

Teachers' Education and Experiences Relative to Promoting Successful Questioning and
Discussion Techniques

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Abstract

Questioning and discussion techniques are effective instructional methods that develop critical thinking and problem solving skills. Despite these positive associations, there is often inconsistent implementation of these techniques across disciplines and grade levels, often resulting in a negative effect on student achievement. This case study explored elementary, middle, and high school teachers and evaluators' perceptions of teaching practices regarding exemplary questioning and discussion techniques. The theoretical framework that guided this study was social constructivism. Participants included 9 teachers who earned exemplary marks on their evaluations for questioning and discussion techniques and 3 evaluators who awarded teachers exemplary marks. Data gathering included semi-structured interviews of teachers and evaluators, evaluation summaries, and lesson plans. Analysis was inductive using constant comparison to identify themes. Findings of the larger study indicated teachers identified how education and experiences promoted successful techniques; created an environment of respect and established a culture for learning; engaged in collegial interactions with peers; identified approaches, materials, and techniques used for questioning; and discussed processes and techniques used for development of students. For the purposes of this paper, findings about how teachers' education and experiences promoted successful discussion techniques will be discussed. Recommendations include designing professional development opportunities for teachers to improve questioning and discussion techniques.

Introduction

Because of the international competition in academics (Central Intelligence Agency, 2012), the United States has pushed student achievement to the forefront of legislation with the Race to the Top (RttT) grant program (United States Department of Education [USDOE], 2009). As a response to the RttT grant, states were required to make several changes in the execution of the business of education. If they wished to be eligible for grant funds, states had to systemize their reform, emphasize science and technology, improve learning outcomes, expand longitudinal data systems, synchronize curriculum alignment, and reform school-level innovation and learning (USDOE, 2009).

In Florida, a change required that a teacher evaluation instrument was to be implemented that was thorough, fair, and clear, and provided data for feedback and an opportunity for conversation between teachers and administration that was focused on and tied to specific student achievement data (USDOE, 2009). The state of Florida allowed each school district to select or develop its own evaluation instrument as long as it met the prescribed criteria and was approved by the state. A large school district in Florida decided to use the Danielson (2007) framework for teaching as a template for the new evaluation instrument. Four domains make up the structure of this new instrument: (a) Planning and Preparation, (b) Classroom Environment, (c) Instruction, and (d) Professional Responsibilities. Each domain has several components (Danielson, 2007). Teachers are rated on a scale of 1 to 4: specifically level 1 *requires action*, level 2, *developing*, level 3, *accomplished*, and level 4, *exemplary*. A small percentage of the

evaluations are coded as *not observed*. For ease of explanation in the study, teachers who earned a rating of a level 3 or 4 were considered proficient and those who earned a rating of a level 1 or 2 were considered not-yet-proficient.

After completing approximately 25,500 teacher evaluations with the new evaluation instrument in the 2010/2011 school year, the district found that 72% of the teachers earned a proficient rating of a level 3 or 4 on their overall teacher evaluation score, which included all four domains. However, only half of the teachers earned proficient ratings specifically in domain 3, instruction, which includes, 3b: Using Questioning and Discussion Techniques at 49.5%, 3c: Engaging Students in Learning at 52.6%, and 3d: Using Assessment in Instruction at 54.7% (RSDOE, 2011).

This evaluation instrument revealed an instructional method that was determined to be important to student achievement (Danielson, 2007), but only half of the teachers in the district showed to be proficient in that area (RSDOE, 2011). When the data were compiled the following year, 2011/2012, the results showed a slight change but not enough to lower concerns. Because the particular school district is one of the largest districts in the nation (National Center for Educational Statistics [NCES], 2011), this deficit became a glaring concern not only for the teachers who did not earn top marks but also for the school site administrators who had to answer to parents and the community about the excellence of their program. The district had to answer to the state, and the state had to answer to the federal government.

Increasing this concern is the fact that domain 3, instruction, carries twice the weight as the other three domains in the final teacher evaluation calculation.

Administrators agreed that teachers' use of questioning and discussion techniques had become a focus for improvement indicating that teachers have expressed that they struggle with asking higher-order questions and tend to focus on facts and basic content rather than critical thinking, problem solving and higher-order inquiry. They wanted to hear from teachers who have been found to be proficient with Socratic Seminars who also teach their specific subject area and grade level.

