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'I WONDER WHAT YOU KNOW…': TEACHERS DESIGNING REQUESTS FOR FACTUAL INFORMATION

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Abstract

The early years are significant in optimising children's educational, emotional and social outcomes and have become a major international policy priority. Within Australia, policy levers have prioritised early childhood education, with a focus on program quality, as it is associated with lifelong success. Longitudinal studies have found that high quality teacher-child interactions are an essential element of high quality programs, and teacher questioning is one aspect of teacher-child interactions that has been attributed to affecting program quality. Open ended questioning is linked to higher cognitive achievement, however teachers overwhelmingly ask more closed than open questions. In the classroom, like everyday interaction, questions in interaction require answers. Teachers use questions to set agendas and manage lessons, and to gauge students' knowledge and understanding.

Drawing on data from the Australian Research Council project *Interacting with Knowledge: Interacting with people: Web searching in early childhood,* this paper focuses on an extended sequence of talk between a teacher with two students aged between 3.5 and 5 years in a pre-school classroom as participants search for images on the Web. Ethnomethodological and conversation analysis approaches examine how the teacher designs her interactions to prompt children's displays of factual knowledge, and how the design of factual questions affect a student's response in terms of what and how they respond. In focusing on how the teacher designs factual questions and how children respond to these questions it shows that question design can close down a student's reply; or elicit a range of answers, from one word to extended more detailed responses. Understanding how the design of teachers' questions can influence students' responses has pedagogic implications and may support educators to make intentional decisions regarding their own questioning techniques.

Introduction:

Quality early childhood education is now a major international policy priority. Findings from the *Effective Provision for Pre-school Education (EPPE)* study (Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart, 2004) reveal quality early childhood programs aid children's development, ease the effects of social disadvantage and provide the foundations for a successful start to school. Follow-up studies highlight teacher-child interactions, along with interactions with peers and materials, as integral to program quality (Hamre et al., 2012; Mashburn, Hamre, Downer, & Pianta, 2006; Mashburn & Pianta, 2010; Siraj-Blatchford, Sylva, Muttock, Gilden, & Bell, 2002; Siraj-Blatchford, 2009). As Mashburn and Pianta (2010) point out:

> actual interactions in classrooms or settings (with adults, peers, materials) are the mechanisms responsible for the effects of early education on child outcomes, and that program improvement efforts aimed to influence child outcomes must explicitly target these interactions, if they are to yield the desired effects. (p.4)

Quality teacher-child interactions are receiving significant attention in early childhood policy initiatives at both a national and international level.

Within Australia, the Council of Australian Government's (2009) *Investing in the Early Years – A National Early Childhood Development Strategy* (Council of Australian Governments, 2009) took the position that all children should have access to quality early childhood programs in the year prior to formal schooling, taught by qualified early childhood teachers. With the aim of improving and promoting program quality, the *National Quality Standards (NQS)* (Australian Children's Education & Care Quality Authority, 2012), an assessment framework, was introduced to rate early childhood programs according to seven quality

areas.

Two essential elements of 'quality' highlighted in the NQS and curriculum documents are (1) connecting curriculum content to student's prior knowledge and (2) teacher-child interactions (Crèche and Kindergarten Association of Queensland, 2011; Department of Education Employment and Workplace relations, 2009; Queensland Studies Authority, 2010). The first quality element is that teachers should build on what students already know. The Australian Children's Education and Care Quality authority asserts that "each child's current knowledge, ideas, culture, abilities and interests are the foundation of the program" (n.d.). As a start, then, teachers must first determine what students know. One way to determine students' prior knowledge is to prompt a display of knowledge through social interaction, such as questions.

