

## SCHOOL LEADERSHIP'S RELATION TO TEACHERS' USE OF CRITICAL THINKING AS AN INSTRUCTIONAL STRATEGY

**Bo Xu**

Assistant Professor

Sichuan International Studies University

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**ABSTRACT:** *The purpose of this case study is to investigate the educational practices that school leadership, more specifically teacher leadership in a Colorado high-achieving elementary school, utilized to promote student talk as an active learning strategy. Sampling process was based primarily on three criteria: 1. An elementary school sustained high academic achievement; 2. The student population in the elementary school has high low socioeconomic status (SES); and 3. The teachers in the elementary school utilized different form of critical thinking as an instructional strategy to promote teaching and learning effectiveness. The researchers used the report from the Colorado Department of Education (CDE), which indicated five the high-achieving schools with high low SES population in the state of Colorado. Eventually, one school accepted the invitation for this research and the researchers arranged one-on-one interviews with seven teacher leaders. The results from this case study indicated that “student talk” is an effective instructional strategy used in the classroom to increase student engagement in the learning process and eventually promote student school success. This study provided some implications for policy makers, administrators, and educators to assist in the implementation of critical thinking as an instructional strategy that supports student achievement.*

**KEYWORDS:** Instructional strategy, critical thinking, teaching effectiveness, student achievement; low socioeconomic status

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### INTRODUCTION

For more than 50 years state and federal politicians, policy makers, administrators, and educators have been concerned with the lingering student achievement gap between racial, ethnic, and socioeconomic student backgrounds (Coleman, 1966). Recently, the Colorado Department of Education (CDE) conducted research on high-achieving schools that maintained achievement over a three-year period for disaggregated populations (Colorado Department of Education [CDE], 2015a). CDE defined disaggregated populations as English Learners, students with disabilities, students experiencing poverty, and minority students (CDE, 2015a). Findings from the research on high-achieving schools concluded with detailed reports highlighting five schools across the state of Colorado (CDE, 2015a). Specifically, one school identified, amongst the five by CDE (2015b), reported using “student talk” as an instructional strategy (p.6). CDE (2015b) noted, “student talk is a process wherein students explain the “why” behind data points or responses to questions” (p. 6). As students engage in learning-content within the classroom, it is pertinent for

educators to foster and support routines and structures that support dialogic thinking routines (Mercer, 2008). With the implementation of Senate Bill 10-191 in the state of Colorado, Quality Standards for educator effectiveness have been identified. Within the Quality Standards developing critical thinking in students is listed as an identified professional practice on the educator effectiveness rubric in the exemplar column (CDE, 2016). Many educators and administrators across the state of Colorado seek to achieve an exemplar rating on their professional evaluation and an understanding of critical thinking as an instructional strategy to assist in increasing student achievement.

In the United States, there is a history of students that continue to underachieve, according to academic standards, in public education (Coleman, 1966). Federal funding sources continue to support efforts to close the achievement gap, but the gap in achievement continues to remain for subpopulations of students (United States Department of Education [USDOE], 2016). There is a plethora of research that exists for effective schools; however, there is a dearth of research on high-achieving schools that have maintained achievement for disaggregated populations, specifically schools with student populations that experience poverty above 40% and sustain academic achievement (Masewicz, 2010). Policymakers, administrators, and educators across the nation are interested in scientifically research based instructional strategies to support student achievement, specifically those strategies that can help increase achievement and ultimately close the achievement gap for subpopulations.

The purpose of this case study is to investigate the educational practices that school leadership, more specifically teacher leadership in a Colorado high-achieving elementary school, utilized to promote student talk as an active learning strategy. For the intent of this study, a teacher leader is a teacher who assumes a formal role of influence at their grade level and confers with other teachers, teacher leaders, the assistant principal, and the principal with student outcomes in mind. Teacher leadership is valued as an important role in leveraging student achievement through purposeful collaboration with worthwhile student outcomes at the forefront for supporting quality instructional practices (Hattie, 2012).

