Appendix 1. The videos used to represent the core practice, eliciting, interpreting and using student thinking

*Description of the videos:*

|  |  |
| --- | --- |
| **Video Episode A (2:23)** | The teacher elicits students’ thinking by asking them to respond to a question in the preparatory task. The teacher interprets the students’ work and selects the positive and negative views to the questions. The teacher uses a non-interactive approach. The teacher highlights some words in the PPT and evaluates the chosen students’ work by directly telling the students that both views could be accepted. |
| **Video Episode B (2:01)** | The teacher elicits students’ thinking by asking them to respond to a question in the preparatory task. The teacher interprets the students’ thinking in the preparatory task and selects the wrong answers in the student work, then addresses their mistakes during the class. The teacher asks one or two students to interpret the selected answers by asking why the answers are not reasonable. Although the interaction involves two students, the contribution is very limited, and the class interaction is authoritative in nature. |
| **Video Episode C (4:02)** | The teacher elicits students’ ideas about whether they think that Barry Marshall’s test is scientific. She gives the students some time to think about the question. She then invites the students to vote and uses the press for reasoning move to develop the students’ reasoning. The students who vote for both sides are asked to express their thinking. This part of the discourse is dialogic, and the teacher does not evaluate the student ideas. She also explicitly re-voices the students’ ideas by saying “let me rephrase what you said.” She interprets the students’ ideas and highlights the word “evidence” in one of the responses. Finally, she mentions to the students that the test is not scientific enough as the sample size is too small, and the test does not have a control experiment. |

*Transcripts of the videos:*

|  |
| --- |
| **Video Episode A (2:23)** |
| ***Transcript:*** |
| **1**  **2**  **3**  **4**  **5**  **6**  **7**  **8**  **9**  **10**  **11**  **12**  **13**  **14**  **15**  **16**  **17**  **18** | T: According to the exercise you have done before these lessons. We have asked you these questions. A scientist cut an amoeba into 2 halves and found that the other part… Just the experiment we have mentioned before. Ok? I asked you is this conclusion valid. You should explain your answers. For your class, ok, 10 students say “yes”, we can conclude this. But 30 of you think that, “Oh, we cannot conclude.” Which one is correct? According to this case, after you have learnt this part.  T: Why do you say yes? Ok, I can get the conclusion. This is the idea come from... Said that there were only one variable different from these samples that is with or without nucleus. As the part with a nucleus survived while the part without one didn’t survive, we can conclude that the absence of nucleus caused the part’s death. So, as you have learned, the scientific method in form 3, ok? Because this experiment, is it a fair test? Yes, because only one difference you can find, right? So, the nucleus is necessary for the survival of cells, because this is very simple test. We can draw the conclusion from this test.  T: But some of you say no. You say no. I’ll let you see later. Ok, it is because he needs to test more cells to prove that nucleus is necessary for the survival of the cells. Only one cell, amoeba, in the experiment is not convincing. Said by Diane. Ok? It is also correct because the question is not asking you, cause the death of amoeba itself. But I have bold and italic the word “cells”. So, only one type is not convincing yet. Ok? So both of your answers are correct, I can say that. Ok? You have your point, ok? |

|  |
| --- |
| **Video Episode B (2:02)** |
| ***Transcript:*** |
| **1**  **2**  **3**  **4**  **5**  **6**  **7**  **8**  **9**  **10**  **11**  **12**  **13**  **14**  **15**  **16**  **17**  **18**  **19**  **20**  **21** | T: This question asked you what should be doubted on B. Let’s see your answers. One of you said that, perhaps the dog might have diabetes before its pancreas was removed. Do you think that there are any problems with this answer? Do you think it is correct? It seems that I have already given you some tips. It’s not quite true, why? Do you need to refer to the question again? Look at the question. This student suggested that B should doubt on the dog itself that it might have diabetes before its pancreas was removed. Read the question. Do you find it reasonable to say that? We have to be skeptical, but we also need to be reasonable. It is not good if it is not reasonable. Do you find it reasonable? Why is it not reasonable? What do you think, Chan Yin Lam? I have given you a lot of hints. Please read the question again.  S: Inaudible  T: Right. The question itself has already stated clearly. What does it say? It says that it is a healthy dog. Which means it was fine before the removal of pancreas. If you insist to say it was sick beforehand, that’s contradicting. Another students suggested this. Perhaps human are different from dogs. The student was suspicious that human are different from dogs. How can you draw this conclusion? I would say this is neither a good answer. Why? What is the problem with this doubt? Chong Bo Chu? Is there anything wrong with that? Perhaps dogs are different humans?  *[After 3 seconds]*  T: Hey the question does not mention about human being. Up till now, it only says that the removal of pancreas will lead to diabetes. It hasn’t mentioned whether it is concerning dog or human, has it? Actually, it hasn’t further touched on human yet. We can at least prove first it is true for dogs. Am I right? |