The second quality area relates to teacher-child interactions. The Queensland Kindergarten Learning Guideline (Queensland Studies Authority, 2010) describes " active listening, questioning, engaging in sustained and meaningful learning conversations, introducing ideas and language, modelling, explaining, collaborating and challenging ideas" (p. 16) as effective teacher practices – all achieved through social interaction. Mehan (1979), a pioneering researcher of classroom talk, identified that the co-ordinated actions of teachers' and students' talk support the accomplishment of classroom lessons. Mehan (1979) identified a three-part interaction that commonly occurs in teacher-child interaction. Labelled the 'Initiation, Response and Evaluation' (IRE) sequence, the first turn is the initiation usually in the form of a question from the teacher, the second turn is the student's response to the teacher's initiation, and the third turn is an evaluation that might include a teacher's assessment of the student's response. This three-step sequence has been expanded further in terms of what teachers say in the third turn teacher response. For example, in addition to an evaluation, the third turn might also include feedback, a comment or a reply by the teacher about the student's response (Baker, 1991; Lemke, 1990; Mehan, 1979; Sinclair & Coulthard, 1992). More recently, Lee (2007) investigated how a teacher's third turn is based on contingency, and responds to and acts upon the student's prior turn at talk, designed to progress the interaction. For example, a teacher could ask, "What would you do if you got lost?" The student could respond with many different answers, one being, "Telephone my dad." The teacher's next turn is often based upon the student's response. One possible response could be, "Do you know the telephone number?" This question might not have been asked if the student's response was, "walk home." In other words the teacher's response is dependent (or contingent) upon the student's answer.

Teachers use questions to initiate teacher-child interactions. Questions are broadly categorized into closed or open questions (Siraj-Blatchford & Manni, 2008). Open questions such as 'What makes you happy?" are linked to improved cognitive outcomes, and therefore correlated with a higher quality education, yet approximately 94% of questions teachers ask are closed (Siraj-Blatchford & Manni, 2008), such as "Are you happy?" This finding highlights the critical importance of teachers' questions as a way of promoting learning within quality early childhood education programs, and calls for further research relating to how teachers use questions in early childhood classrooms.

Ethnomethodological and conversation analytic studies have studied the design of questions used in the institutional context of the classroom, and in everyday life more broadly. Three main question designs have been identified: (i) yes/no interrogatives (YNI) (Raymond, 2003), recently known as polar questions (Stivers, 2010) or candidate answer questions (Pomerantz & Heritage, 2013); these questions are closed questions in that either a Yes or No response is required; (ii) 'Wh' questions (or Q word questions (Stivers, 2010), such as "Why are the clouds black before a storm?" and (iii) alternative questions (Stivers, 2010), such as "Do you want the orange or the apple?". Regardless of design, when a question is asked, a common-sense assumption is that the logical response will be the provision of a response. Research shows, however, that question designs call for particular types of responses. Aligning responses are called type-conforming responses, whereas, misaligning responses are labelled non-type conforming. A YNI design makes a yes/no (or equivalent - e.g. a nod) answer relevant in response. For example:

1. Tea: Did it have spots?

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2. Stu: yes (or no) (or semiotic response such as a nod)

'Wh' questions are designed for particular types of responses. Questions that begin with (or include) "who", "where", "when" make a person, place and time appropriate in a response (Raymond, 2003; Schegloff, 2007). For example:

1. Tea: Where did you find the lady beetle? (where question design)

2. Stu: In my garden. (a place is a relevant response)

Alternative question designs, of which there were none used by the teacher in this data set, provide responders with a choice between alternatives (Stivers, 2010). For example:

1. Tea: Will you be back today or tomorrow?

2. Stu: tomorrow.

Certain replies are preferred depending on question design. YNI's preference agreement (Heritage, 1984; Pomerantz & Heritage, 2013; Pomerantz, 1984; Sacks, 1987). Pomerantz and Heritage (2013, p. 213) suggest the following two examples show how questions can be designed in ways that display the expectation of a particular answer:

Example 1:

1. A: Do you belong to a church now?

2. B: Yes (is the preferred response)

Example 2:

1. A: You don't want that lamb chop do you?

2. B: No (is the preferred response)

Examples 1 and 2 demonstrate Raymond's (2006) point that responses align most often with the restrictions of question design. Heritage and Raymond (2012) show that how a question is asked positions the questioner and responder along an epistemic gradient ranging from not knowing (K-) to knowing (K+) (Heritage & Raymond, 2012). Hayano (2013) provides the following three questions to illustrate the epistemic position conveyed in question design:

1. Who were you talking to?

2. Were you talking to Steve?

3. You were talking to Steve, weren't you? (p. 399)

The first question invokes the lack of, or minimal, knowledge held by the speaker. The second question suggests that the questioner has some knowledge, while the third question asserts the speaker's strong belief that it is true. The design of the question can indicate that the epistemic gap between questioner and responder is either large or small, or somewhere in between.

