Procedural Fluency from Conceptual Understanding

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October 18, 2016

Please open:
https://todaysmeet.com/TQRP_CCSSMath
Agenda

● Revisit the Math Shifts
● Discussion on responses to pre-reading
● What is procedural fluency & how do you build it?
● Analyze a problem
● Teacher & Student Actions
● Questions & Closing
Key Shifts in Mathematics

Since the summer experience, how have you attended to the shifts in your classroom or in your teacher preparation courses?
Procedural Fluency in Mathematics

- What **Assumptions** does the author of the text hold?
- What do you **Agree** with in the text?
- What do you want to **Argue** with in the text?
- What parts of the text do you want to **Aspire** to (or **Act upon**)?
Learning Target

I can incorporate the teaching practice of building procedural fluency from conceptual understanding.
What does fluency mean?

- Students are able to choose flexibly among methods and strategies to solve contextual and mathematical problems.
- Students understand and are able to explain their approaches.
- Students are able to produce accurate answers efficiently.
How does fluency build?

Exploration And Discussion

Informal Reasoning Strategies

Develop & Use General Methods

Addition and Subtraction Strategy Posters

3 + 4 =
6 + 5 =
9 + 7 =

3 + 1 = 4
Use a Number Line

3 + 1 = 4
Use a 10 Frame

Draw a Picture

Count On

Use Objects
Part Part Whole

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How does fluency build?

Exploration And Discussion

Informal Reasoning Strategies

Develop & Use General Methods

8 + 4

9 10 11 12

(8 + 2) + 2
10 + 2
12

8 + 4 = 12
Compute $46 \times 68$

Solve this problem in at least two ways.

What does a student need to understand to answer this problem?
Describe how the models and algorithms relate to key understandings about multiplying multi-digit numbers.
<table>
<thead>
<tr>
<th>What are teachers doing?</th>
<th>What are students doing?</th>
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<tbody>
<tr>
<td>A) Providing students with opportunities to use their own reasoning strategies and methods for solving problems.</td>
<td>A) Making sure that they understand and can explain the mathematical basis for the procedures that they are using.</td>
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<tr>
<td>B) Asking students to discuss and explain why the procedures that they are using work to solve particular problems.</td>
<td>B) Demonstrating flexible use of strategies and methods while reflecting on which procedures seem to work best for specific types of problems.</td>
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<tr>
<td>C) Connecting student-generated strategies and methods to more efficient procedures as appropriate.</td>
<td>C) Determining whether specific approaches generalize to a broad class of problems.</td>
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<tr>
<td>D) Using visual models to support students’ understanding of general methods.</td>
<td>D) Striving to use procedures appropriately and efficiently.</td>
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<tr>
<td>E) Providing students with opportunities for distributed practice of procedures.</td>
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</table>
What are teachers doing?

A) Providing students with opportunities to use their own reasoning strategies and methods for solving problems.
B) Asking students to discuss and explain why the procedures that they are using work to solve particular problems.
C) Connecting student-generated strategies and methods to more efficient procedures as appropriate.
D) Using visual models to support students’ understanding of general methods.
E) Providing students with opportunities for distributed practice of procedures.

Which action would you like to work on or know more about?

What are the challenges in taking that action?

How can you prepare to incorporate this action into your teaching?
Post Webinar Assignment

Choose one of the teacher actions and focus on it through a series of lessons.

Be prepared to share your experience next time.

What are teachers doing?

A) Providing students with opportunities to use their own reasoning strategies and methods for solving problems.

B) Asking students to discuss and explain why the procedures that they are using work to solve particular problems.

C) Connecting student-generated strategies and methods to more efficient procedures as appropriate.

D) Using visual models to support students’ understanding of general methods.

E) Providing students with opportunities for distributed practice of procedures.
Questions
Reference

So often you find that the students you're trying to inspire are the ones that end up inspiring you.

Sean Junkins