TeachME PROFESSIONAL DEVELOPMENT
CEUs for Teachers and Educators

Incorporating Effective Teaching and Learning Methods

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Introduction

Project-Based Learning is a relatively new trend in academics that seems to be gaining in popularity—for many reasons. In a classroom that models Project-Based Learning, students are invited and enabled to investigate on their own as they explore and respond to open-ended, question-based learning prompts. In this way, they will enjoy a unique and creative approach to education that can be eye-opening for students and educators alike.

Benefits of this approach include nurturing more thoughtful and reflective students who will likely improve their creativity and self-confidence. In addition, since a great deal of time will be spent on self-monitored, self-directed projects, teachers may be able to use their time more productively to mentor their students. Additionally, since Project-Based Learning is a collaborative experience, by partnering with other students on projects, students can also learn teamwork and communication skills that will serve them well for their entire lives.

Section 1: What Is Project-Based Learning?

In this course, we'll discuss the latest research underlying Project-Based Learning (PBL), and we'll discuss specific ways to implement these strategies in the final section. Characteristics, advantages, and essential elements of PBL are discussed below.

What is PBL, and what are some of its basic components and characteristics?

In short, Project-Based Learning is a type of approach that puts the student in the driver's seat. With PBL, students have the opportunity to develop their skills and knowledge bases through relatively independent, free-flowing projects or problems that are focused on real-world scenarios. Whether students tackle projects as teams or as individuals, PBL tends to result in a real sense of independence and satisfaction for students — and it can even be less burdensome for teachers, as well (Larmer, 2020).

However, that doesn't mean that this is a low-effort endeavor. Teachers will have to be very mindful about the way they mentor students in a PBL scenario, and connecting students to the resources they need in order to be successful is no small task. It's also important to be very clear about the fact that PBL is more involved and deliberate than

simply having your students do class projects after class projects. As the experts at the Buck Institute for Education have noted, with PBL, it's key that students feel they are able to "investigate and respond to an authentic, engaging, and complex problem or challenge" with their whole attention (Larmer, 2020).

Why PBL? Why bother with this level of academic focus and class projects?

PBL is relatively new on the educational scene. There are those who believe that the emergence of project-based learning could help prepare students for life in the actual workforce, where adults tend to take on a series of projects as they go about their working weeks. PBL helps teach students from their early years to be creative, critical thinkers that rise to the challenges ahead of them in their day-to-day lives (Larmer, 2020).

As it turns out, PBL also appeals to the minds of our young ones. Children are eminently practical people, and directing their own investigation appeals to them. So does rooting potentially more theoretical concepts in real-world applications. For example, studying geometric proofs can be an abstract, painful, and overwhelming task for many students. Figuring out how to create their very own puzzle with tessellation (or another fun, colorful, and tactile version of studying how shapes interact with each other) can cover the same or similar concepts in a much more memorable and engaging way (Larmer, 2020).

What are the essential elements of Project-Based Learning?

At its core, PBL sounds simple enough: Have your students take on projects related to their field of study. Make sure that your students are connected to the resources they need to feel creative. And, of course, tie your students' projects into real-world applications as much as is possible (Larmer, 2020).

While that may communicate a good portion of PBL's intent, it's far from an all-encompassing rundown of what PBL requires. We can more helpfully define PBL through the following seven essential elements (Larmer, 2020):

- **Open-ended questions.** Each project that a student takes on should feature or focus on a big question that will prompt student curiosity. Part of the project

should entail student research regarding the central question, as well as some type of documented or presented student response to the central question.

- **Building on a strong academic foundation.** Each project that students tackle should be something that they are prepared for based on their previous academic histories. When selecting projects, students should work closely with their teachers to ensure that they select appropriate projects that are accessible yet stimulating. While projects should be challenging, students should never be overloaded with a project that is so difficult that it causes them to shut down because they are so stressed.

- **A process of generating more questions even as students work to find answers.** When new questions arise, the project will feel simultaneously more true to real-life experiences and more like a scavenger hunt. This will help stimulate students' curiosity and help them develop their powers of focus and logical inquiry.

- **A strong focus on 21st-century skills.** PBL encourages skills that will help students succeed in an increasingly technological and ever-changing world, where teleworking may become even more of a norm — such as collaboration, communication, creativity, and critical thinking.

- **A strong focus on student choice.** While a good amount of teacher mentorship will be required to ensure students choose appropriate projects and have the resources they need, students need to feel free to make their own choices to reap the benefits of having ownership over their projects.

- **A true-to-life emphasis on feedback and revision.** In our daily adult lives and in our careers, we rarely find that submitting a piece of work once is the end of the process. This is very different from traditional homework and test opportunities, where, in school, students often have one chance to score as high as possible with no chance to increase the quality of their work. While students will still likely have to take exams in a PBL learning environment, it may be a good idea to shift some of their other work to more of a give-and-take type of learning structure where they are able to make improvements and revisions.

- **A true-to-life emphasis on asking students to present their work.** Again, in our adult careers, we are often asked to give at least a brief overview of what we have accomplished. While this should be done carefully so as not to give vulnerable children anxiety, it's important to help children gain the skills they need to give succinct, helpful, and confident presentations about their efforts, research, and

conclusions. Also, crucially, it's key to give these students the experience of peer review and constructive feedback. These necessary steps are ubiquitous in the adult workplace, yet many adults are unfamiliar or uncomfortable with the process. Helping students know from a young age that peer review and constructive feedback are necessary and beneficial can help introduce them to true-life experiences.

Following a comprehensive review of pertinent literature surrounding PBL and surveys of those who have specific expertise and experience in the area, one educational institute identified seven elements deemed essential for PBL. Helpfully, these focus less on the needed takeaways from PBL (which are more the focus of the elements outlined above) and, instead, outline the ways teachers should consider designing the projects that they help students tackle (PowerSchool, 2021).

According to these experts, the seven must-include elements of a PBL project are (PowerSchool, 2021).:

- A challenging question or a problem to drive the project
- Inquiry that is sustained throughout the project (e.g., the answer to one question prompts another)
- Authenticity (e.g. the problem feels true to life or relevant for the student)
- Student choice and voice in the matter (e.g., the student should have some level of say over the subject matter and direction of the project)
- Reflection (e.g., the student should stop throughout the project to consider how it's going and its implications)
- Critique and revision
- Public product or presentation

One school district in Illinois created a class around the PBL structure that provides an illustrative example. In this high school business class, the teachers formed teams of students to work collaboratively. The students took time to design and pitch a product that was based on a real-life problem that they faced. (The idea was to create a "Shark Tank" feel for kids, which helped both teachers and students get more excited about the concept.) The teachers helped the students create budgets, gather materials, market their ideas, and even partner with local entrepreneurs and business leaders for

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mentoring. The class was a monumental success, with teams of students designing mobile apps, practical products, and some experimental innovations that may not have done well in the real-world marketplace, but certainly helped those students realize the value of creativity (PowerSchool, 2021).

This example can also serve as a reminder that PBL doesn't have to be isolating. Rather, the focus should be on giving students a worthwhile and inspiring educational experience with tangible value, whether they work with or apart from their peers (PowerSchool, 2021).

While this type of teaching philosophy doesn't necessarily require less effort (and, in some cases, can even require more effort from teachers - particularly in the early project onboarding phases), it is associated with myriad pay offs that, to many, make the higher expenditure of time worth it for all concerned. In the next section, we'll discuss these benefits briefly in order to ensure that we are providing an accurate picture of the reasons to pursue PBL (PowerSchool, 2021).

What are the benefits of Project-Based Learning?

One of the primary benefits of project-based learning is simply stated: It helps school-taught lessons transcend simply-academic criteria. In other words, through project-based learning, a student will learn more than particular subject matter. They'll learn time management as they track projects, as well as presentation skills, organizational skills, communication skills and more as they move through a largely self-guided project (PowerSchool, 2021).

In this way, project-based learning helps connect students to the concept of learning beyond their classrooms. In theory, at least - and, quite often, in actual research, as we'll discuss in a later section - students who have some project-based learning experience will be better prepared to meet the challenges life presents in a more balanced manner (PowerSchool, 2021).

Specific benefits of project-based learning are as follows (PowerSchool, 2021):

1. **Project-based learning allows students to engage deeply with their content in a practical and ultra-memorable way.** This allows students to sidestep cumbersome, routine, and inherently less valuable practices like learning the same content less effectively through flashcards and rote memorization. Rather,

by practically using the information to attain an end, a student will engage with the content in a way that promotes deeper learning instead of regurgitation.

2. **Project-based learning contains inherent motivation.** Students are practical, and by nature very curious. Many students are also high-achieving and competitive. The idea of solving a problem they are given or making a valuable product (or something else with a tactile or public end in sight) will attract many students. Even students who would prefer not to be in the spotlight would likely prefer some type of hands-on, inquiry-based creative work over lectures and reading. Because project-based learning is more engaging and more fun, students want to learn more - which makes teaching much more effective and far easier in the long run.

Backing up this philosophy is productivity expert Daniel Pink, who created a popular TEDTalk that highlighted how people are motivated by purpose, mastery, and autonomy. Project-Based Learning allows students to start with autonomy and purpose and see results as they work toward mastery, making PBL a very compelling experience for both students and teachers alike (PowerSchool, 2021). Additional benefits of PBL include (PowerSchool, 2021):

1. **Project-based learning is correlated with higher levels of student achievement.** Intriguingly, researchers from Michigan State University and the University of Michigan found that this benefit is seen in disproportionately high levels and among schools that struggle with poverty. As poverty is associated with lower levels of engagement and achievement, the positive impact that PBL may be able to provide in the students' favor will likely be particularly valuable.

2. **Project-based learning is focused on meaningful business and communication skills.** When undertaking a project, students will learn about more than just the academic content at hand: They'll learn teamwork, critical thinking, and problem-solving skills, which are critical for the workplace and beyond.

3. **Project-based learning can go hand in hand with Social and Emotional Learning (SEL) endeavors.** SEL is extremely important for the healthy development and success of a young student. The partnership building, communication, and collaboration inherent in a PBL framework help reinforce SEL learning in an organic and productive way.

4. **Project-based learning can inspire real interest in a field of study.** When subjects are brought to life with real tasks and meaningful projects, students can have a

much better sense of what becoming, for example, a mathematician, scientist, or artist could really be like. Not only can this deter students from picking a career or course of study that might not actually, in reality, align with their personality and preferences, but it can also help connect previously-uninterested students with the career of their dreams.

Project-based learning is far from a perfect, stress-free, or easy-to-implement framework. As with other learning and teaching modalities, along with the numerous benefits that PBL offers to the academic community, challenges may also arise in its implementation. Such challenges will be discussed in the following section.

What are the challenges of Project-Based Learning?

The challenges of Project-Based Learning, simply stated, are as follows (PowerSchool, 2021):

1. **Project-based learning can be a steep departure from what many people are used to when they think of education.** While innovation can be positive, it may also be difficult for people to embrace. When PBL teachers or schools begin a school year with less instruction, more coaching, more interdisciplinary learning, and more community engagement than is perceived as the nowm, that can ruffle some feathers.
2. **Project-based learning is relatively new in the educational scene.** Many of the support systems that we have in place as a society are geared for more traditional types of instruction. This can make finding support for it as a teacher just starting out relatively difficult.
3. **Project-based learning can seem scary and overwhelming in the beginning phases.** For a young student just starting out on their educational path, being told that they will be responsible for a massive project throughout the school semester can be concerning. For these students, it might be a good idea to emphasize the fact that (just as in life after school) the best way to tackle a massive project is to break it down into tiny, extremely manageable steps.

What are some examples of Project-Based Learning?

Before we delve into the research surrounding PBL as well as practical tips for implementation in later sections, it may make sense to provide some specific examples of PBL to give some context to our following conversation (PowerSchool, 2021).

- One science teacher decided to begin a PBL module with a field trip to the zoo. This naturally piqued student interest and enthusiasm, so the project was already beginning at a high point. In the lead-up to the zoo adventure, the teacher presented the students with information about animal habitats and encouraged the students to form opinions about the best environment for a particular animal. Then, after the visit to the zoo (which gave significant practical relevance to the previously-amorphous conversation), the teacher asked each of the students to build a plan for a new type of habitat for the animal of their choice. The students had to back up their planned environment with research and drawings, and then present their findings to zoology students from a nearby college, where they were able to receive feedback.

- While, from this example, it may seem very clear that PBL is well-suited to the sciences, it can be natural to find ways to incorporate other aims as well. For example, one English language arts teacher decided to team up with one of her colleagues, a social studies teacher. In their blended PBL module, they asked their students to define the role that censorship plays in society. In order to do this, they had their students find a book that was banned, read it, research it, form an opinion on it, and then participate in a mock trial experience centering on the future banishment of the book.

- Another group of math teachers decided that simply assigning their students problem sets was not actually working for anyone — the teachers included, who were exhausted from so much necessary grading. They worked together to develop an escape room activity, one in which the students entering the room took on the role of code breakers in a high-stakes theatrical scenario. The nuts and bolts of breaking the code depended on math formulas, but the story provided engagement and fun for everyone involved. In the lead-up to the event, the teachers had presented different formulas relevant to codes throughout history; and, after the escape room experience, the teachers asked students to rationalize their work before, and at the end, discovering if they were correct or not (and had subsequently saved the day).

These are just three examples. There are hundreds of different types of possible project-based learning plans. We'll include a few more ideas for math PBL modules below. See if any of these general types of project ideas would be suitable for your classroom and student population (PowerSchool, 2021):

1. Challenge your students to create the ultimate design: Give your students a brief background into something that's challenging in the world today, and ask them to solve that problem or provide a somewhat realistic solution to the problem using a mathematical model.

2. Give your students a theoretical budget, and challenge them to do something awesome with it. For example, ask them to contemplate what the best possible way to benefit their community for just $25.00 would be.

3. Run the deserted island simulation: Tell your students that they've woken up one morning stranded somewhere in an isolated location. Not only must they survive, but they must also find a way to design a civilization that will be safe and secure for years to come. What type of society do they build? How do they go about doing so?

If you're interested in finding lesson plans for inspiration, there are many PBL plans available on the internet (particularly on Pinterest) (PowerSchool, 2021).

Section 1 Key Points

- It's critical that students are able to respond to and investigate a complex, engaging, and authentic problem with their whole attention. In addition, it is important that they *feel* engaged and empowered.

- Well-designed project-based learning can help prepare students for their adult life in the workforce. As adults, we tend to take on a series of projects — so putting students through similar paces is a good way to get ready for reality.

- PBL's seven essential elements include a strong focus on student choice, feedback and revision throughout the project cycle, and open-ended questions to prompt true curiosity and creativity as an alternative to rote educational methods.

- PBL can be structured around solo investigation or group activities, as long as the focus is on giving students a complete and beneficial educational experience with tangible value.

- PBL helps school-taught lessons transcend traditional subject matter. Through PBL, a student will learn time management, presentation skills, organizational skills, communication skills, and more.
- PBL allows students to start with autonomy and purpose and see results as they work toward mastery, making PBL a very compelling experience for both students and teachers alike.
- PBL is a relatively new concept, so it may not have as much traditional support, for example—and onboarding students to a new project can seem very overwhelming for students.

Section 1 Conclusion

PBL is an educational framework that puts students in the driver's seat. It can lead to many benefits for everyone involved, but it can be difficult to get popular support! One thing that may help is having a good amount of clear research backing up your decision to dabble in PBL. In the next section, we'll take a quick look at two recent studies that can help in this area.

Section 2: The Science Behind Project-Based Learning

PBL has been a subject of numerous studies over the past decade. FIndings from two brand-new studies have provided a great deal of support for the PBL approach — particularly in terms of successful academic outcomes for historically marginalized populations of students. Important takeaways from those studies are summarized below.

Conducted by researchers out of both Michigan State University and the University of Southern California, these two innovative gold-standard studies sought to determine whether there is a demonstrable, causal relationship between the implementation of PBL and better educational outcomes for the involved students (Terada, 2021).

Between the two studies, some 6,000 students were studied. The studies included the participation of over 100 schools across the United States. Notably, for the purposes of this study, over 50% of the students included came from low-income households. This is significant because, unfortunately, it has become extremely clear that household levels of income are very strongly correlated with levels of achievement (Terada, 2021).

The Research-Backed Benefits for Advanced Placement Classrooms

One of the studies focused on the benefits of reimagining AP, or Advanced Placement courses through a PBL lens. The AP courses in question were concentrated in Environmental Science and U.S. Government and Politics. The teachers responsible for these courses had diverse backgrounds, ranging from the humanities to the sciences. The educators were asked to craft their coursework around project-based activities related to their fields of study (Terada, 2021).

The educators responded well, introducing their classes to activities such as (Terada, 2021):

- Simulations of elections, electoral caucuses, and traditional debates surrounding elections
- Re-enactments of historic Supreme Court cases, where students took on roles either inside the case (arguing as prosecutors and defenders in mock court) or as reporters, telling the tale to the public on the outside

After seeing the semesters through to their end, the researchers studied the scores of the students in project-based classrooms who took AP tests as compared to students in more traditionally-taught classrooms. What they found told a clear story: The students in the project-based classroom outperformed their peers by an average of eight percentage points. When the researchers looked more at the demographic data from the students who took and received higher scores on their AP tests, they found that students from lower-income homes and neighborhoods were represented in similar numbers among the higher performers as are their peers who were from higher-income areas (Terada, 2021).

The researchers, in interpreting their findings, made the case that high-quality PBL can make learning more equitable than more teacher-centric educational approaches.

This case was only strengthened when the researchers followed the PBL classrooms through a second year of instruction. In the second year, the researchers found that the improvements in educational efficacy associated with PBL were durable: In the second year, students in PBL classrooms scored a full 10 points, on average, higher on their AP tests than did their peers (Terada, 2021).

For some time now, the national educational community has been looking for equitable ways to teach students from diverse backgrounds. The student population is becoming

more and more diverse, so this is a clear need that will have to be met now and in the future (Terada, 2021).

One of the lead researchers on the AP student study, an investigator from USC, said: “There’s a belief among some educators and some policymakers that students from underserved backgrounds… aren’t ready to have student-centered instruction where they’re driving their own learning” (Terada, 2021). Clearly, these studies dispute this notion and demonstrate the value of this type of learning.

After looking at the data, the researchers also concluded that, on a national level, approximately 30% of students from lower-income homes tend to take AP tests. When those same students were educated in a PBL classroom, that number increased significantly to almost 40%. Put another way: With PBL, more lower-income students take and pass their AP tests — which can unlock significant opportunities for them later in life. This was an extremely significant finding, as AP classes and AP testing are very focused on results. In previous years, these classes in particular have gotten a bad rap for “teaching to the test.” With the results of this study, it’s becoming clear that this doesn’t have to be the case (Terada, 2021).