Additionally, Stivers and Rossano (2010) assert that different actions in social interactions mobilize responses to different degrees. They note that, "depending on what sort of sequence-initial action an individual performs, a response of a particular type is a relevant next (e.g. after greetings, requests, invitations, and offers)" (p.4). For example, a greeting is conditional on a return greeting (Sacks, 1995).

A: Hello

B: Hi

With a focus on teacher questions, ethnomethodological and conversation analytic research has shown that questions are used to promote students' participation (Levinson, 1992), manage and control lessons, gauge students' understanding, request action and assess students' knowledge (McHoul, 1978; Mehan, 1979). While much of this research has focused on whole-group formal lessons, Koshik, Freed and Ehrlick's study, focusing on teacher-student conferences that prompt students to self-correct mistakes, found that teachers' questions can also convey, rather than elicit, information (Koshik, Freed, & Ehrlick, 2010). For example, the question, "Who blew the three little pigs house down?" requests information from the student, where as "Does that word look right to you?" might signal to the student that a word is spelt incorrectly, and prompt a correction.

Teachers more often than not already know the answer to the questions they ask (McHoul, 1978; Mehan, 1979). These 'known-answer' or 'test' questions can be used to elicit information, including factual information from the student. When this elicitation is related to students' factual knowledge, subsequent interactions may promote opportunities for learning new factual information. Teachers implement a range of interactional resources to elicit from students pre-existing knowledge and understanding (Margutti, 2007), and use this displayed knowledge as a foundation on which to build new knowledge. The practice of finding out what children know as a foundational base aligns with the range of teaching strategies identified in the Early Years Learning Framework (Department of Education Employment and Workplace relations, 2009), the Queensland Kindergarten Guidelines (Queensland Studies Authority, 2010) and Building Waterfalls 2nd edition (Crèche and Kindergarten Association of Queensland, 2011).

Requests for factual information can be implemented in both implicit and explicit ways. A direct question, such as "What do you know about ladybeetles?" is a straightforward explicit way to seek information, whereas "I wonder what that is" is a declarative that invites a response and does "requesting" (or questioning in a softer implicit way). Building on the definition of questioning proposed by Ehrlich and Freed (2010, p. 6), questions that call for factual information are defined as "utterances that (a) "solicit" (and/or are treated by the recipient as soliciting)" [known facts] and (b) "are delivered in such a way as to create a slot for the recipient to produce a responsive turn" [that provides factual information] (Ehrlich & Freed, 2010, p. 6). Factual knowledge questions require the recall of facts, and are considered less complex than higher order questions (Bloom, 1956; Lasley, 2010). Sahin and Kulm (2008) examined sixth grade mathematics teachers' use of probing, guiding and factual questions to find that teachers used factual questions as a tool to monitor students' recall of mathematics facts or procedures before progressing onto a new topic (Sahin & Kulm, 2008). As early childhood curriculum frameworks instruct teachers to build on student's prior knowledge, factual questioning might be an important tool to elicit this knowledge.

Recognising the importance of teachers' use of questions as a strategy for determining children's prior knowledge, this paper investigates a single case of an early childhood teacher and her use of questions during a Web search activity. Throughout the search, the teacher calls on students to display their factual knowledge. Particular analytic attention is directed to sequences that involve the teacher's questions that call on students to display factual knowledge and their responses.

Data and Analytic Approach:

The paper draws on video recorded data, from a corpus of over 200 hours, collected for the Australian Research Council project entitled *Interacting with Knowledge, Interacting with People: Web Searching in Early Childhood* (Danby, Thorpe & Davidson) (Ethical approval no. 1100004180) that investigated the extent and activities of Web searching in kindergarten and home contexts in Queensland, Australia. Data collection for the project occurred in three phases: (1) a large scale survey of staff seeking reports on their usage, as well as their views, about using online technology; (2) video recordings of over 200 hours of teachers and children, aged between 3.5 and 5 years, in a kindergarten (pre-school) context, engaging with each other and the Web as part of everyday practice, and (3) a survey of families' views, and use, of digital

technology. Data reported on in this paper is drawn from phase 2 and focuses on a classroom event involving the interactions of a teacher and two children (pseudonyms given). The video recorded interaction was transcribed using Jeffersonian notation (Jefferson, 2004) (see appendix A for a transcription key) to capture key features of talk including intonation, pauses, sound stretches, emphasis and utterances as well as the verbal language used by participants (Psathas, 1995). In addition, a screen recording program, Camtasia, tracked what happened on the computer screen during the interaction. Screen shots of the participants from the video-recorded data and from the Camtasia recordings are embedded within the transcripts were embedded within transcripts however for publication purposes these images have been omitted.