|  |
| --- |
| **Video Episode C (4:02)** |
| ***Transcript:*** |
| **1**  **2**  **3**  **4**  **5**  **6**  **7**  **8**  **9**  **10**  **11**  **12**  **13**  **14**  **15**  **16**  **17**  **18**  **19**  **20**  **21**  **22**  **23**  **24**  **25**  **26**  **27**  **28**  **29**  **30**  **31**  **32**  **33**  **34** | T: So my question is, are you convinced by Marshall's finding that gastric ulcer is caused by this bacteria? Was his test scientific? He really proved that. He tested it on himself and he recovered by taking antibiotics. What do you think? I give you one minute to think about it. By using this method, he really did it. Was it scientific? Why was it scientific or anything that you think was not scientific?  *[Waiting for 1 minute]*  T: Alright. Please show your hands according to your thought. If you think it is scientific, it is scientific. If you think that it is not scientific, just raise your hand for your choice (just keep your choice). Now, let see in class 4E. He is a great scientist. He did this. Was his test scientific? It’s (‘Scientific’) the key word. How many of you think that his thought or what he did is scientific? Raise up your hand please. You don't need to look around. It's your own thought, right? Remember, you can be right. Raise (your hands) higher please, so that I can count.  *[Students raised their hands]*  T: Alright, you think that his test is scientific. 1,2,3,4,5,6,7,8,9,10,11. (One, two, three… Eleven.).  T: How many of you think that his test is not scientific? Raise up your hand. 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15, (One, two, three… Sixteen.). Ok, more than 20. So, you think that his test is not scientific. Why?  S: Because he only did the test to himself. Because it may be caused by himself (Only he himself would had the symptoms), so he needs to do the test on other people too. If they also get the disease, then the hypothesis is true.  T: Let me rephrase what you said. You mean he has to test it on other people as well, not only on himself. Although his hypothesis is very logical and creative, he has to use some scientific methods to collect data to prove it. Thank you. Ng Ching Yung, you said that his investigation is scientific, why?  S: I think it is because he tested it on himself. He really got gastric ulcer.  T: Ok. Thank you. So, you thought that he really got gastric ulcer. He really did it and before he was healthy. What about you? You also raised your hand saying that this method is scientific. Why?  S: He had evidence to prove that his hypothesis was correct. After he got gastric ulcer, he took the antibiotics and he recovered.  T: Everything seems to be very logical. He didn't have that (before the test). He was healthy. After he ingested the bacteria, he developed gastric ulcer. And he cured himself by taking in antibiotics. So, everything seems to be so logical, right? She mentioned about evidence. That's a very good word, evidence.  *[Teacher was writing on the blackboard the word ‘evidence’]*  T: However, let's see. In fact, his test was not scientific. Why? Yes, he had evidence. But the evidence was not adequate. The sample size was too small. It does not have a control experiment. |

Appendix 2. Talk moves adapted from Chen (2020)

