple open-ended questions with no standard answers to trigger subsequent in-depth conversations.

Further, the teacher's question— "Why is it so popular to eat in Thailand?", that is, asking the students to explain the reason (I4, Turn 54). This can be regarded as an opportunity for students to think in a higher order. To ensure that students were willing to engage (feeling competent to answer), Miss Zhou applied some scaffolding strategies, including allowing thinking time (G6, Turn 54) and encouraging student-student dialogue (G1, Turn 54). She gave 10 seconds for the students to have a short discussion in the group. After that, the teacher invited students to share their ideas based on the contributions of others (I2, Turn 55). Students have already exchanged ideas with each other during the group discussion. The teacher's dialogue in a few simple sentences has sufficiently motivated the students to think and express themselves. In Turn 57 and 58, even though she did not continue with the questions, but only pointed out the students who answered, the answers

expressed by the students still reflected the outcome of their thinking. As a result, there was a high level of student engagement during the session, which can be proved by the lively discussion of the students on the recording and the teacher's descriptions in the interview.

At the end of the excerpt, the teacher clarified and built on the previous students' responses (B1, Turn 59). Although this did not launch an invitation to subsequent students' expressions, it modelled a more structured expression for the students. This is a manifestation of the teacher's dialogic teaching. Then the teacher invited the students to continue their thinking after the lesson, so it can be considered as inviting inquiry beyond the lesson (C4).

Excerpt 1 displays a typical pattern of dialogic teaching used by Chinese primary school teachers. The teacher starts with simple open-ended questions inviting students to express their views (E1), based on which opportunities are provided for further reasoning or justification (I4, I5, I6). If the questions are difficult, the teacher will design group discussions or collaborative sessions (G2, G5) to encourage interaction between students (G1), ensuring that they have enough time to think (G6) before expressing themselves in public (I1, I2, I3), and finally the teacher will summarise or deepen the students' expressions (B2, P1) and invite them to continue their inquiry beyond the lesson (C3, C4). This could explain why the four clusters I, B, G and E were coded more frequently in the teachers' dialogues.

As for the remaining four clusters, the R cluster mainly represents the students expressing themselves, so it appears rarely in the teacher talk. The C cluster and P cluster are primarily used to facilitate the flow of the lesson and occur infrequently. In addition, the particular role of the RD cluster needs to be clarified. Although it did not occur frequently on average, it emerged many times in the classroom conversations between the two Chinese teachers, Mr Li (27 times) and Miss Yue (21 times). This is because they trained students in

group work skills during the lesson, so they kept demonstrating the dialogue skills used in group work or inviting students to reflect on the process when working together.

"I see what you mean, but I think we can hear from others as well. So when you finish speaking, you can ask for other's opinions …… If you have a question, don't think of asking the teacher directly, but discuss it in a group first, and if you can't figure it out, come back and ask the teacher." (Mr Li, Innovation school, Chinese subject, Grade 3)

Table 4

Excerpt 1 from an English class for Grade 5

Agent	Turn	Dialogue	CA		
			Code 1	Code 2	Code 3
Teacher	50	And where is it from? Did you find the information? Where is it from? *(Invite one of the students who raised their hand to answer the question)*	E1		
Student		It's from Thailand.			
Teacher	51	Thailand. Good! Do you know anything about Thailand?*(Invite another student)*	E1		
Student		The weather in Thailand is hot.			
Teacher	52	Yes. Usually very hot. Let's check it out on the map. We know South America is very far away from China. What about Thailand? Is it far away?			
Student		No. *(All students say together)*			
Teacher	53	Yes, it's very close to China. Okay. Apart from the fried grasshoppers, there are a lot of fried insects in China. Do you want to try this food?			
Student		No. *(All students say together)*			
Teacher	54	No, most of you say no. Why is it so popular to eat in Thailand? Do you think about this? I'm gonna give you 10 seconds to discuss in your group.	I4	G6	G1
Student		*(Students begin to discuss)*			
Teacher	55	Hey, Time's up. Can I have somebody share your ideas? Yes. *(Invite one of the students who raised their hand to answer the question)*	I2		
Student		So I think people like it. Maybe because it is crunchy and salty, and they like the taste.			
Teacher	56	Yes, probably. What do you think? *(Invite another student)*	I2		
Student		Maybe Thailand people eat more fish, so they want to try some different.			
Teacher	57	Okay, that's interesting view. Yes, the boy in the end.			
Student		I have a the….. I have, I think it is the insect is very delicious. And the 2nd one is, if the insects have good……have many insects we need there.			
Teacher	58	Oh, there are a lot of insects there. Probably. Yes, a girl.			
Student		I actually read an article about this…..of it helps because the insects have nutritions, and they are something to eat. They have high protein.			
Teacher	59	It seems we have a little scientist in our class. Yes. 1st of all, it's delicious, it tastes good, and as the girl mentioned, it's very healthy for our body. Maybe there are some more reasons you can find out after class. OK.	B1	C4	

Note: It was completed with the teacher's assistance and may differ slightly from the actual conversations.

Teacher descriptions of student engagement

Overall understanding of student engagement

The findings of the in-depth interviews revealed that teachers mentioned most of the behavioural dimension when asked about their understanding of student engagement. The teachers mainly focus on both verbal and non-verbal aspects to illustrate students' behavioural engagement. From the perspective of verbal expression, some teachers consider that student engagement refers to the responses of students to the teacher's questions and the number of times students talk in group discussions. From the non-verbal aspect, it refers to students' posture, their gaze, the frequency of raising their hands, the degree of completion of individual tasks during group activities, etc.