In the episode discussed here, during a whole group planning session the teacher prompted a child (Mena) to recall the ladybeetles she had seen in the garden during a working bee held recently at the kindergarten. The teacher used this topic to introduce the whole class to the plan to create a flower garden at the kindergarten. Children proffered the names of insects that might be attracted to their flower garden. One idea suggested by Rory, based on his prior experiences at home, was that they might get hairy caterpillars in their garden.

Upon closing this whole group time, and transitioning the children to indoor learning experiences, the teacher proposed that some children might like to do a search for insects on the computer. This offer is taken up by two children (Mena and Rory), whose group time suggestions of lady beetles and hairy caterpillars became the motivation for a Web search. The analytic focus is to investigate the teacher's pedagogical strategies as participants perform a Web search looking for images of lady beetles and hairy caterpillars.

The study's methodological approach draws on ethnomethodology and conversation analysis that focuses in fine-grained detail on the moment-by-moment, unfolding interaction. Ethnomethodology's interest is in finding out how talk, action and interaction contribute to participants' shared understanding of the unfolding interaction. Conversation analysis examines the sequential features of talk-in-interaction to show how talk is organized and produced as part of a social process co-constructed by participants (Hutchby & Wooffitt, 1998). The video recording of the Web search allowed for repeated reviewing for fine-grained transcription and investigation of how the teacher's design of factual information requests affects how the students take up and respond to her requests.

Calling for Factual Information:

Three question designs have been found to be used by the teacher to ask for students' factual knowledge. The first question design is the Yes/No Interrogative, which in educational terms would resemble a closed question. The second design, the 'Wh' question, cannot be answered with "yes" or "no" and can fall into the category of both open and closed questions. For example, "What's that?" (when pointing at an apple) asks for specific information whereas "What do you know about ladybeetles?" offers scope for a range of responses based on factual knowledge. The third question design is the 'I wonder …' prefaced declarative (Curl & Drew, 2008). The three different formats are now discussed.

Yes/No Interrogatives

In looking at Yes/No questions students either provide a 'yes' (extract 1) or 'no' response (extract 2). The episode commences with two students (Mena and Rory) and a teacher (Lisa) sitting in front of a laptop computer located on a bench in the classroom. A third student is standing at the side of the activity, manipulating a toy on the bench, but does not explicitly engage with the Web search activity. Other students were able to select different learning experiences including building with blocks, reading books, drawing, and creating insects with plasticine. As soon as the Web search begins, the teacher and the two children initiate a search for images of lady beetles to identify the ones that Mena saw in the kindergarten garden.

Extract 1 starts one and half minutes into the episode. The teacher calls for a student to display her factual

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knowledge asking a question about the lady beetle image that Mena had identified as the same type of beetle that she had seen in the garden.

```
Extract 1 (06082012 1:30-1:39)


112   ((Participants look at the image search results displayed as thumbnails on the
        computer screen.))
113   LIS:    pt. .ohhhh °it was like that one.° (.)
114           ↑>did it< have spots? ((gazes at Mena))
115           (0.9)
116   Men:    ((nods))
117   LIS:    ↑like that one ↓did it.((gaze returns to screen))
118   LIS:    ((gazes at Rory))
119   LIS:    have you seen >lady beetles< like that too Rory?
```

The teacher sets the topical agenda by focusing on the physical features of the lady beetle. After identifying the image that represents the ladybeetle seen by Mena (112), the teacher initiates a question that focuses on factual information about the lady beetle (114) and, by gazing at Mena, selects her as the receiver of her question. By employing a YNI (Raymond, 2006), a closed question, Mena is being called on to provide a confirmation or a disconfirmation concerning a piece of factual information. The teacher's use of a YNI question format works to restrict what can and cannot be said, and within a Yes/No single word utterance. In response, Mena delivers an unproblematic type-conforming nod (116), confirming that the lady beetle she saw in the garden had spots similar to the one identified on the screen.

