

Pedagogy of teaching young children through questioning and responding

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ABSTRACT

The role of questions and how they are processed in a classroom in promoting open discussion is vital because of the encouragement of divergent thinking that is achieved through continued dialogue and critical thinking. Furthermore the movement from a teacher-led mode of teaching and learning to more child-initiated approaches necessitate questions rather than answers to be imperative in shaping the socio-cognitive development of learners as they explore and make meanings in collaborative contexts. As Hunkin (1995, p. 4) argues; "We are shifting from viewing questions as devices by which one evaluates the specifics of learning to conceptualizing questions as a means of actively processing, thinking about, and using information productively." The "challenge of making children's thinking visible" (Tan, 2004, p. 7) is confronted when teachers do not have the necessary skills and knowledge in scaffolding children' learning to higher cognitive levels. This paper outlines an action research study with 20 Pacific Island teachers held in 6 different Pacific Island early childhood centres. From baseline data, substantial number of questions that were asked did not foster critical thinking nor sustain interactions. Therefore, participants of the study were trained on a modified model of 'Questioning and Understanding Improves Learning and Thinking' (QUILT) that focused on different teacher behaviours and skills in the process of questioning. Important changes in beliefs and practices were found after the intervention particularly in relation to the fostering of divergent thinking through the type of questions teachers asked and how they undertook the questioning episodes. This paper concludes that it is important to focus on promoting novice teachers' knowledge and skills in questioning so that they can support children's higher levels of thinking. This is especially relevant for teachers in Pacific Island early childhood centres.

Introduction

Questioning is one of the most popular and historical pedagogical technique dating back to Socrates time. Socrates engaged his learners by asking questions using a method known as Socratic or dialectic method. Questions play an important role in the processes of teaching and learning. McKenzie (1999) purports; "Questions are central to learning and growing up. An unquestioning mind is one condemned to "feeding" on ideas and solutions of other..." (p. 5). Kerry (2002) states; "Enquiry lies at the heart of the education process; and enquiry takes place through the formulation of questions, problems and hypothesis which require answers and solutions" (p. 65).

Questions enlighten the interaction between what is familiar and unfamiliar as Martusewicz (2001, p. 57) argues; when we ask questions, "we are opening a space in which there are an indefinite number of possible

answers for us to choose, some more interesting and some more accurate or sensible than others.” This particular space as Martusewicz (2001, p. 57) contends, is a “space of pure difference, where the possibility and the thrill of teaching come from.” I would like to think of this relational space as a ‘zone of ambiguity and uncertainty.’ It is ambiguous and uncertain because the space contains so many diverse possible answers and it is through the collaborative effort between the teacher and students in co-constructing knowledge, that certainties will be discovered so as to make connections and change accordingly. As Bishop (2007) in his speech at NZARE 11th annual conference in Christchurch argues; “learning flourishes in the ocean of certainties and uncertainties.”

Unfortunately, from experience this relational space has not been effectively used by some teachers in early childhood centres. For example, I sat in two different lessons in my role as a visiting lecturer and found different ways in which teachers A and B used in processing conversations and most importantly the types of questions they asked the children during play. In comparing and contrasting these two contexts the conversations were as follow:

Teacher A	Teacher B
<p><i>(B. approaches the Math corner where Teacher A and E. are playing with patterns)</i></p>	<p><i>Child D. (4yrs) selected a book from the shelves. She brought it to E. (4 1/2yrs) and Teacher B. sitting in the corner. D. sat next to E. and opened the book. They both pointed to the pictures and said:</i></p>
<p>A. So what colour is it?</p>	<p>D & E. “Naughty piggy”</p>
<p><i>(C and D approaches A, B and E but A continues to focus on B, E and the play)</i></p>	<p>B. (Looks around and asked) “Hey you two, who’s naughty?”</p>
<p>B. No response</p>	<p>D. “That book” <i>(Pointing to the book E. is holding)</i></p>
<p>A. What comes after Red?</p>	<p>B. “What’s in the book?”</p>
<p>B. Green</p>	<p>D. “That piggy book”</p>
<p><i>(A. turns to E. and asks Green what?)</i></p>	<p>B. “What’s the pig doing in the book?”</p>
<p>E . Book</p>	<p>E. “Killing a monster.”</p>
<p>A. Look here, Red, Green, Blue, Red Green, what’s after green?</p>	<p>C. “No, they’re fighting, naughty pigs. They’re fighting for that.” <i>(pointing to the picture of the rope in the book).</i></p>
<p>E. Green</p>	
<p>A. Well-done!</p>	