However, some teachers indicate that students have different personality traits and their engagement in class cannot be judged by a one size fits all criterion, but rather based on the teacher's knowing the students.

"In fact, my observations of student engagement have changed over the years as I have taught. Perhaps in the past, in public schools, my understanding of engagement was that firstly, he should sit upright, secondly, he should not play with anything in his hands, and thirdly, he should raise his hand to speak, and this was the most direct way that I could identify his engagement. But after I came to the new school, because I had a lot of time to interact with the children, I found that the level of engagement was actually a different thing from one person to another. For example, there was a boy in my class who rarely raised his hand, but when you asked him occasionally, he could tell you what the last child was saying, including what the teacher was saying. I find that whether he raises his hand or not is not a good indicator of whether he is really participating in the class. So I think we can't simply tell whether he is participating in the classroom by using the methods I have just mentioned, but by the amount of time you have spent with the student ...." (Miss Li, Innovation school, Chinese subject, Grade 1)

Although the teachers had different interpretations of student engagement, they concurred on its significance as a basis for evaluating classroom instruction and as a factor that must be considered in lesson design. Observing students' behavioural engagement in the classroom provides an insight into how students respond to the learning content and how they are taught. The teacher collects feedback from students, which can be used both to make timely adjustments to the instructional strategies in class and for post-lesson reflection, which can contribute to the design of subsequent lessons.

"I pay more attention to this matter of class engagement because if I suddenly feel that the class is not very involved during the lesson, then after the class I wonder what is going on and I am quite sad."
(Mr Li, Innovation school, Chinese subject, Grade 3)

"I think ...... if the students are too little involved, then you definitely feel that the classroom atmosphere is a little bit less interactive and you can't be sure what the quality of the students' output is, right? It's too little. The goal is definitely to have more output, more participation, so that you know if he is good or not, as a way of evaluation. ...... In general, I feel that it is about the quality and quantity of the output of student learning, and another one is the classroom atmosphere." (Miss Guan, Public school, English subject, Grade 4)

Description of specific moments of engagement in the lesson

Descriptions and illustrations from all participants regarding student engagement in the surveyed lesson are presented in Table 5. Teachers evaluated the overall level of engagement in the classroom as fairly positive, concentrating on medium and high levels. Three teachers considered that there were no moments of low engagement in the chosen lessons, which is in line with the high level of self-evaluated general engagement. Other teachers' descriptions of low engagement moments included specific questions, specific tasks or a certain duration of the class. They identified possible reasons in terms of students, learning content and lesson design. More specifically, students are afraid to express themselves in front of the public or to be judged by others for their mistakes, which could

lead to low engagement. Engagement also decreases when students are unfamiliar or find the learning content difficult. When the teacher's instructional design is inappropriate resulting in students remaining in the same state for extended durations (e.g. consistently answering questions of similar structure and equal difficulty), the level of student engagement gradually declines.

In addition, each teacher could mention a moment of high engagement in the lesson, some even more than one. It indicated that teachers tended to recognise positive moments in the classes. These moments of high engagement included discussions on a specific topic, particular activities in the classroom, concrete questions asked by the teacher or a certain type of teaching session. Teachers thought there might be several reasons for the positive engagement of students: 1) questions or content close to students' real life; 2) questions or content refer to students' prior knowledge; 3) students feel challenged either by others or questions; 4) content or activities are interesting to abstract students; 5) students have chances to express without many limitations; 6) students can interact with peers.

Table 5

10 teachers' descriptions of specific moments of engagement in each lesson

Teacher	General engagement	Low engagement		High engagement	
	Level	Moment	Reason	Moment	Reason
Miss Yan	Medium	The task: help the character from the text to design a Wechat moment	1. The character itself was less interesting and doing boring things. 2. The teacher's requirements in the task were complex.	Discuss the topic of "The Double reduction Policy"	The students felt a resonance with the topic, especially after one student shared his experience that "Although the teacher didn't assign homework, my mother gave me extra homework herself."
Miss Yue	Medium	The question: Why does everything look idle?	It was hard for students to connect that it was the author who was in a laid-back mood. All they talked about was the stuff itself, and then no matter what they said they couldn't get to the point that the teacher was expecting.	The question: 1. Why does the author use so many personifications? 2. Why is the little white chrysanthemum no longer timid?	1. Because personification is a topic that students are more familiar with, having studied it since Grade 2, they can say something about it. 2. The second question was one that many students had asked before the class, so they had it in mind.
Miss Zhang	Medium	In the middle ten minutes	Students were unable to concentrate and showed off-task behaviors because they were tired of repeatedly answering questions of similar structure and difficulty.	At the beginning, asking questions about reading	Because these questions are about the students' real lives, such as what kinds of books do they like to read and why? Do they read by themselves or with their parents and why? …..There are no standard answers. When the teacher doesn't limit them and gives them this freedom, the children's own desire for expression is fully engaged because they want to be heard.
Miss Li	Medium	None	The teacher herself is able to accept that a lesson has moments of high engagement and moments of low engagement. This is a very natural situation. So she is not particularly concerned.	1. Make up stories with Chinese characters 2. Use Chinese characters to form words 3. Group discussion	1. Because the teacher hands over the classroom to the students when they make up the story. Instead of the teacher telling the students how to memorize a character, the students have to figure it out and teach it to others. 2. When forming words the children can show their vocabulary. 3. Group discussion is a social interaction between children.