The instructional learning strategy, in this case study, is focused on student talk. Student's questioning, in essence student talk, is linked to the Socratic method and is but one instructional component within the complex framework of Socratic discussion and learning to think critically (Paul & Elder, 2007). A student engaged in determining what they know and do not know is part of the Socratic method (Paul & Elder). Socratic method is defined by the American Heritage Dictionary of the English Language (2011) as: A pedagogical technique in which a teacher does not give information directly but instead asks a series of questions, with the result that the student comes either to the desired knowledge by answering the questions or to a deeper awareness of the limits of knowledge. (p. 7)

The Socratic method, a critical thinking instructional strategy, is derived from the intention to answer questions with the purpose to further one's understanding of their thinking and

the thinking of others (Paul & Elder, 2007). The main research question guiding this study is: How is a school's leadership related to teachers' use of critical thinking as an instructional strategy? Many Colorado educators and administrators are in search for research based critical thinking strategies to assist them in achieving an exemplar rating on their professional evaluation. However, there is a dearth of research based critical thinking instructional strategies. The findings from this case study may be used by policy makers, administrators, and educators to assist in the implementation of critical thinking as an instructional strategy that supports student achievement.

## **LITERATURE REVIEW**

For the purpose of this literature review the topics included are: the history of the achievement gap, effective leadership in at-risk schools, effective instruction in at-risk schools, and teachers' use of critical thinking as an instructional strategy. Student achievement is a driving force in education both past and present (Masewicz, 2010) as well as, critical thinking has been closely examined for over 100 years as an integral component to student success in school (Diley, Kauffman, Kennedy, & Plucker, n.d.). Findings from research indicated that effective leadership influenced student academic achievement (Portin et al.2009).

### **History of Achievement Gap**

In 1965, policy makers at the federal government level attempted to solve inequalities and inadequacies in education with the passing of the Elementary and Secondary Education Act (ESEA), [USDOE], 2016). ESEA was designed with several purposes in mind such as: establish rigorous academic assessments, accountability systems, and state standards (USDOE, 2016). Another purpose of the bill was to close the achievement gap between high-performing and low-performing students. Despite the previously mentioned efforts the gap in achievement sustained.

Following ESEA, in 1983, was the publication of a landmark report titled *A Nation at Risk* (USDOE, 1983). This report suggested that America's school system was failing and that students were not adequately prepared to compete in a global market (USDOE, 1983). The result shifted the focus in education from inadequacies and inequalities to student achievement (USDOE, 1983). In 2001, the ESEA was reauthorized to the No Child Left Behind (NCLB) Act of 2001. NCLB was known for the accountability mandated that each child needed to have attained "adequate yearly progress" in achievement and under the growth model, all students would be proficient in reading and math by the year 2014 (USDOE, 2016).

More recently, in 2009, in an effort to address the achievement gap in recent years, CDE created a system to meet requirements for state and federal planning mandates (CDE, 2014). This system is known as Unified Improvement Planning, which Colorado law mandated schools be accountable for student performance (CDE, 2014). This system was created to

increase efficiency and effectiveness for school leaders in the school planning process, which is focused on continual improved achievement.

### **Effective Leadership in At-Risk Schools**

Effective leadership is significant to the success of a school (Hallinger, 2003). Research theory and practice both demonstrate the importance of skilled and committed school leadership in the shaping and maintenance of quality teaching and learning environments (Portin et al., 2009). Strong committed leadership is urgently needed within the most challenging schools (Portin et al., 2009). With the incremental pressure to ensure student achievement and success, the roles of school leaders have shifted from that of school managers to that of leaders for learning (Portin et al., 2009). This shift from school managers to learning leaders indicates that leadership is a strong parameter in influencing learning (Portin et al.2009).

In a study comparing schools serving high socioeconomic status (SES) versus low socioeconomic status student populations, Hallinger and Murphy (1986) suggested that school leaders' primary role in both types of settings was in the role of an instructional leader. Instructional leadership has aided in the shift to better support the needs of new trends in education. Andrews and Soder (1987) also substantiated that contextual effects of instructional leadership have been found in different school settings in response to the challenges of diverse SES existent within student populations. The shift from principals acting as school managers to instructional leaders indicated that leadership is a strong parameter in influencing learning (Portin et al., 2009).