The USC researcher posited one reason why she believed PBL learning was so much more effective for students overall: “There were more connections to their real lives. For example, in the AP Environmental Science course, they were learning about their ecological footprint and thinking: How do my behaviors affect the health of my community and of the larger world?” (Terada, 2021)

More Authentic Learning Observed in Elementary-Level PBL Coursework

The second study focused more on the educational experiences of much younger children. The researchers also wanted to determine whether PBL could help students in earlier grades — in this case, third grade — connect more to the world around them. One educator in this study created a “Toy Unit” that actually helped his young students grasp (literally) the concepts of friction, gravity, direction, and force. He spent some time making “toys” himself with cheap, freely-available materials such as milk cartons, straws, and water bottles. He tasked his students with building simple machines from those building parts that were based on electrical or magnetic force (Terada, 2021).

This classroom wasn't the only one exploring simple ways for young children to engage with scientific principles. Michigan State University and the University of Michigan looked at the learning incomes of over 2300 third-grade students in almost fifty schools across the nation. In the study, students were randomly assigned to either a control group (where the teacher taught in a more traditional lecture-based manner) or to a PBL group, where the focus was more on tactile play and experimentation (Terada, 2021).

When designing the study, the researchers made sure that the schools selected represented a typically diverse population. Of the student bodies, about 60% were either students of color or eligible for reduced-price lunch, or both (Terada, 2021).

At the end of the study period, the researchers examined the students' test performance. Again, on average, the students in PBL classrooms outperformed their peers by about 8 percentage points. These results held steady across all included reading ability levels and socioeconomic classes (Terada, 2021).

Section 2 Key Points

- The researchers in the gold-standard PBL study centered on AP students found that students from lower-income homes and neighborhoods were represented in similar numbers among the higher performers as are their peers who were from higher-income areas.
- As a result, the researchers posited (based on their findings) that PBL can be a very equitable option for instruction, even in AP classes.
- The researchers found that their results were durable, noting similar achievement data after the second year of observation.
- Researchers overseeing a different gold-standard PBL study aimed at learning about the achievement levels of much younger students found very similar results. Across the board, PBL seems to be an extremely effective way of teaching students from a variety of backgrounds.

Section 2 Conclusion

Two recent gold-standard studies have shown that PBL is an efficient, effective, and equitable teaching strategy—making it a feasible and desirable option that could potentially solve numerous issues that our modern world faces. Knowing this, the next

important step is to have strategies in place to make PBL a reality for teachers and their students.

Section 3: Implementing Project-Based Learning Into Your Classroom

As you begin to implement PBL instruction into your style of teaching, it's important to remember that PBL modules and more direct, traditional styles of instruction don't have to be mutually exclusive. In the third section of this course, we'll provide a few ideas for ways that you can transition to PBL as it becomes appropriate for your specific population of students. As remote learning is becoming more common, we'll also talk about ways to make PBL work for you if you're in a remote or hybrid educational situation.

When moving your students through a PBL endeavor from start to finish, one of the key factors is student motivation and direction. As a result, you will likely adopt more of a mentoring and coaching mindset as you help guide your students through the project.

How Can I Help Students Move Through a Project, from Start to Finish?

The start and finish of a PBL module can be overwhelming and formidable. From the beginning of a project, where you'll need to help students get familiar with a significant amount of information very quickly, to the end of a project and the presentation, you will need to help your students tackle many unfamiliar and potentially-difficult things.

Think of yourself as a coach. For example, In an athletic setting, when you're getting young swimmers ready to compete against athletes from another team, you have to ensure that the swimmers have a productive, competitive mindset throughout a long series of challenging, repetitive tasks. You need to keep up your swimmers' morale during long workouts and hard work to prepare them for their end goal (McDowell, 2021).

Your students will need to do something similar. Here are three strategies to help you make sure that they are ready to make it across the finish line:

- **Instruct them with care.** Naturally, this is something you'll be doing already, but you'll need to tailor your teaching strategies to help guide your students toward motivation and a sense of self-instruction. You'll need to check in with your students frequently to make sure that they're understanding the material, not just skating through a fun project. You'll need to work with them to make sure that their projects offer many different opportunities to practice their skills. You'll need to provide consistent feedback to ensure that their project stays on track. And you'll need to direct them to collaborate with other students and teachers as best suits their project. Practical tips that could help in this area include (McDowell, 2021):
    - Spend time at the beginning of your student's project giving them a good amount of direct instruction. Make sure that your students have a grasp on the high-level key facts they'll need to accomplish their project successfully. This is the time for the most teacher-led feedback.
    - As your student moves through the project, ramp down on direct instruction. When you do spend time with your students, ask them to describe what they're learning. Work with them to make sure that they're consolidating their skills and the various concepts they're learning. During this stage of the project and your instruction, your feedback should be more discussion-based.
    - Toward the end of the project, your direct instruction should be relatively minimal. Feedback for your students should come from their peers, with you more monitoring for accuracy and offering practical tips on presentation.
- **Think carefully about the way you monitor their progress.** Consider the young swimmers again. They might monitor their progress against a clock and constantly assess whether they have the proper technique and form to get them to their goals. Your students may be used to monitoring their progress through exams and numeric scores, and PBL is a little different. Your students will need to learn how to evaluate their own progress. They'll need to compare drafts of presentations to previous drafts, for example, to build their own sense of whether something is working or not. You'll need to introduce them to the idea of taking responsibility for their own learning and the objective quality of their own work. Practical steps that may help in this area include (McDowell, 2021):

    - Give your students examples of work that is great, good, poor, and clearly substandard. Ask your students to review their own work in comparison to the examples you've provided. In the beginning, offer your own evaluation of the students' work to help bolster their confidence in their own assessment skills, but, as your students gain confidence and show accuracy in their evaluations, ramp down your own assessments.

    - Make sure that your students keep examples of their own work throughout the project so they can look back and see how they've improved. It's often difficult for students to see how their skills are progressing, so keeping concrete examples can be very helpful.

    - Help your students come up with milestones and times to check in with themselves to assess their own performance.

- **Help your students develop and test the best practice tasks possible.** Again, we'll think about the way swimmers improve. Their overall goal—their project, if you will—is to win a race (or get a great time in an event). However, when they're moving toward that goal, they'll do things other than simply swimming the specific race over and over again. They'll sprint shorter distances, participate in longer endurance events, and even cross-train outside the pool to make their muscles stronger. When your students are moving toward their goals, help them come up with smaller things to practice on a daily or weekly basis that will help them achieve that goal — smaller things that may or may not be obvious to them. Practical steps that may help in this area include (McDowell, 2021):

    - Assigning your students cognitive tasks that may help them work toward their goals and sharpen their skills (such as leading a small group in discussion, for example, or editing another student's work).

    - Providing your students with work examples that are either great or not-so-great and asking them in an informal manner what their opinion is on each. Having them call out specific reasons why the sample is exemplary or why they would recommend changes is ideal.

    - Helping your student build a protocol for giving feedback on someone else's work. The focus should be entirely on grading work that is not their own and providing constructive criticism in an empathetic manner. Of course, the student will likely be able to apply the same thought to their own work, but that shouldn't be the main point of this exercise.

Getting Parents on Board with Project-Based Learning

When you're the teacher in your area pioneering PBL, you might be met with a certain level of resistance from the parents. Many parents are skeptical about projects supplanting the teaching methods they're more familiar with, and that makes sense. They may be thinking of the projects they experienced when they were children — or imagining that you're simply going to be requiring a lot of time, attention, and further investment from the parents themselves as they "help" their students move through a project successfully (Piper, 2021).

Dispelling these notions upfront is clearly a good idea, but you'll need to follow up any type of 'this is not a traditional project' announcement with clear guidance to help parents be invested in this new type of learning strategy. Here are some ways to spark interest among the parents at your school (Piper, 2021).

1. Start by simply communicating, early and often, that PBL is different from simply doing more projects. At the beginning of the semester, sit the parents of students in your classroom down and tell them that you're trying something new — but it really isn't something that is particularly outlandish. Show them the strong base of evidence supporting its benefits (hint: The studies in Section Two may be a good place to start.) You might also have to adopt some simple marketing strategies to help the parents realize that this is something new and innovative. For example, consider the vocabulary you're using to casually describe what you're doing. Are parents listening to you and envisioning that you're about to bring out construction paper and scissors? Or are you communicating that you're going to empower your young students to complete work that helps build individualism, communication, critical thinking, and creativity? Tie the benefits of PBL to the long-term ambitions you have for your students, and be confident in the teaching method you've chosen. This will go a long way toward ensuring that the parents are backing what you do.

2. Think carefully about the projects you start the year with from a parental point of view. Your assignments will be met with more scrutiny at the beginning of the semester, so ensure that those first few lessons are especially engaging, collaborative, and exciting — yet, also, accessible and likely successes. If there's a project that's a bit more of a slow burn or more ambitious and risky, save those for a little later in the year, when you've established yourself and the students have more experience with PBL. In addition, it may be a good idea to tackle a classroom-wide 'mini-project' that only lasts a week or so, followed by some type

of traditional assessment, to prove to yourself, your students, and their parents that you can help students retain information in a new and more engaging way.

3. Come up with a quick elevator pitch for PBL. As you pivot to this new learning model, you'll get approached by parents, colleagues, and even community members or investors who will want you to explain very clearly and quickly what the difference between PBL and 'doing projects' is. One helpful phrase might be something along the lines of "designing projects around key learning standards — standards that include those assessed on an exam such as a standardized test or AP exam." You can also turn it around on the parents and ask them to think of the difference between a really satisfying, hands-on work project versus a routine lecture. The parents will likely be able to recall their own varying levels of engagement and start to see what you're doing. Pointing out that you're planning on helping students get to a place where they can feel engaged and can ace traditional exams will also help.

How to Make PBL Modules Ultra-Engaging for Kids: Tie Them Very Closely to Real-World Problem Solving

We've talked about how to help kids understand the mechanics of a project and we've discussed ways to get their parents on board. Now, let's discuss a surefire way to ensure that children are really engaged with what's happening: Making previously-vague problems as critical and realistic as possible.

There are several reasons why this is a good thing. First and foremost, the messier, faster, and more true-to-life the problems students face in school are, the more they'll be prepared for problem-solving in adult life (McDowell, 2022).

Again, a very important element of PBL is making simulated problems for your students as realistic and engaging as possible. As was the case throughout the country, one school superintendent was facing numerous challenges as she was working to keep her schools running efficiently during a pandemic (certainly a real-life problem requiring keen management skills). As she worked through the struggles, she noted that the problems she faced had a few key features potentially worth replicating for her students.

Those features were as follows (McDowell, 2021):

- The superintendent was never thrown just one specific problem to solve at a time, or several of the same kinds of problems to consider in a neat line. Rather,

the superintendent faced many new and different issues that she and a team of people constantly needed to learn from, prioritize, and solve as efficiently as they could in a set amount of time. This required good decision-making skills as well as good problem-solving skills.

- The superintendent realized that the problems she and her team faced changed over time — requiring her community to constantly re-evaluate the solutions they created, communicate quickly, anticipate multiple different scenarios, and prepare as best they could for anything that could happen. While something like this might be beyond the scope of a fourth-grader, giving them evolving, surprising problems that help them learn to be quick-thinking will both challenge and help them.

Based on her obstacles and successes derived from her experiences, the superintendent ideated five specific examples of strategies to drive authenticity within a PBL framework (McDowell, 2022):

1. Ask students to derive the central question fueling a project from several different contexts — or ask them to select from many issues in one complex context. For example, in one third-grade classroom, the students were assigned a book about the introduction of the Keystone pipeline and the requisite challenges that Native Americans face. The teacher might then introduce a few different contexts for similar issues (e.g., cobalt mining and its negative impact on rural Africa, or how wind farms are causing some species of birds to decline). The students might then group together to determine the core of the challenges that these native species and Indigenous peoples face. To aid and build their projects, they might develop questions about what they want to learn, and, from there, determine how they might go about answering those questions. This will feel far more compelling to students than simply being tasked with a question by a teacher.

2. Present students with changing, fluid problem environments instead of static problem sets. This will be much more representative of the way students will actually experience problems in real life. For example, in one AP economics class, the teacher had her students analyze the changing supply and demand of a popular video game system. This was, naturally, a data point that was destined to ebb and flow over time. For the project, she had her students assume the role of a profit advisor for the company that produced the game system. Over the course of the PBL module, the teacher had the students scanning reliable news sources every morning to learn the latest status of the market for that specific video game

console — as well as any factors (e.g., governmental restrictions, supply chain fiascoes) that could affect the supply available to the producer. After getting a sense of what was happening in the world, the students would have to prepare quick daily reports to "advise" their "client." This felt fun and timely — but also gave the students vital information about the real-life supply chain issues affecting America. On a more meta level, the project required the students to learn fast and effective conversational skills, competency and responsibility, the ability to work together in small groups, and what it felt like to issue recommendations for business strategies at such a high level. As many of those AP economics students were surely headed for at least some type of similar role in their actual careers, this class was well-suited to its audience and interesting for all involved.

3. Ask students to create presentations, not as high-stakes, meticulously-edited performance work, but shorter, rougher sketches that are allowed to be imperfect but more closely aligned with what a student actually thinks. In one seventh-grade classroom, students were asked to send in persuasive essays on a wide number of topics. To add some spice to this relatively routine assignment, throughout the drafting process, students were randomly asked to present their current draft, current ideas, and the general state of their paper. The other students in the classroom were asked to provide feedback on both the writing and the content at this time. While this is a relatively anxiety-inducing exercise, it's very true-to-life — for both the students presenting their evolving ideas and the students providing feedback. If you decide to take advantage of this type of activity in your classroom, it might be a good idea to allow students many different ways to present — e.g., not always standing up in front of a room and talking. They might have the opportunity to share an in-progress Google doc, for example, instead. However, it should also be noted that as scary as this process might feel the first week it's implemented, if it's a process that becomes routine in your classroom, it will both feel less scary and prepare students well for this extremely common business practice.

4. Have an authentically-interested audience engage with the students throughout the formation of the project, not just during a summary presentation at the beginning or during a kickoff meeting at the front end. In one fifth-grade art class, the students were asked to create a series of murals that represented their community. Over the course of this project, the students were tasked with meeting with various community members as well as local artists to learn more

about the community, get feedback on their plans from the artists, and complete other related tasks. In this way, the structure that was put into place ensured that students were receiving guidance and feedback throughout the project, instead of just at the end—which is simultaneously more helpful and less stressful.

5. Finally, have your students tackle smaller, more traditional sets of problems, just under short bursts of time. This constraint alone confers a game show type quality on a relatively traditional type of assignment. For instance, in one Algebra II class, students were tasked with working with logarithms to understand some biological scenarios. Each student was using the same type of mathematical tool (e.g., logarithms), but each was looking at a different biological system. The students were grouped to share what they were learning, evaluate each other's work, and see if there were any connections between what they were experiencing. This teaches students the ability to work quickly on temporary, challenging work—which feels much more appealing than working through a complex and lengthy problem set on your own.

As you're onboarding your classroom and parents to this new type of learning, consider the following talking points: introduce them, repeat them, and send them to parents in emails. Hopefully, this will help dispel the notion that you're simply a fan of assigning monotonous projects (Piper, 2021):

1. Through intentional, specifically chosen, and carefully-designed projects, PBL allows your students to grow and practice the 21st-century skills that will help them find success in college, work, and even in a happy adult personal life. For example, teaching students how to tackle unstructured problems and communicate well now will help them for the rest of their lives.

2. With PBL, the students in the classroom enjoy more of a sense of responsibility for their learning. Not only does this make learning more engaging for young people, it teaches them early on that they will be responsible for their success later in life.

3. Studies consistently demonstrate that students who participate in project-based learning outperform students taught through more traditional methods on key assessments. (This will likely be a very compelling point, so it may be a good idea to find recent studies, perhaps out of well-known and respected research institutions, with effective, easy-to-understand visuals to share with parents.)

4. Well-designed projects allow students to show us what they can do in a much deeper way than the average test. Projects also allow students the chance to challenge themselves, to figure out what they want to do in life, grow closer to their peers, and eventually require less support for success much more quickly. All of these are incredible benefits for young people.

When you're starting a PBL module, you'll need to figure out a way to inform and connect with parents in a meaningful way. Just as with any other learning strategy, you'll find that you have a better chance of success if the parents are helping their students at home. However, with PBL, it's also key to tell your students' parents that they won't be expected to complete projects for their children. With effective communication of the above talking points, you'll be well-set to ensure that parents are ready to support their students' success.

Can PBL Work Within a Hybrid Teaching Model?

PBL is nontraditional in and of itself, so it may be difficult to imagine that it could work with other currently-nontraditional forms of education, such as hybrid teaching. However, as hybrid classrooms are becoming more and more common, it's increasingly clear that disallowing students in hybrid classrooms from experiencing the benefits of hybrid education would be a disservice for everyone involved.

For example, one of the key benefits of PBL is its ability to teach students how to communicate and collaborate well, both for their mental health and to get them ready for the type of collaboration they will experience in college and in their adult lives. Students in hybrid environments may not have much time to spend with their peers in person, so they especially have a great need for these types of experiences. Teachers working in hybrid classrooms do their best to ensure that all students have the opportunity to share about themselves, but it isn't always possible to provide more than a minute or so for each student to give a few basic facts about their lives (Miller, Kelly, and Krajcik, 2021).

When students are collaborating on real-life projects over a longer-term period, they will naturally share parts of themselves that they might not think of in a more formal setting. It will be easier to form a community, feel natural, make connections, and find support in tough situations (Miller, Kelly, and Krajcik, March 2021).

This might seem like a dream-worthy scenario, but it's very possible to use PBL to foster community in a hybrid academic setting. Here are a few strategies that you might be able to leverage to make it easier in your classroom:

- **See if you can strategically use the questions you provide students or prompt them to use in order to strengthen the relationships around them.** This should include your relationship with your students. Teachers in all types of classrooms, hybrid and in-person, build trust and a rapport with their students by asking their students, very simply, what they're interested in. Why? Doing so provides a very low-stress way to help students build communication skills. (The content, if you will, is already very accessible to the child—it's something they like—so all they need to worry about is the transmission) (Miller, Kelly, and Krajcik, March 2021).

