

# Tools & Technology for Mathematics Instruction

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# What is this Session Regarding?

- Technological Pedagogical and Content Knowledge ([TPACK](#))
- Examples of the integration of instructional technology to aid in the teaching and learning of secondary mathematics will be shared.
- Recommended books:
  - Teaching Math with Google Apps: 50 G Suite Activities, Alice Keeler & Diana Herrington, 2017, Dave Burgess Consulting, Inc. ISBN 978-1946444042
  - Focus in High School: Technology to Support Reasoning and Sense Making, *Thomas Dick, Karen Hollebrands*, Publisher NCTM, 2011. ISBN 978-0-87353-674-5

# Apps, search tools, & other tools

- Google apps such as [Google Forms](#)
- [Diamond App](#) for the Ipad
- [GeoGebra](#)
- Search engine for math teachers  
<http://www.fishing4tech.com/mtbos.html>
- [LaTeX](#) Math Typeset program
- Wolfram Alpha <https://www.wolframalpha.com/>





# Wolfram Alpha

## Pro for Students

Starting at **\$4.75**  
/month

SELECT

### KEY FEATURES






-  Step-by-step solutions
-  Web Apps Education Collection
-  Access Pro capabilities in Wolfram Problem Generator
-  *Coming soon:* unlock additional features for the iOS app

## Pro Premium for Students

Starting at **\$7.99**  
/month

SELECT

### KEY FEATURES

-  All Pro for Students features *plus*
-  Extended computation time
-  Reference, Professional & Personal Web App Collections
-  Increased upload size limit
-  Pro Premium Expert Support

# Technology Misuses/Overusage

- “The constant checking of mobile devices has triggered a wavelet of recent classroom technology bans, especially at the collegiate level. For instance, in 2017, after two separate studies out of West Point found that students who used laptops in class received poorer grades, the lead researchers of the studies banned computers from their classrooms.” (Berdik)
- Nearly a third of U.S. teens use electronics to cheat(Noguchi)

# Student Response Programs/Apps

- Kahoot! – Synchronous timed questions
- Quizizz –Can add symbols your questions
- Quizlet Live –Teachers can create collaborative learning games
- Plickers – Students use cards and teacher can use ipad or phone to scan for students responses to multiple choice or true false questions
- Padlet –A collaborative space for teacher and students to share information, resources, images, and items that need review and reinforcement
- Flipgrid –Teachers can create grids and post topics for students to reflect on
- Formative – has less of the gamification and open-ended response option
- Flubaroo - can be linked with Google Classroom
- Other

# Overviews of technology tools used in the teaching of secondary mathematics

Many of these come examples come from teachers that have been enrolled in a technology course offered online.

- [PhET and Gizmos](#)
- [TI Nspire Overview](#)
- [Desmos](#)

# Desmos

- “I started using Desmos Activities in February. The students have given great feedback. Mainly I have used activities written by others. But I did have a class do one activity written by me and it went well. It is amazing how easy it is to put together and I will be writing more in the future. But that doesn’t mean I need to reinvent the wheel, the site has many good activities ready to use in the classroom.”

High School Math Teacher, April 2018



# Customizing Technology Tools

- Creating your own [Desmos activity](#)
- Create your TED-Ed lesson, <https://ed.ted.com/videos>
- **Factoring a Trinomial using the AC Method**  
<https://ed.ted.com/on/1woKGBcZ#watch>

# Recommended Website

- <http://www.statisticsteacher.org/>
- <https://photomath.net/en>
- <https://teacher.desmos.com/>
- <http://patrickjmt.com/> & <http://www.virtualnerd.com/> &
- <https://www.khanacademy.org/>
- <https://illuminations.nctm.org/>
- K–12 Teachers Get Free Trial Memberships to Statistics Teacher
- Be aware of free apps that show the work you think students may be doing.
- Desmos is the cat's meow
- Sites with math tutorial videos
- Nice mix of apps and lessons

# Formative Assessment Tool Sites

Kahoot! – <https://kahoot.com>

Quizizz – <https://quizizz.com>

Quizlet Live – <http://quizlet.com/live>

Padlet – <https://padlet.com>

Flipgrid – <https://info.flipgrid.com>

Formative – <https://goformative.com/>

Flubaroo - <http://www.flubaroo.com/flubaroo-user-guide#step1>

# Sources

- Berdik , C. (2017). Dealing with digital distraction, The Hechinger Report, retrieved Jan 23, 2018 from <http://hechingerreport.org/dealing-digital-distraction/>
- Koehler, M. J., & Mishra, P. (2009). What is technological pedagogical content knowledge? *Contemporary Issues in Technology and Teacher Education*, 9(1). Retrieved from <http://www.citejournal.org/volume-9/issue-1-09/general/what-is-technological-pedagogicalcontent-knowledge>
- Noguchi, S. (2017, Aug. 6). Nearly a third of U.S. teens use electronics to cheat, survey says. The Denver Post. Retrieved from <http://www.denverpost.com/2017/08/06/us-teens-electronics-cheat/>

# Questions/Comments

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# Thank you

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Math 515 - Tools & Technology for  
Secondary Mathematics

<https://www.mnstate.edu/18online/content-areas.aspx>



NATIONAL COUNCIL OF  
TEACHERS OF MATHEMATICS

[The Mathematics Teacher](#) / [Vol. 111, No. 1, September 2017](#) / A Tale of Two Slider...



JOURNAL ARTICLE

## A Tale of Two Sliders

Janet Walker and Michael Todd Edwards

*The Mathematics Teacher*

Vol. 111, No. 1 (September 2017), pp. 66-69

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