In a move to clarify and to continue Mena's engagement, the teacher seeks additional confirmation (117). When Mena does not respond, the teacher shifts the focus from the factual information about the ladybeetle to finding out whether Rory had seen lady beetles like the one Mena had seen. This move is designed to include Rory in the conversation and also shifts the attention away from Mena.

Extract 2, two minutes into the interaction, investigates what happens when the student responds with a type conforming dispreferred response. In this extract, the teacher implements her second YNI focusing on factual information aimed at calling for the students to label the ladybeetle's antennae.

```
Extract 4 (06082012 2:07-2.30)

151   LIS:     and look you can see their six legs.
152            (.3)
153            one two three four five >six<= >↑are they legs¿↓< ((points at screen))
154            (1.3)
155   Men:     na:::a ((animated tone))=
156   LIS:     =what's tha:t. ((gazes at Mena))
157            (1.6)
```

The teacher's next question focuses on factual information relating to the number of legs a lady beetle has and asks for a label for the antennas. She instructs the students to "look" and counts aloud as she points to the lady beetles legs. In her turn she points at the picture of the ladybeetle's antennas on the screen and initiates a YNI (153), usually designed for a type conforming agreement of yes. When the teacher points to antennas and asks "are they legs" (153), the answer to this YNI is no. Her question is framed for a dispreferred response and could potentially cause interactional trouble. Following her YNI, there is a silence of 1.3 seconds (154). The 'standard maximum' silence in interaction is 1.0 seconds (Jefferson, 1989) and the longer pause of 1.3 seconds (154) here indicates interactional trouble. The interactional trouble might have something to do with the way the question was asked because YNI's preference agreement (Heritage, 1984; Pomerantz & Heritage, 2013; Pomerantz, 1984; Sacks, 1987). Mena's long pause before she responds (154) suggests that she does know that what the teacher points at are not legs. Her response is a type conforming, but dispreferred, response in that she responds with a 'na:::a', delivered with an animated tone. Mena deals with the dispreferred response through her animated tone, which works

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to align with the preference principal. The preference principle is, "if possible, avoid or minimize explicitly stated disconfirmations in favor of confirmations" (Pomerantz & Heritage, 2013, p. 213). Mena's animated tone delivers, in a friendly, minimal way, disagreement to the teacher's question. Here is a YNI that receives a type-conforming dispreferred response. In a contingent move by the teacher, she initiates an insertion sequence, changing the question design that works to continue the current topic, aimed at labelling the antennas.

Extracts 1 and 2 showed how YNIs simply request confirmation or disconfirmation of an assertion made within the turn (Heritage, 2012). When responses are type conforming preferred responses, the YNI works to restrict the focus for participants and achieves moving the interaction along. Dispreferred and non-type conforming responses require further interactional work in order to manage the difficulties associated with them, and to maintain the current topic as a focus for participants. Dispreferred and non-type conforming responses will be investigated later in this paper. The next section investigates 'Wh' question designs in the interaction.

'Wh' Question designs

Five sequences, out of a total of ten that initiated a call for factual knowledge from students, involved using a 'Wh' question design. As mentioned previously, 'Wh' questions typically attract longer "phrasal or clausal response[s]" (Stivers, 2010, p. 5), and are often used by teachers to 'test' the student's prior knowledge. In all but one occasion the 'Wh' question design proved problematic for the students. Before investigating the 'Wh' questions that results in problematic responses, Extract 3 looks at the only example in this episode where the 'Wh' question is unproblematic and receives a type-conforming response.

```
Extract 3 (06082012 6:15-6:20)

391   LIS: ->  =>what do you think< he's  ˡ looking for.
392            (.9)
393   Ror:     foo::d
394            (.5)
395   LIS:     mmˡmmm.
```

