

Math: Why Blend?

Michelle Jensen, Cecil R. Short, Whitney Keaton, & Qi Guo

5.1 Blending in Math

The first question you should ask yourself before embarking on the journey of blended teaching is “Why blend?” Teachers who are still searching for their answer to this question may end up spending a lot of time and energy implementing changes that do not serve any larger goal or purpose.

Guiding Question: Why Blend?

Teachers must answer the question “Why blend?” It is not sufficient to blend just because it is popular or because others are doing it.

Teachers Talk: Blended Learning to Increase Engagement (2:28)



Blended Learning to Increase Engagement

Mikki Stuart

~ Math Teacher



Online Integration

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Reflection Question: How could blending your teaching help your students?

Teachers Talk: Staying Current

Rachel Peterson



Teachers Talk: Making Teaching Fun Again



Sandy Chalke

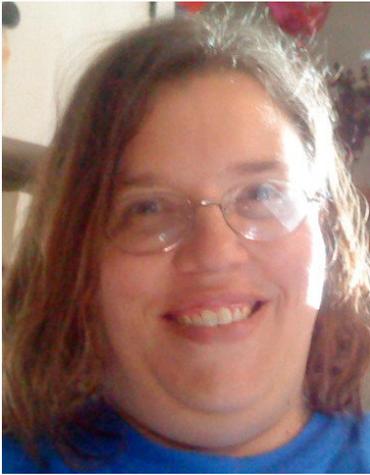
I have so much energy. I'm like 40, 45 right now, but I feel like a brand new teacher every year. I'm like, wait, what am I missing? Is there something to learn? I'm extraordinarily motivated, constantly looking for new ways to challenge and motivate these kids. I think it's refreshing!

5.2 Reasons for Blending

There are three primary reasons why teachers choose blended teaching:

- Improved learning outcomes—Blended classrooms can increase personalization, allow for more individual and small group instruction, and make better use of classroom time.
- Increased access and flexibility—In blended classrooms students have access to materials anywhere and anytime. In addition, they have access to resources and activities that are unavailable to them without an online component.
- Increased efficiency/cost—Blended classrooms can help students complete learning activities in less time and with less energy, reduce printing costs, and help students stay more organized (less likely to lose assignments).

Teachers Talk: Preparing Kids for the Future



Dawn Schlink

We're trying to prepare kids for the future, but the tech is going to change. It's not going to always be the same, so giving them the skills of being able to look for answers and resources and figure out something on their own, I think, is very beneficial.

Teachers Talk: Deepening Learning and Making New Connections (4:10)



Deepening Learning and Making New Connections

Mikki Stuart
~ Math Teacher

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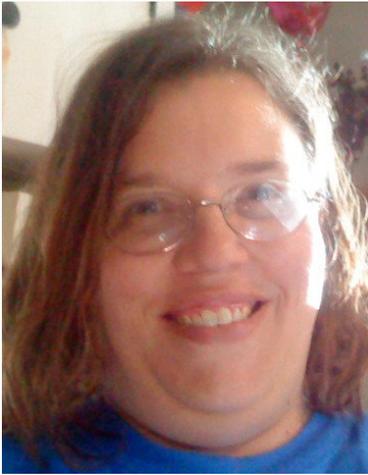
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Reflection Question: How does Mikki Stuart help her students deepen their learning and make connections?

Teachers Talk: Advantages of Blending



Dawn Schlink

The computer takes care of so much of the differentiation. I used to feel like I was making eight different lesson plans for the same class. I've enjoyed being able to generalize my teaching and really spend more time meeting the needs of individual kids. I really feel like I have better relationships through blended learning, because I have time to really sit down with kids on an individual basis. I'm getting to know them and getting to know what they're able to do better.

Oftentimes teachers have multiple reasons for blending, but almost always one of these reasons is primary in their minds. Table 1 below shows some simple examples of purpose-driven blended teaching in math and how it might help teachers achieve multiple purposes simultaneously.

