

Coaching for Questioning: A Study on the Impact of Questioning

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Abstract

This qualitative, descriptive action research study describes the questioning process of educators and its impact on student learning. This research focuses on specific questioning elements and the specific use of Cognitive CoachingSM as a planning and reflecting process to gauge learning impact in the classroom. The literature outlines that questions are a well-known tool for educators and educators use some typical patterns that are not always the most effective use of questioning to impact student learning. Additionally, this research investigates the use of specific elements from Cognitive CoachingSM to craft strategic, mediative questions. Findings conclude that educators indicated a higher degree of awareness and accountability about the kinds of questions they ask of students in the classroom when they are coached to plan and reflect on their new learning. Finally, the coach and participants in the study noted the reciprocal nature of learning, particularly with new content.

Setting a Context for Questioning

“Questioning... may be the most frequently used teacher instructional intervention. A 1981 study reported that teachers ask as many as 300-400 questions daily” (Tienken, Goldberg, DiRocco, 2010). The numbers cited in the earlier research indicate the importance of questioning in an educational setting. While this research study is focused on questioning, it also describes the importance of both the purpose and frequency of asking questions. This review and research study aims to broaden the understanding and purpose of questioning.

There are many ways to ask questions of learners and each can have a different intention. Hannel (2009) states regarding his decades of work on Highly Effective Questioning (HEQ), as “teachers who don't plan for questioning are unlikely to have considered what to do when their

intuitive questions don't lead to the desired learning.” Consequently, when teachers are strategic about their questioning, it may promote greater student learning.

Review of the Literature

Two Types of Questions: Open-ended and Closed-ended

Research typically focuses on the use of questioning as a way of highlighting the effectiveness of different types of questions. One study found that 76% of questions asked over six years by both new and experienced teachers were “reproductive,” or those kinds of questions that have one answer (Tienken, Goldberg, DiRocco, 2010). Other research calls these “closed-ended” questions (Hargreaves 1984; de Rivera, Girolametto, Greenberg, & Weitzman, 2005). Closed-ended questions signal to the brain that there is only one answer which “constrains a child’s response such as [in] test questions, yes–no questions and forced choice questions,” (Hargreaves 1984; de Rivera et al., 2005). These limited responses will shut off other “answers” once a single answer has been achieved. In contrast, David Rock (2009) states that the brain needs choice to function effectively.

Other research indicates that closed-ended questions are more prevalent in learning situations than might be assumed. In a study with instructors of anatomy and physiology and their writing of case questions, “only 43% of the questions produced by participants assigned to write open-ended questions were deemed open ended.” Conversely, “eighty-eight percent of the questions produced by participants assigned to write closed-ended questions were considered closed ended” (Nesbitt & Cliff, 2008).

Other related studies of note, cite elementary students who were asked open-ended questions by their teachers while learning science content had greater use of vocabulary and

more complex sentence structure, whereas the closed-ended questions elicited limited vocabulary and shorter responses (Lee, Kinzie & Whittaker, 2012). The research suggests that teachers are more familiar with the general practice of asking questions; i.e. how and when, particularly with the use of “closed-ended” questions, despite the results from students’ responses.

Rationale for Asking Questions

As noted above, greater focus on what types of questions educators ask can help raise awareness about what kinds of questions might better support student learning. Other literature suggests that teachers have a variety of rationale, or purposes, for asking questions. In prior research, the types of, and purpose for, questions were analyzed. For example, data on questioning that was analyzed in one study with pre-service math teachers included the following categories: “1) check listing, 2) instructing rather than assessing, and 3) probing and follow-up questions.” (Moyer & Milewicz, 2002). The study suggests that teachers ask questions to elicit thinking (i.e. “instruct rather than assess”) and that there are different ways, or types of questions, to offer for students to think; (i.e. “probing and follow up”). Other research notes that teachers ask “questions without really wanting an answer, or . . . include the answer in [a] question . . . [allowing] students to avoid taking responsibility for acquiring knowledge” (Tutt, 2007). This study indicates that teachers may not be clear about their rationale for asking the questions that they do ask.