The more specific problem is not that teachers are not asking questions, it is that they are not asking the types of questions that have been shown to best produce positive student achievement like higher order, curious, critical thinking, and problem solving questions (Almeida, 2010; Danielson, 2007; Kim, 2010; Marzano & Kendall, 2007; Shen, 2012; Tienken, Goldberg, & DiRocco, 2009). This raises the query about why teachers do not use questioning and discussion techniques often enough or well enough. Exploring the key elements of questions themselves, Danielson explained that questioning had two purposes. One was to help students to explore and engage with new ideas, and the second was to help teachers gather evidence of students' learning or rather to assess what they know.

Therefore the purpose of this study was not to attempt to expose all the reasons why there appears to be a lack of implementation in the area of using questioning and discussion techniques but to explore the perceptions of teachers regarding their highly rated level 4, exemplary teaching practices in the component, using questioning and discussion techniques, based on Danielson's (2007) framework for teaching evaluation instrument. This information may prove to be useful for all teachers as they strive to

improve their practice by providing a positive example of how current in-service teachers use questioning and discussion techniques at an exemplary level in their classrooms.

This information may also be useful to stakeholders in the public school arena, including parents, administrators, legislators, community members, and university partners, by helping them to see ways they can support teachers in their effort to teach students how to attain higher levels of critical thinking and problem solving skills.

Review of the Literature

Historical Foundations of Questioning

The historical foundation for using questioning and discussion techniques began about 2,000 years ago with Socrates whose primary mission was to engage others in rhetorical inquiry and discourse requiring critical thinking and problem solving from his compatriots regarding current political, medical, religious, and philosophical topics of concern (Gross, 2002). Plato, a student of Socrates, and Aristotle, a student of Plato, embodied Socrates' insatiable appetite to question and attempt to find alternate solutions to current issues in the world in which they lived. Unlike Socrates, Plato and Aristotle documented the processes of this innovative and controversial method of logical inquiry and hypothetical analysis of varying perceptions and perspectives (Adler, 1997; Gross). Approximately 2,000 years later, Bloom (1984) and Adler argued that Socrates' type of questioning and discussion was one of the most effective instructional methods to develop critical thinking and problem solving in students.

The Socratic Method requires individuals to apply, analyze, and evaluate prior knowledge to solve new problems (Adler, 1997; Bloom, 1984). This method also pushes

people to examine their own paradigms in a metacognitive manner on controversial topics, clarifying and analyzing multiple meanings of these ideas in an open sharing format as they seek solutions and often reveal additional problems (Baer & Glasgow, 2010; Marzano & Kendall, 2007; Tienken et al., 2009). Marzano and Kendall described this Socratic process as a fluid movement between cognitive and metacognitive thinking processes, or going between actual thoughts and thinking about those thoughts, which is in itself a highly critical cognitive cycle where problems invite analysis which results in solutions that require evaluation, suggesting more problems and so on. Sustaining this cognitive/metacognitive inquiry cycle of critical thinking and self-reflection in a social setting is evidence of a well-developed Socratic seminar (Brown, 2009). Bloom (1984) and Adler (1997) argued that each individual needs to be able to engage in this critical thinking cycle to solve problems in order to maintain independence and integrity as a successful member of society.

Even with this richly documented history of the questioning and discussions techniques of Socrates, Plato, and Aristotle, Bloom's (1984) taxonomy of educational objectives, and Adler's (1997) study of the Socratic Seminar during the last half of the 20th century, the implementation of good questioning and discussion techniques in public schools and universities today is still scarce (Adler, 1997; Almeida, 2010; Bloom, 1984; Cho et al., 2012; Danielson, 2007; Groenke, 2008; Karabulut, 2012; Kipper & Ruutmann, 2010; Tienken et al., 2009).

Theoretical Framework of Questioning

The relatively modern framework for this study began in the mid-20th century when Bloom (1984) and over 30 educators and psychologists developed a classification of educational objectives in order to provide a common language for discussion about learning, curriculum development, and assessment. According to Bloom, one of the most important goals of a teacher is to be able to note the changes that come as a result of learning experiences, and the best way to know if change has occurred is to assess the outcome as measured by specific student behaviors which needed to be defined by educational objectives. Bloom argued that defining this classification system would provide educators with operational definitions of hierarchical thinking processes that could be observed and therefore assessed by teachers, most logically by questions. Being able to observe and assess processes would help educators support students as they attack issues that are not yet known, in other words, to prepare students for unforeseen changes in the future by defining “intellectual virtues” (Bloom, p. 40) in a hierarchical manner.