|  |  |
| --- | --- |
| **Goal 1: Help individual students share, expand, and clarify their own thinking** | |
| * **Say More** | Ask students to expand on their own idea by saying more:  “Can you say more about that?”; “What do you mean by that?”; “Can you give an example?”. |
| * **Revoice** | Revoicing students’ reasoning and giving them the opportunity to verify:  “So, let me see if I’ve got what you’re saying; Are you saying…?” (always leaving space for the original student to agree or disagree and say more). |
| **Goal 2: Help students listen carefully to one another** | |
| * **Restate** | Ask students to repeat or rephrase the ideas of others:  “Who can repeat what Javon just said or put it into their own words?” (After a partner talk); “What did your partner say?”. |
| **Goal 3: Help students deepen their reasoning** | |
| * **Press for Reasoning** | Ask students to explain their own reasoning:  “Why do you think that?”; “What’s your evidence?”; “How did you arrive at that conclusion?”; “Is there anything in the text that made you think that?”. |
| * **Challenge** | Give students a challenge or counter example  “Does it always work that way?”; “How does that idea square with Sonia’s example?”; “What if it had been a copper cube instead?” |
| **Goal 4: Help students think with others** | |
| * **Agree/**   **Disagree** | Ask students to apply their own reasoning to someone else’s reasoning:  “Do you agree/disagree? (And why?)”; “Are you saying the same thing as Jelya or something different, and if it’s different, how is it different?”; “What do people think about what Vannia said?”; “Does anyone want to respond to that idea?”. |
| * **Add On** | Prompt students to extend the ideas of others:  “Who can add to the idea that Jamal is building?”; “Can anyone take that suggestion and push it a little further?”. |
| * **Explain Other** | Ask students to explain what someone else means:  “Who can explain what Aisha means when she says that?”; “Who thinks they could explain in their own words why Simon came up with that answer?”; “Why do you think he said that?”. |

Appendix 3. Rehearsal task sheet

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| --- |
| ***Chemistry:***  Imagine you are now going to teach the topic *Acids and Bases* in a *Secondary 4* class at the beginning of your next Tuesday’s class after you have taught your students the following.   * Meaning of concentrated and dilute acids * Meaning and examples of strong and weak acids * Examples of properties of acids, including their pH value, electrical conductivity, and reaction with metals metal carbonates   You have read the textbook pages provided. After reading the textbook, you have set the following learning objective for your students.  *“Explain the differences in acid properties between acids of different strengths”*  You also plan to enact the core practices (e.g., eliciting, interpreting and using student thinking) and use tools such as talk moves to sustain the conversation in your class. Take up to 60 minutes to prepare a plan for a 10-minute class.  *Notes:* You can make use of the mini-whiteboard, visualizer or other materials (e.g., videos, PPT) during the rehearsal.  Paper and pens are provided if you want your students to work on some tasks.  You can refer to the students by name by referring to their name tags. |

|  |
| --- |
| ***Biology:***  Imagine you are now going to teach the topic *Transport of substances in humans* in a *Secondary 4* class at the beginning of your next Tuesday’s class after you have taught your students the following:   * A general plan of the circulatory system and lymphatic system * The composition and functions of blood, tissue fluid and lymph * The structure and functions of different types of blood vessels   You have read the textbook pages provided. After reading the textbooks, you have set the following learning objective for your students.  “Explain how the structure of the heart is adapted to its functions”  You also plan to enact the core practices (e.g., eliciting, interpreting and using student thinking) and use tools such as talk moves to sustain the conversation in your class. Take up to 60 minutes to prepare a plan for a 10-minute class.  *Notes:* You can make use of the mini-whiteboard, visualizer or other materials (e.g., videos, PPT) during the rehearsal.  Paper and pens are provided if you want your students to work on some tasks.  You can refer to the students by name by referring to their name tags. |

Appendix 4. Video Reflection Task

Name (in full):

English Name:

University No.:

***Part 1 - Teacher point-of-view (POV) footage***

(a) What did you notice in the video that escaped your notice during your teaching rehearsal and/or the review of your own video (i.e., from the video recorded by the camera at the back)?

(Number your observations as follows: 1. I noticed that..... 2. I noticed ....)

(b) What did you learn from reviewing and analyzing your own POV video in terms of eliciting, interpreting and using student thinking?

***Part 2 - Student point-of-view (POV) footage***

(a) What did you notice in the video that escaped your notice during your teaching rehearsal or during your review of your own video and the teacher POV video?

(Number your observations as follows: 1. I noticed that..... 2. I noticed ....)

(b) What did you learn from reviewing and analyzing the student POV video in terms of eliciting, interpreting and using student thinking?

***Part 3 - Your question***

(a) Are there any questions that you want to ask us?

Appendix 5. Observation Record Form

Name (in full):

English Name:

University No.:

*Your peer’s name:**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

Provide *evidence* to evaluate the effectiveness of your peer’s practices of eliciting, interpreting and using student thinking.