Miss Guan	Medium	Ask questions about picture books beyond the lesson.	Students were not familiar with the content of the picture book, plus they did not have enough English skills, so they could not express themselves correctly and simply did not raise their hands.	Group activities	Students who usually are afraid to speak were less pressured to face their classmates, so they could make some attempts in the group, and the engagement would become better.
Mr. Li	Upper medium	Quick quiz time	Although the questions were simple, the students felt tired if they kept repeating them. The class flow was poorly designed, so the whole class would seem boring.	1. Students drew small boats on the board. 2. The teacher presents a counter-example to the student's viewpoint.	1. When they couldn't say clearly in words what the stern was, using pictures helped them to show their explanation more clearly. 2. They seemed to feel challenged and wanted to prove themselves, and engagement became higher.
Miss Cheng	High	Analysis of the text	The students were exposed to English writing for the first time and found the content difficult. Also, the text chosen by the teacher did not fit with the structure of the writing to be learned.	The Q&A session following the video watching	Because the content of the video is interesting, it is easy to attract students.
Miss Zhan	High	None	None	Make sentences with "Not to say ...... at least ...... without ......"	The teacher gave an example close to the students' real life, a soccer team at school, so they probably opened up at once and thought of many relevant examples in their lives.
Miss Tang	High	None	None	Introduce new word puzzles for students to guess	New puzzles can spark students' curiosity and stimulate them to challenge. The teacher consolidated students' methods by reviewing the previous lesson and then asking them to guess new ones in a similar way. This would make students feel capable of completing the challenge and engagement would be high.
Miss Zhou	High	None	None	1. Act to sell insects as a group 2 Inquire why insects are popular in Thailand	1. The personality trait of children at this age is that they like to perform. Especially after they already have certain knowledge, they are eager to show what they can do. 2. Students had their own thoughts, and then after listening to other people's ideas, they would come up with new ideas and just want to share them with everyone.

Observable linkages between dialogic teaching and student engagement

Almost all teachers report that dialogic teaching can increase student engagement, but there are certain conditions. For example, the questions should be moderately difficult, the teaching content should be appropriate, the teacher-student relationship should be cordial, and time needs to be taken to develop students' confidence and skills in expression. Moreover, multiple links between student engagement and dialogic teaching can be identified by observing moments of high engagement and the teacher's utterance in class.

Asking questions referring to students' real life and prior knowledge can increase student engagement (see lessons of Miss Yan, Miss Yue, Miss Li, Miss Zhan, Miss Tang, Miss Zhang)

Majority of high engagement moments mentioned by the 10 teachers were related to students' real-life and prior knowledge. Reviewing their classroom recordings showed that the dialogues they used in these sessions were considered to be dialogic CA. Miss Yan's classroom extracts are used to present this link.

"Is there anyone not very happy about your weekends? You know what? Good news! Things can be better. Do you want to know why? Listen. There is a new policy. What's the name of it? The Double reduction Policy." -- C3 Link learning to wider contexts.

This lesson is an English lesson for Grade 5 and the topic is "Our Weekend". Students first learnt to use English to describe the activities that the characters in the text (Mr. Potato) did over the weekend. The teacher wanted to develop students' higher order thinking skills by asking them to compare their own weekend life with that of Mr. Potato and determine which was healthier. Once the students had an understanding of a healthy lifestyle, a double reduction policy was introduced. The double reduction policy means that students have plenty of free time to organise over the weekend. The teacher linked the learning from the books to wider real-life contexts through dialogues. Students' thinking also evolves from memorising English phrases to comparing and analysing others.

"I think we should have a family meeting tonight. We're gonna talk about it. Okay, so I will teach you, Miss Yan will teach you how to talk with your parents. Okay? With the double reduction policy……"---C4 Invite inquiry beyond the lesson (Miss Yan, Private school, English subject, Grade 5)

Because the topic has generated active engagement from students, a number of them said that parents still assigned extra homework. At this point the teacher extended the enquiry beyond the lesson by using dialogic teaching. Students' skills of applying, critiquing and generalising might be trained.

Providing opportunities for students to interact with their peers can enhance engagement (see lessons of Miss Li, Miss Guan, Miss Zhou)

Some teachers felt that students were more engaged in group activities or discussions. Possibly they were more willing to express themselves because they were less stressed among peers. Conversations initiated by the teacher for group discussions or activities are also related to dialogic teaching. Likewise, several of SEDA's 33 CA are related to group activities, such as G1-Encourage student–student dialogue, G2-Propose action or inquiry activity. Teachers who verbally encourage interaction between students and initiate independent research as a group can enhance student engagement in the classroom (Hennessy et al., 2016). Miss Li's classroom extracts are used to present this link.

"Next we will work in small groups to remember the characters, making up stories, riddles or children's songs. Feel free to say whatever you want, but don't show a lack of respect or patience in listening." –G1/G2（Miss Li, Innovation school, Chinese subject, Grade 1)

The goal of this lesson was to enable students to remember Chinese characters by making up stories. The students had already used this method in previous classes, but this time they were dealing with newly learned characters, so they needed to make up new stories. After the teacher initiated the group work session, each student was very active in the

discussion. This is because everyone in the group gets a chance to create and interact with their peers.