<p><i>(C & D begin playing with a set of numbers nearby. They arrange the set of numbers in a pattern)</i></p> <p>C. Teacher, look! <i>(pointing to the numbers that she laid out on the table)</i></p> <p>A. Are you sure? <i>(Asks C but turn to B & E)</i> Are you going to do that?</p> <p><i>(Both B & E nod their heads)</i></p> <p>A. Show me when you finish.</p> <p><i>(Turn back to C and asks)</i></p> <p>A. What number comes before 14?</p> <p>C. Pick up number 1 and put it down then look for a number in the pile.</p> <p>A. Now you have number 1 but is it before 14?</p> <p><i>(C looks puzzled then pick 3 and put it besides number 1)</i></p>	<p>B. "How can you tell they're fighting over the rope?"</p> <p>C. "Coz, they look at the rope and pull on one end"</p> <p><i>(Wait for about six seconds and then asks E)</i></p> <p>B. "What do you think E?"</p> <p>E. "No, they kill each other with the rope."</p> <p>B. "How can you tell?"</p> <p>E. 'Coz , this pig <i>(pointing to one pig)</i> is trying get the rope to kill this one <i>(pointing to the other)</i>.</p> <p>B. "Let me see. It looks like they are fighting and both pulling the rope away from each other"</p> <p>E. "But look, this one is pulling this side so he can beat on this one."</p> <p>B. "That's a great observation E, but actually, they are playing a tug-o-war game.</p>
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The two observations depict what commonly characterizes the majority of early childhood centres. In reflecting on these two observations pertaining to the types of questions asked, Teacher B has used both low level and some higher level questions in her conversations with young children, whereas, in A's classroom, dominance of low level questions is evident. The use of waiting times is evident in B's conversation at some stage, but not in A's conversation with children. Both of these classrooms have had opportunities to extend on children's learning but those opportunities have not been used. Furthermore, A's processing of questioning discourse is more authoritarian than B. This is demonstrated in the prevalence of teacher's questions but none from the children. Moreover, in her social interaction with C towards the end, she has not supported the child neither has developed a shared meaning

and understanding but put C in a peripheral role (Schneider & Watkins, 1996). According to Webster (1987, as cited in Griffiths, 2000, p. 2), “The responsive partner listens to what the child has to say, hands conversation back to the child and allows time to reply.” A. has not offered the opportunity to C. to reply. She has only used questions to assess children’s learning but not engaging with the children in negotiation a shared meaning in the play.

In comparison to B’s classroom, B has offered opportunities to both children to engage in “social dances of conversations,” a term used by Hart (2000, p.138). Further, Hart (2000) contends that the reciprocal nature of the conversation is the key to communication. B has offered chances to C and E to become ‘dancers of the social interactions’ in negotiating a shared meaning and understanding as Schneider & Watkins (1996) argue this is achieved by receptive scaffolding. She also responds to both children by scaffolding them in negotiating a shared meaning from the text.

Both national and international research has documented the importance of using quality questions in social interactions with children, however, teachers are not trained on the skills and knowledge on how to formulate quality questions and how to process the questioning episodes. This paper will explore different characteristics of a quality question and how they enhance and support children’s learning and thinking based on research findings. Furthermore, it will highlight some findings on conceptualizing quality questions and the use of wait times from my action research and then suggest some skills and knowledge in formulating quality questions and how to process questioning episodes focusing particularly on the use of waiting times in responding to children.

What is a quality question?