Other purposes for questioning include the use of questioning as “formative assessment,” not so much as a specific tool, but rather as an informal exchange, or “practice,” where teachers and students co-construct information to meet the students’ learning needs (Black, Harrison, Lee, Marshall, & Wiliam, 2003). According to this study, questioning in this context is a reciprocal process where teaching is a learning process as much for the teacher as for the student. Therefore,

as a formative assessment “practice,” questioning might be a lens by which educators can use to view their own teaching strategies, or practices. The formative assessment process might serve a dual function to provide data about the student’s learning, as well as, the quality of questions raised by teachers or mentors.

Heritage and Heritage, researchers at University of California at Los Angeles’s National Center for Research on Evaluation, Standards and Student Testing (CRESST) and the Department of Sociology describe formative assessment as when a teacher inquires about a task performance “with questions designed to elicit thinking, and in general follows the child’s thought process to where it leads” (Ginsburg, 2009, p. 113). These distinctions around teacher questioning are important to the discussion of the proposed research study. They highlight the complex nature of asking questions and that being skilled at it is an art, as noted by Chin’s observation that “fine-grained analyses uncovering the details of this practice [teacher questioning] are rare” (Chin, 2007, p. 839).

Furthermore, the work of Hannel (2009) on using Highly Effective Questioning (HEQ) emphasizes the need for an “expert pattern” which he delineates as the following:

The HEQ pattern has five steps in questioning toward the understanding of content.

1. Label or identify key facts.
2. Compare, connect, infer, or find disconnections in the information learned in Step 1.
3. Make short summaries or sequences of what was learned in Steps 1 and 2.
4. Apply, predict, or hypothesize what was learned from Steps 1, 2, and 3.
5. Make a final, larger summary of the overall learning.

The HEQ “expert pattern” identifies levels of questioning as with Bloom’s Levels of Thinking. However, the pattern does not specify structural patterns or elements to crafting a question.

Additionally, “many conventionally asked questions have little power to create an alternative future” (Senge, p. 483). If a teacher’s work is to elicit learning from their students, then having students create, or show, multiple ways of understanding, as effective questioning might allow, it is important to distinguish what types of questions are most impactful for growth and learning. Therefore, teachers face the dual challenges of what types of questions to ask and how to craft effective questions. Successful engagement with these challenges is a critical and often over-looked aspect of teaching.

“Questioning is a process teachers can improve if they are willing to focus on types of questions and strategies for their use” (Bogan & Porter, 2005; Hobgood, Thibault & Walbert, 2009). On-going analysis focused on when and how educators craft their questions is essential to growth and learning. Cognitive CoachingSM provides coaches with elements for structuring effective questions, by crafting questions with the coaching frame of Cognitive CoachingSM. This approach might allow educators to more deeply understand the kinds of questions they ask and how to be more intentional and purposeful about the types of questions they use with their students (Costa & Garmston, 2002).

In light of our current wave of the need for rigorous and critical thinking skills for 21st century learning, how a teacher, or mentor asks questions is an important factor in student learning. This research proposal highlights the syntax and structure of how questions are asked.

Research on Coaching

While the background on teacher questioning is rich with ties to ancient Greece and Socrates, the research on coaching is relatively new to the world of education, dating to 1982 and the work of Joyce and Showers on peer coaching. Their foundational work on coaching indicated that when teachers were coached for “solid knowledge, good skills [and] consistent implementation” of a concept into the classroom, there was 95% transference of the concept (Joyce & Showers, 2002). In other words, the study indicates that teachers benefit by making direct applications to their practice when being coached. “Teachers coached by Showers in her 1982 study were much more successful in transferring learned skills into their teaching repertoires than were un-coached teachers” (Showers, 1984).

Currently, the onset and discussion around the Common Core State Standards (CCSS) provides an example of the need to develop higher order thinking in students by teachers. Two of the Common Core anchor standards call for students to “delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence” and to “analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.” The verbs used in the Common Core document (i.e. delineate, evaluate, analyze, build, compare) suggest the need for students to think beyond recall of information. The knowledge from the work of coaching and the new CCSS indicates that questioning by coaches, particularly Cognitive Coaches, might develop higher-order thinking skills in the classroom. Crowe and Stanford (2010) found “by using a diversity of questions for different purposes, teachers can extend and enrich high level, critical thinking and learning naturally within their classrooms.”

