KKFS Math Teacher's Professional Development

BUILDING CLASSROOM ACTIVITIES USING desmos ACTIVITY BUILDER [Secondary Mathematics - grade levels 6 - 12]

Overview

This professional development is designed for Secondary Mathematics teachers grades 6 - 12 and secondary computer science teachers. Teachers will learn the platform of the Desmos Activity Builder in order to develop & design their own interactive and dynamic lessons/activities or labs by enhancing their technological knowledge through discovery. Through Collaboration, teachers will focus on one content area, and address through former experiences how the Desmos Activity Builder could solve instructional issues that arose in the past. After the sessions, teachers will have a tangible resource to further develop self-designed lessons/labs or activities that will ultimately inspire curiosity (teachers and students) and increase engagement (students) in their daily lessons by focusing on pedagogical strategies that best suite their content and student population. Furthermore, the professional development aligns with one of the character traits that we try to instill on our campus: Curiosity.

Session Introduction/Schedule:

The professional development sessions will be completed through discovery labs, online self-learning modules, collaborative groups, and short demonstrations. At the end of this professional development, teachers will have a new activity to share with their students.

This session will be led by a member of the educational technology department whose content focus is mathematics. It will take place in two, two-hour sessions, and is geared towards Secondary Mathematics/Computer Science Teachers. Here are the summary of the goals of the sessions and the learning outcomes.

Day 1

- [2:30 - 3:30] An Introduction to Desmos - [**The Tool**] In the first-hour teachers will discover or rediscover, Desmos as a beneficial tool for direct feedback and differentiation in the classroom. They will complete questions regarding Technology, Pedagogy, Content, and Knowledge (TPACK) using the Activity Tool that will be introduced in the session. Through this interaction, they will understand how the platform works, while also learning the "***why***" **-** the underlying framework which helps them to build successful lessons using the platform. There will be time for reflection after the session to determine if any of their beliefs or attitudes have changed regarding technology usage in the classroom.
- [3:30 - 4:30] [**The Mission**] In the next hour teachers will be split into groups of two or three, according to a specific subject matter taught. They will create a "storyboard" for what concept they would like to address in the activity/lab/lesson and what problems have persisted in the past by tapping into their prior experiences. Using their past experiences as a base, they will then address how the platform 'Desmos Activity Builder' could solve those problems.

Day 2

- [2:30 - 4:00] With their storyboards in hand, teachers will begin building their content-driven activity/lab/lesson using the 'Activity Builder Tool'.

- [4:00 - 4:30] Sharing gallery: This time will be used to give teachers the opportunity to share their storyboards (thought process) and outcome (the activity) with their peers. An archive of all activities created will be emailed to all participants in the session for further exploration. There will be time for reflection to determine if their beliefs or attitudes have changed regarding technology usage in the classroom.

Learning Outcomes:

- Through hands-on discovery, Teachers will be introduced to the technology tool Desmos Activity Builder - (The Tool)
- Teachers will understand the importance of the TPACK framework, and incorporate their understandings to their re-visited activity/lesson/lab - (The Mission)
- Through collaboration, teachers will develop and design their activity/lab/lesson based on a storyboard of former content experiences with their students. (Reflective practices)
- Teachers will walk away with an archive of peer designed activities/lessons/labs that address the learning needs of our student population.

Materials

- Computer lab
- Desmos Introduction to PD Session Activity
- Large A2 copies of the “storyboard”
- Markers
- Projector
- Access to wifi
- Student Ipads

Sources/Resources

The design of this Professional development stems from ideas and understandings from the following readings:

Gutierrez, K. (2018). 3 Adult Learning Theories Every E-Learning Designer Must Know. (2018). td.org. Retrieved from https://www.td.org/insights/3-adult-learning-theories-every-e-learning-designer-must-know

ISTE Connect. (2015). Creating Innovative Professional Development Models In Your District. Connect.iste.org. Retrieved from https://connect.iste.org/blogs/rich-czyz/2015/10/27/creating-innovative-professional-development-models-in-your-district

Katz, S. N. (2000). Don't confuse a tool with a goal. In M. Devlin, R. Larson & J. Meyerson, J.(Eds.), The Internet and the University 2000 Forum, Forum for the Future of Higher Education and EDUCAUSE, Boulder CO.

Mishra, P., & Koehler, M. (2006). Technological Pedagogical Content Knowledge: A framework for teacher knowledge. *The Teachers College Record*, 108(6), 1017-1054.

Desmos Activity Builder

Images used:
What's Happening at SPS Image retrieved from https://sphdshappenings.wordpress.com/page/19/

Causes and cures for classroom boredom Image retrieved from https://www.learningliftoff.com/causes-and-cures-for-classroom-boredom/

How to solve your biggest teaching problems with MBE Image retrieved from: http://thelearningmind.com/solve-teaching-problems

Videos/Images:

Desmos activity builder Introduction video retrieved from https://youtu.be/HToTcxmOHPM

TPACK in 2 Minutes by Candace Marcotte, retrieved from https://www.youtube.com/watch?v=FagVSQlZELY&feature=youtu.be

SAMR in 120 Seconds by Candace Marcotte, retrieved from https://www.youtube.com/watch?v=us0w823KY0g&feature=youtu.be

Electric - 5 Minute Countdown - Retrieved from: https://youtu.be/xTczn5RUgnk

TPACK framework image - Uploaded by Milad Saad Retrieved from https://www.researchgate.net/figure/The-TPACK-framework-graphic-adapted-from-http-tpackorg_fig2_319099920

Tuzuki Usagi gif retrieved from https://tenor.com/view/tuzuki-usagi-gif-6170248

Animated dance gif retrieved from https://tenor.com/view/animated-dance-gif-10123220