  In order to bring this same sense of accessible, enjoyable communication one step closer to an academic sphere, it may be ideal to have a low-stakes forum each week in which all students get a few minutes to talk about whatever they please (within reason). One set of hybrid science teachers decided to follow this pattern. They scheduled a weekly "genius hour," in which every student had a chance to research answers to a set of scientific (but carefully planned to be "fun") questions. They were then asked to informally talk about what they learned, after being told that they weren't being graded—but rather it was just supposed to be an interesting conversation about, say, how many Oreos it would take to reach the moon (Miller, Kelly, and Krajcik, March 2021).

  Over time, the science teachers realized that many of their remote students really enjoyed having an audience in that lower-stress way, and even though they weren't being formally assessed watching students stumble through lightning-quick investigations did show the teachers and students alike a great deal about their burgeoning project management skills. Of course, not every student will be thrilled with the idea of an impromptu presentation. A hybrid fourth- and fifth-grade teacher decided to adopt a similar model, while allowing her students complete choice as to how they wanted to share their answers: For example, they could call in so only their voice was audible, they could send in a pre-recorded voice message, or they could simply type their thoughts into a shared Google doc (Miller, Kelly, and Krajcik, March 2021).

  Another science teacher took the choice out of the matter but opted for the lowest-stakes type of communication for her students: She held a "chat blast" session in a shared chatroom, publishing her research questions at the top of the

hour and giving her remote students a set amount of time to type their way to an answer (Miller, Kelly, and Krajcik, March 2021).

- **Find ways to give fully-remote students a say in hybrid classrooms.** Hybrid classrooms in particular can be very tricky, as you are building an in-person presence and community that not every student can experience, at least not all of the time. To help overcome this in her hybrid classroom through an ongoing project, one teacher strategically paired students together to ensure that one person of the pair was always in the classroom. She told the students who were in the classroom that they were responsible for checking in with their partners throughout the day, so that everyone had at least one point of personal connection, even if they were remote. In a PBL setting specifically, this had concrete benefits — the students who were on-site were then tasked with handling any tactile work, and the students who were remote took the time to do more in-depth supporting research online or with materials provided by the teacher. The same teacher also provided the remote students with ways they could experience classroom activities using materials that they likely already had on hand at home. When leading an experiment in her classroom, for example, she'd turn to her remote students and walk them through, for example, heating up water in a microwave, or adding simple ingredients together in a bowl. (She worked with remote families beforehand to ensure that they had the basic materials on hand.) That way, all students involved felt that they could participate, at least to some extent (Miller, Kelly, and Krajcik, March 2021).
- **Choose your applications strategically.** One teacher found that the educational and communication apps that her school recommended only worked with extremely high-bandwidth internet, a resource that the remote students in her care just didn't universally have. As a result, when she tried to do high-interest activities with her remote and in-classroom students, the remote students were always lagging behind. This created clear division in her classroom. The teacher took time to research different communication apps before deciding to opt for an all-chat-based (but lightning-fast) educational app. She still requires the use of video cameras at some points of her students' day, as is currently recommended by her school district, but during parts of the day's activities, she asks students to turn on the chat app and she shares her screen so that everyone can truly see what's happening in real-time. The in-person students use the chat app, as well, instead of simply raising their hands and speaking. This allows her remote students an equal chance at certain types of fun activities — say, trivia

competitions — that the teacher uses for variety in her classroom (Miller, Kelly, and Krajcik, March 2021).

Can I Make Virtual PBL Work?

As we've discussed, it's entirely possible to make PBL a rewarding educational strategy in a hybrid scenario, but many recommended strategies in that area did rely pretty heavily on making full use of the time that students were in the classroom. If there is zero in-classroom time, as is becoming more popular in many parts of the nation, is there a way that you can incorporate PBL effectively?

There is. In this section, we'll discuss four proven strategies to leverage PBL as well as possible in an entirely virtual situation. The recent pandemic gave the academic community as a whole the permission to revisit and re-assess what it is that learning should truly focus on. For many, the skills that we hope to imbue in our students — curiosity, investigative skills, social collaboration, communication skills — are best taught through PBL (Miller, Kelly, and Krajcik, January 2021).

As many students are now learning remotely, we'd hardly want to exclude a growing sector of the population from these values. To ensure that this does not happen, one team of teachers, researchers, and curriculum developers worked together to reconfigure a series of popular face-to-face PBL units for younger grades. The goal? To allow the lessons to keep their signature collaborative feel—without relying on in-person teaching to attain the hoped-for results (Miller, Kelly, and Krajcik, January 2021).

This exercise resulted in several specific findings regarding the efficacy of project-based virtual learning (Miller, Kelly, and Krajcik, January 2021).

- Students can still learn collaboratively, even when they're apart. It's important, particularly in a virtual setting, that students are active participants in their learning journey—not passive observers. Even if students can't be putting their hands-on materials in order to complete investigations, working together with their peers and sharing the burden of solving puzzles and problems is a good way to build a community of learners ready to work together.
- It's not necessary for parents to facilitate complex, expensive projects built at home during off-hours — projects then shared by students during the virtual time spent with their peers in class. This is hardly a selling point for parents to get involved in virtual PBL, and it really misses the point: PBL isn't about solo crafting

followed by communal show and tell. It's about building something with your peers with social motivation and shared creativity.

- In one teacher's virtual third-grade classroom, the teacher asked students to use in-class time to search for materials around their homes. Then, on-camera, the entire class worked together to manipulate those specific items to create a toy. For example, one student used a margarine lid to create a basic flying toy, complete with stabilizing fins. The teacher used this as a prompt to launch a conversation around the way opposing forces allow flight. Another student turned an egg carton in a boat, blowing the boat across a pail of water to add another angle to her peer's flying machine and requisite discussion.

- Whenever possible, teachers should utilize very real-world examples not just as illustrative points, but as actual activities. This is, perhaps, one of the best definitions of PBL; where traditional learning tends to take place on an intangible level, inside our student's brains, PBL very much occurs within the real world. One science teacher decided to capitalize on this by having her students ask scientific questions surrounding a phenomenon we were all experiencing at the same time. This type of reasoned critique is an essential 21st-century workplace skill, and it doesn't need to happen in person. The teacher streamed a video for her remote class of a specific recent scientific finding, with a parallel chatroom for active student queries.

- Of course, this doesn't need to happen via a video. Another teacher, one educating a group of remote fourth graders, was teaching a module about light and shadows. At some point during the lesson, the teacher asked her students to go outside with their cameras to observe, draw, and ask questions about their cameras. The students used their cameras to stream their shadows over Zoom. The teacher then asked the students to compare their shadows to each other, to draw conclusions about the weather (and other atmospheric conditions and qualities) in each student's unique place. In doing so, the teacher took advantage of the thing that is often considered a fundamental weakness of remote learning: That everyone is in a different spot. Given that separation, the teacher decided to use everyone's individual location as a way to jumpstart an interesting conversation.

- Nonverbal communication is incredibly powerful. In fact, nonverbal communication is often described as something that is just as vital to comprehension and relationship-forming as verbal communication. This is

> something that is also, often, noted as a fundamental weakness of remote learning; we don't tend to get as much of a sense for what other people are actually trying to say because we miss out on an entire, very fundamental aspect of their holistic meaning. One way to get around that is to call it out. Students and teachers alike may need very specific training in nonverbal communication through a camera.

At the beginning of your school semester, set aside a period of classroom time to run through the importance of things like nods, eye contact, smiles, gestures, and even proximity to the camera, to help both teachers and students get their ideas across as effectively as possible. If you, as a teacher, prioritize eye contact and warm gestures, your students will feel more comfortable taking risks with their communication over the camera. (We've all likely felt some version of this in action: When we see that the other people in the Zoom room we're presenting to are smiling and nodding, it's much easier to keep talking) (Miller, Kelly, and Krajcik, January 2021).

One easy way to present this information and this challenge is to play a game of charades. One teacher used a randomizer app to present different concepts — emotions, for example, or bits of hypothetical good, bad, or exciting news — and then asked students (over the camera) to show that concept without using words. This teacher even took the game a little further and mixed in abstract scientific concepts into the game, so the entire class was able to laugh over the way another student, say, tried to act out the existence of electron bonding. This type of informal activity helped bring awareness to students about the importance of their gestures. Repeated a few times throughout the semester, this activity can really help transform the level of communication in your classroom (Miller, Kelly, and Krajcik, January 2021).

Another important consideration is that students should be allowed some level of freedom over the way that they exhibit their learning and their expertise. Instead of being asked to create a diorama, give a five-minute talk, or have an intimidating one-on-one with their teacher, students should be allowed to identify and exploit their creativity to show what they have come to understand in your classroom. This will alleviate a lot of mental stress for students, allow them to realize what their own strengths are, and lead to much more interesting classroom presentations. In the beginning, students may require your help and creativity to understand the wide range of media available to them as they figure out how they want to tell a story (Miller, Kelly, and Krajcik, January 2021).

Once students understand that they can write a song, film a video, draw a comic or partner with a friend to write a humorous sketch about the given topic, they should naturally be much more interested in working toward a demonstration of their mastery of a subject. Taking ownership of the demonstration in this way will help the student understand the central idea much better. To help facilitate this type of creativity, it may be a good idea to create a central repository of presentation tools, formats, and ideas in some kind of shared folder on your digital educational platform. There are free online tools that, once vetted for safety, will allow students to record drawings, videos, and more (Miller, Kelly, and Krajcik, January 2021). Additionally. If you're looking for a simple way to inject some excitement and enthusiasm into a project, send something to each student's physical address. One creative physics teacher bought the components for a simple clock and mailed one part to each member of her class. Working together in a forty-five-minute time frame, the class had to examine the pieces and discuss over a video call what the pieces could possibly represent.

As it turns out, when you're investing in PBL over a camera, you just have to prioritize some type of creativity and communal motivation and enthusiasm—much like you would in person. Fortunately, you don't need to reinvent the wheel. If you're looking for specific activities and lesson plans you can leverage as a teacher putting together a PBL curriculum for your remote classroom, there are many that already exist online. Peruse Pinterest or social media for ideas, and you'll soon have more than enough fun activities from which to launch your own lesson plans! (Miller, Kelly, and Krajcik, January 2021)

How can I best leverage PBL for English Language Learners? What about students with special needs?

The short answer is simple: You leverage PBL in much the same way as you might for more traditionally-abled peers, or for students for whom English is their first language. You do need to do a little more front loading and consider how students with specific sets of abilities may be able to select projects; but, as the bulk of the way that a PBL module rolls out is left up to student choice, the general strategies with which you might approach a PBL project remain this same (Wolpert-Gawron, 2018).

The goal of PBL is to help students embrace independent learning. This is just as important for students learning English or for students with special needs — if not more important, as they'll be learning and working in a world that won't always understand or prioritize their needs. Your job as their teacher remains the same: Giving them the

resources they require in order to unlock learning for themselves. One might argue that PBL is the best choice to help students with special needs or English learners ramp-up to independent learning the most quickly (Wolpert-Gawron, 2018).

One expert agrees, stating simply that "In PBL, English Learners develop a sense of agency and take ownership of their learning… simultaneously practicing academic language and literacy skills while engaging in critical thinking." This is, of course, not to say that teaching PBL to students who require specific types of support will be easy. Depending on the specific population you're supporting, you may need to incorporate specific practices and strategies into your teaching habits (Wolpert-Gawron, 2018).

Here are some proven strategies that PBL teachers and experts have incorporated to effectively scaffold PBL for English Learning (EL) students and students with special needs. Think about your student population and see which of these strategies might work best for you (Wolpert-Gawron, 2018).

- **Ensure that you're providing a wide range of eminently-accessible research for students to choose from.** While you might release a group of English-speaking or non-disabled students into the wild to find research on their own, this may not be the most effective strategy for students who require more support. At the very least, this can seem very overwhelming. Instead, as you're helping them get acquainted with the subject material for their project, give them a few options of research materials. In addition, make it clear they can find other resources if they wish, if appropriate. These may range from traditional classroom resources such as lectures and textbooks to online videos, magazines, library books, or podcasts.

- **Use as many visuals as possible to support classroom success.** This will not only allow you to be more universally understood, but it can also help you be more efficient in your educational strategies. Illustrate common classroom procedures, what you hope students achieve through projects, communication strategies, and as much course material as possible with videos, icons, GIFs, or static images. If you're providing information about a process your students will consistently leverage (e.g., a specific way to solve a math equation), find a way to turn your instructions into a video that your students can watch again and again as they move toward mastery of that type of problem on their own.

- **At the beginning of a new subject, take some time to review the key concepts and vocabulary that will be used in the near future.** This type of review may feel redundant for English speakers, for example, but giving English learners and

students with special needs the toolkit they need to understand more advanced concepts as they arise (with visual aids to use throughout the year) will reduce friction later.

- **If all of your students will be tackling similar projects, create a visual roadmap of what they will be doing.** Tack this roadmap up on your wall, or make it a PDF that your students can reference often. Use this diagram in class, either pointing to it on your wall or sharing it on your screen, to help ground your students in what they're doing—and give them perspective about what they will be tackling in the future.

- **Take time to specifically teach your students the nuts and bolts of collaboration.** This may or may not come naturally to any student, no matter what their background or strengths. Taking time to establish ground rules and expectations instead of throwing a social challenge and the obstacle of collaborative task management at your students will make collaboration much easier. In games in your classroom, have your students practice conversing, disagreeing productively, making constructive observations, and providing positive feedback to support each other as much as possible. If it would help, you can even give your students prompts, sentence starters, and specific types of language they can use to mediate any difficult interpersonal interactions they may encounter as they begin collaborating with their peers. As the collaboration begins, make sure that you're listening to how the students work together. Provide helpful input as often as you can in order to keep groups on track.

- **If your students are English language learners, take time to actually instruct them directly in English — at least casually, if that isn't your specific aim.** As is appropriate, don't be afraid to give them sentence openers and turns-of-phrase that will help them move in American society with ease. PBL is all about direct instruction. Consider some explicit English language tutelage as a way to increase your students' toolkits, so they feel more comfortable embracing independent study.

- **As is appropriate, don't be afraid to incorporate the specific life experience and background of your students into the PBL process.** You may wish to work with specialized professionals to do this correctly, but it's important that you don't ignore the fact that your students are newcomers to America, differently-abled, or have other backstories that they can leverage. In this way, you can help make it clear to these students specifically that they have a great deal to offer as they

represent their communities, and that their unique challenges should not be something that stands in the way of success. Consider the alternative: Would offering a PBL module to students with special needs or English learners in which you didn't mention their unique abilities feel authentic? Work with caution; perhaps rely on your students' parents to help guide you in what feels safe and appropriate, here, but don't shy away from providing direct, helpful support and instruction.

- **Provide targeted support resources, such as bulletin boards in your classroom with specific keywords.** Earlier, we spoke about the way that a visual roadmap posted somewhere easily referenced can really help students keep track of where they are in a specific project. A similar resource can be really helpful for EL learners and students with special needs. As you help your students move through their projects, provide them with updated reference sheets that outline often-repeated processes, specific keywords and their simple definitions, and even sheets that help them know how to ask for support. (A good example may be a sheet that pairs pictures of people with facial expressions clearly identifiable as different types of emotions, so a student has something very easy to identify, point to, and share if he or she is confused, tired, or distressed.) Build out these resources over the course of the PBL module or semester, so at the end of your time together students have a wide array of very useful resources at their disposal.

Section 3 Key Points

- The amount of instruction you give your PBL students should be at its highest in the beginning of the module. You should lessen that direct instruction as you move through the material.
- Your PBL students will need to learn how to evaluate and be responsible for judging the objective quality of their own work.
- One of the best ways to get parents on board with PBL is to remind them, early and often, that PBL is different from simply doing more (expensive, time-consuming) projects.
- Present students with changing, fluid problem environments instead of static problem sets. This will be much more representative of the way students will actually experience problems in real life.

- Hybrid students need PBL, too! Consider pairing in-person and remote students together to help build community and make your remote students feel more involved.
- Whenever possible, teachers should utilize very real-world examples not just as illustrative points, but as actual activities. This is, perhaps, one of the best definitions of PBL; where traditional learning tends to take place on an intangible level, inside our student's brains, PBL very much occurs within the real world.

Course Summary and Conclusion

The results are in: project-based learning is an educational framework that can be implemented for a wide array of learning scenarios. If you're interested in helping your students grow in creativity and independence, consider working toward a PBL framework. Whether you leverage it in full or just incorporate a few inquiry-based projects in your upcoming semester is up to you, but either way, you and your students are sure to reap the benefits.

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Growth

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Part 2:

Introduction

During and after the COVID-19 pandemic, students experienced a loss of the time and community that they usually benefit from during the grade school years. Not only did this result in significant mental health impacts for school-aged children, it has resulted in a lack of familiarity with critical building blocks of relationships and community.

Students, bereft of daily contact with adult mentors and peers, did not have the frequent human interaction often necessary to build skills like support for one another, empathy, and teamwork.

When these students began to return to in-person education, it became clear that the lack of empathy and innate teamwork, though understandable, was an issue. Today, teachers are facing an unprecedented need to teach their students these necessary skills. Fortunately, they go hand in hand with each other. Students who practice teamwork on a regular basis also practice communication and social skills. They have more opportunities to support one another and practice empathy.

In this course, we'll discuss the importance of teamwork, empathy, and support among school-age students. We'll then talk about various ways that teachers can help students grow in these critical ways.

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Section 1: The Importance of Teamwork, Empathy, and Support Among Students

Henry Ford, founder of the Ford Motor Company, once remarked that "If everyone is moving forward together, then success takes care of itself." While success can be subjective and our march toward better outcomes for a varied population of students may be far more nuanced than that quote suggests, one thing is clear: If we work together, we can accomplish far more than we do alone.

Unfortunately, the past couple of years have taught millions of impressionable students that working solo is the safest course of action. That will be extremely hard for students to unlearn—if it's even possible for them to do so. Many schools are continuing to teach in at least a partially remote capacity, and that can be very difficult for the students in those situations.

Whether your school is remote or in-person, there are steps you can take to help students learn these crucial community-building skills. To lay a proper foundation for this course, let's start by considering precisely why these skills are so important.

Why is teamwork among students important?

We've already mentioned a few distinct benefits of teamwork: It helps groups of people get more done, and it can help students build their social skills.