The teacher initiates a 'Wh' question (391). Rory's type conforming response (393), the correct response, aligns with the design of the question, acknowledged by the teacher in her next turn (395). The teacher's question had reduced the epistemic gradient and positioned Rory as having some knowledge, and his type conforming response progressed the interaction in an unproblematic manner. Problematic requests, however, can lead to a participant's silence, mitigated responses and non-answer responses such as 'I don't know', and impact on the flow of the interaction. Extract 4 shows a problematic request.

```
Extract 4 (06082012 3:59-4:18)

256   LIS: ->  what do you know about them.
257            (.5) [((continues typing 'hairy'))]
258   Ror:          [u:mm                        ]
259   LIS:     [(2.5)] continues typing 'caterpillar']
260   Ror:     [they-                                ]
261   LIS:     (2.5) ((completes modifying the search term=
262             and [activates the search))                 ]
263   Ror:          [I'll show you the one that wooked a bit]
               (.4) wike the one that came up (.) into my house_
265   COM:     ((displays search results))
266   ((participants look at the computer screen. Teacher's hand on the trackpad))
267   LIS:     ((manipulates track pad to scroll down page))
268   LIS:     alright.
269            (1.0)
270   LIS:     let's have a look_ ((manipulates trackpad to scroll again))
271            (.6)
```

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Extract 4 begins with the teacher pursuing Rory's factual knowledge asking, "what do you know about them." (256) as she enters the search term into the search engine. The 'Wh' question attracts a problematic response from Rory who uses the thinking token 'um' (258) to bid for time. He begins a response (260) before cutting it off. Instead of answering the "Wh' question (256), Rory's next turn works to change the activity from recalling factual information to finding an image of the hairy caterpillar that had come into his house (263), which was the reason they initiated a Web search for the hairy caterpillar in the first place. The teacher accepts this refocus (268-271), after the computer returns the search results.

Declaratives prefaced with 'I wonder'

Declaratives, prefaced with 'I wonder,' is the third interactional resource employed by the teacher to call for students to display their factual knowledge. Although it was used only once during the interaction, analysis of extract 5 shows how it mobilised a longer turn at talk for the student in response.

```
Extract 5 (06082012 5:17-5:44)

336   Com:   ((pictures loads completely))
337   ((Participants look at the enlarged image of the selected hairy caterpillar))
338   LIS:     <now we can see it up close_>
339            (.3) ((hand on trackpad))
340            ooooohhhhhhh my goodness.
341            ((looks at children))
342            (1.8)
343   LIS:     very hairy-=>I wonder what< kind of ka- butterfly it would
344            turn into.
345            (.5)
346   Ror:     a hairy one=
347   Ror:     = because [it's a   ] <ha- hairy: caterpillar_>
348   LIS:               [°a hair°-]
349   LIS:     so do you think hairy caterpillars turn into hairy butterflies,
350   ???:     no::
351   LIS:     ˆwhat would their ˆcocoons, ˆlook like.
```

The teacher initiates a declarative prefaced with 'I wonder' in line 344 asking about what kind of butterfly it might turn into, designed to call for the student's factual knowledge. Curl and Drew (2008) point out that speakers usually make requests prefaced with, 'I wonder' if they perceive that their request may be problematic for the recipient, and therefore have less expectation of the person answering being able to deliver what they want. The teacher's request in line 343 could have been challenging as it is a more complex request in comparison to the labelling task of extract 2 (line 156). Rory's response, however, is delivered in a straightforward manner without a significant pause, showing that the request and response were unproblematic. He volunteers, "a hairy one= " (347), follows with a latched turn justifying his suggestion, "= because [it's a] <ha- hairy: caterpillar_>" (348). Here, this "I wonder ..." prefaced declarative achieves an unproblematic response, even though the response may be incorrect, which the teacher deals with in her next turn. We also see the response involved a longer turn at talk. The student's longer turn at talk is particularly relevant for early childhood education where teachers are encouraged to "engage in sustained shared conversations" (Department of Education Employment and Workplace relations, 2009, p. 5) and promote opportunities for children to "talk and share ideas" (Queensland Studies Authority, 2010, p. 59).

In an effort to connect the prior turns at talk, and to possibly query Rory's response, the teacher commences with the discourse marker, "so" and follows with a YNI, collating Rory's ideas (349). She repeats aspects of Rory's response and justification, designed as a YNI to question his idea. Although it is not clear if Rory responded, this YNI received a type-conforming no, although this dispreferred response was not oriented to by the participants. The teacher, instead, implements another 'Wh' question (351) and changes the focus to what hairy caterpillar cocoons would look like, another 'Wh' question that causes interactional problems.

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Dispreferred and non-type conforming responses cause interaction problems and are the focus of the next section.