In 1984, Costa and Garmston developed Cognitive CoachingSM with the intent to promote self-directedness in others. One of the coaching tools for fostering self-directedness is questioning. And, as Senge points out, “effective coaching is not about the answers; it’s about the questions (Senge et al., 1999). Additionally, Bearwald states, “developing a question-driven methodology will provide a richer, more relevant, and more meaningful mentoring partnership” (2011). Two factors provide a teacher with a greater opportunity to gain new insights and applications to learning. One factor is working with a coach or mentor. The other is the thoughtful and thought-provoking questions asked by the coach or mentor. Neither factor alone is sufficient in and of itself.

In fact, A Case Western Reserve (2010) study used functional magnetic resonance imaging (fMRI) to show that “learning can be enhanced through coaching with compassion (a method that emphasizes the coached individual’s own goals).” The study indicated, “coaches should seek to arouse a Positive Emotional Attractor (PEA), which causes positive emotion and arouses neuroendocrine systems that stimulate better cognitive functioning and increased perceptual accuracy and openness in the person being coached, taught or advised.” Posing questions that “emphasized weaknesses, flaws, or other shortcomings, or even trying to ‘fix’ the problem for the coached person, has an opposite effect.”

In light of this research, other research specifically related to Cognitive CoachingSM shows that questions with the following elements have the greatest amount of impact for coaches who are coaching teachers (Costa & Garmston, 2002):

- Approachable voice is a way of attending to the tone and inflection of voice when asking questions (Costa & Garmston, 2002).

- Tentative language (“might”) is word choice in a question that signals to the brain of “a toward state,” or an open and curious state of mind (Rock, 2009).
- Plural forms are the syntax and structure of a question that allow the brain to think in multiple possibilities, “[supporting] the capacity for choice” (Rock, 2009).
- Positive presuppositions are positive assumptions and meaning embedded in the question that “assumes capability and empowerment” (Costa & Garmston, 2002).
- Open-ended stems are the structure of a question indicating that many different answers are possible; or an opening that has no known answer and does not constrain a response (Hargreaves, 1984; de Rivera et al., 2005).

In conclusion, teachers can be more strategic about their questions if they are explicitly taught structural elements, brain research rationale, and how to be more intentional about the questions they raise. These elements deepen their art and craft of their questioning in order to impact student learning. This literature review highlights the various types of questions, it’s benefits and impacts, in addition to how educators craft, or construct their questions for student learning.

Purpose of Study

With this context in mind, this research study will investigate why asking questions is important. Additionally, the study will focus on specifically how educators ask their questions and whether, or not, that might be vital to learning. If educators are more thoughtful about the kinds of questions they ask and how they ask them in a given situation, then the learning might have greater potential for impact.

The rationale for this research includes the idea that educators use questioning as a guide for learning, strategy for thinking and an assessment tool. The Common Core State Standards put

special emphasis on “argument” writing, which underscores the need for students to know “counterarguments.” Having clarity around both sides of an issue requires students to have a depth of thinking to analyze their position and the position of others.

Additionally, the teacher evaluation framework by the work of Charlotte Danielson prompts teachers to use questioning as a way to engage students speaking and listening in classroom discussions. The Danielson’s (2013) work states:

Questioning and discussion are the only instructional strategies specifically referred to in the Framework for Teaching, a decision that reflects their central importance to teachers’ practice . . . [and] it is important that questioning and discussion be used as techniques to deepen student understanding . . .

Not only does Danielson’s work indicate the value of asking questions, but her work specifies that “good teachers use divergent as well as convergent questions.” In other words, Danielson’s work states the need for both open and closed-ended questions. Her work further highlights that teachers’ “high-quality questions encourage students to make connections” and that teachers pose questions that don’t necessarily have a set of expected responses and, even when there are a limited number of answers, teachers can find a “non-formulaic” way of eliciting student thinking.