Dillion (1995, as cited in Walsh & Sattes, 2005) calls these questions “educative questions” and he argues that educative questions are questions that advance pedagogical processes and educational ends and facilitate student thinking and class participation. According to Walsh & Sattes (2005), a quality question has four distinctive characteristics and these include; (1) promotes instructional purposes, (2) focuses on important content, (3) facilitate thinking at a stipulated cognitive level and (4) communicates clearly. According to MacNaughton and Williams (2004) these questions are open-ended questions that inquire into a child’s thought processes and require them to share their theories, understanding, imaginations and express feelings for others. Drawing on the proposed definitions of quality questions, this research defines quality questions as high level, open-ended questions that stimulate children’s thinking, dispositions and sustain interactions. (Tekene, 2006).

Why are quality questions important?

The perception of a classroom as a community of learners challenges the traditional view of teaching, learning and questioning. The prevailing

model of teaching as, “knowledge transmission” entails children absorbing information from the teacher (Berk, 2004). The traditional classroom requires children to learn by listening to the teacher, reading and studying to recall information is needed. Teachers use questions only to assess children’s prior knowledge. As new understanding of teaching and learning emerge, learning is seen as a social activity in which children construct knowledge with the teacher and other children. As Wiggins and McTighe (2002) assert teachers are the designers of curricular and instructional activities that promote interactions essential for learning to the level of understanding. This view of teacher and children acknowledges questions as a core function for both learning and teaching.

Research in the questioning techniques approach has established a correlation between effective questioning practices and student achievement. For example, Alton-Lee (2003) in her Best Evidence Synthesis report reveals that 59% of variances in students’ achievement are attributed to differences between teachers and classes. Hattie (2002, p. 6) concludes that; “teachers account for about 30% of the variance in students’ achievement, compared with schools, 5 to 10%.” These findings are confirmed by Cameron and Mitchell in their speech at NZARE conference of 2002, in which they state that teachers are the most important of school-related influences on students’ learning and achievement. Furthermore, Sanders (2001) found that one single factor that influences gains in achievement was the teacher’s effectiveness. A similar conclusion was proposed by Marzano in 2003.

Contemporary researchers have documented that teachers spent most of classroom instruction time in asking questions of students. Hasting (2003, p. 1) states that; “Teachers ask up to two questions every minute, up to 400 in a day, around 70,000 in a school year, or two to three million in the course of a career.” Previous research on teachers’ questioning behaviours and patterns indicate that this has not changed. For example, Leven and Long (1981, cited in Brualdi, 1998) propose that teachers currently ask between three to four hundred questions each day. These studies demonstrate that teachers control the questioning episodes and have a tremendous impact on children’s learning and achievement. Given that teachers control the questioning episodes, their questions are imperative to children’s learning and achievement (Appalachia Educational Laboratory, 1995). Therefore, the questions that teachers ask serve as cues and clues that focus students’ attention in their engagement in play.

Based on empirical research findings (AEL, 1995; Cazden, 2001; Kerry, 2002) teachers tend to call upon high achievers much more frequently than the low achievers, because high achievers are always the ones persisting to sit in a place that is in line with teacher’s vision (action zone) during mat times. As a result of this practice, over children’s year of schooling, low achievers will be turned off or tuned out (Kerry, 2002). Further, teachers’ tendencies to wait (or not) after orally presenting a question (Wait Time I) and after a student offer a response (Wait Time II) have been found varied from high achievers than low achievers (AEL, 1995; Cazden, 2001;

Kerry, 2002). Teachers tend to wait frequently and more for high achievers than low achievers.

Moreover, quality questions are also important in supporting emergent learners' thinking and learning. Cullen (1998, as cited in Farquhar, 2003, p. 20) proposes the characteristics of an emergent learner and quality questions are important in developing these characteristics. Emergent learners need quality questions to engage in collaborative learning activities with peers and to motivate them in extending their knowledge and skills through independent and collaborative activities.

How can quality questions transform a traditional, teacher-centred classroom into a student-centred, inquiry-oriented community of learners' classroom?

Quality questions are imperative in the processes of co-construction and scaffolding which are supported by the Te Whāriki curriculum. The early childhood curriculum is embedded in the constructivist theories which require the teachers to co-construct knowledge with the learners. As Vygotsky's (1978) theory proposes that talk is not about transmission of facts but is rather the cultural/socialization interactions between a child and a more competent adult. An extension of this view is the concept of scaffolding which proposes that children learn incrementally, beginning from what they already know. The teacher's role is to scaffold new knowledge on that base to build a structure of understanding. Through interactions the developing child moves towards the development of learning and high cognitive processes (Kerry, 2002). As Jenlink (2000, p. 7) argues; "...dialogue is crucial to bringing the participants to a level of collective and transformational consciousness."

