Adapting SLH activities: adjustments for younger students

To customise curriculum materials for younger students, teachers need to consider the particular knowledge and skills that their younger students have (Grossman & Thompson, 2008). Strategies teachers can use include explicit scaffolding techniques, such as modelling, giving advice and coaching, that are developmentally appropriate to guide and support younger students to consider ideas just beyond their existing ideas. They can support students while they use a new idea until it makes sense, and then it can be incorporated into their thinking (Harlen & Qualter, 2014).

The research

This project was undertaken over one term to investigate how teachers at different levels of schooling used and adapted Science Learning Hub (SLH) resources for their science teaching. The project involved six teachers from four schools comprising year levels 3 to 10. Two teachers were specialist science teachers. Data was collected through videotapes, audiotapes, observations, field notes, interviews, student work and teaching materials.

This research brief focuses on how Mary and Cilla adapted a colour and taste activity aimed at year 7 and 8 students to suit their younger year 3 and 4 students.

Findings

Mary and Cilla used the Colour and taste activity with their year 3 and 4 students. In this activity, students undertake two experiments: an investigation of the relationship between colour and flavour and an investigation into the relationship between intensity of colour and intensity of flavour.

Colour and taste activity

Colour and taste activity

Adapting a colour and taste activity for younger students.

Colour and taste activity

“I used the same colour and taste activity from the SLH, and I adapted it by not doing the whole thing at once. I wouldn’t have wanted to do any more in one lesson.”

Mary and Cilla adapted the activity to suit their younger students by:

- guiding students through each step of the colour and flavour experiment (Cilla and Mary)
- excluding the intensity of colour experiment (Cilla)
- simplifying the intensity of colour experiment (Mary)
- reducing the amount of information presented in one lesson (Mary).

Guiding students through steps of an investigation

Mary and Cilla guided their students through each step of the colour and flavour experiment.

Cilla clearly explained each step: "First of all, we will be looking at and tasting this colour. What colour is it? You need to write blue in the first column. B-L-U-E. Now without tasting it, in the second column, you're going to write what flavour you think it's going to be. Just by looking at it, what flavour is it going to be? I'm going to invite a group up, you're going to come up to the tasting bench and you're going to take a little blue glass, you're going to taste it, then you're going to come straight back and write down the flavour you think it is after you have tasted it."

One by one, each group came to the tasting table to taste the blue drink. Then they moved onto the green drink, and in the same way, Cilla guided and coached them through each step –predicting, tasting and recording. Colour by colour, Cilla directed and coached her students through the experiment.

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Mary used a similar teacher-directed strategy. However, she also gave her students the opportunity to work independently. Mary guided her students through the first two coloured drinks and then her students worked independently to test the final three colours. Here, Mary has provided a temporary framework for students working with the first two drinks then allowed them to undertake the rest of the task more independently once they secured control of the task.

Excluding the intensity of colour experiment

Cilla chose not to do the intensity experiment as she believed her students were not ready for it. She said, "I do not believe we needed to go into the intensity of flavour with level 2 because they're still getting their head around the concept of the colour, the sight, the taste perception."

Simplifying the intensity of colour experiment

In the colour intensity experiment, students taste four drinks of varying colour intensity – from pale to very dark. Mary wanted to touch on colour intensity but not dwell on it, so she decided to simplify the experiment to suit her students and time constraints. She focused on questioning her students: "After I made three red drinks of varying intensity of colour, I surveyed the kids to see which one they thought would be the tastiest. They all chose the darkest one because they thought it would be the one with the most flavour." She introduced colour intensity in a supportive, low-key manner to enable her students to consider the phenomena.

Reducing information presented

Mary decided to reduce the amount of information presented in one lesson, spreading the two experiments across two lessons – she did the intensity experiment in a lesson following the lesson on colour and taste. Mary said, "I used the same colour and taste activity from the SLH, and I adapted it by not doing the whole thing at once. I wouldn't have wanted to do any more in one lesson."

Concluding comment

Curriculum materials can be customised for younger students through teachers critiquing the materials ahead of time and tailoring them to the needs of younger students. Adaptations such as simplification and excluding some aspects of a task/activity can allow teachers to use an activity designed for older students. Teachers can scaffold students through a task through giving advice and coaching before allowing students to work more independently. Slowing the pace of activities, increasing instructional time and gradually withdrawing step-by-step guidance with hands-on experiences enables younger students to grasp new skills and concepts.

References

Grossman, P. & Thompson, C. (2008). *Learning from curriculum materials: Scaffolds for new teachers.* Teaching and Teacher Education, 24(8), 2014–2026.

Harlen, W. & Qualter, A. (2014). *The teaching of science in the primary school* (6th ed.). London: Routledge.