***Evidence:***

|  |  |  |
| --- | --- | --- |
|  |  |  |

Appendix 6. Student actor role cards

***Chemistry:***

|  |  |
| --- | --- |
| ***Role*** | ***Your characteristics*** |
| **Attentive student** | You are an attentive student and always look at the teacher, but you will not offer to answer his/her questions. You are always co-operative and write a lot when the teacher asks you to work on a task. |
| **Disruptive student** | You are a partially attentive student. You will sometimes look at the teacher, but not always. When the teacher speaks a lot, you will start sleeping and you will try to talk to the peers next to you when there is a chance. You will not co-operate with your peers during group/pair work. If you are asked to write down something, you will write down something irrelevant/draw something else. |
| **Questioner** | You are a partially attentive student. You will sometimes look at the teacher, but not always. You, in general, can follow what the teacher wants to teach, but you always have some questions in your mind. You are co-operative and are willing to follow your teacher’s instruction. If you are asked to write down something you will write something relevant and accurate. You are also willing to contribute in group/pair work.  At appropriate points, please ask one or some of the following questions:   * Will a strong acid produce more hydrogen gas when reacting with Mg than weak acid? * Why does ethanoic acid have weaker electrical conductivity than hydrochloric acid? An ethanoic acid molecule has three more hydrogen atoms than a molecule of hydrogen chloride * Why is ethanoic acid a weak acid? It has four hydrogen atoms in its molecule. * Why can a weak acid react with metal completely? They can only partly ionize in water to form hydrogen ions. |
| **Silent student** | You do not want to participate in class. You won’t look at the teacher frequently. You may also do something off task (e.g., drawing on your own notebook). If your teacher asks you to answer questions or vote, you are reluctant to do it. You will stop for a few seconds and not answer his/her questions and look confused. You will try to follow suit when voting. If you are asked to write down something you will write something minimum though relevant, but you will be more willing to contribute in a group/a pair. |
| **Student with faulty understanding/ misconceptions** | You are an attentive student and always look at the teacher. You are a low ability student and you find the lesson confusing, but you have a very co-operative attitude. You will try to answer your teacher’s questions, but you may find it difficult to answer sometimes. You will write down something relevant but often with faulty understanding/misconceptions. If you are asked to vote, you will be operative and try your best to select the right answer, but your reasons behind the right answer is often wrong (i.e., if teacher asks you to explain, try to provide a wrong reason/illogical reasoning).  The following shows a list of misconceptions/misunderstanding (Pan & Henriques, 2015).   * Acid strength will increase if the hydrogen ion concentration is increased * Strong acid has a higher concentration of hydrogen ions and hence higher pH. Weak acid has a lower concentration of hydrogen ions and hence lower pH. * More hydrogen ions help conduct electricity. More acids can have a better electrical conductivity.   Strong acids ionize in water to give more hydrogen ions than weak acids, so strong acids react with magnesium to form more hydrogen gas than weak acids.   * Strong acids have a high concentration of hydrogen ions and are the same as concentrated acids. |
| **Target student** | You are an attentive student and always look at the teacher. You always offer to answer the questions posed by your teacher. When your teacher does not nominate you to answer questions, you will try to answer his/her questions by shouting out the answer. You are always co-operative and write a lot when the teacher asks you to work on a task. |