Further, quality questions are important in sustaining interactions in a classroom (Walsh & Sattes, 2005; Farquhar, 2003). Farquhar (2003, p.36) argues; "The use of open-ended questions is a technique that teachers value for extending conversation and scaffolding children's thinking." This is also confirmed in a longitudinal British study on effective pedagogy in the early childhood years (Siraj-Blatchford, Sylva, Gilden, & Bell, 2002). However, there is evidence in literature that reveals the dominance of low level questions used in early childhood settings.

Highlights of the Action Research

The research with Pacific Islands' trainee teachers highlights that students from minority groups have been marginalized in classroom questioning discourses because of the types of questions teachers ask the students and how they process and structure the questioning episodes in classrooms. However, this research involves an intervention in which the participants undertook and results to changes in values and beliefs.

Baseline data reconfirms what previous researchers like Cazden (2001), Cazden & Beck (2003) and Bishop & Glynn (1999) argue about. For

example, the first stage of this research focused on both the wording and syntax and the cognitive levels of the questions. With regard to the cognitive level of these questions, the majority of the questions were formulated at the lower levels of Bloom's taxonomy. Baseline data in the second stage showed that nearly all the questions were initiated by the teacher, with only a small number initiated by the students. Similarly, baseline data in stage three indicated that teachers did not wait for the students to respond before or after asking the question. These findings have important implications for children's learning.

Questions that are formulated and conceptualized at low levels of Bloom's taxonomy are likely to limit the level of challenge children experience in the learning environment. Such questions can serve as cues and clues about what children should think of as important to learn. Low-level questions initially formulated by the teachers required only one correct answer and these answers were already determined by the teachers. An important implication of asking these types of question are that co-construction of learning is limited (Kerry, 2002). The learning process is determined by the teacher. Such questions also have implications for scaffolding children's learning (Cazden, 2001). Experiencing questions at repetitively low levels limits students' opportunities to develop their ideas and to be supported to reach higher cognitive levels (Bruner, 1996, Piaget, 1984, Vygotsky, 1978). Furthermore, this level of learning is unlikely to motivate them to engage in high level learning, therefore, exhibit less inspiration to initiate and discover the unknown. This finding coincides with Cazden & Beck's (2003) argument as questions that require only one correct answer, signifies that not all students participate in the discussion, therefore result in an unequal power relationships in classrooms as Bishop & Glynn (1999) contend.

Teachers need to be aware of the types of questions that they ask in the classrooms because if low-level questions dominate the classroom questioning discourse, it is more likely that understanding would be hindered and if students did not understand, there is a possibility that students are still in the zone of ambiguities and uncertainties and therefore, not able to make a difference. However, a substantial improvement in post training data was shown. Teachers' questions and the way the questioning episodes were reconceptualised as a result of acquiring new skills and knowledge through the research and training process. As reflected in some of the participants' reflections, children enjoyed some of the changes and these changes were more likely to impact on children's learning.

Baseline data in stage two revealed that teachers dominated the whole discussion and this also implied that children were not given opportunities to interact with the teacher and most importantly with other children. Similar to baseline data in the first stage, teachers dominated the whole questioning episodes. Again, this finding also implies the imbalance of power relationships in classroom questioning discourses. However, children's questions were increased in post training data which reflected that the interactions increased in the classroom. This implies that students and teachers have been engaged and established the capability and capacity to

change that space of pure difference (Martusewicz, 2001), therefore, both became 'social negotiators of conversations.'

Baseline data in stage three showed that teachers did not wait for children's responses in the pre training phase. Closely related to the first two stages, the implication for this finding is that teachers still hold the control in the classroom and therefore, results to an unequal distribution of power. However, there was a substantial increase of time teachers wait after they posed a question to students and another increase of time before they gave feedback to children's responses in the post training. These changes implied that children's answers to the questions were more likely to be better and longer because of the longer time given to them to think about their answers. The increase in time teachers wait before they offered feedback to children's responses implied that children were more likely to be given more opportunities to expand on their responses and formulated complete and accurate answers. Furthermore, students were given opportunities to become equal players in the zone of ambiguities and uncertainties that resulted to better learning environment that facilitate and sustain interactions as well as higher achievement.