Dispreferred and/or non-type conforming responses

Dispreferred and non-type conforming responses require additional interactional work by the teacher to maintain the current topic of talk and were evident in the teacher's third turn at talk. Aligning with Lee's (2007) notion of the teacher's third turn being based on contingency, analysis shows that during her third turn the teacher modified her interactions to incorporate the student's response. Modifications help to mobilise a response from students (Stivers & Rossano, 2010).

Extract 6 is the extended interaction (building on extract 2) that shows how the teacher in her third turn at talk inserted a sequence of talk that achieved gaining a response from the students. To maintain the current topic of talk, the teacher initiated expanded sequences of talk using modified questions and altered question designs.

```
Extract 6 (incorporating extract 2) (06082012 2:07-2.30)

151   LIS:     and look you can see their six legs.
152            (.3)
153            one two three four five >six<= >↑are they legs¿↓< ((points at
154            screen))
155            (1.3)
156   Men:     na:::a ((animated tone))=
157   LIS:     =what's tha:t. ((gazes at Mena))
158            (1.6)
159   LIS:     >↑I wonder what< that ↓is.
160            (.6)
161   Men:     ey::es.((gazes at Lisa))
162            (.6)
163   LIS:     ↑ey:es!¿=
164            =do you think it might be eye:s.
165            (2.2)((all gaze at screen))
166   Ror:     an:tennaes_ ((looking at Lisa))
167            (.4)
168   LIS:     >you think it might be< ↑antennaes ↓Rory.=
169            (.1)
170   Men:     =this is-=
171   LIS:     =>↑what do they use,< antennaes for.((gazes at Rory))
```

After Mena delivers the dispreferred response of "na:::a" (156), Lisa takes her third turn at talk, an insertion sequence that maintains the original focus - the antennae of the lady beetle. Mena displays to the teacher that she knows that the antennae are not legs, and the teacher now calls for Mena to produce the label for them. The teacher gazes at Mena and asks the 'Wh' question "what's tha:t." (157).

It would make sense to consider that the teacher is probably familiar with the label of antennae that she seeks from Mena. For this reason, the question appears to work as a test question with the teacher in K+ (Heritage & Raymond, 2012) position and the student in K- (Heritage & Raymond, 2012). The subsequent 1.6 seconds (158) of silence is treated as troublesome, and the teacher initiates another turn to talk (line 159). The teacher reformulates her earlier question. Her initial question "what's tha:t." (157) is modified to >↑I wonder what< that ↓is. (159), designed to soften the question, and achieved removing the 'test' component. The "I wonder what" format narrows the epistemic gap between the teacher and Mena so that the teacher's request does not expect that Mena should know the label. Another long silence of 1.3 seconds follows, and this time Mena responds. She proffers the label, "ey::es." (161), an incorrect response, but nevertheless a response that the teacher mobilised through her question reformulation.

The teacher now incorporates Mena's display of knowledge (or lack of it) into the interaction to provide her with the opportunity to learn the label for the antennae. She repeats Mena's suggestion, "↑ey:es! ¿=" (163), delivered with an animated tone and rising intonation. Rising intonation can infer questioning that

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could work to challenge Mena's response, and the teacher quickly asks for confirmation "=do you think it might be eye:s." (164). After 2.2 seconds of silence, Rory self-selects to talk. His self-selected turn to talk follows the turn taking model identified by Sacks, Schegloff and Jefferson (1974) in that other participants can self-select a turn to talk in conversation when the 'speaker selected person' does not respond, and an interactionally significant amount of silence has occurred. Rory's suggestion of, "an:tennaes" (166) is in response to the teacher's wondering (159). His gaze on the teacher signals that this is a relevant place for her to respond. Even though Rory has found the 'correct label', the teacher does not make an explicit assessment. Instead she stops 'looking for the label' and progresses to ask another 'Wh' question (171) targeting additional factual information about what ladybeetles use antennae for. Her progression of the interaction to a new type of knowledge sought might show the participants that Rory's response was indeed correct, however it was not explicitly assessed as being so.

Discussion:

The teacher initiated ten sequences of interaction that employed a variety of question formats that called for students to display their factual knowledge. Table 1 summarises how the teacher uses the 3 types of question formats, the Yes/No Interrogatives (YNI), 'Wh' questions and declaratives prefaced with 'I wonder…', to call for factual knowledge from students.