Here are a few more reasons why teamwork among students is crucial for healthy individuals and academic communities alike (Borkala, 2021):

- **Teamwork helps students overcome shyness.** While it's not a negative attribute to be quiet or be an introvert, moving through school and, later, a career may be much more manageable for students who feel comfortable in social situations. Experiencing supportive, safe teamwork on a regular basis can help students overcome any unfavorable associations they may have with being around their peers. In fact, if students are feeling leery of interpersonal relationships or exposure after the pandemic, one of the tools teachers can use to help re-establish a new, healthier interpersonal norm is to assign students simple tasks and have small groups of students work together to accomplish them. This allows students to form relationships and social skills without the pressure of focusing directly on the relationship and social skills.
- **Teamwork helps improve a student's speaking and listening skills.** When students are working together, they're going to have to learn how to get their thoughts across quickly. They will also have to listen to others. The ramifications of failing to do either of these (e.g., being misunderstood, getting talked over, missing out on information) should help students realize the importance of effective communication and learning skills. It may help jumpstart this process if you give a brief primer on how to communicate and listen well before breaking your classroom into groups — and give reminders as needed over the course of the year.
- **Teamwork helps students grow in productivity.** Teamwork is a great way to increase productivity in school-age children for three reasons. When students share a workload, there is an instant motivation (in many students, whether it be cooperative or competitive) to make progress toward completing assigned tasks. If students struggle with a specific task and they have established a supportive

relationship with their peers or mentors, teamwork should empower those students to request and receive help that can help them overcome obstacles. Finally, if a group of students has all been assigned a specific task to complete, the different personality types and strengths among the group increases the likelihood that the group will come up with several different ways to tackle the problem as a team. This crowd-sourced, creative approach ups the likelihood that a group of students will develop an efficient or unique way to approach assigned goals.

- **Teamwork helps students build conflict resolution skills.** It's inevitable that students who work together will experience conflict at some point. Not only is this unavoidable, it's not a bad thing. When students experience conflict, they will learn how to cool down from heightened situations and come up with achievable ways to compromise. If they don't learn how to do so on their own, teachers can provide students with ideas.

- **Teamwork comes with built-in time checks.** When a group of people is working together, at least in theory, all the participants should be aware of the pace they're supposed to be going — and cognizant of those who are not working as quickly as they should, or at least aware if they're not progressing as well as they should be. (The diverse personality ranges in any random group should include at least one or two people who are type-A, project-focused people; or, if not, it should be easy for you as the teacher to notice if an entire group is lagging behind). In other words, it's relatively difficult to procrastinate effectively as a team.

- **Teamwork helps build a student's socialization skills.** Whether a team needs to work together remotely or in person, the success of the assignment that the team is tackling depends at least in part on the team's ability to interact with each other. Students will need to learn how to communicate effectively; but, more than that, once students are familiar with the basic nuts and bolts of speaking and listening well, they will begin to see teamwork as a way to build community and learn how to enjoy socialization. In this way, teamwork can be an effective way for teachers to help their students bond if it seems that there may otherwise be difficulty for students to do so (e.g., if you're teaching in a remote environment).

- **Teamwork gets students ready for a successful, productive, and engaging career.** Think back to the last time you interviewed for a new job or position: Very likely,

one of the skills that your prospective employer was looking for was your ability to work well as part of a team. Very rarely in adulthood do we tackle projects that are completely solo. Rather, we use our unique strengths as part of a team to accomplish something together that's far greater than anything we could do by ourselves. Functioning well as part of a team is something that your students will have to do for the rest of their lives. Giving them the ability to do so now gives them ample time to practice this future-proofed skill.

Knowing the importance of teamwork for young learners is a good first step. General ways that educators can help students gain and develop their teamwork skills are included below.

How can young students develop their teamwork skills?

In the third section of this course, we'll go a little further into practical ways that teachers can help young students enjoy more efficient and effective teamwork. For now, these are the ingredients of success for teamwork (Borkala, 2021):

- **Teamwork requires commitment to a group effort.** In order to avoid the classic 'group project' effect wherein one or two people put in all the time and energy while the rest relax and capitalize on these efforts, all students need to be committed to doing their part. (Teachers also need to design team projects that require all participants to do their part, and keep an eye out for any signs of those individuals who aren't pulling their weight.) A good analogy here, if you need a visual to discuss with your students, is canoe racing. In order for a canoe to move forward quickly, the force on both sides of the canoe needs to be equal. If any one of the people paddling isn't paddling well, the forces will be imbalanced, and it will be impossible for the canoe to move in a straight line.

- **Teamwork requires good organization and full understanding of all responsibilities.** In the above canoeing example, the team members are able to move in their desired direction because each of the canoers is aware of the need to paddle forward and match the approximate force and speed of the other canoers. In order to work effectively as a team, students need to know precisely what they are doing, what other people are doing, and how each of their responsibilities match together. No member of the team should be told to complete a discrete task without being fully informed as to how that task will benefit the whole, or how this task relates to the assignments their peers are

tackling. This will help build trust. In addition, we know that children are innately practical people. Providing context and organization should help students want to tackle their team's responsibilities more, not less.

- **Teamwork requires equitable sharing of all relevant information.** While 'there should be no secrets in a team' may be taking this sentiment a little far, withholding information that's pertinent to the team's central purposes is asking for misunderstandings and resentment. Instead, the leadership of the team should make a point to give team members regular updates that contain all of the relevant information the team members need to do their jobs well. In addition, there should be an expectation of mutual information sharing between members of the team: for example, if one student knows specific information that could benefit another team member, that individual should share that information instead of guarding it for any reason (including competition). Students should be aware that in the context of a team, one person's success is another's. This helps students develop ways to support each other practically, as well.
- **Teamwork requires that all students are aware that their actions affect the rest of the team.** If one team member doesn't complete an assigned task on time, that simple action (or inaction) could end up hurting the entire team. In order for teamwork to be helpful for everyone involved, all of those who choose to join the team (or are assigned membership, in a school scenario) need to be aware of their need to hold up their end of the bargain in order to gain the benefits of being on that team. (If viewed correctly, this mentality can help every child realize that their contributions are valued and important!)
- **Teamwork requires that every student or team member be willing to take credit as a team, not individually.** Whether a team's project ends well or poorly, the team must be able to take credit for the praise or repercussions as a unit. Again, we can illustrate this with a sports analogy: When a baseball team wins a game, the team wins — an individual player, no matter how well that person may or may not have performed, did not win or lose the game. There is always room to recognize the outstanding contributions of one individual (or, if needed, quietly provide feedback for one student who could have contributed more), but the main credit should go to the group, not any one person. This can help teach individual students healthy humility and support for their peers, if done correctly.

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What is empathy? What are some examples of it in the classroom?

Empathy can be simply yet viscerally defined as the following: Our ability to walk a minute (or a mile) in someone else's shoes. When we exercise our ability to be empathetic, we try to understand the way another person might be feeling (even if it's not something that we may be able to logically relate to) and interpret their actions and connect to them in that light (The Juice, 2021).

Having empathy is considered a critical part of being a kind and accomplished human adult, yet it's not a skill that many people are born with. Rather, it's something that must be introduced strategically, and then practiced and honed over time. This practice and exposure needs to start very early, as empathy should ideally be more of a central character trait for a young student than a skill learned only later in life (The Juice, 2021).

Through empathy, we are better able to evaluate and identify with the way other people may be struggling and growing. It's only with that insight that we are able to be truly helpful team members — and provide meaningful support for our peers (The Juice, 2021).

The specific and outright teaching of empathy as part of social-emotional learning can be a little controversial. There are those who believe that we are born with empathy, and it really isn't something that our teachers need to spend time on in class. That way of thinking may make some level of sense, but it's doing everyone involved a disservice. The latest research that we've been able to glean indicates that it is in everyone's best interest to spend more time discussing our emotions and teaching healthy emotional responses (both to ourselves and each other) in the classroom (The Juice, 2021).

Empathy requires perception, logical thinking, and both courage and compassion. Being empathetic can be awkward and difficult. We need to have a solid grasp of healthy ways to comprehend non-obvious information, and we need to have a good handle on our own emotions, too, before we're able to be as empathetic as possible (or at least, in the most productive way possible) (The Juice, 2021).

Empathy is also a foundational skill that can lead to other valuable behaviors and skills, such as critical thinking and good leadership. All in all, it's clear from many different angles that we should be very intentional in the way we think about teaching empathy to our youngest students (The Juice, 2021).

In the third section of this course, we'll provide a little more detail regarding the way that teachers may be able to do this. The good news is that many of the actions that

teachers already incorporate into their courses may help students strengthen their familiarity with empathy. For example, if you're an English teacher, there's a good chance that you've asked your students to think about what it might be like if they were a character in a story that you've read in class. If you teach Social Studies, you might have asked your students to close their eyes and envision living during a certain period of time, or as a person who lived through or witnessed a specific historic event (The Juice, 2021).

From this, we can see that one of the entryways into learning empathy is imagination. While some students may be able to imagine more easily than others, most children should be able to exhibit enough creativity to pretend, if only for a moment, that they were seeing the world through someone else's eyes. Teachers can go the extra mile in these types of organic exercises to directly make the empathetic connection clear — asking what a student would feel like walking in someone else's shoes, or asking students what they might do to comfort someone who was living in a specific time or storyline (The Juice, 2021). This can take a lot of effort, but, fortunately, we can see that it doesn't go to waste.

Specifically, a recent study out of Harvard demonstrated that there is a clear link between students who exhibit high levels of empathy and students who are better communicators, are more engaged in class than their less-empathetic peers, have higher grades, enjoy more positive relationships, and are even less aggressive overall than other students in the class (The Juice, 2021).

Each of these concrete benefits may come from three specific, less explicit but extremely important benefits of teaching, learning, and practicing empathy. These benefits are as follows (The Juice, 2021):

1. Empathy helps you understand others and yourself better than would be otherwise imaginable. Many of the acceptable behaviors we expect of healthy adults are those that we want to nurture in young students, such as telling the truth and treating each other with respect. Without a solid foundation of empathy, these actions become relatively meaningless rules that a student might follow just for the sake of the rule itself. Empathy allows a student to make sense of his or her own experiences and then apply the same benefit of that discovery to other people. Growing up is hard for everyone, even students at a young age who don't actively appear to be struggling. The earlier that students are able to make sense of their own hardships and connect with the fact that other people

are going through difficult times as well, the better — both for themselves and the people around them.

2. Classroom environments are simply better if a hefty dose of empathy is present in every participant. The way that students interact with each other and with any adults in the room is obviously transformative for the health of the classroom. Without an understanding of how everyone in the room might be feeling, any individual student could easily act out and throw off the positive environment of the room in minutes. The brain chemistry of any one student at any time is extremely volatile; children are sensitive, they're growing and developing, they're experiencing new things with their friends and family every day, and they can be under a lot of pressure. Helping students figure out how to deal healthily with their own emotions and teaching them respect for the emotions of others can make tense situations in your classroom diffuse a lot more easily.

3. If we instill empathy in our students when they're still young, they stand a far greater chance of being happy, helpful, and empathetic adults. These types of adults are far better equipped to go out and contribute to society with well-honed critical thinking skills that benefit from a proper perspective. Whether these adults take on jobs in the public sector or in private offices, they'll be better citizens, employees, leaders, and people — benefiting their own environments and communities wherever they are.

Section 1 Key Points

- Helping students grow in teamwork can help students overcome shyness, help a student listen and speak better, and help a student enjoy more productivity.
- Because students will need to know how to function well as part of a team for the rest of their lives, helping them learn how to support each other and function as part of a team now is a future-proofed skill.
- In order for a team to function well, there needs to be an equitable distribution of information among the members of the team.
- Empathy is a skill that can be taught, practiced, and learned over time.
- Empathy requires imagination, perception, logical thinking, courage, and compassion.

Section 1 Summary

As functioning as part of a team is such an important part of daily life, it's important that students are able to hone the skills that enable them to be a good team member. Sometimes these skills come easily to students; other times, they require more practice. We'll see in the next section of the course, however, that empathy is worth the time it takes to learn it!

Section 2: Current Research: The Benefits of Support, Teamwork, and Empathy

We know that teamwork is absolutely crucial for companies large and small to get anything done. As we're learning now, for successful projects and personal growth alike even at the elementary school level, thoughtful teamwork is equally vital. Recognizing that everyone has specific skills, talents, and gifts, and coming together to wield those gifts toward a common purpose, can be more than just productive: It can be incredible for the mental health and personal fulfillment of everyone involved.

Helping students realize that they can do this successfully from a young age can be transformative for a student's life. Not only will they be well-poised to benefit from successful teamwork, support, and empathy for the rest of their lives (and bring that skillset with them to various jobs and projects, too), they'll benefit in specific ways. In this section, we'll give an overview of the various ways that, according to science, students can expect to benefit from support, teamwork, and empathy. These include (Middleton, 2022):

- **Increased idea-having and problem-solving aptitude.** Did you know that most scientific discoveries aren't discovered by just one person? Even though we tend to give specific individuals the credit for paradigm-shifting discoveries — e.g. Edison invented the lightbulb, Einstein discovered the theory of relativity, Newton's apple fell on his head and no one else's — these theories and discoveries are almost always the result of a team's effort. Even if one person may have had the initial creative spark that ignited an idea, these theories almost always require several people to fuel them into a flame. Even Newton likely needed to talk to his friends and colleagues about gravity to refine the concept from an idea into a full-blown theory. There's a reason for this, and, as a teacher, it's one that you know well: When you talk about a concept and particularly when

you explain it to others or defend it to a group, you need to know that concept like the back of your hand. Analyzing contrasting concepts with a team, defending them, playing them off each other — that's how great ideas are truly born, and it requires a team with different personalities, perspectives, and competencies in order to make that happen. Researchers out of the University of Illinois at Urbana-Champaign are finding that this idea bears out when we look at the science: "We found that groups of size three, four, and five outperformed the best individuals….[We] attribute this performance to the ability of people to work together to generate and adopt correct responses, reject erroneous responses, and effectively process information."

- **Increased ability to innovate.** For similar reasons, researchers are becoming convinced that groups of people with different backgrounds and proclivities are best able to invent new ideas, things, and solutions to problems. Crucially, this means that it may not be in your best interest or your students' best interest to place them in groups with their friends. As one expert put it: "Diversity is a well-documented pathway to unlocking new opportunities, overcoming new challenges, and gaining new insights." (It should be noted that the researcher wasn't specifically speaking of racial diversity here, but rather of students and people from all kinds of different backgrounds.) One study was able to corroborate this idea with a meta-analysis: It found that teams that were made up of members who had, relatively speaking, not much in common (e.g., they were of different ages, different genders, they had different interests) were able to perform better than more homogenous teams by up to 35%. Why? Instead of having just one specific view of a problem, you're getting the benefit of several different perspectives, which can exponentially increase the efficacy of your team.

- **More happiness for all involved team members.** One research team surveyed over one thousand members of various teams across a wide range of industries about their experiences. The researchers found that as long as the team's members practiced mutual respect, personal openness, and gave honest feedback, the members of teams were vastly more likely to report higher satisfaction and emotional well-being than people who tended to work solo more often. And, of course, research from other studies (such as one project out of the University of Warwick in England) does suggest that happy people are more productive than unhappy people; so, even though having happy and mentally healthy students is enough of an end result in and of itself, knowing that they're

better poised to get more done when they're benefiting from the mind-boosting properties of teamwork is a definite perk.

- **More personal growth for team members.** When team members who come from different backgrounds open up to each other, support each other, and share their stories, everyone experiences the chance to grow. For example, team members learn not only from their own mistakes — but from other peoples' as well. This makes personal growth more efficient, and helps individual team members flourish even as their team continues to work toward a specific goal. As members working within a team will have more eyes on their work, they will naturally receive more feedback than if they were working alone. Any blind spots that they may have regarding their work will quickly disappear, as well, which will also make forward progress significantly more likely.

- **The ability to take smarter risks.** This one is simple: When people are working alone, it's harder to put themselves out there. They may feel that, in order to conserve resources or maximize their individual chances of success, they need to play a relatively safe game. This dynamic is different when individuals are working as a member of a team. Instead of feeling that they need to pursue a low-risk strategy, the security that their team offers them may allow individual team members (or all team members) to be more creative. Innovation tends to go hand-in-hand with more interesting, wilder ideas — within reason — which tend to happen more often when team members know they can rely on their peers. There is a limit, however: Data reported in the journal Nature does seem to indicate that smaller teams (5-6 persons maximum) have more disruptive — or interesting and innovative — ideas than larger teams do. There's likely a point where potential interpersonal conflict and drama outweigh the benefits of security and creativity.

- **The ability to make fewer mistakes.** By and large, people who work as a part of a team are less stressed than their peers who work mostly solo. That stress can be lethal when it comes to the integrity of a project. As one researcher pointed out, "Studies show that stress makes us stupid, and leads us to make more mistakes." Serenity in numbers can also have a calming effect. If one team member is frazzled and nervous, putting that individual in a confident team may help turn around an unhelpful mindset (Middleton, 2022) (Marlborough, 2019).

- **The ability to learn social skills in addition to subject matter.** Clearly, if a student is working as part of a team, he or she will be able to hone communication skills

alongside whatever the more academic aim of the project is. A student will emerge from an experience working on a team with heightened listening and speaking skills. In order for a team to work together well, students will need to be respectful. They will need to communicate well. And they will need to understand how to express their own ideas persuasively and confidently, as that's the only way that they're going to get other students excited about their contributions to the group. These are skills that students will be able to leverage for the rest of their lives (Marlborough, 2019).

- **Improved levels of self-confidence.** When students go through a successful and productive teamwork experience and know what it feels like to be supported, they understand the importance of giving and receiving respect. They also recognize that their ideas will be valued. And, with that healthy expectation firmly in place, your students will be empowered to know when they are in a healthy working environment or if it's better for them to move along. If you teach your students how to be a good member of a team now, other people will be less able to take advantage of them in the future. These young people will be confident about what they're able to offer to the world, and they'll know how to leverage their specific value in a group setting (Marlborough, 2019).

What are typical characteristics of an empathetic student?

As you're teaching your students how to be more empathetic human beings, you may wonder how you can tell if your approach is working or not. One way to do so is simple: Learn what the characteristics of an empathetic person are, and see if your students get closer to or further away from that ideal over time. To aid you as you piece together your own personal rubric, we'll present several habits of empathetic students here that you could start keeping an eye out for in your classroom.