Finally, the Cognitive CoachingSM model of coaching has a clearly outlined set of elements for constructing questions that is brain-based in theory. The authors of Cognitive CoachingSM reflect on their work as co-developers of the coaching model, further acknowledging the value of asking questions by stating in their reflection to learn is to ask questions (Costa & Garmston, 2003):

The learning journey about Cognitive Coaching and its effects is not complete.

Knowledge in the field continues to expand. Challenges persist. Transformation for individuals and educational organizations remains a daunting and complex proposition.

To build common vision, and liberate each person's self-directedness takes time, wisdom and skills of dedicated professionals. Indeed, as a result of 18 years of experience, we seem now better able to ask more valuable and penetrating questions.

Their reflection indicates that enhanced understanding of coaching as a learning process impacts the kinds of questions asked which this research seeks to explore.

Research Questions

The literature from questioning and coaching suggests that there is a direct correlation between the two aspects of this research proposal: (a) developing clearly structured questioning strategies is an important tool to impact student learning and (b) the use of coaching to enhance and deepen the questioning process is important to the learning of both teachers and students.

This research seeks to develop and deepen understanding of this relationship and its impact on students in the classroom by researching the questions:

1. What might be the impact of coaching middle school teachers and/or others in supportive positions, such as volunteer mentors, on questioning strategies in classrooms, specifically using the Cognitive CoachingSM model of coaching?
2. What are the kinds of questions that are most impactful?
3. How might knowledge of the neurosciences inform how teachers ask questions of students?

Methods

Setting, Participant Recruitment and Enrollment

Participants in this study teach or mentor at an urban East Los Angeles middle school. Two groups of educators were recruited: (a) science teachers working on their teacher growth and evaluation process, and (b) volunteer mentors from a non-profit organization working alongside teachers with students in both small and whole group settings in the classroom. This supporting agency utilizes volunteering young people ages 17-24 to give service in support of students and to collaborate with teachers directly in the classroom as tutors, mentors and role models. Both the teacher and the volunteer mentors have unique opportunities to ask questions of students. Another unique aspect of this work is that these two groups of educators interact together supporting the same groups of students on a daily basis, so they have the opportunity to learn from each other while supporting their students. Of these two groups, totaling 22 potential recruits, six teachers and mentors volunteered to sign the consent forms and participate in this full research study on questioning.

Procedure

The design of this descriptive, qualitative, action research started with a survey to identify teachers' and mentors' baseline knowledge and awareness of the kinds of questions they already ask in their classes and the kinds of questions as presented in the Cognitive Coaching SeminarSM (CCS). Teachers and mentors were asked through consent forms to participate in an action research study to look closely at the kinds of questions they already ask students, questions they could ask and the possible impacts in the classroom.

Study Procedure

The qualitative, descriptive action research procedure took place over ten weeks of study. With consent, teachers and mentors completed a “pre-survey” questionnaire about their understanding of the kinds of questions they currently ask in the classroom. In the first week of the study, the middle school teachers/mentors and the coach met for a presentation workshop on effective questioning strategies. The coach taught the elements of mediative questions as cited in the Cognitive Coaching Foundations SeminarSM. These elements include:

- approachable voice;
- tentative language;
- plurals;
- positive presuppositions; and
- open-ended.

During this workshop when the coach presented the elements of mediative questions, the coach as the presenter, provided processing time for participant learning. Over the course of the study, the coach planned and reflected with the group on their practice of questioning based on their learning from the initial presentation session. The planning conversations took place during weeks three and four and the reflecting conversation took place during weeks nine and ten. Collaborative sessions took place during weeks two and three with the participants and the coach which included further depth of understanding of mediative questions by learning about cognitive operators (i.e. thinking stems like “describe,” “analyze,” or “evaluate”).

The coach kept field notes of these meetings, noting all the questions asked in the group by both the coach and the participants, providing documentation of the modeling of questions and the learning process.