***Biology:***

|  |  |
| --- | --- |
| ***Role*** | ***Your characteristics*** |
| **Attentive student** | You are an attentive student and always look at the teacher, but you will not offer to answer his/her questions. You are always co-operative and write a lot when the teacher asks you to work on a task. |
| **Disruptive student** | You are a partially attentive student. You will sometimes look at the teacher, but not always. When the teacher speaks a lot, you will start sleeping and you will try to talk to the peers next to you when there is a chance. You will not co-operate with your peers during group/pair work. If you are asked to write down something, you will write down something irrelevant/draw something else. |
| **Questioner** | You are a partially attentive student. You will sometimes look at the teacher, but not always. You, in general, can follow what the teacher wants to teach, but you always have some questions in your mind. You are co-operative and are willing to follow your teacher’s instruction. If you are asked to write down something you will write something relevant and accurate. You are also willing to contribute in group/pair work.  At appropriate points, please ask one or some of the following questions:   * Is it right to say the blood pressure inside the ventricle is higher than that in the auricle to pump blood to all parts of the body? * What will happen if there is a hole in the septum? Will the patient’s blood become blue in color? * Is heart beat a reflex action? It seems that it cannot be controlled by will. |
| **Silent student** | You do not want to participate in class. You won’t look at the teacher frequently. You may also do something off task (e.g., drawing on your own notebook). If your teacher asks you to answer questions or vote, you are reluctant to do it. You will stop for a few seconds and not answer his/her questions and look confused. You will try to follow suit when voting. If you are asked to write down something you will write something minimum though relevant, but you will be more willing to contribute in a group/a pair. |
| **Student with faulty understanding/ misconceptions** | You are an attentive student and always look at the teacher. You are a low ability student and you find the lesson confusing, but you have a very co-operative attitude. You will try to answer your teacher’s questions, but you may find it difficult to answer sometimes. You will write down something relevant but often with faulty understanding/misconceptions. If you are asked to vote, you will be operative and try your best to select the right answer, but your reasons behind the right answer is often wrong (i.e., if teacher asks you to explain, try to provide a wrong reason/illogical reasoning).  The following shows a list of misconceptions/misunderstanding (Salem A, 2007):   * The heart valves help to pump blood within the heart * The brain stimulates the heart to initiate its beating * The heart beat is a reflex action * Blood from one side of the heart goes to right side of the body and blood from the other side goes to the left side of the body * The heart strings pull the valves to make them close |
| **Target student** | You are an attentive student and always look at the teacher. You always offer to answer the questions posed by your teacher. When your teacher does not nominate you to answer questions, you will try to answer his/her questions by shouting out the answer. You are always co-operative and write a lot when the teacher asks you to work on a task. |

Appendix 7. Final Survey

The workshops were funded by the *University Teaching Development Grant* and we are interested in including your workshop learning experiences in the final report and in our research. It would be very helpful of you to tell us what you think about the workshops.

***Directions:*** Answer the following questions.

1. (a) In your view, how has *your ability to enact the core practice of focus (i.e., eliciting, interpreting, and using student thinking)* changed after attending the noticing and rehearsal workshop?

Please evaluate your ability on a 7-point scale (1 = Very Incompetent; 2 = Moderately Incompetent; 3 = Slightly Incompetent; 4 = Competent, 5 = Slightly Competent; 6 = Moderately Competent; 7 = Very Competent)

*Before joining the workshops:*

*After joining the workshops:*

(b) Briefly explain your rating:

2. To what extent do you think each of the following experiences was useful in enhancing your *ability to enact the core practice*, *i.e.,* *eliciting, interpreting, and using student thinking*? (1 = Not at all useful; 2 = Slightly useful; 3 = Somewhat useful; 4 = Very useful and 5 = Extremely useful)

|  |  |  |
| --- | --- | --- |
|  | | **Usefulness (1-5)** |
| (a) | Viewing, discussing and analyzing a series of published videos showing teachers enacting the core practice to different extents |  |
| (b) | Viewing and analyzing Mr. Mak’s video |  |
| (c) | Viewing and analyzing your peer’s rehearsal video |  |
| (d) | Viewing and reflecting on your rehearsal video |  |
| (e) | Viewing and reflecting on your point of view (POV) video footage |  |
| (f) | Viewing and reflecting on student perspective point of view (POV) video footage |  |
| (g) | Sharing of video-viewing experience with peers |  |
| (h) | Sharing and discussing metaphors representing video-viewing experience |  |
| (i) | Sharing of rehearsal experiences with peers |  |
| (j) | Performing rehearsals with student actors |  |
| (k) | Responding to student actors with different roles (e.g., target students, students with misconceptions) |  |
| (l) | Rehearsing for the second time |  |
| (m) | Reflecting on your rehearsal experiences |  |
| (n) | Watching peers teach other topics in the first rehearsal |  |
| (o) | Watching peers teach the same topic in the second rehearsal |  |
| (p) | Theoretical input (e.g., principles and strategies for eliciting, interpreting, and using student thinking) by the facilitators |  |
| (q) | Modeling of the core practice (i.e., eliciting, interpreting, and using student thinking) by the facilitators |  |
| (r) | Feedback by the facilitators on rehearsals (both immediately after rehearsals and in whole class discussion) |  |
| *Others (please specify):* | |  |

