Table 5.3 Fifth Grade Students' 4C's for the Book, *Holes*

Connections	Challenges
• I get blamed at home for things I do not do and I usually don't get to explain my side of the story. Like Stanley I am always in the wrong place at the wrong time! • I'm reading a book called *Reaching the Summit*. It is the story about Sir Edmund Hillary. It's about people surviving with very little resources while climbing Mt. Everest. Stanley and Zero too had to survive on just onions when they were up in the mountain. • It says in the book, "It felt good to blame someone." I too sometimes like blaming my brother for things that I do. • Text to Text—*Cherub* and *Holes*. In *Holes*, whenever they talked about the past incidents, the book had a different font. It was the same in *Cherub* too. • Mr. Pendanski said that Zero had nothing in his head. I too have been called "Stupid."	• Why did Stanley think he would be going to a fun camp when he was in trouble? • Everyone thought Zero was "Nothing," but he never got to show anyone who he really was except Stanley. • How did the people at Camp Green Lake assume that hard labor would build one's character? • Why was the reference made to "It's not a girl scouts camp" innumerable times? – Girls are not inferior!!!!!
Concepts	**Changes**
• Never give up trying! Try, try, try again, you'll succeed. • When you live your whole life in a hole, the only way you can go is up. • Friendship • Perseverance • Belief in oneself • Leadership • Determination • Give a friend a helping hand. • Bravery • What goes around, comes around. • Never judge a book by its cover.	• The story clearly states the prejudice people had back then (even now, maybe less) regarding colored people. • Kate used to be a wonderful woman, till Sam's death changed her completely. Certain incidents can change the way you think forever. • I thought that Stanley's father was silly to be doing stuff with sneakers but at the completion of the book I thought of him in a different way. • After Stanley caught the shoes "falling" from the sky, everything changed for him. He got arrested, taken to Camp Green Lake and had a tough time. Even then he thinks of what happened as "Lucky"!!! • Halfway through the book I realized that Zero was not a white person.

THE MICRO LAB PROTOCOL

Reflect individually on the issue or topic being examined, then working in triads:

- *Share:* The first person in the group shares for a set time (usually 1–2 minutes). The other members listen attentively without comment or interruption.
- *Pause* for 20–30 seconds of silence to take in what was said.
- *Repeat* for persons two and three, pausing for a moment of silence after each round.
- *Discuss* as a group (5–10 minutes), referencing the comments that have been made and making connections between the responses of the group.

The Micro Lab Protocol was originally developed by Julian Weissglass for the National Coalition for Equality in Education as a structure for discussion. What is presented here includes adaptations made by Tina Blythe. The Micro Lab is a simple structure for ensuring that all voices are heard and ideas attended to before the topic of focus is discussed. Though the Micro Lab isn't a thinking routine per se, that is, it doesn't prompt specific thinking moves, teachers have found it to be a valuable tool for making students' thinking visible and a useful structure for directing group conversation. Consequently, the Micro Lab has become a routine in many classrooms and staff rooms dedicated to creating cultures of thinking.

Purpose

Teachers often ask groups to discuss ideas in classrooms with more and less success. Often groups get sidetracked and/or a single person dominates while others sit back. The Micro Lab is designed to ensure equal participation and make sure everyone contributes. The rounds of sharing are timed by the teacher or facilitator. This keeps all groups on track and focused. The moments of silence provide time to think about what the last speaker said and a chance for the entire group to "recenter" itself. Groups of three provide for optimal interaction without asking people to be silent for long periods.

Once all ideas have been shared, an open discussion of the small groups occurs. Discussants now can make connections between ideas, ask clarifying questions, highlight themes, and further explore the topic. Teachers have found that regular use of this protocol helps students to be better listeners and to learn how to build on and connect

to others' ideas. Some students learn how to present their ideas and talk from their own perspectives with greater confidence rather than relying on others.