How to formulate a quality question?

Formulating a quality question is a difficult task because it involves a lot of thinking on the teacher's part. As Walsh & Sattes (2005, p. 22) assert; "To form a good question takes work; it takes thought, skill and practice." This necessitates the teacher to have an in-depth knowledge of the curriculum and to have an understanding of children's development. As David (2000, p. 113) argues on the definition of pedagogy, he states: "Young children require an approach that allows questioning and concept construction but also takes into account of the child's development."

Therefore, teachers need to understand what is important about the content they will be engaging in with children in addition to children's developmental stage as they prepare questions.

For the purpose of this paper, Walsh & Sattes (2005) characteristics of a quality question will be explored in detail.

1. Promote one or more carefully defined instructional purposes:

The purpose of a question depends on the instructional objective. In saying this, there are two typical classroom contexts for questioning that include recitation and discussion. For example if the objective is to assess children's prior knowledge, questions for this purpose would be framed under the recitation context. However, if the purpose is to challenge children's thinking, questions will be structured under the discussion context. Therefore, teachers need to ask themselves; "What is my purpose in asking a question at this time?"

2. Focus on important content

Deciding on a content focus is also another difficult task to do but Christenbury and Kelly (1983, as cited in Walsh & Sattes, 2005) suggest a framework that teachers can use in choosing a content focus. In their questioning circle, it calls attention to the relationship between the subject matter, personal reality and external reality. They argue that teacher's questions can fall into a single domain such as personal knowledge; two overlapping domains, such as personal knowledge and subject matter; or in all three domains but the most powerful questions are the ones found in the intersection of the three areas. For example in retrospect to Teacher B's classroom, the question; "What's the pig doing in the book?" is an example of subject matter. Asking the question, "What do you think, E?" is an example of personality reality. An external reality question could be used when E. responds the pigs were killing each. B. could have asked; "Have you seen two people playing with a rope, E?" However, a question that could be included all three domains would be; "If the pigs have not got a rope, do you think they would be killing each other?"

3. Facilitate thinking at a specific cognitive level

Perhaps this is the most important and difficult skill that teachers can encounter in determining the cognitive level of the question, however, there is an abundance of tools that teachers can use in determining the cognitive levels of questions. For the purpose of this paper, Walsh & Sattes (2005) framework based on Perkins (1992) work will be used. Perkin (1992 as cited in Walsh & Sattes, 2005) argues that there are three goals for education and those are to retain knowledge, understanding knowledge and active use of knowledge. Further, he proposes that to attain 'generative knowledge' or knowledge that can be 'put to work' in real-life situations is to pursue all three goals of education. To summarize Perkin's assertion, we will use the Create, Use and Recall framework to determine the cognitive level of the questions. This is in hierarchal order in which Create being at the top whereas Recall at the bottom of the hierarchy. Create is putting of elements together to form a coherent or functional whole and reorganizing elements into a new pattern or structure. It is characterized by questions that evaluate, critique, judge, design, construct and others. Use is applying what is already known to by carrying out or applying a procedure in a given situation. This is characterized by questions that interpret, infer, analyse, differentiate and such. On the other, Recall is the retrieving of information from long term memory. This is characterizes by questions that asks children to recognize and recalling.

(4) Communicates clearly and are concise

Quality questions are clearly focused, concise and communicate clearly to the children. Teachers often asked what Dillion (1995, as cited in Walsh & Sattes, 2005) termed as “double-barrelled” questions which means they ask two questions at a time. These questions are confusing and therefore, children would not want to engage and participate in the interactions. However, Walsh & Sattes (2005) suggest asking only one question at a time. We also need to choose our words with care so it has a clear meaning and have a minimum number of words necessary to convey meaning. In other words, we should use words that are developmentally appropriate, culturally sensitive and achievable.

How do children make connections? How do teachers prompt to promote thinking?