Challenging students by questions can stimulate engagement (see lessons of Mr Li and Miss Tang)

Two teachers suggested that when students are challenged, either by a difficult task or by the teacher, they will be more engaged. This is in line with the CA (i.e., P5 Challenge viewpoint; P6 State disagreement/position) in SEDA, which contributes to the dialogic interaction. In other words, students are motivated to engage when the teacher uses utterances to challenge their arguments, beliefs or assumptions (Hennessy et al., 2016). I used Mr Li's classroom as an example to show how teachers can stimulate student engagement with challenging dialogue.

The goal of Mr. Li's class is to teach students to understand the meaning of words in context. He used the word "Chuanshao" (stern) as an example and asked the students to understand the word through the passage provided and express it in their own words. To enable students to express themselves accurately, Mr. Li would always use the questions "Are you sure? Is that really what it means? Is there a more accurate way to say it?" to stimulate students' engagement. The students responded positively and proposed to draw pictures to illustrate the meaning of the word.

Discussion

By drawing on the classroom recording and teachers' interviews, the study 's main goal was to detect the relation between dialogic teaching and student engagement in Chinese elementary school. The results of coding the classroom transcriptions with SEDA show the dialogic presence of primary school teachers in the classroom. Students' engagement in the classroom is revealed through the teacher's descriptions in the personal in-depth interviews. Finally, it is observed that student engagement is enhanced when teachers use specific types

of linguistic expressions related to dialogic teaching. This study combines classroom recordings and personal interviews to enhance both the internal validity and to provide a new lens to the existing literature. Moreover, it provides a more diverse context for research on dialogic teaching by showing how teachers' application dialogic teaching in Chinese primary school classrooms. Clarification of how teacher talk stimulates student engagement in class provides practical evidence for research on student engagement.

The first research question was how teachers apply dialogic teaching in the classroom. The analysis of classroom recordings revealed that over half of the teachers' talk in Chinese primary classrooms could be considered dialogic, which is in line with the findings of Vrikki et al. (2018). Their analysis of the classroom videos suggested that the presence of 'dialogic moves' in each lesson was not as rare as predicted based on the dominant IRF pattern in classroom conversations (Vrikki et al., 2018). Moreover, they found that the codes with the highest average frequency in the teachers' conversations were elaboration (ELI, EL), reasoning (REI, RE), and questioning (Q) with the use of the Cambridge Dialogue Analysis Scheme (CDAS) which including 10 'dialogic move' codes. It is consistent with my finding that I (i.e. Invite elaboration or reasoning), B (i.e., Build on ideas), and E(i.e., Express or invite ideas) are more frequent code clusters. Although the coding names are different, the underlying concepts are the identical. These suggest that there are specific features of productive dialogue for teachers (Vrikki et al., 2018). In the individual interviews, the teachers also indicated that they had attended more or less training related to the teaching linguistic aspects, such as how to design logical chains of questions and how to give feedback to students in the classroom using effective language.

Apart from above, the typical pattern of dialogic teaching used by Chinese primary school teachers mainly focus on inviting students to express ideas/opinions/ reasons (i.e., Invite elaboration or reasoning and Express or invite ideas). Associated with the study of

motivating teaching behaviours, calling for students' participation and applying inviting

language can support student autonomy and increase student engagement (Cents-Boonstra et

al., 2020). Based on the self-determination theory, giving students the freedom to express

themselves promotes the fulfillment of three psychological needs, namely the need for

competence, relatedness and autonomy. And when students' psychological needs are met,

they become more engaged in the classroom (Deci & Ryan, 2012).

The second research question is how teachers describe student engagement in the

classroom. The teachers' descriptions of student engagement focused on the behavioural

engagement dimension. In the classroom they perceived student engagement by observing

students' utterances and body language. This is consistent with the findings of previous

studies. Measures of behavioural engagement include behavioural aspects of attention, such

as eye contact and active participation in discussions (Buhs & Ladd, 2001). However, some

teachers argued that assessing student engagement should not be based only on these external

signs, but also on knowing the students personally. Indeed, there is little consensus regarding

a valid measure of engagement in the research field. Sinatra et al. (2015) argued that

individual differences should be taken into account when measuring the student engagement.

They proposed a continuum measurement from person-oriented to context-oriented because

of the integrating nature of engagement. It is not adequate to evaluate student engagement

from a single dimension. This is consistent with the reflections that the teachers raised in the

focus group meeting. They questioned whether student behavioral engagement reflected the

true state of learning, as there were students who appear to be "performing learners".

In addition, teachers are likely satisfactory with the overall student engagement and

more concerned about the positive moments of student engagement in the classroom. Their

descriptions of these moments may be either a specific task or question, or a certain time

period. Research found that teacher perceptions of student engagement are related to their

beliefs including motives, attitudes toward competences, perceived self-efficacy, and ratings of interpersonal teacher behavior (van Uden et al., 2013). It is in line with the age profile of participants, that is, the average working years for the 10 teachers is about 6 years. Research has shown that most teachers in the early professional life phase (0-7 years) have a strong sense of identity, self-efficacy and effectiveness (Day, 2007). Therefore, they are inclined to have a positive perception of their classroom.