As the authors of the taxonomy generalized the educational objectives, they noted varying degrees of difficulty within each class, each one building on the former, increasing the complexity of the skill. For example, within the cognitive domain, there are six classes; within the knowledge class there are three layers, recall of basic knowledge, methods of dealing with that knowledge, and abstractions and generalizations about that knowledge (Bloom, 1984). The remaining five classes in the cognitive domain, comprehension, application, analysis, synthesis, and evaluation, require increased skill in order to be successfully implemented (Bloom, 1984). By defining these

increasingly complex skills, educators can more easily measure cognitive processes of students and be able to assist them in their intellectual growth and development (Bloom, 1984).

The Broader Problem: A Lack of Good Questioning

Researchers have explored the gap between teachers knowing to ask higher order questions and actually asking them (Beghetto & Kaufman, 2009; Danielson, 2007; Groenke, 2008; Hulan, 2010; Kim, 2010; Mazzola, 2009; Ogle, 2009; Purdy, 2008; Weinstein, McDermott, & Roediger (2010). Mazzola indicated that critical thinking, questioning, and discussions are natural processes. Soon after children learn to talk, they begin to ask questions, and then discuss their new learning with others; they continue to do so as long as they are not stifled, specifically by adults (Mazzola). Talk, which includes questions and discussion, supports learning, increases understanding, and helps students develop higher levels of language use as individuals interact with each other (Groenke, 2008). Language is initially encountered through listening and speaking and then expanded into the realm of reading and writing which comprises the avenues of communicating knowledge (Vygotsky, 1978). Speaking, listening, questioning, and discussing are natural events that occur in child development (Vygotsky).

It is generally agreed upon in the United States that all children should learn to read, write, speak, listen, and compute and be able to apply those skills and acquired knowledge in critical and creative ways in order to be a fully-functioning adult (Coleman, 2010). Because of this broad goal, educators have grappled with the best way to get

children to read, write, speak, listen, and compute and apply their learning in creative ways.

Perceptions of Questioning and Discussion Techniques

These theories, as effective as they have been found to be, are often perceived by teachers to be contrary to the culture of many public schools because of the lack of understanding of theories and how the theories support learning (Shen, 2012; Smith & Lennon, 2011). Smith and Lennon found that many teachers avoid using questioning and discussion techniques because of fear of displeasing parents and administration which might result in loss of classroom control, or worse, loss of job if the discussion becomes too controversial even though the teachers agree that questioning and discussion are the best ways to develop critical thinking. Even though teachers may hold similar religious and political views as parents and administrators, questioning and discussion may be misinterpreted and miscommunicated to parents, administrators, and community members and bring a perceived threat to the teachers' security (Smith & Lennon). In addition, teachers often hold the perception that they must be the holder of the knowledge and are fully responsible for student learning, as opposed to the students being responsible for their own learning, which could discourage teachers from wanting to venture into areas where they may not feel fully knowledgeable (Smith & Lennon).

Additionally, teachers are sometimes confused between questions that assess and questions that support comprehension because of lack of training (Fordham, 2006; Hannel, 2009; Marzano, 2007). Therefore, there seems to be a disconnect between what has been found to be an effective teaching method and the lack of security that teachers

perceive they have at their school sites to be able to implement such methods (Smith & Lennon, 2011). Larson and Lovelace (2013) found that professors' perceptions of the types of questions they were asking and the wait time they were allowing were not consistent with reality; in fact they were asking more lower-order questions and allowing about 2 seconds rather than their perceived 10 seconds for their students to ponder the queries. Kucan (2007) found that teachers had skewed perceptions of their own practices and were not fully aware of the questions they were asking and responses they were giving until they took the time to transcribe an audio recording of their own classroom discussions. Through this transcription analysis process, teachers' perceptions become more accurate and teachers self-reported positive change that could then be supported by analysis of their own actual transcriptions (Kucan).

