**Project-Based Learning**

**Objectives**

The goals of this session are to:

* Present the project-based learning process, learning outcomes of project-based learning, the teacher’s role in project-based learning, and variations of project-based learning
* Connect teachers with online resources for math projects
* Show project-based learning in action, via the documentary *Most Likely to Succeed*

**Guiding Questions**

* What is project-based learning?
* What types of project-based learning experiences can I give to my students?

**At a Glance**

* Reflection of Paul Lockhart quote
* The project-based learning process
* The teacher’s role
* Project-based learning variations
* Activity – film viewing
* Online resources for project-based learning in the mathematics classroom

**Materials**

Handout M5 (Project-based Learning, 3 pages)

Film *Most Likely to Succeed* (with viewing access code for teachers)

**Procedure**

**Set-up:** Arrange desks or tables so that teachers are able to easily see the screen where the film will be shown.

**Before We Begin: Quote “to do mathematics” (2 minutes)** (page 1)

Facilitator welcomes teachers as they arrive

* Ask teachers to read and reflect on the quote on the first page of the handout.

**Introducing the Session’s Focus: Project-Based Learning (20-25 minutes)** (pages 2-3)

Facilitator goes through pages 2-3 of the handout. This material is adapted from:
Wurdinger, S. D. (2016). *The Power of Project-Based Learning: Helping Students Develop Important Life Skills* (Reprint edition). Lanham, MD: Rowman & Littleﬁeld Publishers.

*The project-based learning process* - Facilitator unpacks the cognitive process inherent to a project (page 2). Facilitator asks for a teacher to describe a project they have given to their students and diagrams the PBL process on the board, having the teacher fill in examples of students having to cycle through the phases of “plan,” ”test,” and “reflect.” **(8 minutes)**

* Note: Consider reaching out to teachers about sharing a project in advance of the session, and/or having an example project to share should no teachers choose to share a past project during the session.

*Learning outcomes of PBL* - Facilitator reads through the list of learning outcomes. **(2 minutes)**

*The educator’s role in project-based learning* - Facilitator discusses role of the teacher being more of a guide rather than leader throughout the project-based learning process (page 2). It is important that students have opportunities to generate their own plans, test those plans, and reflect on their mistakes; doing “too much” can interfere with this process. In project-based learning, the teacher is there to support students in obtaining the information/materials/resources they need to be able to advance from one step to the next in the PBL process. **(5 minutes)**

*Five variations of project-based learning* - Facilitator gives teachers time to look over page 3 of the handout. The facilitator shares with teachers that depending on teacher experience, the learning objective, and context, different variations of projects may be more appropriate than others. **(5 minutes)**

**Film (25 minutes)**

Facilitator shows the first 25 minutes of the film. Facilitator then gives teachers the online access code to finish the film (they have one week to view the film before the access code expires).

Film access: <https://teddintersmith.com/mltsfilm/>

**Connecting Teachers with Project-Based Learning Resources (5 minutes)**

Facilitator shares with teachers the following link:

<https://www.ct4me.net/math_projects_2.htm>

This website inventories various sites known to contain high-quality mathematics projects. This website also provides teachers with other resources geared towards supporting those new to PBL.

Note: Facilitator should explore and become familiar with the website and its offerings prior to session.