Selecting Appropriate Content

As with any discussion, content matters. Meaningful discussions emerge from meaningful content. The possibility of differing perspectives also adds to the richness of discussion. The Micro Lab can be used to discuss and explore perspectives on current events and political issues, to reflect and share what one has learned thus far, to explore and process plans one has made, to discuss possible problem-solving strategies, and more. Other uses include reflecting on oneself as a learner: How are you becoming more accomplished as a reader or writer? Where do you want to see yourself improve? Whatever the case, if the discussion is to be more than sharing, you need to think how the discussion is likely to benefit the learning of the members of the group.

An important component of discussion preparation is reflecting beforehand. In some respects this preparation can be thought of as the content, as it is what students "bring to the table." If the members of the group don't bring something to the table, the banquet of discussion will be lacking. In helping students to bring something to the table, the Micro Lab can be combined with another thinking routine to structure students' reflection. For instance, after a field trip a teacher might have individual students reflect in writing using Connect-Extend-Challenge or the I Used to Think . . . , Now I Think . . . routine.

Steps

1. *Set up.* Inform learners of both what you want them to discuss and what you are hoping they get out of these discussions. Decide how long you will give learners to reflect (usually done in writing). Depending on the amount of material you are asking learners to synthesize, usually 5–10 minutes is sufficient. Explain the protocol, its purpose, guidelines, and how much time will be given for each round of sharing and silence. Form groups of three and have groups number off so that they will know who goes in which order. Inform the groups that you will act as timekeeper.

2. *Share.* Announce that Number 1s begin sharing for the assigned time (state a definite time between 1 and 2 minutes). No one speaks except the speaker. Other group members listen attentively and may take notes if they feel it will be useful. Call time by ringing a chime or bell if possible. Call for the groups to be silent.

3. *Call for silence.* Allow 20–30 seconds of silence for everyone to take in what was heard. Some people are uncomfortable with silence, but with time they come to appreciate its calming and centering effect. At the beginning, you may encourage people to just mentally review what they heard.

4. *Do rounds 2 and 3.* Repeat steps 2 and 3 above until each member of the group has shared his or her thinking. Note: If the speaker finishes before time is called, the group spends the rest of the time reflecting in silence.

5. *Commence discussion.* Announce that groups can now have an open discussion for the predetermined time (usually between 5–10 minutes). Encourage groups to begin by making connections between what others have said or asking questions of clarification. Call time by ringing the bell or chime.

6. *Share the thinking.* As a whole group, ask students to reflect on the protocol itself and how they felt it facilitated their thinking about the issue or topic.

Uses and Variations

One might not think a discussion protocol would find much play in a mathematics class, but Manuela Barden at Mentone Grammar and Linda Shardlow at Methodists Ladies College, both in the greater Melbourne area, have found multiple uses for it in their middle and high school classes respectively. Manuela found that the Micro Lab helped students to be more independent. After giving her seventh graders an investigative geometry task, she gave students 5 minutes to think about the task, review their texts, and write down any questions or issues that came up for them. Students then completed a Micro Lab with 1-minute rounds, 20 seconds of silence, and 5 minutes of discussion as a way of clarifying the task. Manuela found that her students accomplished the task with much less direction and more confidence than in previous years.

In Linda Shardlow's grade 12 class, she used the Micro Lab to structure more collective problem solving and better talk about mathematics. Having done the protocol once, when all students worked on the same problem, Linda thought the Micro Lab would be better if students were bringing different but related thinking to the table. Working in groups of three, each group was given a set of problems related to the topic of functions. Decisions were made about who would do which, and students worked for 10 minutes before entering the Micro Lab rounds. In the rounds, students explained what they did, why they did it, and where they got stuck or were confused. Silence was used for note taking. Linda found that the discussions that followed were rich and that students showed good insights into one another's problems and were making connections between them. Afterward, a senior girl commented, "I really had to think about what we were doing instead of just copying stuff down and, even though I didn't think I would have the

confidence to explain to others how I did things, I did though. So, it made me feel really good about myself."

