Value and Logistics of Collecting Written Work in Online Mathematics Courses

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Beyond Crossroads: Provide professional development and training in assessment techniques for mathematics faculty.
Rationale and theories behind placing value on process

- Beyond Crossroads: To build problem-solving skills, faculty need to engage students actively in the learning process, create opportunities for exploration, and help them recognize that there may not be a rule to memorize or algorithm to follow for a given problem.

- Deeper, lasting learning of concepts should be emphasized. Online mathematics platforms emphasize the right answer, not the process. Evaluation of learning should take into account how well they learned the concepts, not just if they can get the answers.

- Discuss: Does the right answer indicate understanding of the mathematical concept?
I use an online math program. Why grade written work?

- Emphasize the algebraic processes
- Not guess and check, not pattern finding
- Give meaningful feedback when student understanding falters
- Partial credit for partial understanding
- Reduce cheating
- Reduce anxiety

- What do you think?
In addition to enhancing students’ learning, classroom assessments positively affect students’ perceptions and attitudes about the learning process.
What is the goal of assessments?

- Part of learning cycle and continuous improvement
- Assign grades
- Grades should reflect what student know and understand
- Other?
Learning outcome: Solve systems of linear equations by substitution method

Use substitution to solve the system.

\[-3x + 4y = 17\]
\[y = 2x + 8\]
How much did this student know about solving systems of linear equations? Assign a point value 0-5 points

1. \(-3x + 4y = 17\)
\(-3x + 4(2x + 8) = 17\)
\(-3x + 8x + 24 = 17\)
\(5x + 24 = 17\)
\(5x = -7\)
\(x = \frac{-7}{5}\)

\(\frac{5}{5}\)

\((-1.4, 5.2)\)

\(y = 2(\frac{-7}{5}) + 8\)
\(y = -2.8 + 8\)
\(y = 5.2\)
Incorrect
Your answer is incorrect.
- x: Your answer is incorrect.
- y: Your answer is incorrect.

Use substitution to solve the system.

\[-3x + 4y = 17\]
\[y = 2x + 8\]

Answer Submitted:

\[x = -1.4\]
\[y = 5.2\]
Learning outcome: Factor trinomials with lead coefficient = 1.

Factor the trinomial completely.

\[ x^2 - 6x + 8 \]
How much did this student know about factoring? Assign a point value 0-5 points

22) $x^2 - 6x + 8$
   A) $(x - 2)(x - 4)$  B) $(x + 2)(x - 4)$  C) $(x + 2)(x + 4)$  D) prime
Scan multiple page written work activity

- Genius Scan
- Cam Scanner
- Notes on Apple phones
- Many other free apps

- YouTube video with help on CamScanner
**Do:**
One document (use batch feature)
PDF format
Crop appropriately

**Don't:**
Multiple documents (one for each page, single feature)
Any other format: jpg, html, tiff, gif
default cropping
Upload into LMS, don’t email

YouTube video: Demonstrating what student will see when they upload

LMS Settings: File upload type PDF, max number files 1, allow multiple submissions

Why use Learning management system (LMS, such as Moodle, Blackboard, Canvas)

Keep everything in LMS, students not looking around, comments on documents, everything electronic

Exam 1: Upload written work here.

23 of 26 submitted
Student views

Exam 1: Upload written work here.
Logistically.

Google doc with grading notes, adjust score in online program, enter grade in LMS.
Exam 3

Directions: Do your work on this paper. Include the original problem. There is work to show on every problem. Do not skip ANY steps. Submit answers on Aleks also.

1. Solve the compound inequality. Write your answer in interval notation.

\[ \frac{2v}{2} > \frac{10}{2} \quad \text{and} \quad \frac{4v}{4} \geq -\frac{16}{4} \]

\[ v > 5 \quad \text{and} \quad v \geq -4 \]

\[ [5, \infty) \]
Student buy-in and compliance

• Explain why I collect written work.

• Separate technology skill from math skill

• Mastery of technology skill before they can start homework

• Technical support (over the top helpfulness, rarely to they need)

• Low stakes- group quiz

• High stakes- exams
How do you assess student learning in online classes?

Discuss in groups. Report back to group.

Share on this google doc.

Find this google doc on www.amybarnsley.com