Data Collection Methods

During one-on-one meetings, the coach used the “Planning Conversation Map” from Cognitive CoachingSM to capture the learning from the participants throughout the research process. The map was used in the first meeting with each individual participant and a “Reflecting Conversation Map” was used in the final meeting with each participant. The coach audiotaped these planning and reflecting conversations based on the Cognitive CoachingSM maps (also part of the Cognitive Coaching SeminarSM) to document learning and growth of teachers’ and mentors’ use of questions in their classrooms. Transcriptions of audiotapes allowed the coach to hear and see how the questions posed by the coach impacted the teacher’s and mentors’ learning and thinking about the questions they ask in their class. Additionally, these data provided a record of those questions asked and how the participants responded to those questions.

Additionally, teachers and mentors completed a post-survey questionnaire documenting their understandings after the research study of the questioning strategies learned and used in the action research. The pre and post-survey data was analyzed both qualitatively and quantitatively, noting specific written examples, patterns across participant responses and Likert scaled response comparisons.

Data Analysis and Coding

The 173 minutes of audiotaping of teachers and mentors talking about their work in their classrooms provided a qualitative look at how these educators were implementing their learning and how students were responding. The audiotaping and transcription was used to code language indicating the impact of teachers and mentors’ learning about questioning strategies they use with students.

One aspect of data collected from these audiotapes noted specific language of learning (i.e. “I learned that...” or “I found it important that...”) and language of the use of Cognitive CoachingSM elements of questions, (i.e. “approachable voice,” “open-ended,” etc . . .). Language of “impact in the classroom” was coded in two ways. One way was to indicate student impact in the classroom (i.e. “students are saying . . .” or “. . . see how students in that classroom are learning . . .”) and the other was to show language of impact on participant learning (i.e. “I just know I need to . . .” or “I notice now. . .” or “I realize that I really needed to. . .”).

Another aspect of data collected was the ways participants responded to particular types of questions, specifically crafted and structured by the coach during the planning and reflecting conversations. For example, how a participant responded to a question about “constructing new learning” or “reflecting on the process” of the conversation itself was analyzed to identify themes of learning. Tables 1 and 2 show the regions of each of these conversation maps and examples used by the coach in this research study.

Table 1

Planning Conversation Map

Regions of the Map	Example questions from coach
clarify goals	What might be some goals you have for learning about questioning?
specify success indicators	So when you think about those goals, how might you know you've achieved success in this?
anticipate approaches, strategies and decisions	... what are some of the approaches that you might take as you think about a particular group of students you work with?
establish personal learning	So thinking about this group, what might you want to pay attention to in yourself as you play around with these approaches?
reflect on the process	So in thinking about your learning and growth and the things you want to practice, how has this conversation supported you in that?

Table 2

Reflecting Conversation Map

Regions of the Map	Example questions from coach
summarize impressions and recall supporting data	How are you doing on your learning of questioning at this point? What might you have been hearing that indicates that you are on an upward trajectory of learning?
analyze causal factors	So thinking about the students and your interactions with them, what do you think an observer might have said as they were observing you ask questions? so...thinking about being intentional then what have been some of the resources that you have used to support you in your learning?
construct new learning	So. . . what might you say are some of your key pieces of new learning in this process?
commit to application	So thinking forward, what are some of the things you are thinking about applying or continuing to apply in the future? . . . what data might you want to be paying attention to that will allow you to be more focused is this area?
reflect on the process	So in the big picture of this whole process we have been on, this journey we have been on, how has this supported you as a learner?

Identifying these regions and how a participant responds in each area allows the coach to mark particular areas of growth and learning. These data collection methods round out the analysis.

Findings

Participants

Six teachers and mentors at one urban Los Angeles middle school were part of this study; a female science teacher, four female mentors and one male mentor. The mentors are volunteering to give a year of service at this inner city school to collaborate with teachers directly in the classroom as tutors, mentors and role models. All have completed college level education with a Bachelor's Degree. At least two mentors indicated an interest in obtaining a teaching credential after their year of service at the school and one indicated interest in pursuing a degree in law school. All findings stem from the audiotapes, field notes and survey data collected from these six participants and analyzed by the coach.

