

PDIG Project

2017-2018

Math Daily 3 and Technology in the Classroom:

Launching a Framework to Increase Student

Engagement and Independence

By:

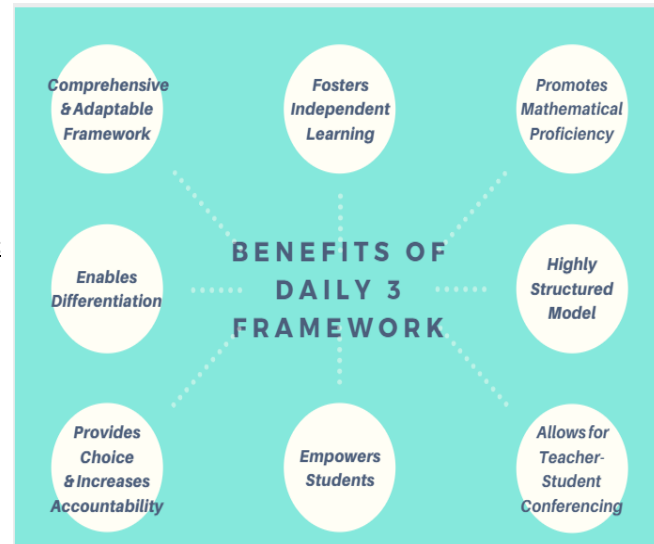
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Context:

As math specialists at Links and John Grant High Schools, the biggest challenge we face is that our students with diverse exceptionalities have difficulty demonstrating independence in their learning. Moreover, we believe that teaching our students how to learn, in a structured setting, is far more important than simply teaching course content.

It is with these considerations in mind that we committed to the following two objectives for our Professional Development and Innovation Grant (PDIG) project for the 2017-18 school year. First, we set out to launch the Math Daily 3 Framework to scaffold students and enable them to play different roles in their learning process. Second, we aimed to increase the use of technology and online resources in the classroom to provide each student with a broader range of skills, as well as, computer/iPad proficiency.



PDIG Project Objectives

Objective 1

- To provide students with deep conceptual understanding of math through the implementation of the Math Daily 3 Framework

Objective 2

- To incorporate technology and the use of online resources to enhance student engagement

Project Description:

When it came to selecting a framework for our specialized mathematics programs, including Work-Oriented Training Program (WOTP), Semi-Skilled, Modified Academic Program (MAP) and Autonomy Preparation Program (APP), we believed that our students would benefit from a highly structured classroom with flexible stations that would encompass the full spectrum of learning opportunities. Based on the nature of the classes and the goals of both teachers and learners at LINKS and John Grant High Schools, we decided to adopt the Math Daily 3 Framework to facilitate differentiation and to foster student independence while maximizing student learning.

Math Daily 3 Overview:

The Math Daily 3 framework created by Gail Boushey and Joan Moser allows students to choose from 3 activities:

- Math by Myself
- Math with Someone
- Math Writing

Math Daily 3 provides students with opportunities to build math stamina and independence while providing the teacher with the opportunity to conduct whole class and small-group instruction, as well as one-on-one conferencing.

At John Grant and LINKS High Schools, the Math Daily 3 stations have been renamed:

Independent Math, Hands-On Math, and Tech Math.

Math Daily 3 Station Overview

Independent Math:

During Independent Math, students build their working stamina through leveled activities and worksheets. The key to student success at this station is to provide students with work that is at their level to enable independent work. Should the work be too difficult, students will experience frustration, will require teacher assistance and will not develop mathematical proficiency. Should the work be too easy, students will lack engagement and will not develop a deeper conceptual understanding of mathematics. In order for the independent math station to function effectively, students must have differentiated math activities and worksheets accessible according to the unit of study.

Hands-On Math:

Hands-On Math is one of the three tasks that students choose during Math Daily 3. Through hands-on math activities, students build mathematical knowledge and problem-solving skills by collaborating and conversing with others. These tasks can be projects, games, activity boards, various math tools/ manipulatives, or even the use of computers or tablets. By playing games and solving problems together, students can organize their thoughts in a way to express their thinking about mathematics more clearly and concretely.

Tech Math:

Tech Math aims to develop student autonomy by enabling them to use different media as tools to search for solutions to mathematical problems. Students are initially guided through activities with their teacher's support where there is a gradual release of responsibility. Once independent, students are able to navigate the online resources and programs with ease. Additionally, students can generalize the computer skills they have acquired, in other subjects of learning.