Table 1. *Question formats that call on student's factual knowledge*

Calls for factual Knowledge	Number implemented	Example
Yes/No Interrogative	4	↑>did it< have spots?
'Wh' question	5	=>↑what do they use,< antennaes for.((gazes at Rory))
"I wonder …" preface declarative	1	-=>I wonder what< kind of ka- butterfly it would turn into.

Analysis of this interaction shows that the design of the teacher's request for factual information does indeed affect the response type. Type conforming responses to YNIs elicited either confirmations or disconfirmations, all but one of the 'wh' questions posed issues for the students in their responses, and declaratives prefaced with "I Wonder …" achieved a response to complex questions.

When interactional problems occurred, the teacher reformulated the question design in order to pursue the student's display of factual knowledge (or lack of it). Two main modifications to question designs were used by the teacher in the interaction. These modifications included (i) the reformulation of a direct 'wh' question to a softer, indirect request for information (e.g . =what's tha:t.(156) became >↑I wonder what< that ↓is. (158)) and (ii) the alteration of a 'Wh' question to a YNI. Through reformulation, the teacher achieved maintaining the focus of the original question and mobilising a response from the students.

Conclusion:

Knowledge of how question designs are used by teachers in order to mobilise a response has implications for classroom interactions. First, the design of the question can encourage (or discourage) students from responding, and can call for one word or longer turns of talk in their answers. For example, when comparing 'Wh' questions, which seem to be 'tests' of knowledge, with declaratives prefaced with 'I wonder…', the 'I wonder…' declaratives appeared to provide an interactional space that was non-testing and received a more detailed student response. 'I wonder …' prefaced declaratives, therefore, are recommended as a strategy to encourage children to contribute to unfolding interactions. This design might also be of value in other interactions, such as brainstorming and problem solving experiences that aim for students' contributions. Question designs that remove the 'test' and promote risk taking in relation to 'having-a-go' at answering, promotes opportunities for sharing knowledge and ideas, which stand to improve program quality.

Second, lost opportunities for students to display their knowledge may result in lost opportunities to build on what children know. A student's response is significant as teachers incorporate what students say into the flow of the interaction making the information more meaningful and relevant to their local context (Mercer, 1995). This also has implications for program quality.

Third, this kind of analysis enables teacher practices to be investigated in fine-grained detail, and has implications for professional in-service and pre-service programs. If teachers are familiar with ways to call for students' factual knowledge they can make intentional decisions. Finally, teachers' knowledge about the designs of questions may prompt critical reflection and inform future practice.

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Appendix:

Transcription Notation

The transcription system used to transcribe conversational data was developed by Gail Jefferson (2004). The following notational features were used in the transcripts presented in this chapter. The following punctuation marks depict the characteristics of speech production, not the conventions of grammar.

bu-u-	hyphens mark a cut-off of the preceding sound.
[	a left bracket indicates the overlap onset
]	a right bracket indicates where the overlapped speech ends
=	no break or gap between turns

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(0.3)	number in second and tenths of a second indicates the length of an interval
(.)	brief interval (less than 0.2) within or between utterances
so:::rry	colon represents a sound stretch of immediately prior sound with increases in the number of colons indicating the longer prolongation
you	underline indicates emphasis
↑	shifts into high pitch
↓	shifts into low pitch
DOG	loud talk is indicated by upper case
hey?	a question mark indicates a rising intonation
dog¿	a Spanish question mark indicates a substantial rise that ends up in the mid to mid-high end of the speaker's range
here,	a comma indicates a continuing intonation with a slight rise
did.	a full stop indicates falling, final intonation
boots	underline indicates stress or emphasis via pitch or amplitude. The longer the underline the greater the emphasis
°soft°	softer, quieter sounds
.>quick<	talk is speeded up
<slow>	talk is slowed down
.hhh	a dot prior to h indicates an in-breath
hhh	indicates an out-breath
( )	the talk is not audible
(house)	transcriber's best guess for the talk
(do)/(dig)	two equally possible hearings
together!	an exclamation mark indicates an animated tone
dr-dirt	a single dash indicates a noticeable cut off of the prior word or sound
((walking))	annotation of non-verbal activity