Formative Evaluation of Student Work: A Venue for Reflective Practice

Sara Salloum, Ph.D.
University of Balamand
Agenda

- Sweet Introductions/expectations
- Activity with cartoons
- Activity discussion
- Mini-lecture on tool
- The Why and How of Reflection?
Introductions/Expectations

• Please be guided by the chocolates to sit

STEM

STEM

Humanities/Social Sciences

Humanities/Social Sciences
Objectives

• Explore and use formative evaluation strategies for
  • Reflective enhancement of teaching and learning
  • Documentation of “Teaching and Educational Development”
  • Encouraging students to reflect on their learning

• Explore and use formative assessment tools (concept cartoons) to assess students’ prior knowledge and to reflect and inform activities to improve instruction

• Time permitting: Discuss theoretical and philosophical underpinnings of reflective practice
Activity 1: Students’ Ideas and Reflection
My observations of this culture reinforce my belief that people everywhere share certain basic characteristics, in that they are base, vulgar, crude, stupid, and totally without redeeming merit...
Activity 1: Reflective Journals on Concept Cartoons

- Each student will get handout 1.
- Each group will get a concept cartoon.

**On your own: BEFORE DISCUSSION (5 minutes)**
Examine cartoon and fill first box in Handout 1

**Group Discussion (10 minutes):**
Discuss which do you think is the best response

Complete second box after Group Discussion
What are concept cartoons
Are we all the same inside?

Although we look different on the outside, we are all the same inside.

Any differences inside come from changes in how we grow. Genes are not involved!

I think that we have differences. My blood type is different from my sister's.

There are male and female differences, but that's all.
How will the girl’s cut heal?

The cut will heal as new cells are made during mitosis.

Washing it with soap and water and putting a band-aid on it will heal it.

I think that both mitosis and meiosis cause the cut to heal.

I think the healing will happen as new cells are made during meiosis.
Chemical reactions get hot

Some chemical reactions stay the same temperature

Chemical reactions need to be heated to get them started

Some chemical reactions get colder

What do YOU think?
Activity Discussion

• Please save your journals for a follow up activity.

• Questions:
  • What are you thought about the activity? What do you think are its objectives?
  • How would you assess what you just created
  • What can you learn from them?
  • How do they compare to assessments you do in your area?
From the beginning: Constructivism
Student’s Prior Knowledge (Alternative Conceptions)

1. Students come to our classrooms already holding their own ideas about natural and social phenomena that they have developed through everyday experiences: NO TABULA RASA

2. Some of these ideas maybe at odds with accepted views “alternative conceptions”

3. These ideas are the result of students’ active efforts to make sense of the world and so students tend to hold on them.
Transfer versus Constructivist views of Learning

<table>
<thead>
<tr>
<th>How do we learn?</th>
<th>Transfer View:</th>
<th>Constructivist View:</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Knowledge is the possession of teachers: the teacher transmits knowledge</td>
<td>An alternative way of viewing the learning process might incorporate the following points:</td>
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<tr>
<td></td>
<td>In contrast to the teacher, the pupil is empty headed (Blank slate)</td>
<td>i. Students come to science lessons already holding their own ideas about natural phenomena which they have developed through everyday experiences: students are not blank slates.</td>
</tr>
<tr>
<td></td>
<td>The teacher's job is to pass the knowledge on to the pupil: the teacher is active.</td>
<td>These prior ideas interact with new experiences and phenomena: students make linkages between prior ideas and new experiences.</td>
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<tr>
<td></td>
<td>In contrast to the teacher, the student is passive in simply accepting the knowledge from the teacher.</td>
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Formative Assessment and Evaluation

- Identify and elicit students’ commonly held ideas and Alternative Conceptions
- Help students reflect on their learning (Metacognition)
- Aid instructors to reflect on their teaching and its effectiveness
CONCEPT CARTOONS

Special thanks to Dr. BouJaoude from AUB as the part on CONCEPT CARTOONS is adapted from a workshop he developed
Identifying students’ Alternative Conceptions

• **Concept cartoons:** Concept Cartoons are cartoon-style drawings that put forward a range of viewpoints about an everyday event.
Concept Cartoons

- Concept Cartoons are cartoon-style drawings that put forward a range of viewpoints about an everyday event.

