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Applying Interactive Technologies to Mathematics

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Objective:

We are learning to...

include practical and realistic ways to integrate interactive technologies into mathematics, including interactive whiteboards, mobile applications, software, and free Web-based programs.

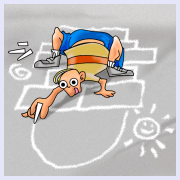
Rationale

1. Teachers, as well as students, should have access to technology that helps facilitate and mediate learning in the classroom (Lim, Chai, & Churchill, 2011).

2. Students' access to technology can positively influence mathematics achievement (Hennessey, 2006; Hill, Rowan, & Ball, 2005).

3. The degree and comfort level of the teacher determines the duration and usage of technology (Glover & Miller, 2002; Holmes, 2009; Kennewell, Tanner, Jones, & Beauchamp, 2008).

Technologies that we will cover:



Interactive whiteboard

iPad applications

Personal devices

1 The percentage of household's with a computer today is:

A 19%

B 97%

C 49%

D 68%

2 What percentage of students have access to the web outside of the school day?

A 11%

B 20%

C 92%

D 33%

Requirements of Common Core State Standards

(CCSS, 2010)


Students must be able to navigate texts at various complexity levels.


Students must be able to connect and make meaning of what they are reading.


Students are required to develop these skills across mediums, from print to digital sources.


Technology involves the tools with which we deliver content and implement practices in better ways.

Educators are facing the challenge that all students are college and career ready with the CCSS, 2010.

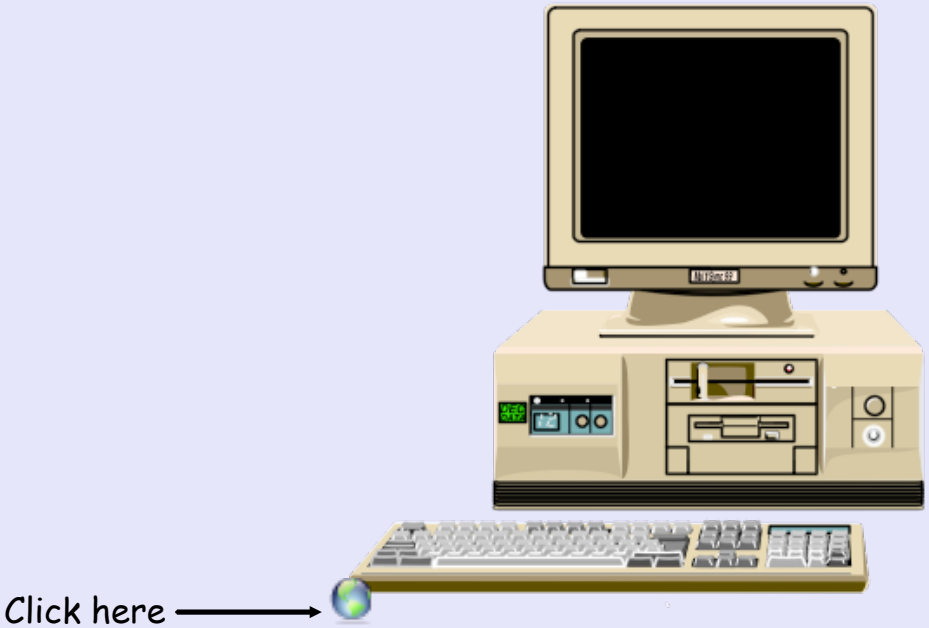
Importance

- Many students spend hours online (Lenhart, Madden & Rainie, 2006; Livingstone & Bober, 2004) They communicate with each other via instant messaging, Skype, and social media networks designed to keep people connected.

- Digital natives interact and engage with a variety of online content including Wiki's, video's, avatars, and games.

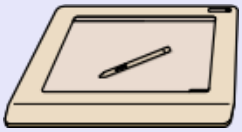
- As our society becomes more technologically advanced, students' knowledge and ethical usage of technology becomes essential to curriculum and instruction (Brand, 1997).

What happens here?



If there is a fundamental shift in the way we communicate, shouldn't that result in a fundamental shift in how we teach?

Traditional -vs- 21st century



- Gaps exist between the "traditional classroom" and "21st century" digital teaching and learning that goes far beyond a didactic classroom (Means, & Olson, 2004).
- "21st Century" digital teaching entails teachers integrating technologies into their instruction that help to engage and interest students. This way of teaching embraces all aspects of TPACK (Koehler, & Mishra, 2008).
- The revised National Council of Teachers of mathematics standards , 2007, suggest that teachers embrace and embed modern educational technology in mathematics teaching, modeling appropriate and effective methods to incorporate technology in daily lessons.