### **Instruction in At-Risk Schools**

Carey (2004) suggested that students who qualify as low SES could achieve and learn high standards as equally as higher SES students if highly effective teachers teach them. Unfortunately, according to the studies from Carey (2004) and Mangiante (2011), low SES students are far more likely to be placed with teachers who are inexperienced, poorly educated, less qualified and who under-perform in the classroom than students in wealthier communities. In schools serving students with low SES, the instruction as well as the curriculum should meet the same standards of effectiveness that would be expected in schools serving relatively advantaged students (Carey, 2004). Nonetheless, the expected standards are not often met and a significant proportion of high poverty schools lack adequate instructional resources (Leithwood et al., 2004).

Leithwood et al. (2004) suggested that effective instruction is conducted in a highly supportive classroom that involves a caring learning environment. In this environment, most of the class time is spent on curriculum-focused activities and the teachers are able to maintain students' engagement in those activities. In effective instruction, teachers pose questions "to engage students in sustained discourse structured around powerful ideas," and assist students" to enable them to engage in learning activities productively" (p. 8-9). Students in at-risk schools needed to be encouraged to become active creators of their own

knowledge, in order to "assume greater control over setting their own learning goals and to collaborate actively with each other in achieving these goals" (p. 28).

### **Teachers' Use of Critical Thinking as an Instructional Strategy** <sup>[1]</sup><sub>[SEP]</sub>

A frequent term used in education today is critical thinking. Paul and Elder (2006) defined critical thinking as, "the art of thinking about thinking while thinking in order to make thinking better. It involves three interwoven phases: It analyzes thinking; it evaluates thinking; it improves thinking" (p. xiii). The process used to analyze thinking, regardless of the situation, is to think about the point of view, assumptions, concepts, inferences, implications, question, information and purpose (Paul & Elder, 2006). Paul and Elder (2006) stated that when evaluating thinking, one must examine the strengths and weaknesses by seeking clarity, precision, accuracy, depth, logicalness, significance and fairness. These processes support the notion of improved thinking when quality thinking is supported and weak thinking is abandoned (Paul & Elder). The shift in instructional practices, which offers time for students to converse about the parts of their thinking and hold their thinking to a standard of quality establishes a learning environment that values student dialog (Paul & Elder, 2007).

### **Student Talk**

In the report: High Achieving Schools Study conducted by CDE, "student talk" was identified as an integral component of "data use" that contributed to the school's success (CDE, 2015a, p. 6). To access thinking, or the "why" as CDE termed it, Costa and Kallick (2009) stated that teachers created a thinking environment in their classroom. Instructional strategies teachers used included probing for thinking, then posing problems and raising questions (Costa & Kallick, 2009). Next, teachers who valued student thinking set up an environment that supported time for students to think, structures to support student thinking, and the assessment and growth of student thinking (Costa & Kallick). Classrooms that support time for students to share their thinking had a supportive community rich with collaboration and the open investigation of student ideas (Costa & Kallick).

### **METHOD**

This research uses an epistemology, theoretical framework, and method that is focused on understanding school leadership's relation to teachers' use of critical thinking as an instructional strategy in a high achieving low SES school. The research framework, methodology, and method are carefully explained in this section. In order to investigate the research problem, the following research question was raised by the qualitative case study inquiry:

How is a school's leadership related to teachers' use of critical thinking?

### **Research Framework**

The epistemology embedded in the study is constructionism. Constructionists hold a preliminary belief that meaning cannot be discovered or created, but it can only be constructed through human's' interaction with the world (Crotty, 1998). As Crotty stressed,

“it is in and out of this interplay that meaning is born” (p. 45). Since the goal of the case study is to construct the meaning of school leadership’s actions in promoting critical thinking in the instructional process, the epistemological stance for this inquiry is centered on constructionism.