As instructional coaches and developers, we often use the Micro Lab to facilitate group reflection on the learning. One prompt we frequently use is, "How is your classroom changing as a result of your work with these ideas?" The prompt helps focus learners on the effect our professional development actions are having, and the discussions lead to lots of sharing, questioning, and clarification that helps to move us forward.

Assessment

The Micro Lab, existing as it does in a moment of time, presents both opportunities for and challenges of assessment. On the one hand, the individual sharing and subsequent conversations make thinking visible; on the other hand, it is only possible to hear snippets of these, especially when one is facilitating the rounds. Consequently, it may be useful to determine what you anticipate to be the outcome of the conversation, such as a plan, an increased level of understanding of the topic, a distillation of important ideas, or something else, and ask students to document this at the conclusion, much the way Alan Bliss did with his students in the Picture of Practice described following.

However, do try and listen in on groups as much as possible. You may want to target just one group to stand beside and listen to. This can give you a sense of the developing conversation and where and how ideas are being built. Are students able to make connections to what others have said? Do they ask probing questions of clarification where needed? Are students able to build on one another's ideas to deepen their own understanding? Can they spot ideas both different to and similar to their own?

Tips

Although the Micro Lab can be used by simply posing a question and giving students a bit of think time before talking, giving students adequate time to write and think before starting often ensures better contributions. This also creates a record that you can go back to later if you want to see what individuals were thinking. When learning the protocol, start with shorter times for talk, silence, and discussion, lengthening these as students become more practiced. Be consistent and deliberate in enforcing the rules of no interruptions and a brief period of silence. If these norms are broken, then the focus on listening and building on others' ideas will be lost as well. Finally, don't be afraid of the silence. As teachers we are so used to filling up all the airtime that we seldom have silence in our classrooms. Tell students the purpose of the silence is to take in what was just said and to recenter, getting ready to hear the next speaker with a pair of fresh ears, not merely to be quiet. Be sure to debrief with your students how the silent periods worked for them.

A Picture of Practice

At Melbourne Grammar School, Alan Bliss and his colleagues begin the school year teaching an interdisciplinary unit involving history, science, and geography to their eighth graders. The nine-week unit explores the idea of Atlantis. Specifically, asking the question, "Can the island of Santorini be Atlantis?" Alan explains the unit's organization. "We have a common, nondisciplinary specific introduction to the unit and then each of the three disciplines explores a different element of the puzzle. At the completion of the unit, students are asked to combine their learning across all three subjects to respond to the key question."

Although the unit has always been successful and engaging for students at the all-boys school, Alan noted that "over the last few years, we have noticed that one of the key issues arising for students is how the subjects link together." In addition, the teachers struggled with an issue common to all long-term, project-oriented work: "How can we most effectively enable a scenario where students' developing understanding can be made visible and thereby assessed?"

After Alan had worked with the Micro Lab as a learner himself in a professional development setting, he commented, "The Micro Lab protocol seems to be an ideal structure for enabling the boys to articulate their current understanding and so provide an opportunity for them to check on that understanding and misunderstandings. It also seemed a sound structure to enable students to share their thinking with their peers and to build their understanding and knowledge using each other as a resource, effectively increasing student talk in the learning process."

Using the Micro Lab also fit into a larger goal of Alan's to develop his middle school's facility at independent discussion. In an article entitled, "Enabling More Effective Discussion in the Classroom" (Bliss, 2010, p. 1), Allen wrote, "Over the last five years, I've begun to see more clearly that discussion in class can be a critical step for students in both developing and checking their understanding; and for me, as teacher, in checking on student understanding and misunderstanding."

Because he was interested in developing new thinking and gaining fresh perspectives, Alan decided to try the Micro Lab by combining two different classes. This would allow him to form groups of four students, two students from each class. However, this also meant the classes would need to meet in the library study area

to facilitate the large group of sixty students. Alan began by giving his students 5 minutes to write individually about the question, "Can Santorini be Atlantis?" Each group member then presented his or her ideas and reasoning for 1 minute, followed by 20 seconds of silence. Once everyone had shared, there was a 5-minute period of discussion. Alan followed up the discussion period with another 5-minute period of reflective writing on the key question.