In terms of the third research question about the relationship between dialogic teaching and student engagement, the dialogic linguistic expressions in teacher talk stimulate student engagement, that is, asking questions referring to prior knowledge or students' lives, providing opportunities for students to interact with their peers, and challenging students by questions. Firstly, although there is no previous empirical research demonstrating that teacher-initiated dialogues about students' real life or prior knowledge could increase student engagement, similar dialogues can increase student motivation according to self-determination theory (Deci & Ryan, 2012). When students talk about topics related to their own lives, they will feel connected to their context. Then the needs of relatedness could be fulfilled. Additionally, students would feel competent when they can apply their prior knowledge.

Secondly, the positive link between opportunities for students to interact with their peers and student engagement can be supported by the studies on collaborative learning for student engagement (Okolie et al., 2021; Zepke & Leach, 2010). As students learn in groups, they have less pressure and more exposure. Peer interaction is a strong predictor of student engagement (Moran & Gonyea, 2003). Thus when teachers apply dialogic teaching strategies to enable students to interact with their peers, whether in small groups or as partners, it can provide a conducive situation for their engagement. Thirdly, the fact that the challenge can promote student engagement has been demonstrated by Strati et al. (2017). Students'

perception of challenge promotes their moment of engagement in science learning activities, and instrumental support from teachers stimulates students' perception of challenge. More specifically, instrumental support includes the use of structured questions, providing feedback and other scaffolding strategies (Strati et al., 2017), which is in line with the application of dialogic teaching.

Limitations of the present study

Although this explorative study offers a new insight on the relationship between student engagement and dialogic teaching, it leaves room for improvement. Firstly, the recording devices had some impact on the students according to the teachers' feedback. The students had deliberately behaved well because they were aware of the situation that the class was recorded in, and this may have had a certain effect on the findings. Likewise, a similar situation exists for teachers. Although the researcher did not make a requirement for a recorded class, almost all teachers picked a well-prepared lesson, which may undermine the researcher's insight into the teachers' application of dialogic teaching in their daily practice. However, the chance for member checking provided by the focus group meetings could assist the researcher in further validating the findings of the current study, thus reducing the bias introduced by the above circumstances. Furthermore, the homogeneity of the age and gender of the participants mentioned earlier may not be conducive to presenting a comprehensive picture of the study.

Regarding to the analysis, because the researcher applies SEDA as an analytical tool for the first time, it may also bring some deviations to the conclusions. I studied more detailed implementation instructions by reviewing SEDA's website. The initial coding results were also checked with the teachers during the personal interviews. The above measures were used to minimize the bias of the study. Moreover, some teachers mentioned the objectivity of measuring student engagement in focus group meeting. They considered that

teachers' descriptions of student engagement might be subjective if they focused only on the dimension of behavioral engagement. Although there was a classroom recording as a supplement, the content is not clear enough. A video would provide a more objective picture of the students in the classroom.

Implications for research and practice

To visualise the teacher's application of dialogic teaching and the real engagement of the students, it might be beneficial that the classroom can be video-recorded in the future research. This may lead to identify more linkages between student engagement and dialogic teaching. Further, a scientifically comprehensive engagement measurement tool should be applied in future study. More specifically, the tool would ideally combine the perspectives from the teacher and the student, while integrating the three dimensions of engagement, taking into account both individual personality traits and contextual factors. Additionally, How teachers' working years influence their use of dialogic teaching is remained to explore, which may offer guidance for teacher professional development program.

The findings of this study have implications for the teaching practices of Chinese elementary school teachers. The teacher could use more examples related to students' real life or extend the class content to life scenarios in the classroom conversations, which would stimulate students' engagement. Besides, simple questions and consistent teacher approval are not always effective for student engagement. Classroom tasks and questions are optimally difficult for students to complete after applying their prior knowledge and working with their peers. The teacher should use dialogue to create the conditions for these challenges. Finally, the teacher should use dialogic teaching to provide ample opportunities for students to express themselves. For example, when a student's response is unclear, inviting another student to help clarify rather than the teacher paraphrasing is more likely to promote student engagement (Bergman, 2018).

References

Alexander, R. J. (2001). *Culture and pedagogy: International comparisons in primary education.* Blackwell Publishers.

Alexander, R. J. (2006). *Towards dialogic teaching: rethinking Classroom Talk*. Dialogos.

Alexander, R. (2018). Developing dialogic teaching: genesis, process, trial. *Research Papers in Education*, *33*(5), 561–598. https://doi.org/10.1080/02671522.2018.1481140

Alexander, R. (2020). *A Dialogic Teaching Companion*. Routledge. https://doi.org/10.4324/9781351040143

Appleton, J. J., Christenson, S. L., & Furlong, M. J. (2008). Student engagement with school: Critical conceptual and methodological issues of the construct. *Psychology in the Schools*, *45*(5), 369–386. https://doi.org/10.1002/PITS.20303

Bakhtin, M. (1981). *The Dialogic Imagination: Four Essays*. University of Texas Press.

Bakhtin, M. (1986). *Speech Genres and Other Late Essays*. University of Texas Press.