Peterson and Taylor (2012) found that teachers did not realize what they were doing until they reflected on their own instruction through video and peer observations and worked collaboratively and socially with other educators to analyze student data and their own observable data. When teachers become metacognitive and take the time to reflect and analyze documented evidence that is focused on a learning objective, such as questioning and discussion techniques in the classroom, that is when change will most likely occur (Peterson & Taylor).

The Socratic Seminar and Other Questioning Techniques

Adler (1997), a practitioner of the Socratic Seminar for over 6 decades, outlined, implemented, and demonstrated specific questioning and discussion techniques that, according to him, could be replicated. Adler began by explaining that a Socratic Seminar

is not a quiz, lecture, or open forum to express opinions and prejudices. It is a time for properly executed questions and discussion in order to learn multiple aspects of content and values of cultural significance (Adler; Chowning, 2009; Mangrum, 2010). Adler listed three conditions for facilitating a successful Socratic Seminar which included 1 ½ to 2 hours of time, participants seated facing each other, and docility for learning, which is a willingness to withhold judgment and evaluation until all data are collected, analyzed, and synthesized. The easiest condition to meet is setting the furniture in a circle, but the time requirement and docile learning perspective are more challenging barriers to overcome. Adler emphasized that the cursory 50 minute class period is simply inadequate for the development of a proper Socratic Seminar. With that warning and the current time constraints placed on school schedules, teachers must decide to concede to a 50 minute seminar, split the seminar into two sessions, or abandon the seminar altogether.

In order to implement a successful seminar, Adler (1997) indicated that the facilitator needed to be able to do three things simultaneously in order to maintain integrity and fluidity of the discussion. Initially, the facilitator must be prepared with higher-order questions to direct the discussion around the educational objective (Adler). Next and interchangeably, the facilitator must analyze the implications of each participant's answer and follow-up questions while maintaining participant engagement in a fluid dialogue with each other, not always with the facilitator, about opposing views (Adler). Adler emphasized that the facilitator should not be the single holder of the knowledge, but should become a co-learner, albeit a more competent co-learner, in the Socratic process. He warned that the facilitators must have well-developed active

listening skills and be able to devote their full energy to each seminar adding that facilitators should only complete one seminar a day or integrity would be lost (Adler).

The Methodology

Qualitative Case Study Design

Yin (2009) and Wahyuni (2012) indicated that case studies examine phenomena that cannot be divorced from context because reality is informed by individuals' perceptions of their experiences. Additionally, social reality is informed by multiple individuals with multiple perspectives based on multiple variations yet can show similar outcomes making reality appear changeable and unstable (Wahyuni). Teachers using questioning and discussion techniques cannot be separated from the students, the classroom, and the school environment in which they take place. When a small percentage of people share a common phenomenal characteristic, they can be considered a part of a bounded system that warrants a case study (Glesne, 2011; Hancock & Algozzine, 2006; Stake, 2010).

Participants

Participants for this study came from a bounded system of evaluators and teachers who worked for one of the 10 largest school districts in the nation during the 2010/2011 school year. The teachers earned exemplary marks in the instructional domain, specifically component 3b, using questioning and discussion techniques, on the Danielson (2007) teacher evaluation instrument. The goal was to interview evaluators and teachers about their perceptions of teaching practices regarding exemplary demonstration of questioning and discussion techniques.

Data Collection

Data included interviews with teachers who earned the exemplary marks in component 3b, using questioning and discussion techniques, interviews with mentor evaluators, peer evaluators, or principal evaluators trained and authorized to observe and award exemplary marks, and examination of related artifacts associated with the lessons from which the teachers earned exemplary marks. These related artifacts included pre-observation planning documents that the teachers submitted prior to the observations, evaluators' observation performance reviews, teachers' reflective journal notes, lesson plans for the observed lessons, and graphic organizers, manipulatives, or other supporting materials teachers thought related to the observed lessons regarding questioning and discussion techniques.

Data Analysis

In qualitative collective case studies, data collection and data analysis can occur simultaneously and function interdependently (Hancock & Algozzine, 2006; Merriam, 2009; Stake, 2010; Yin, 2009). Data were analyzed as soon as the first interview was completed using the constant comparative method (Glaser & Strauss, 2012; Leech & Onwuegbuzie, 2007; Vander Putten & Nolan, 2010). Interviews were transcribed verbatim and then coded by hand, identifying categories and themes in a constant comparative manner (Glaser & Strauss; Stake; Tesch, 1992; Wahyuni, 2012).