That said, every student is different — and, in many ways, these characteristics represent ideals. Just because you have a student who is quieter and shyer or one who occasionally acts out does not mean that these individuals aren't progressing toward higher levels of empathy. That just means that they're human! Characteristics of empathetic students are as follows (Borba, 2020):

- **Students who are more empathetic will exhibit emotional literacy.** Students who are able to first recognize and then understand what different tones of voice, types of body language, or facial expressions mean will be better equipped to

deal with the emotions these visible indicators represent. The best way to become more emotionally literate is to see people experiencing real emotions — the wider range of emotions, the better; the more people who may exhibit those emotions in different ways, the better! In this respect, a classroom filled with young people may actually be one of the most ideal places to teach and practice empathy, as these students will undoubtedly exhibit many different types of emotions over the course of just one morning! If possible, depending on your situation and your school's regulations, allowing your students to interact face-to-face is the most helpful way to help them subconsciously become more familiar with these emotions and expressions. It may also be helpful to do a little pre-work with your students: For example, give them an emotional vocabulary to equip them with the words they need to navigate this arena. Discuss what it means to be happy or sad — or why someone who is short or taciturn may be hurting, and how best to support them. Simply getting the conversation out there in the open can go a long way toward making this close-to-the-chest topic a lot less awkward.

- **Students who are highly empathetic will likely exhibit a stronger moral identity.** While it's not an exact correlation, it does seem that students who have activated and practiced their empathetic skills may have a stronger internal ethical code. For a basic example, we can turn to a general moral law, one exhibited in most major religions and even considered a basic tenet of politeness and civilization — being nice to and respecting each other. Students who are able to put themselves in another's shoes and benefit from a different perspective from time to time will be better able to internalize the ramifications of this type of moral code (and the hurt and sadness that could result if they did not follow this code).

- **Students who have higher levels of empathy may have a stronger moral imagination.** As we discussed above, one gateway to empathetic skills is through literature; before we talk about connecting to the other humans around us, it can be easier to start by connecting with our favorite songwriters or characters in fantasy tales. Students who are becoming more empathetic might frequently say things that demonstrate that they're thinking about the interior state of a person in a book — for example, expressing sorrow that a character might be getting tired, or hoping that certain characters might complete their goals so they can feel fulfilled. If students are able to empathize with a book character in this way, it may be easy for them to make the leap to empathizing with their neighbors in a short time (Borba, 2020).

- **Students who are growing in empathy may show that they're able to collaborate better as a part of a team.** They may seek less individual attention, work harder toward shared goals, and make suggestions that clearly demonstrate they're thinking about everyone's best interest. (You could say that empathetic students are better able to take a 'we' mindset over a 'me' one.) You'll be able to tell that students are growing in empathy especially if they're able to practice this kind of cohesive connectedness even with students they don't know or don't particularly like

- **Finally, students who have been practicing empathy and are growing in it successfully may demonstrate higher levels of moral courage.** These students may be able to pick up on cues in their environment, situational or social, and immediately seek out ways to be kind and reduce pain — even if it's not immediately obvious, easy, or popular to do so. Examples of this type of behavior are the kind you may already notice and happily report to beaming parents! Students with high levels of moral courage are those who notice when others are sitting in the cafeteria by themselves and go sit with them — or put their own social status on the line by inviting the new, lonely kid to hang out. These are also the students who rush to defend someone who's getting picked on in class, or who ask the tough questions in class (e.g., points out that a character in a book acted in a dishonorable way).

What is the science behind empathy?

Did you know that empathy, strictly speaking, is a sign that our brains are functioning as they should? Here's a quick overview of the neural mechanisms that fuel empathy:

> *"Our brains house a "mirror neuron system" that is engaged when we observe actions. It internally "mirrors" observed actions and helps to understand them, thus generating empathy" (Cherodath, 2022).*

This sequence of events and the parts of our brains that perform them get stronger every time we complete an empathetic action, which is very good for our brains and the rest of our bodies. It's a little bit like performing a workout or exercising a specific muscle — but it feels a great deal more intrinsic and innate. For example, when we hear that someone else has experienced joy and our synapses mirror that feeling, we're being empathetic now and making it much easier to be empathetic in the future. The same

goes if we find ourselves tearing up when friends are sharing something that made them sad (Cherodath, 2022).

It may feel automatic, but it's a real skill that we are exercising.

Empathy may come more automatically to some than others, but to whatever extent, empathy is an intrinsically human trait. Studies have shown that even human babies empathize with each other; it's one of the reasons they cry when they hear another newborn crying. (One of the reasons — being disturbed and confused themselves is also part of it, but researchers looking at newborn brains do see the empathy mechanisms beginning to fire) (Cherodath, 2022).

This does indicate from the very beginning that humans are wired to 'feel' emotions that aren't exactly theirs. It's one of the types of glue that keeps us together — and, evolutionarily, has kept us in communities and enabled us to survive. In this view, what is empathy — and why is it important?

According to psychologists, the boiled-down definition of empathy is this: It's the very human, natural capacity to understand, share with, and respond to the affective state that exists in others. Even if we don't tend to think that we're exceedingly empathetic individuals, most of us have at least some level of empathy. Empathy fuels socialization and communication; it's the intuition that helps us understand why people are acting the way they are (Cherodath, 2022).

Oddly, in order to understand more about empathy, we can look at the few people who, for whatever reason, don't have any. Humans with psychopathic personalities are often antisocial and exhibit aggressive behavior. They also don't tend to understand basic moral systems, which makes sense: Much of our moral understanding is based on very simple expectations regarding our respect for and connection with other humans (Cherodath, 2022).

Researchers who have dedicated their lives to studying empathy have found that empathy has three distinct components. They include (Cherodath, 2022):

1. **Emotional contagion.** This is the ability of individuals to perceive the emotions of others — or share their own emotions with others. While the word 'contagion' may feel odd, it's appropriate: This component literally requires emotion or the perception thereof to leap from one person to the next, much like the common cold, but in a healthy way.

2. **Theory of mind.** This is the cognitive aspect of empathy. Once we have perceived another person's emotions through 'emotional contagion,' the theory of mind aspect allows us to take on that other person's mindset for a moment. If emotional contagion is the process of walking in another person's shoes, theory of mind is the component where we're able to put them on and walk a mile, if only for a short time.

3. **Sympathy.** This connects our brains back to our bodies: Now that we've picked up on other people's emotions and walked in their shoes, our sympathetic response allows us to feel for those individuals, whatever they're going through. This is the mechanism by which we start tearing up, even subconsciously, when someone else tells a story about going through something tough — or, when a friend calls to say to share great news,, we find ourselves inexplicably happy and excited, too.

While these ingredients for empathy are present in most humans, some of them require time to mature. Others will require some degree of practice. The 'theory of mind' component of empathy, for example, does not seem to mature in children until they're about four years old (Cherodath, 2022).

To learn more about the neuroscience of empathy, a complex process relying on the sensorimotor mechanisms in our brain — neurons firing and creating physical responses based on mental stimuli — researchers conducted experiments wherein they disrupted a subject's neuron mirroring systems. Doing so strategically resulted in patients who had a very difficult time recognizing emotions and responding to them properly. To confirm these findings, the researchers sought out anecdotal reports of the behaviors of patients who had brain trauma in the specific areas of the brain associated with emotional recognition. These patients displayed a similar difficulty understanding, for instance, when another person was angry and it was challenging for them to respond in an effective manner to diffuse the situation (Cherodath, 2022).

Why might people lack empathy?

Leaving aside the possibility of a (rare) brain lesion, there are many reasons that people, particularly young, growing people, may have difficulty practicing empathy. It's not because they're psychopaths; it's because — even though this is an innate and natural skill — it's one that requires our active input to practice well. This doesn't always go hand in hand with our basic instincts. When you're searching for ways to help your

students experience and utilize the power of empathy, you'll need to find ways to help them overcome the following difficulties (Robbins, 2021):

1. **It's hard to practice empathy when you feel threatened.** Think about this from an evolutionary perspective for a moment: While we are all built with the urge to connect with the people around us, at the very least for community and basic survival, we're all programmed to keep ourselves safe, as well. If we perceive that we are in a dangerous situation (even if that's a parasocial modern equivalent of being 'in danger,' such as being confronted with the possibility of sitting alone in the cafeteria), then we may have warring instincts at play in our brains. Particularly for young people, who may still need time and grace to strengthen their empathy muscles, it's very easy to let the individual need for protection and survival win out over the need to connect with peers. In this situation, individuals who feel threatened may shut down or lash out instead of acting in a way that opens themselves up to others.

2. **It's hard to practice empathy when we're being judgmental.** In this case, 'being judgmental' refers to our tendency to believe that we are right and other people are wrong. This, too, is a protective mindset that's built into most of us; it takes humility and flexibility to be able to override that basic notion. However, when we are being judgmental and we look around ourselves continually judging the actions of those around us, it's much harder to be empathetic with people (whether we believe that they are acting rightly or not). It puts ourselves on a pedestal above other people, which is not conducive to practicing empathy, as this requires a more level playing field.

3. **It's hard to practice empathy when we're afraid.** Fear — and our strong inclination to deny that we are feeling afraid — is at the root of many of the reasons it may be difficult to practice empathy. There is nothing wrong with fear. Fear keeps us safe. However, when we don't have a healthy relationship with fear or if we deny fear, that denial can make it harder for us to be open with and support the people around us. For example, our tendency to defend ourselves against 'threats,' real or perceived, often leads to our being overly-judgmental of the people we interact with in our lives.

What are signs that a student in my classroom may be having a hard time practicing empathy?

If you have a goal as a teacher to help your students practice more empathy on a daily basis, it is helpful to realize when a student may need to invest more time and attention into this specific skill. Some indicators that you may be able to look for that could demonstrate a student's lack of empathy include (Robbins, 2021):

- If a student is perpetually critical of other people's appearances, work, or other aspects of their being.
- If students don't seem able to control their emotions or their response to stimuli.
- If a student simply doesn't seem to be aware of the emotions of others — e.g., if another student is crying, not seeming to 'get it' or respond in any type of appropriate manner.
- If a student tends to accuse other people of being too sensitive
- If a student perpetually overreacts to very small things
- If students simply won't admit when they are wrong
- If a student behaves insensitively to other people
- If a student tends to have a hard time maintaining healthy relationships
- If a student does not seem to handle uncomfortable situations in a healthy way
- If students tend to believe that the world is out to get them, seeing slights against them everywhere they look

It can be easy to take offense to any of these behaviors, or simply to punish students when they are being brash or insensitive. One reason why this is so easy is simple: Many of these reactions and behaviors are programmed into our own emotional response, whether we were born with them or we honed them carefully over time. When as teachers, we see a student, someone we've been tasked with training and forming over years, display this type of troubling behavior, we quite literally don't know how to react (Robbins, 2021).

As mentioned above, just because certain students may seem to have a hard time practicing empathy, it does not mean that they are hopeless or in danger of becoming

sociopaths. This just means that we have an opportunity to help teach that student a more helpful way to go through life. Giving students the tools to unlock empathy will make their lives easier, fuller, and richer both now and later (Robbins, 2021).

In the third and final section of this course, we'll discuss a few effective ways that you can help your students grow in empathy.

Section 2 Key Points

- In teamwork, practicing empathy leads to an increased ability to solve problems, innovate, and be happier with the members of your team.
- As long as the members of a team practice personal openness, honest feedback, and mutual respect, surveyed members of teams report higher satisfaction than people who work alone.
- Empathetic students may exhibit emotional literacy, a strong moral identity, and strong moral imaginative skills.
- Emotional contagion is the ability of one person to perceive the emotions of another or to share personal emotions with another.
- It's hard to practice empathy when we're afraid. The basis for many of the reasons students may not practice empathy is ultimately rooted in fear.

Section 2 Summary

Emerging studies delving into the neuroscience underlying empathy are showing us that empathy, support, and the experience of working in a team are very good for human health and happiness. However, empathy is a skill that doesn't always come easily to many. Fortunately, with a heightened awareness of what it takes to be supportive and empathetic, we may be in a good position to help our students grow daily in this essential skill.

In the third and final section of the course, we'll take a look at the specific ways we can make that happen.

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Section 3: How to Teach and Practice Support, Empathy, and Teamwork In the Classroom

The benefits we mentioned in section two about empathy, support, and teamwork may sound well and good — but if you're a teacher, you know that getting students to work together isn't always constructive or easy. How can we practically help our students incorporate and practice these skills while keeping everyone healthy and happy? Incorporating some of the tips in this section may help.

How can we teach students how to work together as a team?

The art and skill of successful collaboration is one that is required not only for a good experience in school, but also for most adult careers. Equipping our students with the skills needed to collaborate well with their peers right now will help them both now and later!

It's important to realize that the skills and attributes that make a student a good team member don't always come naturally. In fact, many students will likely experience difficulties as they work toward

being a productive and helpful team member. These challenges, along with possible solutions, include (Curletto, 2020):

1. **Students who talk too much (or too loudly).** As you are likely well aware, there are some students in every classroom who like nothing more than the sound of their own voice. It can feel like asking students to collaborate is just inviting those students to speak out of turn during class. Quiet may seem preferable, even if it means that students need to work by themselves. Alternatively, if your school has rules about how loud students can be in class, it may seem like teamwork or collaboration may be out of the picture. If this is the case, you might have a conversation with your students at the beginning of the year about inside and outside voices, and the practical reasons why students shouldn't be yelling while they're in class. This is a time where it might be fun and practical to use technology to your advantage: Perhaps you can find an application on your phone or computer that measures the ambient decibel level of your classroom and challenge your students to keep their dull roar under a certain decibel limit. Children are innately practical, and many like a good challenge. Keeping a decibel

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meter on a visible screen during teamwork times can be a simple way to help students visibly keep their noise levels in check].

2. **Students who resort to arguing too easily.** Students of all ages may encounter difficulties when they are working with different people with varied personalities. This can result in continued arguments about the specific way that students would like to see a task or project play out. Monitoring and helping mediate all of those discussions can seem like just too much, and that makes sense! One thing that may help is assigning students discrete and well-defined roles within their team. Providing clear expectations regarding which student gets to make specific decisions that impact the team can help diffuse conflicts. One of the roles you may assign within a team structure is simply that of student moderator. (The Social and Emotional Intelligence (SEL) parallel, if you're interested in assigning team roles based on SEL competencies, may be something like 'relationship manager.')

3. **Students who indulge in off-task behavior.** You may start a teamwork session with high hopes and clearly-outlined expectations, only to start walking around groups five minutes into the session and learn that the various teams aren't working on their studies; they're discussing their favorite scene in the latest popular movie to hit the big screen. This is to be expected; some small talk is natural — but finding ways to help your students keep themselves on task will save everyone involved a lot of time and frustration. Having one of the roles that you assign within your team structure be that of 'time keeper,' a student whose job it is to keep everyone on track, may be helpful.

4. **Students who don't do their fair share (and students who shoulder most of the burden).** This is so expected that it's almost a trope at this point: Group projects tend to go hand in hand with an unequal distribution of work. This may mean that it's time to invest in more considered management of the group structure. Assigning team roles may help, as will making it clear to your students that you will be grading students individually. Asking students to rate each other on their input and team performance privately may help, as an exit-ticket system. You may have to interpret their input with a grain of salt, but you may also be able to pick up on trends within the feedback that can help you address any issues that may be occurring.

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How can I teach my young students empathy in the classroom?

When we're hoping to teach young people how to unlock and practice their own senses of empathy, we're teaching them the following:

- How to feel what another person is feeling
- How to take on the perspective of other people by imagining what it's like to stand in their shoes
- How to take concrete action that helps another person who is struggling

Teaching empathy is therefore all about recognizing what another person is going through and connecting that realization to actions that we are able to take. Since this is such a personal, intrinsic skill that you are trying to teach, it's not exactly something that you can put on flashcards or get your students to repeat and memorize. It's abstract — which means that one of the best ways to teach this concept is by modeling it yourself. A few practical strategies to help you teach empathy as successfully as possible include the following (Kidspace, 2020):

- **Model empathy through your own actions.** Telling students to recognize emotions in other people and act in kind is a difficult concept to portray verbally. Instead, set a good example for your students. This can take the form of obviously, overtly, and audibly acknowledging the emotions that you're seeing in a classroom. For example, when it's time to moderate a dispute between two students, you could take the extra step of asking each of the students how they are feeling, what they are feeling, and how to best handle those emotions once they have been clarified. Helping students realize that they are upset, that their friend is upset, too, and that the same strategies that might diffuse their bad mood could work for their friend as well, is an incredibly powerful conflict resolution skill that could help your students avoid excess stress in their future. You can also model empathy by describing your own emotions, even if you do so in an overly-exaggerated or oversimplified way. For example, if something happens in the classroom that might clearly make you upset, you may say something along the lines of — "Wow, I'm feeling upset right now, so I'm going to take some time to think about what happened. When I feel a little better, we'll talk about how we might be able to work toward a solution." This might seem overly-obvious and verbose to you, but it models a thought pattern that a child may need to have spelled out in a clearer way.

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- **Teach children how to observe others productively.** Simply slowing down and being observant enough to glean a few key details from other people can tell you a great deal about the emotions they're experiencing. For example, if someone is frowning with crossed arms, an adult may be able to intuit that the person is struggling at that moment. Children often need time to learn this type of observation and connotation. You can give your students a head start by, again, verbally processing what you see and attaching it to an emotion. You might say something like, "Wow, you sure are stomping your feet right now —- which means, I think, that you are mad. Do you feel angry? What happened to make you feel that way?" You can also add helpful charts to the walls of your classroom that connect some observable facial cues and mannerisms to emotions. You could even play some kind of acting game with your students ("Look surprised — now, look sad!") to help them draw the link between the body movement and the emotion. Then, once your students are getting a little better at recognizing emotions, you can start to talk about how a student might be able to help a person who is going through an observably tough time.

- **Teach students that it is our goal in life to invest in others.** As a teacher, this is clearly not a foreign concept to you! However, again, some students may need a little help learning this basic concept, even if it comes more easily to others. As humans, we thrive in community; and communities are built by people who take the time to invest in each other's success and happiness. In order to be the best version of ourselves, we need to spend time looking outward, at the people around us, and do what we can (at least some of the time, in some way) to help them. Students should know that this is a different skill than simply being outgoing; you don't have to want to spend time with people all of the time in order to help them. Rather, just keeping an eye out for other people's moods, helping other people when a situation presents itself to us, and other simple tasks can make a huge difference for our community. Helping students realize that this is a basic human need and that doing this can make both ourselves and our neighbors happier and healthier people may lay a logical foundation for empathy. (Frustrated students, and even parents, may wonder why you're spending so much time and focus teaching them how to recognize and respond to emotions. For parents, going over some of the evidence laid out in section two of this course may help. For students, it may be enough to simply ask them how they feel after they help another person.)

