

Using concept cartoons for assessment

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Chris Joyce (2006)

Concept Cartoons are cartoon-style drawings that put forward a range of viewpoints about an everyday event. Naylor and Keogh (1999) developed, researched and refined their use as a science assessment and teaching tool. They are now exploring their use in mathematics.

Their features include:

- presentation of alternative ideas about a concept, including the scientifically acceptable stance;
- the use of visual images;
- minimal use of written language; and
- contexts that are familiar to children.

When to use

At the beginning or part way through a unit of work, to:

- gain an indication of the range of students' ideas within the class;
- identify areas of misconception;
- stimulate starting points for investigations;
- offer challenges that may lead to restructuring of ideas.

At the end of a unit of work to:

- review learning

The theory

This strategy takes account of constructivist views of learning, that is, taking students' ideas into account when planning teaching. By presenting a number of possible alternatives, "cognitive conflict" generates conditions for learning readiness.

It also draws on research into common areas of misunderstanding in science.

Read more about Concept cartoons research (Millgate House) and Teaching and learning in science: a new perspective (Leeds University)

How the strategy works

- Concept cartoons stimulate students to discuss their ideas, including those that are normally reluctant to do so. This gives teachers access to those ideas. It also gives students access to each other's ideas, which may prompt them to reconsider their own.
- The visual cartoons and minimal written text provide a valid assessment strategy for students with poor literacy skills, reluctant learners, and ESOL students.
- Concept cartoons appear to reduce the risk of fear of giving a "wrong" response.

Reference: Naylor, S. and Keogh, B. (1999). Constructivism in classroom: Theory into practice. *Journal of Science Teacher Education* 10 (2), 93-106.

What to do

- Present the concept cartoon to individual students, small groups, or the class.

- Ask them to comment on each statement or ask them to indicate which statement they agree with.
- Ask students to give a reason for their choice. This is particularly important for accessing their thinking processes.
- Encourage debate between students with different opinions.
- Follow up discussions with students setting up investigations to explore their ideas.

Note that for some concept cartoons there may be no one right answer. "It depends on..." may be an appropriate response.

To generate your own concept cartoon

- Use everyday contexts that students are familiar with.
- Provide three or four alternative statements for discussion.
- Generally use positive rather than negative statements.
- Refer to research on common alternative conceptions as a source for statements.
- Include the scientifically acceptable viewpoint.
- Some multiple-choice questions are suitable for adapting to a concept cartoon.

Limitations

- Teachers need to access research into common alternative ideas to construct their own concept cartoons.
- Cartoon faces or stances that are not carefully chosen can inadvertently provide clues.

Adapting the strategy

Instead of having faces, just use speech bubbles from the "Draw" feature of your word processing programme. This may be more appropriate for older students.

Examples of ARB resources that use the concept cartoon strategy

Key Ideas:

Concept Cartoons are cartoon-style drawings that put forward a range of viewpoints about an everyday event. Naylor and Keogh (1999) developed, researched and refined their use as a science assessment and teaching tool.

Resource List

- Cat food and soup
- Who is estimating? Addition
- Who is estimating? Multiplication
- Estimation or not?
- Rolling cars