Table 1

Examples of Multiple Purposes for a Blended Math Activity

Blended Example	Blended Purpose
Allows students to connect algebraic and graphic representations in a virtual space.	Learning Effectiveness: Using technology to manipulate algebraic and graphic representations allows students to come up with their own conjectures and test them. They are much more likely to remember mathematical rules if they are the ones discovering them.
	Access & Flexibility: Students can access and interact with the learning content anywhere, anytime.
	Increased Efficiency/Cost: By modeling and manipulating equations and graphs in a virtual space, students master and retain concepts much faster than they do with direct instruction. Teachers save time by lecturing less and using engaging digital activities more.
Creates a space for discussions that involve all class members and facilitates meaningful mathematical discourse.	Learning Effectiveness: Written discourse encourages use of proper mathematical vocabulary and provides evidence of understanding of mathematical terms and concepts. Online discussions also build life skills such as collaboration and communication.
	Access & Flexibility: Online discussions allow all students to voice their ideas, including students that struggle to fully participate in class discussions. Dominant students do not take over the discussion. Online discussions give everyone the opportunity to participate, because they have time to discover what they think and to write about it, creating more robust, reflective, and divergent discussions.
	Increased Efficiency/Cost: Online discussions efficiently give every student a voice.

Blended Example**Blended Purpose**

Blended learning gives students some control over their learning.	They also free up classroom time for other activities.
	Learning Effectiveness: Students can be assigned instruction and learning activities that are adapted to their specific needs. Students who get it can move on to additional learning materials, and those who don't get it can go back and review content until it is mastered. Blended learning can also make it easier for teachers to provide individual feedback to students.
	Access & Flexibility: Students have the flexibility to access the content according to their individual learning progress and have some freedom concerning where and when to complete their assignments. If they can't finish in class, they can continue learning and complete work at home, work, or other locations away from their classroom.
	Increased Efficiency/Cost: Students don't waste time where they are already proficient. They don't have to wait for other students to catch up or worry about falling too far behind.

As you go through the math chapters, you will be able to reflect on what you have learned and design your own activities and classroom in a Blended Teaching Workbook. Click on the "Blended Teaching Workbook" button to access your workbook.


Blended Teaching Workbook

Write a brief statement about why you want to blend your classroom. Which purposes and outcomes are you most interested in for your blend? Access your Workbook [here](#). Make sure you save your copy where you can access it as you go through the math chapters.



5.3 Common Challenges to Teaching/Learning Math

Teachers Talk: Difficulty Connecting Algebraic and Graphic Representations



Rachel Peterson

One of the biggest gaps in math instruction is not being able to connect an algebraic representation with a graphic representation. But if students can use technology to manipulate both, they can start to come up with their conjectures and test them. That's way more powerful than me telling them what the equation is and what to do with it and how to graph it. It's just so much easier for them to see and remember if they're the ones manipulating and making conclusions. I can give them all the rules, but they're not going to remember any of them. But if they're the ones who manipulate and prove or disprove each other, then they're going to remember.

Reflection Question: How can the advantages of blended learning help you overcome the challenges you face in the traditional classroom?

Your choice to blend will be more meaningful to you and your students if it helps to address challenges that you and your students face in the traditional non-blended classroom. We refer to these challenges as “problems of practice.”