3. Identify the *3 most influential learning experiences* in the workshop. Rank them in decreasing order of influence (i.e., 1 – the most influential). Briefly explain how the experience has influenced your ability to enact the core practice.

|  |  |
| --- | --- |
| **Most influential experience**  *(e.g., (a))* | **Brief explanation of how this experience has influenced your ability to enact the core practice** |
|  |  |
|  |  |
|  |  |

4. How can the workshops be improved to further enhance your ability to enact the core practice?

5. Write down any other thoughts about the workshop that you would like to share with us.

**Thank you very much**

Appendix 8. Illustrative vignette for the teaching rehearsals

In this section, we provide a vignette to show the classroom interactions in Annie’s second rehearsal and the associated reflective discussion that was held immediately after the rehearsal. This rehearsal involved teaching a class about the structure and function of the heart (see Appendix 3 for more details). Annie first started the rehearsal by asking the students to jump for 15 seconds; this exercise was to highlight the idea that the heart muscles never fatigue. Next, she presented a PPT slide illustrating the positions of the different heart structures (e.g., the auricles, heart values, and heart tendons). She then divided the class into three groups: each group was asked to guess the possible function of one specific part of the heart and to write their ideas on a mini-whiteboard. The following transcript shows what happened after the group discussion.

Table S1. The transcript for Annie’s second rehearsal

|  |  |  |
| --- | --- | --- |
| **Turn** | **Speaker** | **Transcript** |
| 1 | Annie | How about we invite the group in the front to share first. What do you think is the function of the [heart] valve? |
| 2 | Student actor 1 | We think that the valve pushes the blood because it reminds us of a pinball game we have played before. *[S1 is using hand gestures to show how the flippers can push a ball]* We think that the valves will also work like this. |
| 3 | Annie | Pinball: where flippers push the ball up. How about … OK everyone: how about we have a vote? Who agrees with what this group has said? |
| 4 | *[Some raised their hands, and some didn’t (e.g., Student actor 2)]* | |
| 5 | Annie | OK, Student actor 2, you disagreed with what she said. Why is that? Can you tell us what you think is the actual function of the valve, if you disagree with what this group proposed? |
| 6 | Student actor 2 | Maybe… maybe they don’t… maybe the valves prevent the blood from going backwards? |
| 7 | Annie | OK, that’s another interesting idea. So, we have valves. And from this group, it is to push the blood forward and from this other group it is to prevent the blood from going backward, right? |
| 8 | Student actor 2 | Yes |
| 9 | Annie | OK. Somebody else tell me what you think about Student actor 2’s idea. Student actor 3, what do you think about Student actor 2’s idea? You agreed that it is to push the blood: how might it do that? |
| 10 | Student actor 3 | *[Student actor 3 is using hand gestures to show how the flippers can push a ball]* The action. |
| 11 | Annie | OK, when you play that *[Annie is using hand gestures to show how the flippers can push a ball]* pinball game, you need a contraction force to move that thing forward, right. You need a force to push it open. In the heart, the valve is actually not a muscle; so, it cannot contract or relax or move on its own. It’s not possible. This means that it actually cannot push the blood forward. What pushes the blood forward is the pumping action of the heart. Just like with a pump or a balloon, when you push or squeeze the heart, the blood rushes out. |

A misconception about the function of the heart valve surfaced when Annie invited student 1 who played the role of a student expressing faulty understanding (Appendix6) to share her thinking with the whole class (Turn 2). Annie used the agree/disagree move to engage other students to think with the student (Turn 3). She also deepened the students’ reasoning by pressing them to reason about their own thinking (i.e., “why is that?”, “how might it do that?”; Turns 5 and 9) and re-voiced the students’ contributions in a non-evaluative manner (Turns 3 and 7).

Annie later reflected on these classroom transactions in the post-rehearsal discussion. The discussion started with the instructor, Keith, who invited Annie to reflect on her design of the rehearsal.