In the same vein, the preference of epistemology in the study informs the choice of the theoretical framework. In order to make sense of phenomena and construct meanings via research interaction with participants, interpretivism, as a complementary theoretical framework in qualitative research Crotty (1998), was adopted to help us conceptualization on the process of research design pertaining to the preference of methodology and method. The interpretivism framework offers us the theoretical lens to investigate the participants’ responses to the inquired information. Through collecting school level leaders’ implementations to promote critical thinking, specifically student talk as an instructional strategy to improve students’ school achievements, we aim to interpret connotations out of verbal communication and construct inductive meanings from participants’ discourses and develop the deeper understanding of the research problem.

### **Methodology**

This section includes an overview and rationale for the choice of methodology adopted in this inquiry: case study, which is aligned with the epistemology and theoretical framework of this study. Case study has been constantly identified as a particularly useful methodology to guide research for promoting learning (Stake, 1995; Wagner et al., 2006). Different than all other forms of qualitative methodologies, case study focuses on a single unit with specific boundaries in space and time (Creswell, 1998, 2005; Merriam, 1998). Since case studies are bounded, this type of research has a clear beginning and ending point. The contextual setting is another important consideration in a case study because researchers are interested in investigating a particular setting (Creswell), which in this case, was a high achieving low SES school.

### **Methods**

Techniques, procedures, and activities used to collect and analyze data constitute the research methods. Within qualitative research, inquiry methods are highly personal and interpersonal (Patton, 2002). In this study, the primary technique to collect data is individual interview. All the interview procedures strictly followed the rules of Institutional Review Board (IRB) protocol pertaining to contacting potential participants, sending research invitation, recording interviews, and saving interview records. A description of the methods that we employed is provided as follows.

**Selection of participants.** Seven teacher leaders were purposefully selected as participants because they had valuable information to fulfill the purpose of the inquiry and answer the research questions raised (Merriam, 1998; Patton, 2002). Based on pre-established criteria, participants were selected with the consideration of the fact that they were information-rich (Patton). The aim of purposefully selecting participants was to obtain a deeper understanding of meaningful leadership within the unique context of a high achieving low

SES school, not to make empirical generalizations of broader school environments or phenomena.

**Data collection.** Determining the school site, as to where to conduct the research, was based primarily on the criteria that the school sustained high academic achievement, a student population with a low SES, and the teachers utilized some form of critical thinking as an instructional strategy. Student talk was determined to be a critical component of the school's high achievement rating according to CDE (2015b). Once the site was selected, one of the researchers contacted the school principal to schedule an initial meeting. The initial meeting included one of the principal, the assistant principal, and us. The meeting was a private meeting with the school principal and assistant principal. An initial introduction to the research study was discussed and a criterion for the participants to be selected was shared. Participants were contacted by email and in person. As an interview team we took turns interviewing the participants at a time and place during school hours that was convenient for the interviewees. One of us took the role as primary interviewer and the other collected field notes, while the third actively observed. Interviews took approximately 30 minutes and were digitally recorded. Participants were provided with the interview questions ahead of time.

**Data analysis.** After collecting the data, we first transcribed all the interviews and field notes into a spreadsheet and started to code the transcribed information. Through the coding process, a detailed description of the participants' experiences and actions in promoting critical thinking in the classroom emerged. We detailed such aspects as the contextual information of the school, the chronology of exemplary events, and daily activities involved in the school setting. In the coding process, we focused on identifying a few key issues and themes pertaining to the influence of leadership's role on educators' instruction, the importance of critical thinking in instruction, and the relationship between critical thinking and student achievement, not for generalizing beyond the context of the case, but for understanding the complexity of the case. In order to identify the significant issues and themes, we applied the analytic strategy from Yin (2003) that first tried to find patterns in semantic content, namely, identifies issues within each participant's responses and then constructs common themes that transcend the general situations on top of the originally identified issues. Then, we explored deeper than the semantic content of the data and theorized the underlying ideas, assumptions, conceptualizations, and ideologies that are stemmed from inductive description and meanings.