2017-2018 Journal Entries

Oct 2017 - PDIG meeting 1

- Teachers reviewed Work-Oriented Training Program (WOTP), Semi-Skilled, Modified Academic Program (MAP) and Autonomy Preparation Program (APP) program objectives
- Established PDIG Project Goals: 1. To implement the Math Daily 3 Framework and 2. To incorporate technology and the use of online resources into math lessons
- Created schedule for launch

Nov 2017 - PDIG meeting 2

- Teachers registered students for Reflex-Math and Math Help Services (Online learning tools)
- Created common assessment/rubric for 'Fraction Unit'
- Exchanged resources and lesson ideas

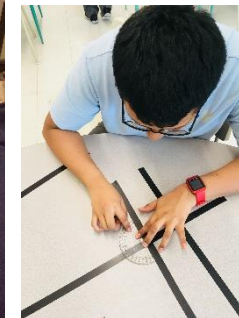
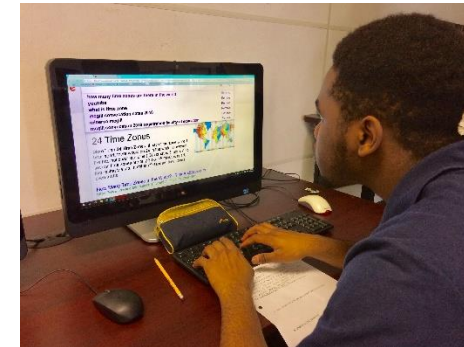
Feb 2018 - PDIG meeting 3 & 4

- Teachers designed classroom organizational tools and posters to visually transform the classroom for stations
- Created games, templates and resources for Hands-On Math station (Jenga, Kaboom, Spoons)
- Compiled a list of educational websites for the Math Tech station

Mar 2018 - PDIG meeting 5 & 6

- Teachers reflected on Math Daily 3 launch and the use of technology in the classrooms
- Drafted final report

Math Daily 3 & Tech



Project Goals:

Overall, the goals of launching the Math Daily 3 Framework and incorporating technology were partially met at both LINKS and John Grant High Schools. With the implementation of Math Daily 3 Framework, we hoped to create a classroom structure which would maximize student autonomy and improve mathematical proficiency. Most of the students from both schools struggled with independence and needed constant attention and guidance. Additionally, the use of online resources, provided students with basic fact practice, but licenses needed to be purchased for Math Help Services. We continue to believe that in order to prepare our students for their work stages and future careers, we must continue to use Math Daily 3. This framework, although imperfect, allows us to be the most responsive to the learning needs of our students.

Project Outcomes:

The benefits for the teacher participants were numerous. We learned about assistive technology, namely, Apps and online resources by speaking to professionals (consultants, IT personnel) in the field. We benefitted from the release time to build common assessments, create games, and plan various math units collaboratively. Additionally, we developed a greater understanding of our specialized programs. Finally, the PDIG project allowed us to focus on best practices, become more effective in our assessments and respond to our students more effectively.

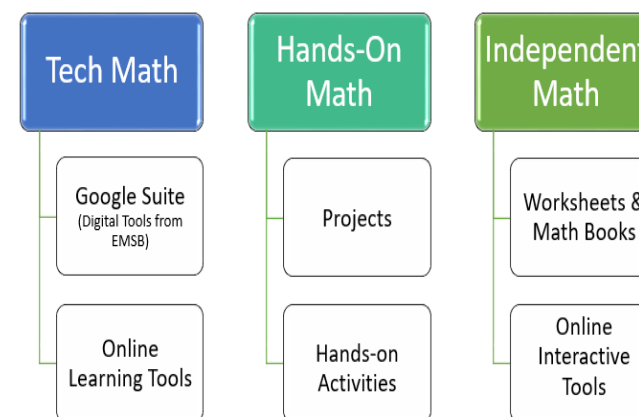
Successes:

- Student independence increased
- Established a common framework, common units and common assessments at John Grant and LINKS High Schools
- Students developed initiative in their own learning and engaged in peer teaching
- Students gained confidence through the use of technology

Challenges:

- Students needed more guidance at the Tech Station (we needed to teach the technology before they could be independent)
- Online licenses needed to be purchased. Administration needed to approve the purchase of licenses for Math Help Services (budgetary constraints could prevent the use of such online resources in subsequent years)
- Building stamina for independent work required more time and the level of independence varied according to the unit of study.
- Unit Transitional Period: With the introduction of new concepts, students who were used to the framework needed more guidance in order to complete math tasks.

Focus of Math Daily 3 Stations



Reinvestment:

The framework established in the classrooms at LINKS and John Grant High Schools created a learning environment that is both flexible and structured. With a focus on accommodating individual learning styles and building independence, this structure can be adopted by any math teacher.

If creating independent learners who are proficient in math is the objective of our English Montreal School Board community of teachers, the Math Daily 3 Framework is a way to achieve this end.

Visit our Math Daily 3 website for ideas and resources

related to our unit on Time.

<https://wotpmathjg.weebly.com>



Independent Math Station



Hands-On Math Station



Tech Math Station

The process for the launch at LINKS and John Grant HS:

- Build stamina for independent work and chart student progress visually in the classroom
- Introduce the 3 stations, as well as, model appropriate working behaviour through the use of anchor charts
- Create posters and organizational materials to facilitate the movement of students from station to station
- Construct math games/manipulatives and register students for online resources
- Connect with project partner throughout the launch to plan units, create common assessments and reflect on the process

Additional information about Math Daily 3 can be found at the following website:

<https://www.thedailycafe.com/math-daily-3>