Because the group was so large and he was teaching the routine for the first time, Alan wasn't able to move around and listen to all the conversations as effectively as he would have liked. To gain a better sense of what students had taken from the conversations, he had students post their thoughts on the class wiki (see Table 5.4 for a short excerpt from this online conversation). In reading through these, Alan noted, "The wiki entries revealed that some students had developed appropriate disciplinary thinking in the three subjects that they were able to apply to their thinking about the topic. What was surprising was that some students were able to indicate that their thinking had been deepened through the sharing that took place within the protocol."

As a first round, Alan liked the way the protocol increased the level of participation among students. As a result, he continued to repeat this structure every two weeks of the unit, gradually increasing the time for writing and talk in the protocol as students were asked to integrate more and more ideas from their disciplinary studies.

In reflecting on the overall process, Alan remarked, "I have been pleased generally with the manner in which the protocol plays out in the classroom. Students have generally been cooperative, although the notion of students sticking to the *noninterruption* element of the individual talking section has proven a challenge. My anecdotal listening to the occasional discussion at the last stage of the protocol has indicated that it may be necessary to introduce some more structure to that aspect; to suggest some things which might be worth discussing as a natural outcome of the individual presentations, or to be a little more insistent on focusing on issues which arise or clarification questions."

The Micro Lab is just one of the routines Alan uses regularly in his classroom. "Using routines over the last few years seems to have led to student acceptance that on occasion they will be asked to think, consider, reason rather than be told. I would like to think also that they see the routines as a method of focusing thinking, even if they are not always able to articulate it. So, when a student says, "Are we using Micro Lab?" it might indicate that he recognizes that the process is of critical importance leading to understanding."

Table 5.4 Grade 8 Students' Wiki Conversation on Atlantis

Carter said (at 11:28 am on May 19): seriously Santorini CAN be Atlantis but that doesn't mean it is Atlantis.

Eric said (at 11:30 am on May 19): Yes, I think Santerini could be Atlantis becuase of many things

- Geographical Reference near Libya, Egypt
- There were a lot of other things on the list like Hot and Cold Water, Bulls, Sheltered from The North.
- And a very important one the circular shape of the island
- Volcanos Tsunamis and Earthquacks all happened

Thats why Santerini could be Atlantis

Malcom said (at 11:31 am on May 19): Can Santorini be Atlantis? Yes

Proof:

1) It is in a correct position in relation to possilbe pillars of Hercules location
2) Has a volacno in the middle that erupted at around the supposed time of Atlantis and so would support the theory that Atlantis was destroyed in an eruption. A volcano could also help support the theory that Atlantis had hot water plumbing: the water would be heated in natural springs then pumped down to where it was needed
3) It is in a correct location in relation to egypt and Lybia which was where the story came from and where elaphants that were mentioned in plato's dialogue could have originate
4) Is closé to Athens supporting the fact that the Antheans could have possilby gone to war with the Atlanteans
5) The island is circular, slopes up to a peak and has a base rock that erodes quckly suggesting that the island was once much larger
6) Because of the volcano the soil would be very nutrutious allowing for food to be plentiful and for the civilisation to flourish
7) The dialogue mentions an impassable layer of mud: this could be the volcanic resedue after the volcano

Chris said (at 11:31 am on May 19): I don't think that Santorini can be Atlantis because the only thing that they have in common is being cicular. But think about it—if you only saw the top of Crete from a boat, it would look circular, wouldn't it?

Dr. Alan Bliss said (at 2:43 pm on May 19): I am impressed with Eric's and Malcom's considered responses, mostly because they have supported what they say with evidence. Doesn't mean that they are correct but their method of responding is logical.

Deshi said (at 2:06 pm on May 24): Eric, i think your right about Santorini fitting into Libya and Asia. But consider this option, how about if Libya and Asia were the size of Santorini. I know there not now, except maybe when Plato lived Libya and Asia could have been a lot smaller making them around the same size as Atlantis.

Note: Punctuation and spelling are reproduced as in the original.