Patterns and Themes

“A question is not just a question,” remarked Participant “B” who was coached in the process of this study of learning the elements of Cognitive CoachingSM questions. The statement reflects the depth in which these research participants analyzed their own practice of questioning with students in their classrooms. Participant “A” chuckled, “I haven't spent so much time thinking about questions before.” The following description details the themes that emerged from the 173 minutes of audiotaped transcription, field notes, and survey data collected from all six participants from this research study.

Table 3

Application of Mediative Elements

Pre-survey Questions	Post-Survey Questions	Mediative Elements in Post-Survey Questions
Why didn't you do your homework?	What might be a question you have about this?	Tentative language, positive presuppositions, open-ended
What is the theme or major idea?	How might you relate this to something you've experienced?	Tentative language, positive presuppositions, open-ended
What did you do first?	How might we go about the first step of this problem?	Tentative language, positive presuppositions, open-ended
Are you sure about that?	What might be some possible answers?	Tentative language, positive presuppositions, open-ended, plural forms
What is the purpose of your answer?	What are some possible methods for solving this problem?	Tentative language, positive presuppositions, open-ended, plural forms

Table 4

Participant Indicating Learning of Mediative Elements of Questions

Participant	Open-ended	Tentative language /plural forms	Approachable voice	Positive presuppositions
"A"		x	x	x
"B"	x	x	x	
"C"	x	x		
"D"			x	
"E"	x			
"F"	x			

Value of the coaching process (Theme #1).

One overarching theme that emerged from the data was that of being coached when learning something new. All participants indicated that being coached on questions was a valuable experience. For example, Participant "C" recorded on the post survey, "As a result of being coached on questioning strategies, I have been able to create a foundation of comfort for

the students when I ask them questions in class.” Participant “E” stated, “Since I have been coached on my questioning, I have taken more notice on the questions that I have been asking and the way that I am forming my questions.” Participant “B” stated, “thank you . . . I would not have had the success I want with my kids without the opportunity to learn about this approach to questioning.” This speaks to the appreciation participants felt to have time to reflect on their learning and the “space” for thinking about and applying new learning. When asked, “So, how has this conversation supported you in the work that you do with kids?” Participant “F” stated, “I think in part it’s like a reflective *space* (emphasis added) that we don’t have time for in our day to day space about how we’re approaching students.” In response to a similar coaching process question, “So, how has this process, this conversation, been supportive of you in your learning?” Participant “F” stated, “there really isn’t space being created often for us to do that [fine tune pedagogy].” And, Participant “A” also noted the value of “space” when asked to reflect on the coaching process, “having the *space* (emphasis added) to think about our practice in intervention with students doesn’t happen enough . . . and [it] also just re-engages me . . . makes me realize I’m excited about this and want to do it.”

Participants also recognized value in the coaching process as a reciprocal and accountable process, “I have felt more pressure to reflect on what I am doing. This is not a bad thing,” (Participant “E”). Participant “F” stated, “. . .these sessions have been really helpful . . .[and] that there are multiple, I think helps me feel a little more accountable to trying to implement the stuff that I talk about . . .” This data shows that these participants found that time to reflect on their learning made them more thoughtful and accountable to their learning and their students.

New learning around the “open-ended” element (Theme #2).

While all participants noted new learning in general about how to ask impactful questions, the one specific element of mediative questions (i.e. “approachable voice,” “plural forms,” ...) that all participants noted as a new learning in the “post-survey” (see Appendix) was the element of open-ended stems. Table 3 shows specifically how questions changed from pre-survey questioning examples to post-survey questioning examples.

One significant difference in learning of the elements was that each participant interpreted the open-ended element in different ways. Examining Table 4 shows that two-thirds of participants found new learning about the element, “open-ended.” Participants explained in the coaching conversations that open-ended aspects of questioning were most important in their learning. Participant “F” stated, “...if I just asked that open ended question from the get go, then I was getting more in depth and thoughtful answers from students” and that “I guess the beauty of asking open ended questions is it can go in a variety of directions it might not end up where I was thinking it would end up.” Participant “B” stated, “I think so far what’s really worked for me is ... open ended questions and because when I get too specific or ... narrow [questions] to yes or no ... [students] just stop talking.”