Teacher Centered vs. Student Centered

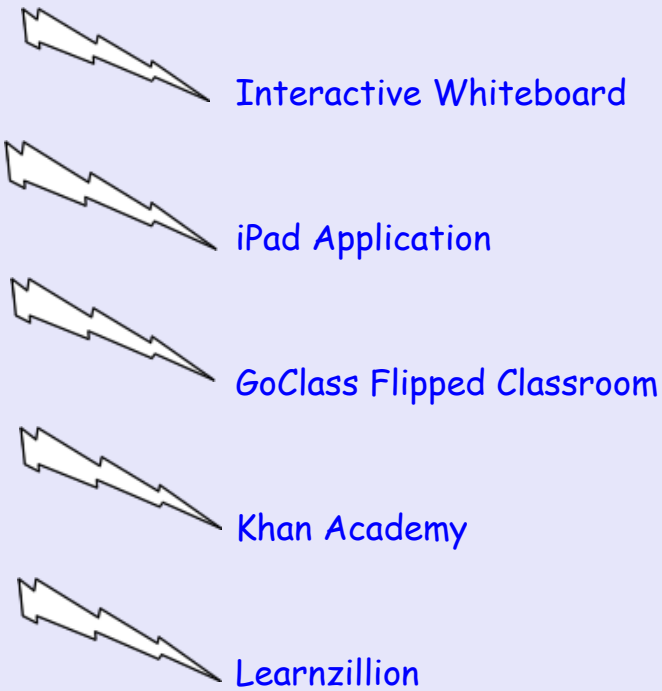
Using an interactive whiteboard or SMARTboard to its fullest capabilities allows student learning to extend beyond that of a chalkboard or overhead projector (Manzo, 2010).

Instructional strategies that promote interaction, technology and are student centered provide the most effective mathematical learning environment (Brabeck, Fisher, & Pitler 2004).

INTERACTION

Casino Dice Game

Technologies used



- Interactive Whiteboard
- iPad Application
- GoClass Flipped Classroom
- Khan Academy
- Learnzillion

SMARTboard Tools

- ✓ Dice
- ✓ Spinners
- ✓ Timers
- ✓ Protractors
- ✓ Clocks
- ✓ Calculators

Online Resources and coordinating applications

www.learnzillion.com +Droid/Apple Application

www.khanacademy.com + Droid/Apple Application

www.edmodo.com + Droid/Apple Application

www.geogebra.com

www.goclass.com + Droid/Apple Application

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ISTE NET-S	NCTM Mathematical Practices	Relationship
1.) ***Creativity and innovation***: Students demonstrate creative thinking, construct knowledge, and develop innovative products.	4.) ***Model with mathematics:*** Students apply mathematics to real-world problems. Students can demonstrate learning in a variety of ways. 7.) ***Look for and make use of structure:*** Proficient students closely to discern a pattern or structure.	**A.)** Students use technology to creatively-construct knowledge, structures, and develop innovative products that demonstrate real-world math application.
4.) ***Critical thinking, problem solving & decision making:*** Students use critical thinking skills to plan and conduct research, manage projects, solve problems, & make informed decisions using appropriate digital tools.	2.) ***Reason abstractly and quantitatively:*** Students are able to make sense of problems and understand the quantities involved. 3.) ***Construct viable arguments and critique the reasoning of others:*** Students construct and test conjectures, build arguments, and give evidence of such. 6.) ***Attend to precision:*** Clear and concise language is used when communicating with others about math.	**B.)** Students use technology to help construct viable arguments, solve problems, and make informed decisions regarding conjectures. Precise language is used in the formation of arguments and conjectures.
2.) ***Communication & collaboration:*** Students use digital media & environments to communicate and work collaboratively, including at a distance, to support individual learning & contribute to the learning of others.	3.) Construct ***viable arguments and critique the reasoning of others:*** Students construct and test conjectures, build arguments, and give evidence of such. 5.) ***Use appropriate tools strategically***. Students use a variety of tools to demonstrate mathematical concepts. Tools are used to support, communicate, and deepen their understanding.	**C.)** Digital media environments are used to communicate understanding of mathematical concepts, research and build arguments, and test conjectures. Students can work collaboratively with real-world math problems.
3.) ***Research and information fluency:*** Students use digital tools to gather, evaluate, and use information.	1.) ***Make sense of problems and preserver in solving them:*** Students use skills by making meaning of problems and analyzing their solutions. 8.) ***Look for and express regularity in repeated reasoning:*** Proficient students will look for regularity and look for short cuts.	**D.)** Digital tools are used to help make meaning of mathematical problems. Gathering and evaluating information helps to demonstrate regularity and highlight short cuts.

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What new technologies will you attempt in your classroom now?

Text # **37607**

In front of your response key in **732397**

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