5.4 Problems of Practice

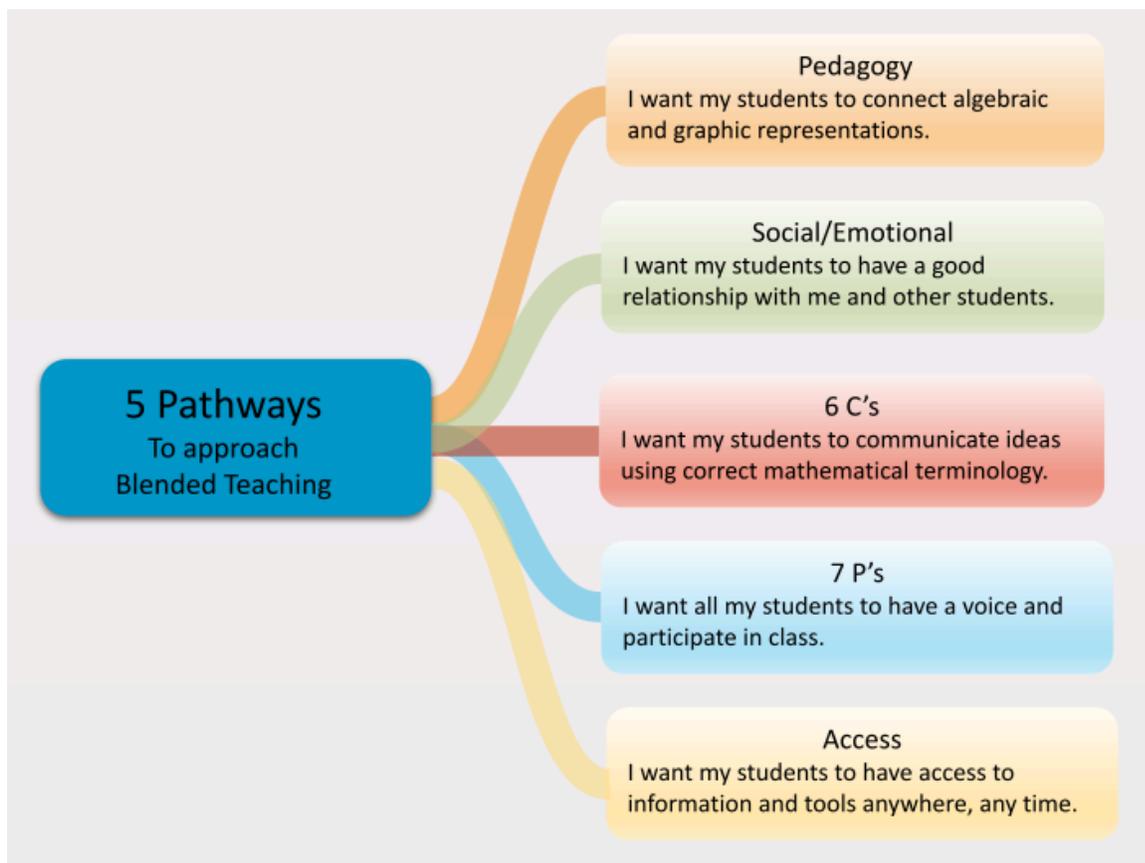
Definition: Problem of Practice

A problem of practice is a current problem or challenge that you believe could be improved through blended teaching.

Problems of practice can fall under any of the three purposes outlined in section 5.2. However, the most meaningful and powerful problems of practice for teachers deal directly with improving learning outcomes for their students.

Figure 1

Problems of Practice in Math



These five pathways are a powerful tool to help you think deeply about problems of practice that are relevant to you. Once you identify specific challenges in your current approach to teaching, you will be able to begin exploring what online approaches may be combined with your in-person approaches to make a better experience for your students and you alike.

Teachers Talk: Student Engagement



Sandy Chalke

Students are less engaged when they don't have control of their learning. I gave one student I worked with a lot of opportunities. I think with blended learning he had a way to choose how he wanted to learn. Sometimes he would even go to the quiet room, and he would just listen to my videos and finish his tasks.

Teachers Talk: Blending to Encourage Mathematical Discussion (1:40)



Blending to Encourage Mathematical Discussion

Rachel Peterson

~ Math Teacher



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Reflection Question: How does blended teaching encourage mathematical discourse?

Finding Your Problems of Practice

Now that you have reviewed the five pathways to identifying problems of practice, it is your turn to look at your own practice and try to identify a couple of challenges that you can consider as you continue throughout these math chapters. What student outcomes and teaching practices would you like to improve? What stands in the way of your teaching having the impact you would like it to have?



Blended Teaching Workbook

Identify 2-3 problems of practice (PoP) that you can use as you consider blended options for your classroom.

Note: You should identify several problems of practice (PoP) because not every PoP has a good blended learning solution.

If you haven't already opened and saved your workbook, you can access it [here](#).

In the next chapter you will begin to explore [online integration and management](#) in your blended teaching.

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