One participant remarked the importance of “creating an environment where questions are open ended” and that “it takes a little bit more . . . verbal reinforcement to create the space for them to feel like they can really . . . explore concepts.” This participant also stated in reflecting with the coach “I think I’ve learned about how questions can really predict . . . the kind or quality of answer that’s going to be given . . . and that asking more closed off questions that have one answer [students] will . . . give that one answer and that’s the end of the process.” Additionally, this same participant noticed, “when I was asking better questions the students

were more likely to ask me for clarification about the questions I was asking” which was also indicating that students felt a safe environment to explore further thinking.

Participant “A” described a similar importance in creating an environment for students by using another of the elements of mediative questions, “my relationships have really strengthened and built over time. I think this is related to questioning through the attention I have tried to place on having an *approachable voice* (emphasis added).” Table 4 shows in what area each participant clearly indicated new learning around the elements of mediative questions.

Individual participant patterns and cross language use (Theme #3).

In addition to the themes across all participants, some particular patterns emerged when looking at themes for participants individually. One pattern was noted with Participant “A” who used the word “space” seven times in 28 minutes of audiotape. For example, “I’m really finding time to just make *space* for going at the pace that we need to go.” Slowing down to find “space” was thematic. In the middle of the reflecting conversation Participant “A” said, “I think there was this nervousness that I had around immediately needing to have an answer for students if they asked me a question.” There seemed to be a sense of urgency. The participant later said a key piece of new learning was “something I thought a lot about and reflected on ...I model for the students approachable voice, but I don’t think I model for them credible voice.” While the participant is highlighting the importance of “building [student] confidence” and finding “space” for learning, the conversation and language used by the participant indicated the desire to have confidence and credibility as the educator asking the questions and being a model for students.

And yet, another participant, “D,” used the language of “space” as a way of conveying learning for both the student and the educator. When asked “What might an observer notice about your questioning now?” participant “D” replied, “I try to . . . give that open air *space* and

allow them a visual cue that this is an open *space* where you can feel free to explore and not worry about getting the answer wrong.” And yet a third participant reflected, “I try to give them *space* to go in different directions” (Participant “C”). While the use of the word is slightly different among the different participants, the reference with the word is demonstrating a pattern. When learning how to ask questions with some specific elements, having that structure is what led these participants to the metaphor of space.

Language of learning and/or growth (Theme #4).

Other statements of learning or growth as indicated by the marker words, “learn,” “help” and/or “grown” include, “I feel as though I have grown a lot... and through this growth I have seen a change in the types of responses my students are giving me.” Other comments on learning include, this kind of “strategic questioning helps students feel less intimidated to engage with material, grapple with ideas, feel confident in their own prior knowledge, and grow as learners” (Participant “C”). Participant “B” noted that using “an approaching tone. . . has been a lot more helpful because before I was like “What are you doing? What is the answer?” as opposed to “What might be some possible answers?” And Participant “D” stated, “I’m striving, I’m striving” when describing the use of the approachable voice; “I try to have that lilt at the end of my question.” All of these statements show that the coaching process when learning something new allows for a more direct application of the learning and direct outcome on the part of students.

Learning as reciprocal process (Theme #5).

An overarching finding is that the process of learning questioning techniques was applicable and reciprocal. In other words, learning occurred for the participant, as well as the students, in the same area of growth that the coach modeled. For example, participants spoke of

what they were learning around questioning strategies, like the “approachable voice,” and then described how they made an application of that learning as a model for students. This strategy was one the coach employed throughout all coaching and learning sessions. This reciprocal process extended the learning to include all parties involved in the research question: the coach, the teacher or mentor and the students in the classroom. A key learning for one participant and the coach was around this element of voice and how “something about [the coaches’] tone of voice was what caused me to allow all this information in...” (Participant “B”) It was further described that questioning is “very complex and it takes very specific people to master . . . questioning skills.” (Participant “B”). It is evident that this individual noticed that having a role model, who was the coach, allowed for the application and thereby being a role model deepened the participant’s skills as well as the students’ skills. While it feels to this participant like questioning is an “art,” as described in some literature, what was highlighted was the power of the role model in looking closely at a subtle skill like questioning.