Bear, G. G., Yang, C., Chen, D., He, X., Xie, J.-S., & Huang, X. (2018). Differences in school climate and student engagement in China and the United States. *School Psychology Quarterly*, *33*(2), 323–335. https://doi.org/10.1037/spq0000247

Bergman, D. J. (2018). "I Think You Mean…" Potential Perils of Teacher Paraphrasing and Alternative Responses for Student Engagement. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, *91*(4-5), 201-211. https://doi.org/10.1080/00098655.2018.1500261

Biesta, G. (2004). "Mind the Gap!" Communication and the Educational Relation. *Counterpoints*, *259*, 11–22. http://www.jstor.org/stable/42978490

Braun, V., & Clarke, V. (2021). Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic

approaches. *Counselling and Psychotherapy Research*, *21*(1), 37–47.

https://doi.org/10.1002/capr.12360

Buhs, E. S., & Ladd, G. W. (2001). Peer rejection as antecedent of young children's school

adjustment: An examination of mediating processes. *Developmental Psychology*,

37(4), 550–560. https://doi.org/10.1037/0012-1649.37.4.550

Castillo-Montoya, M. (2016). Preparing for interview research: The interview protocol

refinement framework. *Qualitative Report*, *21*(5), 811–831.

https://doi.org/10.46743/2160-3715/2016.2337

Calcagni, E., & Lago, L. (2018). The Three Domains for Dialogue: A framework for

analysing dialogic approaches to teaching and learning. *Learning, Culture and Social

Interaction, 18*, 1–12. https://doi.org/10.1016/j.lcsi.2018.03.001

Cents-Boonstra, M., Lichtwarck-Aschoff, A., Denessen, E., Aelterman, N., & Haerens, L.

(2021). Fostering student engagement with motivating teaching: an observation study

of teacher and student behaviours. *Research Papers in Education, 36*(6), 754-779.

https://doi.org/10.1080/02671522.2020.1767184

Cents-Boonstra, M., Lichtwarck-Aschoff, A., Mascareño Lara, M., & Denessen, E. (2021).

Patterns of motivating teaching behaviour and student engagement: a microanalytic

approach. *European Journal of Psychology of Education*.

https://doi.org/10.1007/s10212-021-00543-3

Chapin, S. H., Mary Catherine O'connor, & Nancy Canavan Anderson. (2009). *Classroom

discussions : using math talk to help students learn, grades K-6*. Math Solutions.

Christenson, S. L., Sinclair, M. F., Lehr, C. A., & Godber, Y. (2001). Promoting successful

school completion: Critical conceptual and methodological guidelines. *School

Psychology Quarterly*, *16*(4), 468–484. https://doi.org/10.1521/scpq.16.4.468.19898

Connell, J. P., & Wellborn, J. G. (1991). Competence, autonomy, and relatedness: A motivational analysis of self-system processes. In M. R. Gunnar & L. A. Sroufe (Eds.), *Self processes and development* (pp. 43–77). Lawrence Erlbaum Associates, Inc.

Crowe, M., Inder, M., & Porter, R. (2015). Conducting qualitative research in mental health: Thematic and content analyses. *Australian and New Zealand Journal of Psychiatry*, *49*(7), 616–623. https://doi.org/10.1177/0004867415582053

Cui, R., & Teo, P. (2021). Dialogic education for classroom teaching: a critical review. *Language and Education*, *35*(3), 187–203. https://doi.org/10.1080/09500782.2020.1837859

Day, C. (2007). Committed for life? Variations in teachers' work, lives and effectiveness. *Journal of Educational Change*, *9*(3), 243–260. https://doi.org/10.1007/s10833-007-9054-6

Deci, E. L., & Ryan, R. M. (2012). Self-determination theory. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 416–436). Sage Publications Ltd. https://doi.org/10.4135/9781446249215.n21

Dworkin, S. L. (2012). Sample Size Policy for Qualitative Studies Using In-Depth Interviews. *Archives of Sexual Behavior*, *41*(6), 1319–1320. https://doi.org/10.1007/s10508-012-0016-6

Finn, J. D. (1989). Withdrawing From School. *Review of Educational Research*, *59*(2), 117–142. https://doi.org/10.3102/00346543059002117

Fredricks, J. A. (2014). *Eight myths of student disengagement: Creating classrooms of deep learning*. Corwin Press

Fredricks, J. A., & Eccles, J. S. (2002). Children's competence and value beliefs from childhood through adolescence: Growth trajectories in two male-sex-typed

domains. *Developmental Psychology, 38*(4), 519–533. https://doi.org/10.1037/0012-1649.38.4.519

Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, *74*(1), 59–109. https://doi.org/10.3102/00346543074001059

Fredricks, J. A., Filsecker, M., & Lawson, M. A. (2016). Student engagement, Context, And adjustment: Addressing definitional, Measurement, And methodological issues. *Learning and Instruction*, *43*, 1–4. https://doi.org/10.1016/j.learninstruc.2016.02.002

Gunuc, S. (2014). The relationships between student engagement and their academic achievement. *International Journal on New Trends in Education and their implications*, *5*(4), 216-231.

Hennessy, S., Rojas-Drummond, S., Higham, R., Márquez, A. M., Maine, F., Ríos, R. M., García-Carrión, R., Torreblanca, O., & Barrera, M. J. (2016). Developing a coding scheme for analysing classroom dialogue across educational contexts. *Learning, Culture and Social Interaction*, *9*, 16–44. https://doi.org/10.1016/j.lcsi.2015.12.001

Johnson D. (1994). *Research Methods in Educational Management*. Longman Group, Essex.

