

Primary Number and Operations through an Interactive Technology Lens

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What are we going to do today?

- What is the value of technology in instruction?
- What shifts in mathematics instruction have occurred?
- How do I integrate technology into the conceptual development of mathematics?

I can't buy in until I know why?

- Research says...
 - Teachers, as well as students, should have access to technology that helps facilitate and mediate learning in the classroom (Lim, Chai, & Churchill, 2011).
 - The degree and comfort level of the teacher determines the duration and usage of technology (Glover & Miller, 2002; Kennewell, Tanner, Jones, & Beauchamp, 2008).

Shifts in technology use



If there is a fundamental shift
in the way we communicate,

○ Shouldn't
there be a
fundamental
shift in the
way we
educate?



Traditional -vs- 21st Century

- Gaps exists between the “traditional” classroom and the “21st Century” classroom. Digital teaching and learning goes beyond a didactic classroom of the past (Means & Olson, 2004).
- “21st Century” digital teaching entails teachers integrating technologies into their instruction that help to engage and interest students (Koehler & Mishra, 2008).

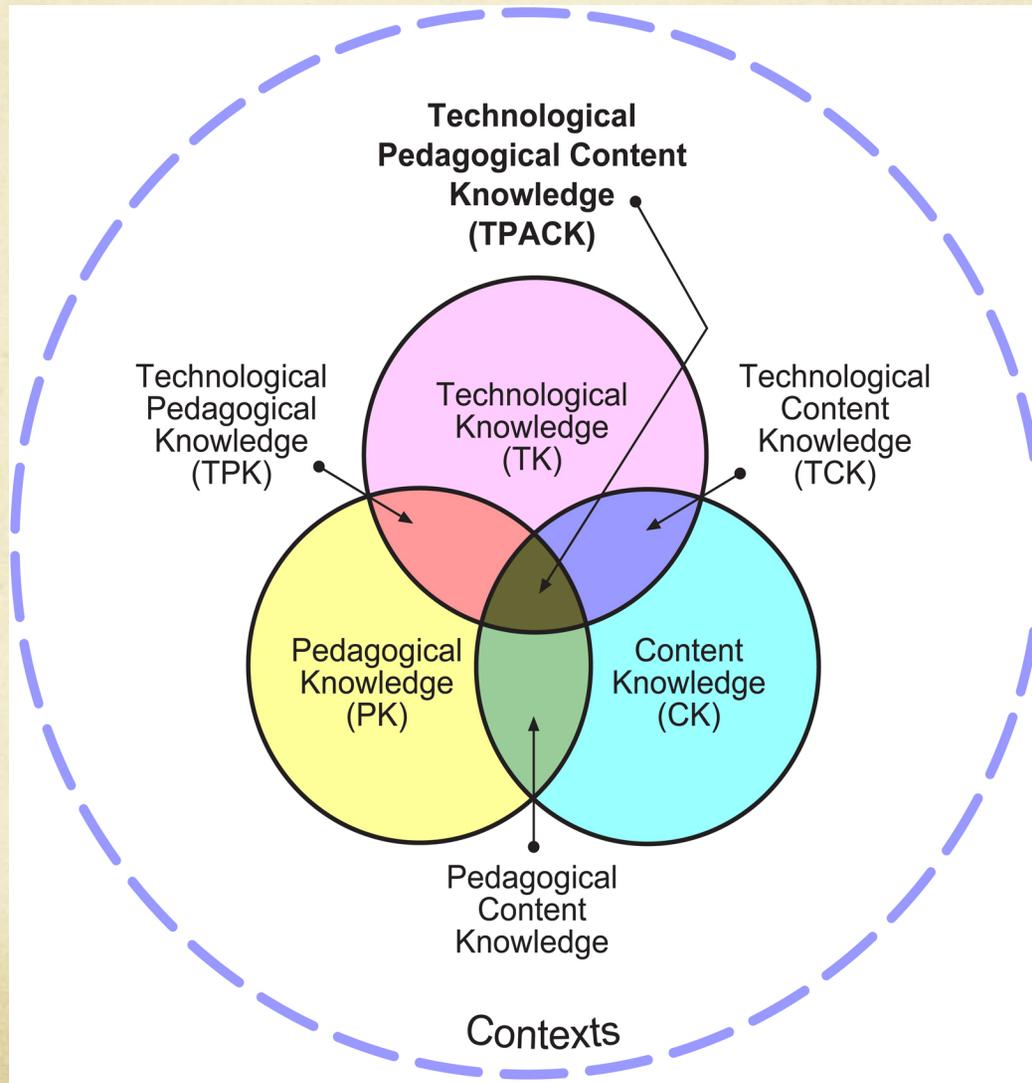
Mindtools

- Using technology as an avenue to expand student thinking, invite creativity, and build knowledge adheres to the constructivist approach of learning (Morphew, 2012)
- The most important way teachers can utilize technology in their instruction practice is as a tool that is used accordingly to support their learning (Jonassen, 2000).

Make a Difference

- Technology is meant to replace “old” methods of teaching, in which the standard chalkboard, notebook, and pencils are used and the teacher is the primary deliverer of information (Doolittle, 2003).

TPACK Framework



Shifts in Mathematical Pedagogy

- Constructivism:
Learners create knowledge through experiences and interactions.
- Creating a classroom environment in which students are offered the opportunity to problem solve, collaborate, and bring creativity to the classroom allows learning to develop in authentic ways (Dunham, & Hennessy, 2008; Means, & Olson, 1994; Morphew, 2012).

How much do you owe me?



What are we required to do as Math educators with technology?

- *Common Core State Standards (CCSSO, 2010)*
 - Mathematical Practices
 - Make sense of problems and persevere in solving them.
 - Construct viable arguments and critique the reasoning of others.
 - Model with mathematics.
 - Use appropriate tools strategically.
 - Attend to precision.

Web-Based Conceptual Development

- <http://illuminations.nctm.org/Games-Puzzles.aspx>
- http://www.mathplayground.com/math_manipulatives.html
- http://www-k6.thinkcentral.com/content/hsp/math/mathinfocus/common/itools_pri_9780547673851/main.html
- http://nlvm.usu.edu/en/nav/topic_t_1.html

iPad Applications

- Quick Images
- 10 Frame Fill
- Number Pieces
- Number Rack
- Equator
- Fish Swish

Take it a Step Further!

- Flip It!



GoClass

- GoClass is a platform to control all of your instructional materials.
- Lessons are designed through a PC/MAC.
 - Elements come together to form “lessons”.
- Lessons are then delivered as a whole class or independently through a personal device.

Two Components of GoClass

Whole Group

- This allows you to control student content during whole group instruction.

Flip Session

- This allows students to work at their own pace through the content. This can be done in class or when students are anywhere with an Internet connection.

Mainstreaming Your Content

- Using the “GoClass” Application is not a “new” way to do things.
- This is a way of rethinking things.
- Effective teachers already have lessons “designed” to reach students.
- “GoClass” is a way to put all the lesson content in one place, so that students have direct access beyond the classroom.

Conclusion

- Integration of technology begins with the teacher.
- Integration of technology is a pedagogical shift.
- Integration of technology is not a scary thing!
- Integration of technology is making small changes over time that make a BIG difference!