

HOW WE TEACH CAN CHANGE LIVES!

Workgroup: High School to Postsecondary Alignment

Huddle 4: Improving Fundamental Math Skills and Concepts.

High School to Postsecondary Alignment workgroup goals:

- Examine how high school mathematics curriculum, assessments and courses align with postsecondary entrance requirements, courses and expectations.
- Build community and engage high schools and postsecondary faculty in a dialogue about postsecondary expectations in mathematics.
- Identify strategies that promote greater alignment.

Improving fundamental math skills is crucial to the success of K-20 students.

We began this journey by defining the key challenges our students face when transitioning from High School to College.

Main factors contributing to the challenge:

- Poor problem-solving skills.
- Weakness with basic computation.
- Poor math literacy.

As a result of our work we were able to evaluate potential solutions to the previously identified challenges.

This session will explore suggested strategies to ensure students are mastering fundamental math skills and concepts.

Recommendation # 1

Developing personalized, just-in-time brush-up modules covering foundation skills, especially algebraic manipulation and procedural techniques needed for success on current topics.

Recommendation # 1 - Strategy

- Have local districts make available to their students free just-in-time personalized/adaptive prerequisite math modules for 11th and 12th grade math courses.
- Have each State College System and State University System institution make available similarly structured modules for all 1000 level math courses.

Recommendation # 1 - Why?

- Reduces the need for instructional faculty to re-teach topics, skills, and concepts from previous courses.
- Provides spaced review, practice, and assessment of foundational learning objectives over multiple years. Opens up class time for more higher-order investigations.
- Can allow selected SCS/SUS students to jump ahead and save one course on their math pathway.

Recommendation # 1 - Resources needed

- Selection of an open-educational resource platform and acquisition of technological resources to host a collection of standard modules at the FLDOE level.
- Committees tasked with designing the mathematical content of modules at the FLDOE as well at each individual SCS/SUS institution. Local districts can decide whether to opt-out to design, host, and implement their own modules.

Recommendation # 2

Connect grade/course specific math topics to real-world application and meta-majors.

Meta - Major: Definition. A meta-major is a cluster of academic majors with related content and disciplinary focus. Having a meta-major will give students an academic pathway based on an area of interest to inform class selection and choose a major course of study.

Recommendation # 2 - Strategy

- Provide examples of real-world applications of mathematics based on standard or cluster of standards. (state effort)
- Identify standards/topics that are pre-requisite topics based on meta-majors. (state and local effort)

Recommendation # 2 - Why?

- Students and teachers are struggling to see the relevance in the mathematics that they are learning/teaching.
- Some majors will require a heavier emphasis on certain topics than others. By seeing the connection of the standards to future majors/jobs, students can better determine course sequences.

Recommendation # 2 - Resources needed

- The State College System and State University System will determine mathematics courses that are recommended based on each meta-major
 - The SCS and SUS will work with a committee from K-12 to determine the K-12 standards that are pre-requisite standards for the courses identified for each meta-major.
- Examine current mathematics standards and create examples of the applications of the standards.
- Committees responsible for math text selections should inform publishers that preference will be given to those texts that illustrate how text topics are used in future math pathway courses and in real-world applications.

Recommendation # 3

The FLDOE should provide professional development (PD), to include training and resources, to teachers on how to ask probing questions that elicit critical thinking and problem solving from students.

Recommendation # 3 - Strategy

- Provide annual PD to FL school district teams in a “train–the–trainer” methodology.
- Provide resources for FL school district teams to use in their districts with teachers.

Recommendation # 3 - Why?

- Students who are not successful in Algebra 1 have limited post–secondary options. State assessment data for Algebra 1 and other math assessments indicate that many students are unable to think critically.
- Anecdotal data from K – 12 math supervisors indicates that in many math classrooms teachers are not using questioning strategies that will teach students how to think critically.

Recommendation # 3 - Resources needed

- A team of experts to create a PD plan that can be used in trainings.
- Opportunities to learn from existing programs such as CGI (Cognitively Guided Instruction).
- Financial resources to provide for statewide trainings.

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Top Three Recommendations

Recommendation	Type	Strategy
1. Personalized just-in-time brush-up modules covering foundational skills, especially algebraic manipulation and procedural techniques needed for success on current topics.	<input type="checkbox"/> Policy <input checked="" type="checkbox"/> Practice <input checked="" type="checkbox"/> State <input checked="" type="checkbox"/> Local	<ul style="list-style-type: none"> • Have local districts make available to their students free just-in-time personalized/adaptive prerequisite math modules for 11th and 12th grade math courses. • Have each State College System and State University System institution make available similarly structured modules for all 1000 level math courses.
2. Connect grade/course specific math topics to real-world application and meta-majors.	<input type="checkbox"/> Policy <input checked="" type="checkbox"/> Practice <input checked="" type="checkbox"/> State <input checked="" type="checkbox"/> Local	<ul style="list-style-type: none"> • Provide examples of real-world applications of mathematics based on standard or cluster of standards. (state effort) • Identify standards/topics that are pre-requisite topics based on meta-majors. (state and local effort)
3. The FLDOE should provide professional development (PD), to include training and resources, to teachers on how to ask probing questions that elicit critical thinking and problem solving from students.	<input type="checkbox"/> Policy <input checked="" type="checkbox"/> Practice <input checked="" type="checkbox"/> State <input type="checkbox"/> Local	<ul style="list-style-type: none"> • Provide annual PD to FL school district teams in a “train-the-trainer” methodology. • Provide resources for FL school district teams to use in their districts with teachers.

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"Alone we can do so little; together we can do so much." – Helen Keller