Kim, M. Y., & Wilkinson, I. A. G. (2019). What is dialogic teaching? Constructing, deconstructing, and reconstructing a pedagogy of classroom talk. *Learning, Culture and Social Interaction, 21*, 70–86. https://doi.org/10.1016/j.lcsi.2019.02.003

King, R. B. (2015). Sense of relatedness boosts engagement, achievement, and well-being: A latent growth model study. *Contemporary Educational Psychology*, *42*, 26-38. https://doi.org/10.1016/j.cedpsych.2015.04.002

Linnenbrink-Garcia, L., Rogat, T. K., & Koskey, K. L. K. (2011). Affect and engagement during small group instruction. *Contemporary Educational Psychology*, *36*(1), 13–24. https://doi.org/10.1016/j.cedpsych.2010.09.001

Meng, S., Chen, Z., Li, Q., Liu, D., & Zhao, L. (2010). The situation and educational measures of school boredom among primary and secondary school students in Tianjin. *Tianjin Federation of Social Science Circle (3),* 4.

Mercer, N. (1995). *The Guided Construction of Knowledge: Talk Amongst Teachers and Learners*. Multilingual Matters.

Mercer, N., Dawes, L., & Staarman, J. K. (2009). Dialogic teaching in the primary science classroom. *Language and Education, 23*(4), 353–369. https://doi.org/10.1080/09500780902954273

Mercer, N., & Littleton, K. (2007). *Dialogue and the development of children's thinking : a sociocultural approach*. Routledge.

Mercer, N., Wegerif, R., & Dawes, L. (1999). Children's Talk and the Development of Reasoning in the Classroom. *British Educational Research Journal, 25*(1), 95–111. https://doi.org/10.1080/0141192990250107

Mercer, N., & Dawes, L. (2008). "The Value of Exploratory Talk." In *Exploring Talk in School: Inspired by the Work of Douglas Barnes*, edited by N. Mercer and S. Hodgkinson, 55–73. Sage.

Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide to design and implementation* (4th ed.). Jossey-Bass, Cop.

Michaels, S., O'Connor, C., & Resnick, L. B. (2007). Deliberative Discourse Idealized and Realized: Accountable Talk in the Classroom and in Civic Life. *Studies in Philosophy and Education*, *27*(4), 283–297. https://doi.org/10.1007/s11217-007-9071-1

Moran, E. T., & Gonyea, T. (2003). *The Influence of Academically-Focused Peer Interaction on College Students' Development*.

Nystrand, M., A. Gamoran, R. Kachur, & C. Prendergast. (1997). *Opening Dialogue: Understanding the Dynamics of Language and Learning in the English Classroom.* Teachers College Press.

National Research Council & Institute of Medicine. (2004). *Engaging schools: Fostering high school students' motivation to learn.* The National Academies Press.

Natriello, G. (1984). Problems in the evaluation of students and student from secondary schools. *Journal of Research and Development in Education, 17*, 14–24.

Okolie, U. C., Mlanga, S., Oyerinde, D. O., Olaniyi, N. O., & Chucks, M. E. (2021). Collaborative learning and student engagement in practical skills acquisition. *Innovations in Education and Teaching International*, 1-10. https://doi.org/10.1080/14703297.2021.1929395

Reeve, J., & Tseng, C. M. (2011). Agency as a fourth aspect of students' engagement during learning activities. *Contemporary Educational Psychology, 36*(4), 257–267. https://doi.org/10.1016/j.cedpsych.2011.05.002

Rojas-Drummond, S., Torreblanca, O., Pedraza, H., Vélez, M., & Guzmán, K. (2013). 'Dialogic scaffolding': Enhancing learning and understanding in collaborative contexts. *Learning, Culture and Social Interaction, 2*(1), 11–21. http://dx.doi.org/10.1016/j.lcsi.2012.12.003

Ross, H., Cen, Y., & Zhou, Z. (2011). Assessing student engagement in China: Responding to local and global discourse on raising educational quality. *Current Issues in Comparative Education*, *14*(1), 24-37.

Ryan, R. M., & Deci, E. L. (2000). Self-determination Theory and the Facilitation of Intrinsic motivation, Social development, and well-being. *American Psychologist*, *55*(1), 68–78. https://doi.org/10.1037//0003-066x.55.1.68

Shi, Y., Shen, X., Wang, T., Cheng, L., & Wang, A. (2021). Dialogic teaching of controversial public issues in a Chinese middle school. *Learning, Culture and Social Interaction, 30*(PA), 100533. https://doi.org/10.1016/j.lcsi.2021.100533

Sinatra, G. M., Heddy, B. C., & Lombardi, D. (2015). The Challenges of Defining and Measuring Student Engagement in Science. *Educational Psychologist, 50*(1). https://doi.org/10.1080/00461520.2014.1002924

Sinclair, M. F., Christenson, S. L., & Thurlow, M. L. (2005). Promoting School Completion of Urban Secondary Youth with Emotional or Behavioral Disabilities. *Exceptional Children*, *71*(4), 465–482. https://doi.org/10.1177/001440290507100405