There is an abundance of research evidence on the correlation and effectiveness of practising wait times to children’s achievement (Alton –Lee, 2003; Marzano, 2003; Hattie, 2002; Sanders, 2001). These researches have signalled many benefits in children’s thinking as confirmed in higher achievements. To name a few, children offer longer responses, talk more to each other, and ask more questions (Walsh & Sattes, 2005). Nevertheless, if we believe that the interactive part of a conversation is a multistep process, it is obvious that it takes time which depends on the complexity of a question and the way a child thinks and attends.

Rowe (1986, as cited in Walsh & Sattes, 2005) reveals the value of silence as she was conducting a scientific research with K-12 classroom in the United States and hence the beginning of Wait Time I and II. Wait Time I is defined as a time of silence after the teacher asks a question and Wait Time II is another silence after the child responds, before the teacher or child reacts or comments. According to Walsh & Sattes (2005) teachers need to give time to the children to think because they engage in five mental processes in their quest of finding the answers. These processes include;

1. Listen to the question

This is important as when children do not pay attention to the question when it is asked, they will be unable to answer correctly.

2. Decode the meaning of the question

When a question is asked to a child, he mentally tries to understand the meaning of the question. This process is different in children especially children from cultural backgrounds that are different from a teacher. This is why questions must be concise and simple.

3. Overt response

This is the beginning of formulating of a response by thinking of the answer to the question before they can actually translate it into words. According to Piaget (199 as cited in Berk, 2004) in developing

concepts, children draw on into their schemata to find information that are associated with the question especially when the question asks for new information.

4. Covert response

This step is when a child answers the question out loud. This is the beginning of an interactive and negotiating step in which a child response out loud and teachers to be attentive so she can extend by offering cues, clues or prompts.

5. Rethink and revise the answer

For higher cognitive level questions, children rethink and revise their answers based on other children's answers, their own thinking about the answer and teacher's reaction and feedback.

Frequently teachers assume that when children do not respond to questions, it is due to lack of knowledge, however, children maybe having trouble at any one of the steps in the process (Walsh & Sattes, 2005). For example, the consequence of not listening to a question is children repeatedly asking what or asks to repeat the question. If this is the case, teachers need to repeat the question in simpler and brief words. If children have difficulties in understanding the meaning of the question, teachers need to offer simple prompts or simply rephrase the question.

Children usually need more scaffolding in the third level and this is where teachers need to offer cues, clues or probe to support children in their quest of finding the answer to the question. Cues are words, symbols or phrases to help children recall. For example, in the opening scenarios Teacher A. should have offered C cues to assist her in finding the number before the number 14 like "Yes, you have found the first digit of that number but there is another number that looks like half of number 8." Clues are overt reminders that assist children in recalling and remembering. For example, A. could have offered C a clue like "it starts with t..." On the other hand, probing is a context where a teacher looks for reasoning behind an incorrect response or asks for clarity when the response is complete. For example, A. could have prompted C for the reason why she picked up only number 1, then use that response as catalyst of finding a shared meaning with C.

Conclusion

The need for teachers to reconceptualise classroom questioning discourse is necessary for the benefit of all students' especially Pacific island students. Most of the time, teachers assume that there are a plethora of quality questions in teacher resource materials, and that they could just ask any question that comes in mind, however, this research has indicated the importance of planning the questions before implementation. If children's learning is to be promoted in ways consistent with contemporary learning theories (Vygotsky, 1978, Bruner, 1996), then training teachers to ask high level, open-ended questions and learning the knowledge and skills on processing classroom questioning discourse is essential. If teachers are

equipped with all these knowledge and skills, there is a possibility that all students will participate and most importantly everyone will share the same power in classrooms discussions.

To become effective teachers, we need to re-evaluate our values and beliefs and respond to the ever changing world without compromising our essential values. Teachers need to persevere with own individual identities but adapt to the needs of the 21st century. As knowledge society dominates the new millennium, teachers need to make informed decisions pertaining to the types of questions they ask the children and how they process and structure the classroom questioning discourses, so that better outcomes and achievement would result especially for our Pacific Island children. Nevertheless, all parents have high hopes and expectations for their children in their educational journeys and that is to achieve exciting outcomes.

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