- 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.
Concept Cartoons: 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.
Concept Cartoons: When to use them

• 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 alternative conceptions;
  • 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
Concept Cartoons: 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 English language learners.

- Concept cartoons appear to reduce the risk of fear of giving a "wrong" response.

* English for Speakers of Other Languages (ESOL)
Concept Cartoons: How to do it

- 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.
The Why and How of Reflection for teaching and Learning?

Is it true that the most important thing is how you see yourself??
Reflective Journals and Learning Logs

• Personal record of students on their learning

• Typically, instructor asks students to record learning using PROMPTS that stimulate thinking.

• Thought of as a meta-cognitive tool that encourages CRITICAL thinking

• Please check Handout 2
Yet More Concept Cartoons

"How much for the mirror?"

I'm not sure if they understood the lesson, but I taught it really well!
Activity 3: Observation of Natural Object/Organism

• Go around describing the organism on the screen:
  • First round: Tell us a first impression from your place.

• Second round:
  • Take a few minutes to observe; You can come closer and look at closely.
  • Please write down the characteristics words about the organism and then tell them to me
Discussion

Whole class:

• How were the two rounds similar and different?

• What can we learn about the organism from observing and describing?

• What additional characteristics or aspects became visible to you in the second round?

• How can this activity of relate to assessing our students?

• Think about:

I placed your descriptions along a continuum: can you tell what the continuum refer to? Or how are the two sides different?
What do you see?

- Activity 2: Examining student work
- Please check Handout 3.
- **Group Work**: Now revisit your reflective journals form a TEACHER perspective and examine them using Handout 3.
Handout 3

Describe

Analyze

Reflect
Reflection Heuristics
Practical Discovery

- Description vs. inference in examining students’ work
- Opening venues for multiple interpretations and examining viability, in terms of:
  - Materials that authentically demonstrate students’ strengths and challenges
  - Effectiveness of activities to improve instruction
Framework

• Reflection on two levels:
  • Instructor reflection for enhanced practice
  • Students (and later as practitioner) reflection on learning and its meaning their growth

• Create a learning community around continuous growth, reflective thinking, and creative practice (21st Century skills)

• Philosophical reflections (Practical Wisdom/Phronesis)
  • Reflection as a way of being
Reflective Practice

Summary and Conclusion
Formative Assessment Tools: What have we explored?

• Concept cartoons
• Reflective Journals on cartoons
• Analysis of students’ reflective journals: Examining students work reflectively for enhanced understanding and practice.
A Very Intelligent Person once said...

- To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advance in science. (Albert Einstein)
Reflective Practice

• Better understand what we know and do as educators

• “learning through questioning and investigation to lead to a development of understanding” (Loughran, 2002)

• Better understanding and ways to question assumptions

• Understanding and collecting teachers’ stories and narratives
John Dewey.

Reflective Practice as embodying...

• Responsibility
• Open mindedness
• Wholeheartedness
References

• [https://www.carolina.com/teacher-resources/Interactive/5-common-misconceptions-in-genetics/tr10631.tr](https://www.carolina.com/teacher-resources/Interactive/5-common-misconceptions-in-genetics/tr10631.tr)


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Components of Teaching and Educational Development

- Your thoughts about teaching
- Documentation of your teaching
- Teaching effectiveness
- Materials demonstrating student learning
- Activities to improve instruction
- Contributions to the teaching profession or institution
- Honors, awards, or recognitions
John Dewey..

Reflective Practice as embodying...

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References


Concept Cartoons References

• https://www.carolina.com/teacher-resources/Interactive/5-common-misconceptions-in-genetics/tr10631.tr


• https://www.sciencelearn.org.nz/resources/2567-using-concept-cartoons-to-explore-students-scientific-thinking