Table S2. Annie’s interpretation of her second rehearsal

|  |  |  |
| --- | --- | --- |
| **Turn** | **Speaker** | **Transcript** |
| 12 | Keith | Can you talk about something that you designed deliberately [in this rehearsal as a result of the first rehearsal] and that you wanted to test out and receive some feedback on from them [the student actors]? |
| 13 | Annie | In the previous rehearsal, I asked the whole class to generate ideas about the structure and function [of the heart]. I put down some structures and functions and then asked them to just discuss in pairs how the two relate. The concept was probably too vague, and the class didn’t know what they were doing. From the suggestions made last time, [this time] I asked each group just to focus on one structure. Now I am thinking that maybe I should engage more students in the discussion. |
| 14 | Keith | So, you are thinking that you should get them to engage a little bit more. What do you mean by that? |
| 15 | Annie | When they (pointing at two student actors) vocalized some misconceptions, I only asked one student before I explained the answer myself. Maybe, I should elicit more ideas from the students. |
| 16 | Keith | Is there anything else that you want to seek their [student actors’] advice on? |
| 17 | Annie | What do you [student actors] think [about my rehearsal]? |

Above, Annie described how she acted on the comment provided to her in the first rehearsal and modified her approach to elicit student ideas (Turn 13). She also expressed dissatisfaction on how she used student thinking as she directly “explained” the answer herself after asking only one student (Turns 6, 11 and 15). After being prompted by the facilitator (Line 16), she started to seek feedback from the audience (Turn 17). The transcription relating to this discussion is presented in Table S3.

Table S3. The student actor’s comments on Annie’s second rehearsal

|  |  |  |
| --- | --- | --- |
| **Turn** | **Speaker** | **Transcript** |
| 18 | Student actor 4 | She mentioned a balloon. I thought that was quite good because the action of squeezing [a balloon] is similar to that of the action of the heart. For that analogy, if you can take more time and elaborate some more [about the action of the heart] using that analogy, I think that would be even better. |
| 19 | Keith | The analogy of squeezing the balloon. How about student actor 1? |
| 20 | Student actor 1 | She explained the misconceptions and responded to the misconception very well. |
| 21 | Keith | Can you give an example? |
| 22 | Student actor 1 | Like the valve. |
| 23 | Keith | Any more thoughts? |
| 24 | Student actor 5: | I think it is a good approach to ask for our opinions. For example, saying ‘do you agree?’ or ‘does anyone disagree?’ |
| 25 | Keith | So, you like agree/disagree. What do you think? Who was here [in the first rehearsal] last time? |
| 26 | Student actor 2 | She essentially did what she didn’t do last time. |

The student actors provided immediate feedback on different aspects of the rehearsal. Student actor 4 explained how Annie could better harness the analogy she used (Turn 11) to address the common misconception expressed by student actor 1 about the valves (Turn 18). Student actor 1 praised Annie for her explicit efforts to address the vocalized misconception (Turns 20, 22; see Turn 3). Student actor 5 further complimented her strategic use of the talk move agree/disagree, which allowed different students, including the silent student (Student actor 2; see Turn 6), to provide some reasoning for their ideas (Turn 24). Finally, student actor 2 provided feedback that reaffirmed Annie’s productive changes by saying that Annie performed better here than she did in her first rehearsal (Turn 25).

It is worth noting that this reflective discussion also opened up opportunities to highlight and discuss more spontaneous thinking by the student actors that went beyond the list provided to them (Appendix 6), as evident in the following interchange (Turn 26):

Table S4. The student actor’s spontaneous student thinking highlighted in the post-rehearsal discussion

|  |  |  |
| --- | --- | --- |
| **Turn** | **Speaker** | **Transcript** |
| 25 | Keith | I remember there were some interesting ideas (from the audience). ... Student actor 4, can you share with us [what you thought]? |
| 26 | Student actor 4 | At the beginning, she asked us why the heart might tire. I said that perhaps some of the muscles do not work. She then mentioned that the auricles and ventricles should contract and relax together. |
| 27 | Keith | The heart moves in sequence: that’s quite an interesting idea, isn’t it? I had also not heard of that. |

To summarize, the rehearsal provided a chance for the PSTs to try out talk moves in two attempts; they could turn feedback in the first rehearsal into actions for further inquiry in the second rehearsal. The reflective post-rehearsal discussion provided opportunities for the PSTs to reflect on the use of different approaches to elicit and use student thinking; to seek feedback from student actors; and to discuss emergent student thinking. The facilitators deliberately solicited views from the student actors to highlight interesting student thinking in the post-rehearsal discussion. In this way, the PSTs could develop the disposition of attending to student thinking and learning when reflecting on their own instruction.