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- **Teach students that the goal of listening to other people should be to understand, not just to respond.** We've all been in that situation at a party where we know that the person we're speaking to isn't actually taking in what we're saying; rather, the person is just waiting for the next opportunity to speak. This is a frustrating situation, and one that we should teach students to avoid from a young age. While some part of the human brain will always be working on our ability to respond in any situation — that's innate and protective — we need to respect the art of listening, and listening well. Listening allows people to feel valued and seen, which can reduce frustration and stress. Teach your students how to listen well, with eye contact, pauses after sentences, and follow-up questions. See if the conversational atmosphere in your classroom changes. Ask students how they feel after having a more considered conversation (even if it's staged or only a few seconds long), as opposed to having one person run all over a conversation. If you wish to challenge your students to practice the art of conversing well, pair the students up in small groups and give them something to talk about. Walk around the groups and moderate, as needed, to make sure that more outgoing students aren't simply running the show. This will be an ongoing initiative, but it's one that should pay off in spades.

What does a supportive classroom environment look like?

Research shows us that the environment where students are educated has a significant impact on their happiness and on the overall effectiveness of their education. As a teacher, you likely know that already — which is why you and many teachers all across the nation tend to spend an abundance of time and resources making sure that the classroom is a safe, happy, and beautiful place to be.

As we reflect on the importance of empathy, support, and teamwork, it is critical to think about ways to prioritize and emphasize the value of support through classroom design. Practical ideas include the following (Kidspace, 2020):

- Acknowledge the fact that a classroom itself can serve as a means to teach children positive ways to treat one another. Many young students are visual learners. Even those who aren't will turn to the physical objects and visual resources available in your classroom for cues, subtle or overt, as to how they need to act. Include prompts throughout your classroom that make it clear your classroom is a community of kind, empathetic, and supportive individuals. A photo wall full of candids of your students interacting kindly and happily can

promote this atmosphere, as can a chart that helpfully illustrates different emotions — or even a chart that provides common sentence starters to help students navigate conversations with each other.

- In your messaging, whether it's verbal or physical, always emphasize that your students are capable and strong. Psychological studies show us that when students react out of spite or malice, this usually comes from feeling weak or insecure; acting in a more measured, connected way comes from a place of central strength and power. Feature and reinforce this central thought throughout your classroom environment.

- Ground all of your academic exercises — or as many of them as possible — in real-world experiences. This doesn't necessarily mean mentioning pop icons or current events in all math problems, for example, but young people are interested in events or stories they can relate to. One of the biggest differences between purely academic exercises and work that's grounded in reality is the expectation for quick perfection and the arrival at a single predetermined, pre-approved answer. While there are necessary instances when there is only one correct answer, there are also cases where students should be rewarded for tackling projects that are a little more creative in nature, and where they may not have one set answer. When they find that they are having problems or cannot find a solution, make sure that they and everyone else knows that trial and error teaches resilience and that mistakes are found abundantly in reality, and it's not a big problem. Support them through their setbacks, and frame mistakes as inevitable chapters on the way to success. This will make students feel both emotionally and academically supported — and it may even strengthen their creativity and problem-solving skills for use in other areas of their life.

- Make sure that your students are able to get up and move over the course of the day. This will help students feel healthier and happier, and will support helpful, positive thoughts as opposed to more frustrating, solitary ones.

- Whenever your students experience an achievement of any kind, recognize that. You don't need to have a trite participation trophy corner of your room; rather, it may be enough to simply foster an environment wherein you and your students are able to recognize when someone else is proud of an accomplishment. When this happens, you should teach your students to offer up simple congratulatory sentences and meaningful compliments. (Again, having these sentence stems on

a poster in your classroom may be very helpful for your more visual learners) (Kidspace, 2020).

- Teach your students that happiness, success, and support is not a zero-sum game. In the larger culture, many people feel that they need to attack people who are doing well because they believe that success and happiness are only granted to a few — and that another person's happiness directly and negatively affects their own ability to be happy. This is the psychological root underlying jealous attacks and passive-aggressive 'compliments' often paid to people who are celebrating a win. If at all possible, impress on your students that you're working toward a framework wherein everyone can win and be happy — and, so, there doesn't need to be anything bitter about another student's successful moment. (As a central authoritative figure in your classroom, you can reinforce this by celebrating the triumphant moments of all students, often, on a regular basis. (Kidspace, 2020).

- Turn your classroom into an environment of celebrating who each individual student is. The diversity, cultural, and socioeconomic makeup of the average American classroom is swiftly changing, and that can create an atmosphere where bullying, confusion, and resentment exist. Be up front with your students about the differences apparent in your classroom, and take the time in your day to examine and celebrate the stories that make each of us who we are. This can be subtle — e.g., assigning books written by diverse authors.

What are some specific strategies we can use to encourage students to get along and support each other?

If you're a teacher, you know that this is something that you constantly have to be aware of and that you are always working to perfect. You can have all of the sky-high plans and dreams you want for your students, but they can, at times, despite your best efforts, be mean to each other, ignore each other, fail to work flawlessly as a unit during team projects, or even pretend to do all of the above while silently and invisibly being incredibly unkind to one another.. Children may act cruelly from time to time.

Other students take a significant amount of time to understand basic lessons about the importance of being good to each other.

This does not mean that these students are necessarily malicious or 'bad.' It just means that this may be a counter-cultural movement — and that supporting each other can be

difficult and non-intuitive at times. Part of teaching well is teaching the nuts and bolts of positive student-student interactions. As tempting as it is to assume that this is something that comes naturally, it isn't.

Here are a few specific strategies you can use to help students figure out how to express themselves helpfully, build rapport with other students, become more comfortable with each other, and work better as a team in full support of each other (Ingle, 2019):

- Make 'two minute talks' a habit in your classroom. Create a series of simple prompts or conversation starters (such as 'what's your favorite dessert?', or 'which would you rather do, go to the beach or a mountaintop?') and place them in an accessible format — print them out and cut them up, or simply put them in a flashcard on your screen so you can easily present one at a time to the entire classroom. Periodically and strategically throughout your students' days (or even just once during your class period), signal that it's time for a rapid-fire two-minute talk, and flash the question at hand. Ask the students to speak to a very specific person — e.g., the person on their left, the person they're assigned to work with, or someone that they haven't spoken with yet that day. The extreme structure of this practice should reduce pressure; the students will already know exactly what to talk about, and they need only talk for two minutes. (If you have students for whom this may still be a problem, consider showing them the question ahead of time or something similar.) Perhaps this could become a ritual that occurs at the beginning of a team activity as an ice-breaker or it can be used as a short social break in between longer periods of study. Either way, this will help students practice quick, effective conversations and learn more about each other.

- Construct a class playlist—perhaps a new one for each month or semester, so it's something that your students are able to look forward to on a regular basis. When it's time to create the playlist, have each of your students get up and write the name of an artist or a song they like on the board in your class. (You can adapt this practice to your classroom format; perhaps students could type suggestions into a chat, or something similar.) Make it clear that you have veto power, and that students should exercise some wisdom regarding appropriate song suggestions. Forcing students into a situation where they need to brainstorm something fun together like this can prompt easy conversation. You could also have students suggest music as a two-minute talk or exit ticket, instead, and then have students explain why they made their picks in small groups. This is a fun activity that can help students bond and help open their minds a little bit. If any

one student is being loud or judgmental about another student's music choices, challenge the student (or see if another does) to have a more open mind about the situation.

- When you're forming student groupings, be very intentional. You know your students better than anyone, so you're the person best suited to creating teams that will work together very effectively. Put students together who will be able to learn from each other in the best way possible — personalities that seem to suit each other well, and a good mix of introverted and extroverted students. This can help keep the social dynamics balanced so that the students, when grouped, will stand the best possible chance of working together as a cohesive unit (Kaechele, 2020).

- Consider employing group contracts. While it might be tempting to throw students together (even well-chosen, highly-strategic groups of students), and hope for the best, your chances of success will skyrocket if you give the students some semblance of a structure to cling to. Your students may in fact work together naturally, but developing a group contract (or something that sounds a little more fun and personal) can be beneficial. This will help solidify each student's personal role within the group, the expectations for the group as a whole and each person within the group, and more. You could call this document a whimsical Cast of Characters, a Group Charter, a Productive Plan, or anything else — but listing the requirements and expectations up front and giving everyone a copy is as good an idea for a group project as it is in a business situation (Kaechele, 2020).

- Assign roles within the group with an eye toward SEL competencies. After creating a group contract, you should have an idea of the various roles that will need to go into the team structure. However, if you think outside the box a little bit, you could overtly or subtly make the assigning of team roles into an SEL exercise. Instead of making one student the captain or leader of the project, put one person in charge of Responsible Decision Making. Instead of having another student do research for the project, have that individual be in charge of Social Awareness or Relationship Skills. Along with this, you will likely have to have some traditional roles represented in your team structure in order for the students to efficiently complete the task (Kaechele, 2020).

- Have your students critique another collaboration. Pull up a video of a famous cast of characters (or a group relevant in pop culture) completing a task at hand.

Old sitcoms might be good for this, as long as they're age appropriate, or YouTube compilations may also help. Give your students an overview regarding how a group works well together (e.g., listening to each other, staying on task, making sure that each person understands what another person is saying) and then watch the clip, asking the students to notice whether the group is working together and understanding each other as well as they can. (This is why a funny clip might work well, as the crux of many older sitcom jokes is actually, very simply, the characters not functioning very well as a team.) When the clip is over, invite the group of students to decide why or why not the team worked together in an effective way. Alternatively, you could invite your students to watch the result of a massive group effort (say, a short scene from a Star Wars movie, or you could ask them to examine a large architectural structure) and then ask the students exactly what project roles and competencies were required to get that job completed so well (Kaechele, 2020).

- When in doubt, have your students play a game that doubles as a team building activity! Ask them to tell a story where each person contributes one word, build a small structure out of something inconvenient (like chopsticks or marshmallows), or even imagine how they might tackle a larger project (e.g., building a structure in your town, or filming an episode of their favorite TV show). Coming together to brainstorm and execute a spontaneous project can force your students into their roles as an effective team — and, if this doesn't happen intuitively and naturally for a group of students, you can be there to help ensure that every student is working together as kindly and productively as possible with simple guidance (Kaechele, 2020).

- Have your students take a quick personality assessment (such as the Myers Briggs framework). These types of personality quizzes are fun for students, easy to administer, and can help give students a context for understanding both themselves and each other's needs in a team setting (Kaechele, 2020).

Section 3 Key Points

- Assigning team roles may help with many of the common downsides of working within a team structure. These roles may include options such as relationship manager, project leader, and timekeeper.

- When we're helping young people unlock empathy, we need to teach them how to take on the perspective of another and then act according to that information.
- Teachers can model empathy by talking about their own feelings, sometimes in an overexaggerated way, to help students understand the connection between emotion and action.
- Simply observing another person can be enough to tell us a lot about how that individual may be feeling.

Conclusion

Teaching, practicing, and learning empathy, as well as teaching students to support each other and participate in high-quality teamwork can take a lot of patience, but the end result is worth it. Helping students learn how to function alongside their peers now will help them far into the future! By teaching your students how to recognize and deal with emotions productively, you're helping them enjoy more meaningful relationships and more productive teamwork experiences. These efforts will help every member of your classroom and help boost the community in your class, as well.

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Introduction

As 21st educators, we are always looking for creative and innovative ways to engage our students in the learning process. One such way is hands-on learning? Hands-on learning and the tactile teaching techniques it requires are educational methods that rely on direct involvement from learners and educators alike. The main thesis of this type of educational tactic is simple: Students need to do something in order to learn about a specific subject effectively.

Teachers will need to put a significant amount of thought into constructing environments that help students learn in this way. For example, there needs to be a significant focus on rewarding learning experiences for students, so that students are motivated to participate in, and oftentimes lead these types of activities. Ultimately, it might be a goal for many educators to incorporate this learn-by-doing philosophy across all areas of their teaching curricula.

Section 1: Why Hands-On Learning and Teaching?

In this course, we'll discuss the pros and cons of hands-on learning, the science supporting this educational strategy, and effective ways to incorporate this type of strategy in a variety of common learning scenarios.

Before we get into that, however, it will be helpful to begin with a central definition.

What is Hands-On Learning?

First of all, there's another widely-known name for hands-on learning that you may be familiar with: kinesthetic learning. In this course, we'll refer to the central concept as "hands-on" learning, since we're always in favor of simple, effective language (Miriam, 2021).

Hands-on learning occurs when a student carries out physical activities or participates in physical projects to learn more about the subject material, instead of listening to a lecture. (In this way, it's somewhat similar to PBL, or project-based learning.) This form of learning falls under an umbrella of educational strategies known as "participatory" education (Miriam, 2021).

With a little thought and creativity, teachers can transform any traditionally lecture-based lesson into a hands-on learning module. For example, a few types of very common hands-on learning lessons might include (Miriam, 2021):

- Performing experiments as part of a science class
- Performing reenactments in history or literature class
- Solving tactile or real-world problems in mathematics
- Writing short stories or poems in English class
- Solving problems or playing strategy-based games in any class that requires critical thinking

As you can see, the possibilities are endless. What's more, hands-on learning helps strengthen abilities outside of simple recognition of subject matter based facts. For example, while completing the above activities, students might grow in creativity, communication, and critical thinking as well as in their knowledge of history, literature, or math (Miriam, 2021).

What are the Benefits Associated with Hands-On Learning?

Hands-on learning is associated with numerous benefits. While the advantages of this type of learning will be discussed throughout this course, some of the primary benefits include the following (Miriam, 2021):

1. **Students tend to retain more information when participating in a hands-on learning module.** Why? When students are working with their hands, experiencing sensations, and solving problems, that engages both sides of the brain far better than simply taking notes during a lecture. In addition, when a student is forced to use newly-acquired information immediately, that sends the information into a more practical part of memory storage.
2. **Students who learn through hands-on learning modules tend to exhibit increased attention spans.** This also makes sense, if you think about it: During lectures, students often tend to lose focus and tune out, perhaps paying more attention to how quickly the clock is moving than on the subject matter the teacher is introducing. With hands-on learning, students are up and moving. They're more interested in what's happening than they are focused on how quickly the class is ending. And, of course, with activities and projects, students

have to stay focused on the instructions the teacher is giving: If not, they'll miss a key step and be left to overcome a challenge on their own.

3. **Students have the opportunity to work together in teams during hands-on learning modules.** In lecture-based learning, students are not generally interacting with one another. When you throw an activity into the mix, however, students need to work together in order to succeed. Not only does this help create a community within your classroom, but this also mirrors the way that adults work together much more closely — preparing a student well for his or her later career.

4. **Students have tactile results to be proud of at the end of a hands-on learning module.** Although a stack of notes, quizzes, tests, and papers is certainly something to be proud of, it'll be much more interesting for children to take home, show off, talk about, and display the results of hands-on learning modules. For example, if you've asked your geometry students to put their skills to the test by designing and building a small piece of furniture from scratch, at the end of the semester, they'll have a brand-new stool to use in their home. Through this process, they would have received the help they need to ensure that these pieces are safe to use in addition to looking good!

5. **Finally, hands-on learning can make learning more fun!** If you asked students whether they'd like to sit and read a book, do some scientific calculation, listen to a lecture, or if they would prefer to go outside and collect insects to study, which do you think they'd choose? Peppering your lesson plans with tactile, hands-on activities will keep your students guessing, making it much more likely that they'll look forward to and enjoy their classroom experiences.

Is hands-on learning a strategy that can work for every student in every situation?

While we can't make a universal recommendation for every student, as all young people have unique learning styles and needs, hands-on learning is an educational strategy that has the capacity to be well-suited for students of many ages and different personality types (New School, 2022).

Even students who are shy, have low energy, or who prefer some aspects of more formal types of instruction (e.g., having clear instructions or a teacher as a guide to lead them through an activity) will likely benefit from having some type of tactile reminder or

interactive experience to rely upon as they go through their learning journey (New School, 2022).

Hands-on learning can be extremely versatile, as well. If an instructor is able to present a group of students with a variety of learning opportunities, each suited to a specific type of learning modality, then students can pick and choose activities as they wish to a large extent, as long as they're covering the primary subject matter. For example, if students benefit from listening to lessons, they can opt to listen to a lecture as they're completing an activity with their hands. Other students may prefer to watch a tutorial or read a paper as they're moving through a learning activity. Hands-on learning can therefore be incorporated into many different types of lesson plans, making it a viable option for every teacher to at least consider (New School, 2022).

Why is Hands-On Learning a Powerful Option?

Hands-on learning can bring any type of subject matter to life for children, which can help them get interested in a field of study or even help them realize that a specific subject isn't actually for them. Hands-on learning can help a student connect to the reality of a less-tangible subject matter; for example, completing volunteer work or putting together a proposal to help people on the other side of the globe will add another level of realism to, say, a social studies class — more realism than reading any textbook or story will be able to offer (New School, 2022).

Many of us have been able to experience the benefits of "learning by doing" with our educational experiences. After participating in biology labs, future scientists are more sure with their hands and more confident about the theories they want to experiment with. After an auto shop class, future engineers are better equipped to understand how motors work — which could better help them better recognize the way we think about energy in the future (New School, 2022).

In more traditional learning frameworks, students spend years (close to a decade, even) steeping themselves in theory before they actually put their knowledge to use. In hands-on learning, students are becoming involved in a practical way with the real nuts and bolts of their chosen field from an early age. This can help them be more interested, more focused, and better able to create, years later, when they do launch their own careers. As it turns out, there's a deeper level of learning that many students can unlock only when they invite their senses into the learning experience. As it can be difficult to make reading or listening to a lecture a fully experiential thing, concentrating on

weaving at least occasional hands-on learning activities into a lesson plan can add variety and power to virtually any subject (New School, 2022).

Importantly, hands-on learning does seem to confer these benefits regardless of the type of classroom this strategy is used in. As remote learning and virtual learning are becoming more popular options, more and more teachers are figuring out effective ways to help distance learners join in the hands-on fun. We'll discuss the ways you can help make this happen in a later section of this course (New School, 2022).

Hands-on learning is also powerful because it gives students a more accessible way to self-correct. Often, when students are learning something primarily theoretically, it can be easy to misunderstand or misinterpret central facts and theories. It can also be very easy to confuse different high-level concepts when they're all grouped together on one page — for example, specifics of the three laws of thermodynamics, or the various sections of the United States Bill of Rights may overlap as a student is trying to retain this information (New School, 2022).

When students are given the opportunity to familiarize themselves with these concepts individually and through engaging activities, a set of concepts or laws that easily blurs together becomes much more distinct. An easily-misunderstood theory becomes much simpler to understand. If students realize that they're confused about something, when they're working with something tactile or manipulable, it becomes much simpler to identify and verbalize what's standing in their way (New School, 2022).