Evidence of Quality

After completing the code/recode process, the categories and themes were compared to increase dependability (Glaser & Strauss). In order to strengthen

trustworthiness, the researchers used triangulation, code/recode, reflexivity, and verbatim quotes from participants. All of these data provided evidence that revealed patterns and consistencies between and among participants.

Findings

Teachers' Education and Experiences and Successful Discussion Techniques

The problem this study examined focused on data that showed that only half of the teachers in one of the largest school districts in the nation earned proficient marks in the instructional area of using questioning and discussion techniques and only 3% of those teachers were able to earn exemplary marks in this area (RSDOE, 2011).

Questioning and discussion techniques have been found to be a highly effective instructional method that fosters critical thinking and problem solving in students (Danielson, 2007; Groenke, 2008; Hulan, 2010; Lim et al., 2011; Ogle, 2009; Weinstein et al., 2010; Williams & Lahman, 2011). It was alarming that only half of the teachers were implementing these techniques proficiently and worse, that only 3% of the teachers were able to demonstrate it at an exemplary level (RSDOE, 2011). This revealed a need to interview teachers who had earned exemplary marks in the questioning and discussion component, and ask them what they did that they believe led to those top marks.

Key findings of the larger study indicated teachers identified how their education and experiences promoted successful techniques; created an environment of respect and established a culture for learning prior to teaching students; engaged in collegial interactions with peers; identified approaches, materials, and techniques used for questioning; and discussed processes and techniques used for development of students.

For the purposes of this paper, the findings regarding how teachers' education and experiences promoted successful discussion techniques will be discussed.

Professional Development and Training

All participants expressed that they attended professional development (PD) and read books on the subject of questioning and discussion, but each attended different trainings and read different books. There was no common training or book shared between participants. Jenny, elementary reading, and Natalie, elementary math, both mentioned a Higher Order Thinking (HOT) question training, but they could not remember the specific title. They both indicated that it was training for elementary math and science teachers and they found it to be helpful in all subject areas they taught. The common thread regarding professional development (PD) and reading books was that all of the teachers sought PD and read books on their own; the PD they got was not required by their schools or districts.

When asked about prior experience with deep questioning and discussion as a student, five of the teachers did not experience this deep discussion process until college and the remaining four experienced it during elementary school, two specifically with their mothers. All of the teachers remembered their first encounter with deep questioning and discussion about text or content. There was a distinct gap of positive experiences with deep questioning and discussion during the middle or high school years except for one teacher who said she experienced this during high school when she took a college level course.

Education, Experience, and Leadership Opportunities

Eight out of the nine teachers (89%) earned a master's degree, a National Board Certification, or both. The one teacher who has not earned a master's degree is also the teacher with the fewest years of teaching experience; she has been teaching seven years, and while she was earning her bachelor's degree, she attended an out of state college on a full 4-year sports scholarship. After graduation and prior to obtaining a teaching position, she managed over 100 employees for a major retail sporting goods store. All nine of the teachers were teaching in the field in which they earned their bachelor's degrees, and all participants earned a bachelor's degree in the field of education. They all indicated that they entered college specifically to become a teacher.

An area that was not anticipated was leadership roles outside of the classroom. Interestingly enough, all nine (100%) of the teachers have held one or more teacher leadership roles within their schools or within the district. The participants not only fulfilled their required duties as classroom teachers, but they have added other leadership roles which include being a subject area leader, grade level leader, site-based math or reading coach, as well as being district trainers for differentiated instruction training, College Board Advanced Placement training, and Spring Board Curriculum training.

It was anticipated that the teachers would have been teaching for 5 to 15 years based on the assumption that the more experienced teachers would be less likely to be willing to make the shift from a traditional teacher-led class to a student-led class regarding questioning and discussion techniques. However, the teachers have been teaching from 7 to 38 years suggesting that experienced teachers are not necessarily

unwilling to change with the shifts in education. Although 66% of the teachers did teach language based subjects, specifically reading and English, 33% of the teachers taught math or science. The subject areas taught by participants included three elementary reading teachers, one elementary science teacher, two middle school math teachers, and three high school English teachers. Although the three elementary lessons delivered were reading lessons, they all used nonfiction texts that were social studies based.