### **Trustworthiness of the Study**

In this study, methodological rigor was obtained through verification (Meadows & Morse, 2001). Verification is the first step in achieving trustworthiness of a research study. Using the protocols from Frankel (1999) and Meadows and Morse (2001), verification of this study was fulfilled through a review of existing relevant literature, proper documentation of observations and field notes, collection of appropriate data samples, identification of negative cases, and saturation of interview data. Trustworthiness of the study was established using within-project evaluation and was accomplished by multiple methods of

data collection (interviews and document analysis), iterative data analysis and coding, and member checks of themes with participants.

## RESULTS

The purpose of this case study was to investigate the educational strategies that school leadership, more specifically the teacher leader strategies in a Colorado high-achieving elementary school, utilized to promote student talk as an active learning strategy. To further our understanding we selected seven participant interviews and as we reviewed the transcripts we identified meaningful statements and phrases that revealed components related to the active learning strategy specific to student talk. Additionally important to understanding commonalities between the participants was finding recurring statements and phrases shared by all participants. Throughout this process these common statements contributed to the identification of themes.

The identified phrases were reported out by members of the teacher leadership team and categorized into significant themes that supported student talk. In order to be considered a theme, general phrases from all participants were collected and organized to support the themes. We used inductive analysis to analyze the data which according to Creswell (2007), is beginning with “raw data consisting of multiple sources of information and then broadens to several specific themes and on to the most general themes” (p. 154). The three general themes that emerged were: (a) instructional strategies for student engagement, (b) types of teacher questioning, and (c) thinking strategies aimed toward student talk and critical thinking. Participants reported that these themes occurred across various classroom settings and were supported by the influence of shared leadership. Common to all participants were references to professional development that either they themselves, or another teacher leader had partaken in and the learning was then relayed to other teachers in the building.

### **Teacher Strategies Contributing To Student Talk As an Active Learning Strategy in the Classroom Setting**

**Instructional strategies for student engagement.** A general theme that emerged focused on instructional strategies, used by teacher leaders, to support student talk where participants noted that “students talk to each other” (Chloe, Evan, & Greig). Several of the participants mentioned attending a KAGAN seminar, which provided them with instructional strategies that support student talk. The instructional strategies range from protocols for student talk activities to scaffolding strategies. Some of the student talk activities, reported from participants, came from a program titled ELA Achieve and the KAGAN seminar. Specifically from ELA Achieve were the strategies using role cards and A-B partners. The role cards helped students to: “pose a question, challenge an idea, support your thinking, build on idea, and present on an idea” (David). According to Chloe, and specifically David, the A-B partners are guided by the following student talk protocol.



You give the kids some think time, and they come up with some teams they have been on. So, when it is student A's turn to go, they share and student B has to listen, and then student B goes and you give them about 30 seconds and then they move down the line, and the person at the end of this row would then come down so they are with a new person, then they share again and do it a couple of times.

Some of the scaffolding strategies mentioned by the participants included using visuals, small group work, and ability grouping (Chloe and David).-Chloe regarded scaffolding as providing an opportunity for students to be "able to communicate their learning, but with more support." Another strategy that participants mentioned was having students strategically grouped, specifically ability grouped via varying abilities.

**Types of questioning.** The next theme that we identified was questioning. According to CDE (2015b), and a majority of the participants, "how" and "why" were frequently used question words to probe student thinking (Anna, Brenna, David, Faith, and Greig). Specifically Brenna stated using "open-ended" questions, questions that have more than one right answer, and questions that seek to understand how students figured out their answer and requires them to describe their process.

In addition, Chloe reported that the use of questioning strategies "is not just about regurgitating information it's a lot about thinking about information and analyzing information." Students verbalizing their own learning, in relation to arriving at an answer, required greater depth in understanding the content they are learning (Chloe). Students engaged in this type of learning are no longer passive in the learning process, but rather engaged at a higher level of understanding (Chloe). Flexibility in thinking, as Chloe stated, is teaching students "that they have to have an idea or have an answer, but then explain how they got that or why they think that or what else someone could think. This type of thinking extends beyond content into the social aspect of a student's life" (Chloe).