Strati, A. D., Schmidt, J. A., & Maier, K. S. (2017). Perceived challenge, teacher support, and teacher obstruction as predictors of student engagement. *Journal of Educational Psychology*, *109*(1), 131–147. https://doi.org/10.1037/edu0000108

van Uden, J. M., Ritzen, H., & Pieters, J. M. (2013). I think I can engage my students. Teachers' perceptions of student engagement and their beliefs about being a teacher. *Teaching and Teacher Education*, *32*, 43-54. https://doi.org/10.1016/j.tate.2013.01.004

Vasalampi, K., Metsäpelto, R. L., Salminen, J., Lerkkanen, M. K., Mäensivu, M., & Poikkeus, A. M. (2021). Promotion of school engagement through dialogic teaching practices in the context of a teacher professional development programme. *Learning, Culture and Social Interaction, 30*(July). https://doi.org/10.1016/j.lcsi.2021.100538

Vrikki, M., Wheatley, L., Howe, C., Hennessy, S., & Mercer, N. (2018). Dialogic practices in primary school classrooms. *Language and Education*, *33*(1), 1–19. https://doi.org/10.1080/09500782.2018.1509988

Wang, M. T., & Holcombe, R. (2010). Adolescents' perceptions of classroom environment, school engagement, and academic achievement. *American Educational Research Journal, 47,* 633-662. https://doi.org/10.1080/09500782.2018.1509988

Yang, Z., & Wang, S. (2022). Dialogic teaching in secondary classrooms in China: Features, commonalities, and distinctiveness. *Learning, Culture and Social Interaction*, *34*, 100619. https://doi.org/10.1016/j.lcsi.2022.100619

Yin, H. (2018). What motivates Chinese undergraduates to engage in learning? Insights from a psychological approach to student engagement research. *Higher Education*, *76*(5), 827–847. https://doi.org/10.1007/s10734-018-0239-0

Yin, R. K. (2009). *Case study research: Design and methods* (5th ed.). Sage.

Zepke, N., & Leach, L. (2010). Improving student engagement: Ten proposals for action. *Active Learning in Higher Education*, *11*(3), 167–177. https://doi.org/10.1177/1469787410379680

Zhang, Z., Hu, W., & McNamara, O. (2015). Undergraduate student engagement at a Chinese university: a case study. *Educational Assessment, Evaluation and Accountability*, *27*(2), 105–127. https://doi.org/10.1007/s11092-015-9213-x

Appendix A

The frequency of 33 CA

Code cluster	CA	Miss Yue 123 turns---101CA	Miss Tang 162 turns---94CA	Miss Zhang 122 turns---83CA	Mr Li 161turns---114CA	Miss Li 112 turns---90CA	Miss Zhou 144 turns---87 CA	Miss Cheng 93 turns---57CA	Miss Yan 149turns---86 CA	Miss Zhan 107 turns---86 CA	Miss Guan 155turns---65 CA	Sum
I	I1	6	2	0	2	2	4	1	5	3	2	27
	I2	11	8	0	1	17	18	5	7	21	4	92
	I3	4	3	7	2	1	1	0	0	0	7	25
	I4	1	11	21	11	7	2	6	5	2	2	68
	I5	1	0	2	0	0	0	0	0	0	0	3
	I6	1	4	11	1	4	1	0	2	5		29
	Sum	24	28	41	17	31	26	12	19	31	15	244
R	R1	1	0	0	0	0	0	0	0	0	0	1
	R2	1	2	1	0	0	0	0	0	0	0	4
	R3	0	0	0	0	0	0	0	0	0	0	0
	R4	1	0	0	0	0	0	0	0	0	0	1
	Sum	3	2	1	1				2			9
B	B1	9	12	8	8	11	6	3	3	11	14	85
	B2	0	1	0	0	0	0	0	0	0	0	1
	Sum	9	13	8	8	11	6	3	3	11	14	86
P	P1	2	1	0	2	0	0	1	3	4	2	15
	P2	1	0	0	2	0	0	0	0	0	0	3

	P3	0	0	6	2	0	2	0	0	0	0	10
	P4	0	0	0	0	0	0	0	0	0	0	0
	P5	0	0	0	1	3	1	0	3	1	0	9
	P6	2	1	0	2	0	0	0	0	0	0	5
	Sum	5	2	6	9	3	3	1	6	5	2	42
C	C1	6	6	0	6	3	0	0	3	2	0	26
	C2	7	3	2	5	0	1	0	1	1	0	20
	C3	0	0	0	3	0	2	1	0	2	2	10
	C4	2	0	2	0	1	2	0	3	1	1	12
	Sum	15	9	4	14	4	5	1	7	6	3	68
G	G1	2	1	0	8	5	3	3	4	0	2	28
	G2	1	3	2	4	1	5	3	6	1	6	32
	G3	3	3	5	2	2	4	6	5	7	2	39
	G4	2	1	0	1	3	2	0	1	1	0	11
	G5	9	7	2	6	1	3	2	1	1	1	33
	G6	1	3	3	2	4	6	4	4	3	3	33
	Sum	18	18	12	23	16	23	18	21	13	14	176
RD	RD1	13	4	1	13	6	4	1	5	2	2	51
	RD2	6	3	3	8	0	0	0	0	1	0	21
	RD3	2	2	1	6	0	1	0	0	0	0	12
	Sum	21	9	5	27	6	5	1	5	3	2	84
E	E1	6	12	5	13	18	19	21	23	17	15	149
	E2	0	1	1	2	1	0	0	0	0	0	5
	Sum	6	13	6	15	19	19	21	23	17	15	154