Another aspect of the reciprocal nature of this research process was evidenced as one participant asked the coach a clarifying question while describing the very act of the participant encouraging students to ask clarifying questions. For example, “when that [being intentional and patient] works out well, I think is when the students take that as an opportunity to ask clarifying questions which I think as been really great; sometimes it also means I have to ask a question in a couple of different ways . . . in order for them to feel like they understood the question I’m asking . . . and . . . could you ask the question again my brain went into the clouds.” (Participant “F”). Again, the reciprocal process played out in this process as the coach supported the participant to support student learning.

Connections to Literature

The reviewed literature addresses the importance of questioning particularly the use of open-ended or “productive” questions. Also noted in the research is the more frequently used “reproductive” questions which address only lower levels of thinking and prompt single answers. Other comparisons focus on the idea that questioning might be a reciprocal process when used as a formative assessment (Black, Harrison, Lee, Marshall, & Wiliam, 2003). When participants in this research study noted the unique position they held to be both a learner and a model for students, it is important to emphasize that effective questioning that uses specific elements has the potential to impact educators on multiple levels.

Another comparison between the literature and this study is that participants noted the artful craft of posing questions (Chin, 2007, p. 839). Questioning is “very complex and it takes very specific people to master . . . questioning skills,” states Participant “B.” Yet, this was not out of reach for these educators, particularly in light of the fact that five of the six participants are not credentialed teachers.

Conclusions/Implications

Overall, this study highlighted that teachers and mentors who work directly with students benefit from being coached. Participants valued time to reflect upon their work, which is something all educators seek and often don’t have. So, honoring time to process learning is an implication for educators, particularly when student outcome is the goal. The role modeling noted in this study has been shown to be a powerful learning process.

Additionally, when teachers and mentors have a specific set of elements to structure their questions, they have some concrete indicators for their questioning process. Noting the elements of mediative questions (approachable voice, tentative language, etc . . .) can give teachers and

mentors just enough of a scaffold for crafting a question so that the questions have an impact on student learning. Additionally, when these educators are coached, they are more likely to act upon their goals and new learning when planning and reflecting.

Another conclusion that can be drawn is that questioning is more than just a credentialed teacher practice, but is a practice that anyone can benefit from when they have some specific tools to use. Clearly, questioning practices changed for all participants as indicated by Table 4 and as indicated by survey data. Participants noted in the pre-survey, questions without the mediative elements and then in the post-survey the use of many of the mediative elements. For example, “Can you explain your steps?” and “Can you summarize what you’ve learned?” and “Have you read the directions?” became “What are some possible methods for solving this problem?” and “How might you relate this to something you’ve experienced?” and “What might this line tell us about the author or the story?” in the post-survey.

Limitation/Recommendations

A contributing limitation to this study was finding a group of educators willing to take some extra time out of their schedule to meet with the coach for the workshop, group sessions and one-on-one conversations. Many educators in the urban settings of this research geographic area are overwhelmed and overworked, so asking for additional time away from daily duties may have felt like an additional “thing” rather than a potential support for growth and learning.

Another limitation to the study as a whole was the pre- and post-survey data comparisons. There was not a direct correlation for each participant between pre-survey and post-survey questions. The comparisons were made universally across the collective whole of the pre- and post-survey data. A more in depth analysis for each participant could have been made with this kind of detailed analysis across individuals.

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Appendix

Teacher/Mentor Questionnaire

Circle One: Pre-survey

Post-survey

Please respond to the following:

1. Please describe how you feel about your questioning of students in your classes?
2. What are some examples of questions you ask of students currently?
3. What are some things you are wondering about in asking questions of students in the classroom?
4. What are some of the ways students respond when you ask them questions during lessons?
5. Rate your knowledge of the following categories. 0 being no prior knowledge – 3 being very familiar.

Tentative language	0	1	2	3
Plural forms	0	1	2	3
Approachable voice	0	1	2	3
Positive presuppositions	0	1	2	3
Cognitive operators	0	1	2	3
Specifying thinking	0	1	2	3
Explore thinking	0	1	2	3