**Thinking strategies aimed toward student talk and critical thinking.** When students are asked to provide evidence to support their thinking, this additional step encourages more of an assessment of thinking (David). "I think as a school we've done a great job of trying to get students to think outside of the box and not be robots; and not just solve an algorithm, but be able to conceptually understand and be able to explain why and how it's happening" (Evan). David shared the importance of students justifying their answers or their thinking with reasoning instead of belief statements.

A number of participants also concurred with the CDE (2015b) report in having students explain their thinking (Anna, Chloe, Evan, and Greig). Brenna reflected on the notion of the one who does the talking is the one who does the learning. Giving students time to share their thinking gives the students an active voice. Brenna also mentioned that students' explained their thinking by going deeper than the correct answer, and asked questions such as: "How do you know?, Why do you think that?, and What do you think they were thinking that caused them to make that mistake?"

## **DISCUSSION**

The question that guided this study was: How is a school's leadership related to teachers' use of critical thinking? The broad themes identified from our seven interviews were: (1) instructional strategies to increase student engagement, (2) types of questioning, (3) thinking strategies aimed toward student talk and critical thinking. Participants provided a plethora of examples that supported student talk as an instructional strategy. Administrators and educators may be able to benefit in terms of student achievement from the strategies mentioned by the participants.

Specifically, questioning played an important role in classroom instruction. Educators should be intentional about planning for and using questions to leverage student thinking and learning. Questions that ask the students to explain their answer, even if it is incorrect, have value for the learners. "How" and "why" were the questions that many participants probed to help facilitate dialogue among students and dig deeper into student understanding. As noted in the CDE report (2015b) "Students listen to each other and present the justification for their responses and how they reached a conclusion" (p.6). Furthermore, CDE (2015b) explained that "This allows students to listen critically and engage in deep conversations" (p.6). CDE (2015b) also reported, "This process also allows teachers to listen for the areas in which students are struggling to articulate conceptual and applied learning, giving the teachers an opportunity to scaffold student thinking and learning" (p.6). Our research findings conclude that many teacher leaders use instructional, questioning, and thinking strategies that aim to support student talk and critical thinking. Leadership has a formal role, which assists in the implementation of the above mentioned strategies. The leadership team had a subtle influence by having open dialogues with staff and assisted in the facilitation of sharing learning from professional development with other staff members. Teacher leaders perception of student talk's impact on student achievement is that "they are better thinkers and they are more aware of metacognition" (Anna) and "I definitely see a lot of payoff, a lot of benefit" (Brenna). The formal role of leadership in the implementation of instructional, questioning, and thinking strategies aimed to support student talk and critical thinking were perceived by the participants to influence student achievement.

## **LIMITATIONS OF STUDY**

While this study intended to highlight the school leaderships' relation to critical thinking as a possible instructional strategy to increase student achievement, there were limitations within the research that impacted the research findings. The sample size included interviews, which were conducted within one school site. Generalizing the teacher samples' point of view to the general teacher field may not be a fair sampling of what teachers know about student talk and/or how they implement it, or not, as an instructional strategy to promote critical thinking. Second, we interviewed 12 teachers in the school site, however, due to our teacher leader criteria, it was necessary to narrow our findings to that of seven

teacher leaders. This paring down of interviews may have neglected to include other significant contributions that could have shifted the themes identified and overall findings. For future research, we would recommend including diverse participants in the study. This could be beneficial to reveal hidden dynamics of the research problem and offer insightful information from different lenses. Analysis of all the relevant parties could contribute to the final results of the study and offer a thick description of the research question.

Finally, strategies to support thinking skills were shared, yet indicated a lack of a common understanding and official training of critical thinking. The intention in implementing thinking skills is to support, foster, and cultivate critical thinking as an instructional strategy that it is purposeful and intentional. Further research is needed to clarify what types of professional development support critical thinking as an instructional strategy. Additionally, empirical evidence that critical thinking strategies utilized by teacher leaders sustain achievement for disaggregated populations is needed in the field of education. Actions as such could promote a learning environment where all educators and learners have access to critical thinking as a learning tool to foster strong-sense critical thinking and ultimately support student achievement.

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