Finally, when you delve into the way that children's brains develop and hold onto memories, the type of memories that are created when a student smells, touches, makes or even sees something unusually vibrant are much stronger and easier to reference than the memories a child makes when he or she reads a book. Shifting to hands-on learning becomes a deviation toward more efficient learning — learning that truly sticks in children's brain better, allowing them the opportunity to learn in a more permanent and helpful way (New School, 2022).

How does Hands-On Learning help students build toward a career?

With its heightened focus on practical learning and hands-on experience, hands-on learning is possibly far better suited for helping students build workplace preparedness than more traditional learning (New School, 2022).

Traditional learning and education don't tend to translate perfectly into the way a child would practice a related craft down the road. For example, think about the way that

students might learn to mispronounce a word or may learn an incorrect meaning of the word in a self-learning environment. They read a word over and over again, perhaps are given a written test on a subject that uses that word — but they may never actually use or speak the word aloud themselves until asked to do so in a professional capacity. It is only then that the individual learns the correct pronunciation and the true meaning of the word (New School, 2022).

In hands-on learning, students, in theory, can get many of these mistakes out of the way before they're asked to practice a skill with responsibility attached. For many fields, this can make a world of difference. For example, in medical studies, manufacturing, and architecture, little mistakes that are borne from inexperience can be significant. Students who have gone through hands-on learning will still make errors, of course; that's the nature of humanity. However, it stands to reason that, because they'll have meaningful practice and hands-on experience prior to graduation, they'll make fewer mistakes. This is the same general idea that underlies the importance of medical internships and residences prior to a medical student's licensure as a professional doctor — just taken to even more pervasive and helpful levels (New School, 2022).

Not only will it help the future workplaces of students who have gone through hands-on learning, but this type of learning will also serve the individual students better, as well. Often, there is a stark amount of competition for high-paying, enjoyable jobs — the types of jobs that often require a great deal of experience and familiarity with usually learned-on-the-job skills (e.g., doctor, engineer, even musician or artist). Students who have been working in and practicing in their fields of choice, even sporadically, from a young age will have a better chance of standing out from the competition and securing the career or project of their dreams (New School, 2022).

How well does hands-on learning transfer from the classroom to an office workplace?

One question facing educators is whether or not the long-lasting benefits of hands-on learning impact all types of careers, including those that require less skilled handiwork. For example, will hands-on learning still help a student who will later get a job in a more analytical, theoretical field?

It would seem so. While the actual subject matter of hands-on activities may be less strictly applicable, the way a student learns to receive and apply knowledge will help that individual later regardless of the type of career chosen. Think about it: In the real world, people are given problems to solve, asked to create proposals and develop

creative solutions, to think outside the box, and to prepare presentations that will resonate with their audiences. They're asked to do things; for the most part, that's what a job entails (New School, 2022).

Hands-on learning, with its focus on performing tasks instead of passively taking in information, fortifies students' mindsets and helps give them the expectation that they'll be tackling projects and doing meaningful, tangible work on a daily basis. Regardless of the subject matter, training students to ace multiple-choice quizzes doesn't have much future-proofed benefit. However, teaching students to walk into a new environment, assess what needs to be done, jump in, get their hands dirty, and make mistakes until they get something right—that's a much more versatile skill, and one that employers in a range of fields will seek out and reward (New School, 2022).

Further, there's a good chance that students will be able to list many of the accomplishments they gain from their years in a hands-on learning environment on their resumes - which will, of course, further boost their competitiveness among their peers when applying for jobs. If job seekers are able to report that they have worked with a specific computer program several times a week, took a class that required the use of a specific tool, did a certain amount of volunteer hours, led a team of students as they completed a specific project, or solved a specific problem using only a certain set of materials, that will look good to future employers (whether for a job or an internship — or to future schools) (New School, 2022).

How else does hands-on learning benefit students?

As educators, we naturally want to ensure that our students benefit from our teaching methods in many ways. It's great to help them with skills to enhance their job prospects, but we want to also teach them in ways that help them become happier, more empathetic, and more forward and logically-thinking individuals (New School, 2022).

For teachers and students alike, hands-on learning offers more opportunities to problem-solve, connect with peers, and enjoy more active learning sessions than more traditional lecture-based strategies. Hands-on learning should result in fewer restless participants, as students will be receiving more stimulation during the class hours themselves. Students should also feel more excited and happy about the prospect of learning; instead of resigning themselves to an hour of taking notes, they get to figure out how to redesign a museum, or they can practice cooking a different type of food. This novelty can do wonders for a student's level of engagement and mental health (New School, 2022).

How can I prepare my students for hands-on learning?

Pivoting from traditional lecture-based educational methods to more interactive hands-on learning can be challenging for many students. In order to help them prepare, consider assisting your students in the following ways (New School, 2022):

1. Help students become familiar with the safety procedures relevant to the specific type of hands-on learning prior to starting a new type of project or skill. For example, if you're going to be leading your students through a shop class where specific types of power tools are used, devote an entire class period while you're still in your classroom to the proper care and use of those power tools (and then make sure trained adults are nearby when students are using those tools at all times).

2. Equip students with the personal protective equipment that they need in order to complete their new projects successfully, and ensure that they know how to use each piece of equipment.

3. Giving your students hands-free ways to take notes (e.g. recording functions on their computers or tablets) so that they don't have to take off gloves or put down tools to record important concepts for later use can be very freeing and empowering.

4. Emphasize the importance of a clear mind as students learn new skills — for example, take the time to explain the connection between enough sleep and a good diet and having enough energy to tackle new activities. Additionally, make it clear that hands-on learning periods will likely require more physical endurance from students than the typical lecture-based class.

How does hands-on learning work for groups of students?

Hands-on learning can benefit individual students by empowering them with new skill-sets, but as importantly, since teachers are rarely in a scenario where they're only teaching one student at a time, this type of learning can work well for groups of students. Students can also benefit in many ways from working with their peers, as they develop communication, presentation, and cooperation skills from working on activities with other students (New School, 2022).

When you're structuring your hands-on learning activities, build variety into the different ways that you'll be guiding students to interact with one another. For example, one

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lesson might have a competitive edge to it; in another, the interaction between students might be decidedly more cooperative. If a specific hands-on activity is more solitary in nature, you could bring together students at the end of a class to discuss how the experience went, or to brainstorm better ways to tackle a particular problem. If you have a large class of students, you could even group your students in pairs or small groups of three where they can take turns and help each other complete a certain activity together (New School, 2022).

Section 1 Key Points

- We can define hands-on learning as a series of physical activities or tactile projects that a student embarks upon to learn more about the subject material. More widely, hands-on learning depends upon interactive, engaging educational actions that require the student to be an active participant in their learning journey.
- There's a neurological rationale for the importance of hands-on learning. When students work with their hands, solving real problems and experiencing real sensations, that engages their brain far more than taking notes or watching a video.
- Hands-on learning can help groups of students learn subject matter and enjoy opportunities to grow their communication and presentation skills.
- Hands-on learning can help students bolster their resumes and become more competitive in the job market. They may, for example, be able to say that they've worked on problem-solving or with a specific tool for years. That's hands-on experience that a future employer or further educational opportunity will like to see!
- Hands-on learning can be leveraged for remote students, as well, through EdTech, remote activities, and strategically planned community involvement.
- Hands-on learning also helps prepare young people for the realities of their future careers, where they'll likely be asked to experiment with unfamiliar variables, tackle projects, and complete real objectives on a day-to-day basis.

Section 1 Summary

It's clear that hands-on learning presents valuable opportunities for students to gain educational experiences, build relationships with their teachers and peers, and cement

meaningful skills that they can use for the rest of their lives. Additionally, it does seem that hands-on learning is increasingly popular even for remote and virtual learners.

However, much like any other type of educational practice, hands-on learning must be implemented strategically in order for teachers and students to enjoy the related benefits. In the second section of this course, we'll discuss how a teacher might leverage hands-on learning to the best possible effect.

Section 2: How to Implement Hands-On Learning

Now that we've discussed the basics of hands-on learning, it's time to discuss how best to implement it in your classroom if that's a goal for you and your team.

Implementing hands-on learning in early education

Hands-on learning works well for young and old students alike, but there are different considerations that you should think about in both cases. When you're helping your students in kindergarten and elementary school get used to daily education, keeping them engaged is key. That's one way in which hands-on learning can provide a great deal of motivation and excitement (Lynch, 2019).

Hands-on learning is very beneficial for young students because it helps them engage with and start to understand new concepts using different parts of their brains. This can not only introduce them to the subject matter — it can help them discover how they learn, which is invaluable information (Lynch, 2019).

If you're looking for ways to implement hands-on learning in early education, it's a good idea to start by thinking about the way you set up your preschool classroom. One school of thought involves getting rid of the big furniture — chairs, tables, desks, and the like — in rooms that are geared to support the very youngest of learners (e.g., preschoolers). Instead, the room should consist largely of open space, and there should be a variety of objects around for young students to use and manipulate (think: modeling clay, buckets of water and low sinks, finger paint, crayons, pipe cleaners, and building blocks) (Lynch, 2019).

With all of these materials within easy reach, the teacher could begin a learning period by sitting on the ground with children and asking the students how they might use the objects around them. The teacher should refrain from telling the student how to use a pipe cleaner or blocks, or even showing the student how they might be stacked. Rather,

the teacher should focus on allowing the student access to the central joy of hands-on learning: That of discovery (Lynch, 2019).

This is very different from current trends within early education. Many schools are focusing on having extremely structured classrooms and formal types of learning strategies, even for the very youngest students. While many may argue the practicality of this type of educational strategy when employed from an early age, others believe that this simply isn't the best way for very young students to learn and discover (Lynch, 2019).

Instead, preschool children should be guided freely in exploration, and allowed to move around an enriched environment as they see fit. It may seem like they are simply playing with provided materials, but in actuality, they are using their senses to learn about the world around them. They are learning how to be curious and cementing the foundation of their critical thinking skills (Lynch, 2019).

Crucially, these young learners will start to learn about the process of trial and error. For example, the simple process of building a block tower can become an experiment with a hypothesis and a conclusion. "What if I build the tower this way," a young learner might think, before executing the experiment — building the tower. Whether the tower stands tall or falls tells the young learner a great deal, whether subconsciously or not, about the way objects work together and about trial and error. Moreover, that framework of proposing a question, completing an activity, and logging the result for future reference is an invaluable one that tends to be more effective when student get there on their own (Lynch, 2019).

How can hands-on learning be implemented for older students?

We know that guided or unguided play with paperclips, pipe cleaners, and blocks is great when you're working with very young students. However, when your students are in middle or high school, you may find that these types of craft- or play-oriented activities aren't enough to keep the older learners stimulated and engaged. However, when you're working with older students, the principles of hands-on learning can be incorporated in creative and meaningful ways?

Here are some practical strategies to consider implementing (Ditch That Textbook, 2021):

1. **Have your students get their hands dirty and/or get up out of their chairs.** While this is a little bit of a literal take on 'hands-on' learning, it can be really helpful to

help break students out of a learning rut — particularly older students who have come to expect long lectures or lengthy reading assignments as the primary educational methods du jour. Instead, clear a circle in your classroom and make a mess on the floor — whether it be of cooking ingredients (to talk about the chemistry behind baking) or flashcards or a large floor game. Anything that physically gets the students out of the 'just sit down and take notes or read' mold will instantly be more memorable and induce more brain activity than more typical teaching strategies. While it may not be possible to do something like this every class period, it can be particularly effective for helping students "get" a concept they've previously been struggling with.

2. **Make sure to spell out a concrete, real-life connection for everything that a student is learning — as much as is possible.** If you aren't able to make a concept physical and tactile, that's okay. That may depend on your budget or the amount of time you have to sink into a certain lesson or concept, and the resources aren't always there. Providing context and connections for the things you're teaching your students, however, is quick and free. Doing so may seem redundant or unnecessary to you, but helping your students figure out where they stand in relation to a specific subject will help them order it within their worlds.

3. **Ask your students to become engineers, designers, content creators, or reporters — anything that will force them to look at the information they're learning in a functional or useful way, instead of simply as data to retain.** Right now, there's been a huge swell in focus on the maker movement — asking students to make things with their creativity and newly-acquired knowledge — as well as in functional design thinking. These types of project-centered learning activities are very good for the brain and can help students of all ages be more focused on their studies. Instead of giving your students a problem set in mathematics, for example, ask them to design a new playground for your school within a certain set of financial or geographical restraints. That type of problem will require a great deal of mathematics calculations, and will also help your students retain the information for longer than rote memorization.

4. **Introduce the idea that in real life, data often doesn't make sense.** Often, when we present problem sets and stories to students, we cleanse the data and work the problems specifically so there are never any inaccuracies — and there are always simple, clean, easily-findable answers to any given problem. Of course, in adult life and on the job, this is rarely the case. After you've had your students

work through a few geometry or physics concepts in a safe, clean data environment, have your students work with real data — or create problems for each other to solve that may not necessarily have simple or correct answers. Ask your students to determine whether the problems are solvable, and provide their reasoning if they don't think they are. This is far more interactive and experiential than a simple problem set, and it gives the students far more responsibility and ownership of the way they take on the given problems.

5. **Ask your students to teach other students.** As an educator, you know full well that you need to understand something really well — inside and out — in order to teach it effectively. The way you look at subject matter if you know you're going to be presenting it to others and answering their questions is just different. Take turns asking your students to partner with you in the presentation and education process. For example, in a given semester, all students could have a week where they are the one championing the subject material for that week. Your students will know that you're there to help them, of course, to make this experience as low-stress as possible; but they can be the ones coming up with games for the class to play, initiating class discussions, finding videos and resources to reference during classroom presentations, and more. Not only will all students know their specific part of the subject extremely well, but this will also help students learn communication, presentation, and project organization skills that otherwise would have been left on the table.

6. **Try the same hands-on learning strategies used for younger students — just aged up for an older audience.** Earlier, when we discussed ways to implement hands-on learning for young students, we discussed strategies like leaving blocks and pipe cleaners out, refraining from telling students how to play with them, and letting the students discover their own methods for learning and playing in the intended environment. Allowing older students to do something similar can be both cathartic and productive. Consider leaving times open in your curriculum or lesson plans to allow students free time to discover what they will — either in an open-ended way or in a closed, safer arena. For example, you could give your students access to microscopes and ask them to tell you whatever they can about the types of fabrics they're wearing in the room, or you and your students could set up a working fish tank in your classroom so they could observe the nitrogen cycle in action.

7. **Make sure that your classroom is a safe place for students to fail.** With hands-on learning, it's easy to see that the often-circuitous route a student takes to learning new material is part of the journey. (Picture the toddler building a tower of blocks, above — they have to know it's okay for the tower to fall in order to feel confident building it back up!) Older students need to know that it's okay to have a hard time building the aquarium, figuring out a new kind of problem, or putting together a presentation that their peers will actually enjoy. If they don't operate within a safe-to-fail area, they'll tend to be conservative, instead — making it much less likely that they'll experience the thrill of discovery, and much less likely that they'll actually get comfortable with the material they're working with. Every class will have to include some kind of assessment, but make sure that the projects and activities in between higher-stakes assessments leave room for students to play around, try again, and grow. Their learning will be much deeper because of this!

How does hands-on learning transfer to higher education, the workplace, and the real world?

Hands-on learning may sound great in theory, but since one of our primary goals as educators is to help students get ready for life in the real world, we must ensure that we are using this type of learning in a way that prepares young students for what's out there

As it turns out, hands-on learning can enrich higher education and transfer to career and adult life in many practical ways, including the following (Lerna, 2020):

1. **Work placements, internships, and practicums.** Internships are already a way that students in college and new to the workforce can practice hands-on learning. In internships and other similar programs, older students have an opportunity to practice what they've been taught in a professional environment — and learn more real-world lessons along the way. While for many students, internships are one of the first opportunities they have to practice their academic skills in a work setting, and for students who have benefited from project-based or hands-on learning from a young age, this type of experience will be very familiar.

2. **Training programs for professional accreditation.** Often, before future professionals can become doctors, lawyers, nurses, or psychologists, students will need to complete a certain number of work training hours in their intended career environment (e.g., a hospital). This is a specific type of hands-on learning

that will help prepare those students to do well in specific work environments once they've achieved their certifications.

3. **Undergraduate research.** If students are in pre-medical or pre-PhD programs, they will likely spend at least some time in their undergraduate studies working under a principal investigator (or PI) in a research laboratory. This also applies to students who aren't in the hard sciences; for example, a student might do research as part of art history or an abnormal psychology program. In taking on undergraduate research, students both gain a deeper understanding of their chosen fields and an idea of what real life in their chosen profession might be like.

4. **Volunteering and fieldwork.** Formal internships, work placements, or funded undergraduate research aren't the only ways to get hands-on learning opportunities. Depending on your field, you can find valuable experience through volunteer work, shadowing a professional, or by helping nearby labs or offices with any needed fieldwork. Typically, volunteer and fieldwork may be done "out in the world," e.g., in actual fields or forests—or by conducting polls and surveys on city streets. Older students may be able to help contribute to their professions by finding a volunteer position related to the field of their choice.

Section 2 Key Points

- Teachers who wish to invest in hands-on learning might start by setting up their classrooms a little differently. An emphasis should be placed on open spaces and numerous fun, brightly-colored, tactile objects.

- Preschool children in particular should be guided in exploration instead of told how to play. This helps young children learn how to be curious, which in turn may help cement their sense of discovery and their critical thinking skills.

- Don't have the time or resources to invest in a completely updated curriculum or learning space? You don't have to. Instead, you can help your students benefit from some of the benefits of hands-on learning by providing as much real-world context as possible. Children are inherently practical people, so giving them a funny, relatable, or dramatic contextual reason to connect and care about the material can have an instant effect.

- If you're able, consider tapping into any nearby makers' spaces or communities. Or, ask your students to become hypothetical engineers, consultants, or rocket scientists. This can enable you to ask your students very clear-cut questions and

pose very specific, practical problems to solve based on the relevant subject matter.

- Consider giving your students problems with no clear, defined, or clean answer. Often, in real life, there is no absolute or obvious answer to a question or problem. Allowing your students the freedom to derive imperfect answers from messy data is much more realistic than the alternative.
- Consider asking your students to take turns teaching each other subject material — or asking students to be your "teaching assistant." Presenting and discussing a piece of information works different brain muscles than simply taking information in passively.