Reflection and Self-Development

Reflection did occur to a strong degree for both teachers and evaluators. All three evaluators (100%) and six of the nine teachers (66%) directly spoke about the importance and the action of reflecting on teaching. Teachers noted that participating in a professional learning community and working with others and going to training is important, but an additional consideration indicates that reflection on teaching exists within certain components. Even though participants did not speak directly about reflecting on teaching as a component described in the evaluation rubric, they implied they reflect on their teaching by describing their students, their lessons, and their teaching practices on their own and with their colleagues. Most of the participants indicated that reflecting on teaching is very important to the process of using questioning and discussion techniques by way of the words they chose.

It appears that there is a strong relationship between reflecting on teaching and using questioning and discussion techniques. Certain questions by the evaluator can help teachers in the reflective process and lead them to understand the specifics the evaluators are asked to look for as described by Danielson (2007).

Stella, second grade reading, said that,

After a lesson I'll reflect back and see what types of questions really led to higher order discussions with the children, [ones] maybe they had difficulty with, and of course, that helps me to plan lessons and further discussion questions.

She went on to say the National Board Training taught her how to have “those internal discussions and reflection with ourselves,” which really helps in improving questioning and discussion. Emma, seventh grade math, completed reflective coaching cycles where she was, “able to really go into the metacognition, thinking, being reflective all the time.” She added that she “went back to [her] classroom after that experience and was completely different, changed, felt really on my game.” She said that, “having those two years to really think reflectively about teaching and observing other teachers and go through the coaching process really trained me to think deeply about whatever issues or what I wanted the kids to learn.”

Claudia, a peer evaluator, pointed out that the evaluators “tell classroom teachers they have to reflect on their teaching every day.” Settee, a principal evaluator, explained that teachers who earn these exemplary marks are “strong in their planning, they’re strong in their reflective features, they’re strong in their desire for just becoming a better teacher.” She added that they are, “constantly looking for ways to improve their teaching [...and...] not afraid to try something new.” She emphasized that, “obviously it goes better for them [the teachers] if they have taken the time to seriously reflect on the success of their lesson.” Maria, a peer evaluator, was more specific in her suggestions and indicated that she tells teachers that, “the easiest thing would be to reflect on who is

participating in your discussion.” She gave an example and said, “Then I would also ask them to reflect on the quality of questions.” She would specifically ask the teachers, “Do your questions always have a single response that you’re looking for or do you ask a question that might not have a correct answer, or might have multiple correct answers?” This line of questioning on the part of the evaluator can help the teacher in the reflective process and lead them to understand the specifics the evaluators are asked to look for as described by Danielson (2007).

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Implications

Relative to PD, although two of the nine teachers did use the Socratic seminar for their exemplary lesson, it did not tell the whole story of how they earned exemplary marks. After analyzing all teacher interviews and the three evaluator interviews, it was clear that the connection was deeper than the Socratic Seminar; it was in the theoretical roots that informed the Socratic seminar, social learning theory (Vygotsky, 1978) and constructivist theory (Bandura, 1977). Vygotsky argued that learning occurs socially before it happens internally. Bandura indicated that observation and social interaction are the foundational behaviors necessary in the learning process.

These are two learning theories that have undergirded many teaching methods found to be effective for developing critical thinking and problem solving for students. These two theories have also given way to the development of instructional methods like the Socratic seminar and cooperative learning, found to be effective methods that do in fact develop critical thinking and problem solving in students (Adler, 1997; Bandura, 1977; Bloom, 1984; Danielson, 2007; Marzano, 2007; Marzano & Kendall 2007; Vygotsky, 1978). However, staff development entities use this concept of social/constructivist learning theory on a limited basis when selecting and implementing PD for teachers, a rather ironic observation (Cormas & Barufaldi, 2011; Scher & O'Reilly, 2009). Scher and O'Reilly argued that teacher PD needed to expand learning opportunities beyond sitting and listening to a lecture with the expectation that the teacher will implement the new teaching practice without any coaching or follow-up

training offered on the part of the trainers. This is consistent with the findings of the current study in which participants noted they attended professional development (PD) and read books on the subject of questioning and discussion, but each attended different trainings and read different books. There was no common training or book shared between participants. The common thread regarding professional development (PD) and reading books was that all of the teachers sought PD and read books on their own; the PD they got was not required by their schools or districts.

If one maintains the assumption that social/constructive learning continues beyond high school level education, it reasons that PD should also be rooted in this theory. It makes sense, then, if the goal is to improve teaching practices, that teacher training for in-service teachers should be delivered with sound learning theory methods rooted in social/constructivism, yet repeatedly, it is not (Cormas & Barufaldi, 2011). Cormas and Barufaldi pointed out that only 5% of PD they researched allowed self-reflection, only 38% had connections to real world scenarios, only 52% allowed the training to be on-going, and 62% included collegial interaction. Scher and O'Reilly (2009) suggested PD expand the methods of delivery to include, "coaching, mentoring, participation in active learning projects, and teacher collaboration" (p. 2).

Considering the teachers in the current study, all pointed to collegial support in their development of exemplary demonstration of questioning and discussion combined with the current research indicating it is an underused yet desired and effective delivery method of PD, it makes sense to implement more PD using existing channels of collegial support. However, Scher and O'Reilly (2009) warned that the training needed to be

rigorous and closely connected to real world application using actual content material and specific student examples of what the teachers were teaching. Within this suggestion, Scher and O'Reilly added that high quality PD needed to include a built in element of fidelity with clear immediate, intermediate, and long-term outcomes that could be measured and clearly defined at the beginning of the PD. They also indicated the PD needed to be on-going, allowing time for teachers to apply, reflect on the outcome, adjust, practice, and apply again with collegial support for constructive feedback (Scher & O'Reilly). The concept of the importance of reflection is consistent with findings of the current study: all three evaluators (100%) and six of the nine teachers (66%) directly spoke about the importance and the action of reflecting on teaching. Teachers noted that participating in a professional learning community and working with others and going to training is important, but an additional consideration indicates that reflection on teaching exists within certain components.

Akert and Martin (2012) found that principals who trust teachers to take leadership roles in the schools experience higher incidents of positive morale, teacher retention, effective teacher collaboration, and as a result, higher student achievement. This concept is consistent with the findings of the current study that all of the teachers in this study had site-based leadership roles within their schools. It is logical to assume then that this condition of being a leader would be a direct result of conditions created by the principal (Akert & Martin). This condition then increased positive collaboration with colleagues, which increased teacher efficacy, which gave these teachers the courage to implement and practice perfecting new teaching practices (Bruce & Flynn, 2013).

Therefore, the exemplary demonstration of using questioning and discussion techniques by the teachers in this study could also be attributed to the culture for learning and environment of respect and rapport that was created by the principal at the school-wide level. According to Love, Akert and Martin, and Mullen and Huntinger (2008), principals, whether they agree with it or not, have a great impact on how well their teachers collaborate. This concept transfers to the teachers as well, in that they have a great impact on how well their students collaborate with each other, which is the essence of component 3b, using questioning and discussion techniques in the classroom.

Recommendations

The obvious solution to increasing the effective implementation of using questioning and discussion techniques in classrooms is not just teaching teachers how to ask higher order questions or teaching them to set up Socratic seminars or cooperative learning structures. The solution to increasing the effective implementation of using questioning and discussion techniques lies in creating proper conditions. These conditions need to allow teachers to develop their own PD using their own evaluation data to determine their own course of study as they work collaboratively with peers and administrators at their own school site and use embedded project-evaluation and process-evaluation measures before, during, and after the program implementation.

Investigating perceptions of teaching practices regarding questioning and discussion techniques, in light of the need for graduating high school students with well-developed critical thinking and problem solving skills, is a timely and appropriate investigation. Business owners and educators have determined that critical thinking and

problem solving are the two skills most coveted in high school graduates and questioning and discussion is one of the most effective methods for teaching students how to master these skills. The teachers and evaluators in the current study indicated that demonstration of questioning and discussion at the exemplary level goes beyond asking students higher order questions. It is more about students having authentic and deep conversations about content, which includes their generation of higher order questions followed by collaborative discussion about those questions. Questioning and discussion cannot happen unless the classroom has an established culture of respect, rapport, and high academic and social expectations.

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