Course Summary and Conclusion

When it comes to hands-on learning, a little can go a very long way. Finding imaginative ways to help children think about a subject more interactively and practically can help them use their brains in different ways. It can also help them unlock specific skills that will help them for the rest of their lives. Consider taking just a few steps toward hands-on learning in your upcoming lesson plans. Whether you're able to reimagine your entire curriculum or just take an afternoon to help your students work through one specific activity, you may be surprised by just how many benefits you and your students will experience.

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Growth

Introduction

In the United States, despite a great deal of innovations and progress in the educational sphere, there still exist many barriers to effective teaching and learning. These may be external or internal, and it's time to acknowledge the effect of these obstacles on teachers and students alike. If we don't take time on an administrative and classroom level to address these barriers, we'll make little progress with assisting the struggling students who most need our help.

The goal is to increase the efficacy of teaching overall, so that teachers no longer have to divert instructional time to dealing with these barriers. Instead, after dealing with various impediments, teachers can hope to drive increased engagement for all students, not just those who are struggling. The strategies we'll discuss in this course will point to comprehensive systemic updates that schools and teachers can implement to address existing barriers to learning and teaching.

Section 1: The Barriers Impeding Forward Progress

As we begin to discuss effective interventions that address barriers to teaching and learning, it's key to ensure that we're all on the same page regarding what those obstacles are. The roadblocks that most directly impact learning efficacy can be extremely varied: Mental, physical, cultural, emotional, and social elements can all come together to impede students from achieving their educational goals. They can also make it very difficult for a teacher to educate effectively.

In this beginning section, we'll review some of the most common barriers that stand in the way of learning and teaching success. Then, we'll begin to break down strategies that might help us move forward.

What are some common barriers that impede teaching and learning?

There are many barriers that could interfere with a student's ability to learn effectively. We can break down the different types of barriers into a few different groups (Rice, 2021):

- **School barriers.** These are location-specific (or even classroom-specific) elements that may distract or otherwise interfere with a student's ability to focus and learn at school.

- **Emotional barriers.** These barriers may not be tangible or obvious, but they stand as very real mental impairments to effective learning. Often, these barriers take the form of fear, lack of motivation, or other significant emotions that disallow students from having the confidence to immerse themselves fully in their learning environment.

- **Environmental barriers.** These barriers may be at home or at school, but generally consist of distractions that impact a teacher's ability to teach or a student's ability to learn.

- **Psychological barriers.** These often take the form of conditions that may make learning more challenging for both impacted students and their peers (e.g., dyslexia, autism, or ADD/ADHD). It's a school's job to help a student overcome these challenges, so, reducing these barriers may require creating better support systems for students who need them.

The most common barriers that impact teaching and learning include (Rice, 2021):

- **Motivation.** Children and adults alike may run into times when they just don't feel like jumping into another project. Depending on the atmosphere in your classroom (or your students' work from home learning space), it can be challenging for both teachers and students to have the energy to make it through an intellectually stimulating weekday — let alone for the students to have the energy to complete hours of homework on their own time. If the learning community lacks interest, drive, and inspiration, or has too many distractions, these can all impact motivation adversely. As a result, the entire community will be less apt to learn as effectively or as efficiently as they otherwise might. Creative and innovative strategies can help to overcome this barrier, such as including elements of gamification in your curriculum.

- **Lack of previous knowledge.** If the bulk of your student base has had a similar learning history, you may be able to create lessons that specifically speak to and build upon the students' previous educational experiences. When new students join your classroom who have not had those previous experiences (or if a student struggled in the past), they may have a difficult time jumping in and keeping up.

As a result, they may not be motivated or able to complete current educational aims as desired.

- **Learning challenges.** More people than you may think have learning differences that can impact their ability to keep up with classmates or new learning paradigms such as remote or online learning. For example, approximately 10% of the American population has autism or dyslexia. It's imperative that we set up systems that can help students and teachers who have these learning challenges. For example, making sure that your online learning platform has options to repeat lectures, read them, listen to them, turn on subtitles, as well as other strategies are all excellent ideas to consider. It's also advisable to invest in very clear, written, step-by-step instructions for any activity you'll need teaching staff or students to complete. In addition, consider establishing a few different ways that students can complete assignments: For example, on a given subject, a student might be able to have a quick oral discussion with you to demonstrate comprehension, or provide a typed-up report, or make a quick video, etc. This flexibility will help students who learn in different ways understand how best to proceed in your classroom. Implementing robust organizational systems in your classroom, whether physical or online, will also help your entire community succeed.

- **Learning environment.** Classrooms, work places, and even home environments can contain numerous distractions. Distractions can easily hinder overall productivity or learning success and create undue frustration. If we can take steps to create serene, organized, helpful environments for learning, that may help students and teachers alike enjoy an increased ability to concentrate on their work.

- **Emotional barriers to effective work.** It's incredibly important that we no longer discount or ignore emotional barriers to productivity or understanding (as might have been more common in the past). Fear of change, insecurities, trauma, fear of failing, and many other real emotional barriers exist and can make a huge impact on a learning community's environment and abilities. It's key that we realize that these obstacles are real, discuss them openly to normalize them, and create structures in our schools (and provide resources for home use) that help us build systems of support for the mental health of our entire community.

- **Disparate learning styles.** In a perfect world, every student would learn in precisely the same way, allowing a teacher to implement a singular educational

style that would impact everyone in the best way possible. This is not how learning or education works. Some students work better with written and other visual materials. Others enjoy auditory lectures, learning with their hands, or learning in a more independent, project-based fashion. And, of course, we need to take into account the ways that teachers feel most comfortable and productive teaching: While teachers need to appeal to a variety of learning styles, we need to consider a teacher's natural educational styles as well. Building out content to be versatile so it can appeal to a wide variety of learning and teaching styles (perhaps by creating shared resources, so many teachers with differing educational styles can create, share, and access educational content) will make a school more efficient.

- **External neighborhood factors.** When students spend a long time (months or years) in neighborhoods that are impoverished, economically depleted, contaminated, hostile, or dangerous, their academic environments will likely be deficient and detrimental. From communities that are simply disorganized to areas that have high levels of violence and drug use, we find that many students who live in these environments are simply too anxious and stressed to focus on investing in their academics. These young people and their family members are trying to survive day by day. The same goes for students who simply don't have access to social and medical services.

- **External family factors.** Similarly, when a student grows up in a living environment that is impoverished, neglectful, overcrowded, rejecting, overly-demanding, or even abusive, they often have a difficult time functioning in a classroom, so being able to focus on their homework is not even a consideration or reality. We as educators must have genuine empathy for these students and families, while also recognizing that such circumstances constitute significant barriers to academic success. The same effect could be said of students who undergo frequent changes of residence, face dysfunctional family dynamics, or who have limited English-speaking skills. In these cases, it is very difficult for struggling parents to support their students in their academic endeavors (Adelman and Taylor, 2020).

Reasons for Educational Barriers

It's important to realize that, unfortunately, the obstacles that children and teachers need to overcome in order to teach effectively are not meted out fairly among the

educational workforce and student population. For example, in poorer areas, rural areas, and among marginalized communities, the factors and conditions that make learning much more difficult seem to occur much more frequently.

Factors that schools need to be aware of in order to provide the support needed for children living in these conditions or communities include the following (Rueckert, 2019):

- **A lack of funding for education in your area.** Why most teachers are likely impacted to some degree by funding, discrepancies in this area vary extensively by region, community, and culture. Most schools simply don't get as much funding or financial aid as they need. This is especially pervasive outside the United States; however, within America, the amount of funding for public and private schools greatly differs depending on the setting and circumstances. With low funding, schools may not have the bandwidth to create support structures for struggling students. Teachers may be overloaded, and students (if they come from a similarly strained financial background) may be anxious and lack a calm learning environment after school. All of these constitute significant barriers to education that may be difficult to overcome with creativity alone. While outside-of-the-box thinking can help alleviate some of the pressures caused by financial insecurity for both students and schools, it needs to be a priority from school administration and local, state, and federal government to send schools more money so they can operate more efficiently.
- **A lack of trained, passionate, creative, and interested teachers.** Particularly in the post-COVID area, the educational system in the United States is facing a shortage of trained, motivated and excited educational staff. Having an empathetic and interested teacher is one of the most important factors for a child's education. Apart from anything else, a teacher who cares is one of the adults most likely to recognize any barriers that a child may be facing. These teachers then become the best possible resources to help provide support for struggling children. However, teachers need adequate training and motivation to do so. We're running out of teachers who have both the skills, experience, and the mental energy to pour themselves into their students. Schools need to prioritize recruiting, training and retaining high-quality teachers by paying them adequate salaries and ensuring that they can thrive in a positive work environment. Of course, we realize that this is also highly dependent upon the

amount of funding that a school receives; this is merely to note that a teacher shortage is quite fundamentally a barrier to effective learning.

- **A lack of support for children with disabilities or learning challenges.** We mentioned this above, but it bears looking at from another angle: Students learn better when they're with their peers, and it tends to be a knee-jerk response to send children who have learning challenges or physical disabilities to special education. For example, visually impaired children might be sent to special education, even if (with a few creative support systems in place) they might be very capable of keeping up with children in the general classroom. The same might be said of newcomer students or students for whom English is a second language. Instead of deciding to send students for special education the first time that a barrier is encountered, it might be better for everyone (including for the overall resources of the school) if some time is spent brainstorming ways to keep that child in the general classroom with a few extra support structures in place.
- **Poor nutrition.** This is a factor that often goes hand in hand with low funding, but we'd be remiss not to note it here: Hunger has a huge impact on overall development, focus, and performance, which may contribute to stress and anxiety, and have a significant impact on a student's ability to learn effectively. Even if students are not hungry at a particular moment, poor overall nutrition can affect their focus, mood, energy levels, and more. In fact, these attributes of a good learner are so innately connected to good nutrition that schools should consider poor nutrition as a very real barrier to effective education. There are ways that schools can work to mitigate chronically poor nutrition, from making more options available in the cafeteria to hosting food drives, partnering with local farmers markets, and more to ensure that all of their students, families, and school staff have access to a robust array of healthy, nutritious foods.

Barriers to Effective Teaching

Obstacles in learning environments aren't limited to those that impact students. There also exist very real barriers to teaching effectively—which, of course, ultimately impact the ability of the students in those situations to learn as well as is possible.

Teachers often face barriers that impede their ability to teach in an effective manner. From the necessity of teaching in dangerous circumstances to being overloaded with classrooms full of students who have wildly varying (and sometimes even special) needs,

it's key to shine a spotlight on the educational environment where teachers spend their days. As much as we're working to reduce student barriers to learning with excitement, energy, and meaningful comprehension, it is also very important to improve circumstances for teachers as they effectively support students and as a means to retain them. Specific barriers include (Meador, 2019):

- **The need to support a classroom featuring a wide range of student personalities, interests, and needs.** This is not a new problem, but it is a very real challenge that teachers need help managing. Public schools in the United States support a varied population of students with diverse experiences and demands. Most educators embrace this and are thrilled with the opportunity to help the students that need it most. This does not mean that educators don't need more support to do so effectively — or without overloading or over-stressing our educators. Teachers are tasked with finding efficient ways to teach the bulk of their students and meeting the needs of students who may fall outside the norm. This is a significant challenge that requires thinking outside the box and considerable patience, training, and support. Teachers need ongoing professional development to ensure that they are always fully equipped to meet the disparate learning styles, needs, and backgrounds of a diverse classroom. They also need the time, flexibility and bandwidth to do so effectively.

- **The lack of parent support for teacher initiatives.** While a creative, hard-working, and engaged teacher is one of the single most important factors in a student's learning journey, a student's family or immediate caregivers are also quite important. In an ideal situation, a student's teachers and parents could work together to ensure that a student is supported at both home and school. Teachers would provide parents with needed resources, and parents would support their student's teacher's efforts to educate. This doesn't always happen, and students are struggling as a result. We know from current studies and research that at-home support (e.g., parents who are able to make education a priority and are consistently involved in educational efforts) do better. When this is not the case, teachers have a more difficult time educating on a very practical level. The comprehension level, preparedness, and energy levels of already diverse classrooms can differ wildly, making an educator's daily task list even more necessarily multifaceted. While it's clear that not every family may be in a financial place or have the energy or emotional capacity to invest a significant amount of time in their student's education, on a basic level, parents should be able to ensure their students are healthy and prepared for school. They should

also participate in regular two-way communication between home and school. In a later section, we'll discuss how to enrich parent-school communication to support student education.

- **The lack of proper funding.** Unfortunately, in this day and age, this is a likely barrier to effective teaching that most educators feel keenly. A lack of proper funding is about far more than a classroom being unable to afford niceties: Class sizes often increase in a school that has minimal funding. As a result, a school may not be able to afford the basic educational and instructional materials that make schooling possible (such as technology and curriculum). This forces teachers to do much more of the work themselves or even pay for school supplies out of their own tight salaries. The stress and frustration that this creates may serve as a significant barrier to effective instruction.

- **An overemphasis on the importance of standardized testing.** Standardized tests are important, but preparing for them shouldn't come at the expense of deep learning across a varied slate of subjects. We're also learning more about standardized testing, and how it can be a relatively ineffective way to assess students who do not necessarily learn in standardized ways. For these and related reasons, there are some teachers who are entirely against standardized testing. Those who aren't in complete opposition to this type of testing still find it frustrating and stressful that advocates both inside and outside of their academic communities often prioritize standardized test results over meeting students' overall needs. When schools and communities require high standardized tests in order to determine teacher efficacy, teachers are often put into a difficult position—one in which they often must compromise their own strengths and passions in the effort to prioritize teaching to the test. This can result in incredibly high levels of teacher burnout, dissatisfaction, and stress.

- **Unfairly low public perception of the role teachers play in a community.** Particularly if you're in the teaching field, you've likely heard the derogatory expression: Those who can, do. Those who can't do, teach. Popularized in an infinite array of movies and other types of media, this maxim has created a stigma surrounding teachers, especially in the United States. While there have been pockets of time in the past few years (e.g., the beginning of the COVID-19 pandemic) where national sentiment has been behind teachers, for the most part, the heroic sacrifice and work of the public school teacher is largely ignored. This is especially clear when the general perception of teachers in America is

compared to that in other countries, where public school teachers are revered for their services. While most teachers would decisively say that they are not teaching for public acclaim, the fact that their exemplary work is often ignored or underappreciated is disheartening. The chronically low perception of teachers in America has certainly had an effect on our lowering rates of teacher retention and has contributed to the growing teacher shortage we face.

- **The increasing trendiness of educational tactics.** The often competitive nature of the American school system has resulted in an ever-present need for schools to present the very latest and greatest educational tools and practices. Sometimes these trends are worth implementing. Other times, they may be trendy but they're largely non-substantive. Regardless of their efficacy, these ever-changing trends wear on teachers, as they are tasked by their schools to become experts in new learning tools without much notice, or are expected to be constantly on the pulse of the latest educational trends, only to have these innovations be replaced by new strategies once again.

Section 1 Key Points

- There are many barriers to effective education for students, including physiological barriers, environmental barriers, and emotional barriers such as the lack of motivation.
- Overcoming these barriers will require effort and creativity — as well as, likely, more funding.
- Some of the most important obstacles to education can be less obvious — for example, inadequate nutrition, or an overemphasis on the importance of standardized testing.
- Ensuring that the tools we use are accessible and valid will help us teach and learn more efficiently.

Section 1 Summary

In addition to having a basic understanding of the main barriers standing in the way of both effective learning and efficient teaching, it is imperative to address what is needed from schools and administrations in order to improve educational efficacy and access. In

the next section, we'll talk about the different domains of support that could help transform American education.

Section 2: The Science Behind the Barriers We Face

One important factor to consider when assessing barriers that students face in school is what research says about development and learning. How do students naturally face the trials before them? As teachers, what can we realistically expect—and how can we give our students a leg up when needed?

Here's what science has to say about young brains, learning differences, and the impact of stress (Darling-Hammond and Cook-Harvey, 2018):

- **Our brains—particularly young brains, e.g., our students' brains—are malleable.** Our brains change throughout life to meet the barriers in front of us. Our brains are also shaped by the relationships we enjoy. Investing in warm relationships, empathetic communications, and creating productive rhythms and routines will help strengthen our brains so we're ready to meet barriers and challenges. It's also evident that children's brains develop better when they feel safe, connected, supported—and challenged. As teachers, it's our duty to give our students an educational experience that meets all of those criteria.
- **On a neurological level, variability is expected.** Gone are the days when we assumed every child learns the same way and at the same rate, yet many of the assessment structures and expectations regarding success that we have for our students rely upon that erroneous assumption. The reality is since students' brains are different, the profile of their learning and the pace of their comprehension will also differ from their peers. In other words, there are many pathways through education. No one pathway is correct, and multiple avenues can lead to success.
- **Adversity and effective learning are incompatible.** This makes a healthy and helpful school response to adversity absolutely necessary as part of a school's mission. In the United States, nearly 50 million children per annum are exposed to psychological traumas such as homelessness, abuse, food insecurity, and exposure to crime. The type of toxic stress that results from these situations completely eradicates a student's normal ability to learn well. By facilitating supportive relationships, existing as a safe place, helping students build healthy

routines, and connecting students to resources and support when needed, schools can productively work to help students overcome these stressors so they can enjoy normal health and happiness—but also an enhanced ability to learn well.

If we base our strategies on these principles, it becomes evident that we need to focus on specific domains of support in order to help students overcome barriers. These include the following (Darling-Hammond and Cook-Harvey, 2018):

- **Identity-safe classrooms.** In addition to simply being safe spaces for our children, we need to proactively focus on creating an environment that is conducive to student achievement. Building an identity-safe classroom includes focusing on:
    - Teaching strategies that promote student responsibility, belonging to a community within the classroom and within the school, cooperation in all classroom tasks, and having a generally positive and understanding student voice
    - Cultivating an appreciation for diversity, by using culturally-responsive materials in class and having high expectations for the empathy and understanding of all students
    - Creating strong interpersonal relationships between all students, teachers, and adult teaching aides
    - Creating and maintaining organized, purposeful classroom environments so that all students feel physically safe and respected during the day
- **Social-emotional learning.** If students need to feel healthy, happy, and safe in order to learn, we need to invest in social-emotional learning, or SEL. Some strategies to help students invest in their emotional healthiness (and so avoid learning barriers associated with depression or anxiety) include (Darling-Hammond and Cook-Harvey, 2018):
    - Giving your students targeted instruction in skills related to SEL competencies, such as interpersonal communications, conflict resolution, decision-making, and more. (It's key to realize that these are learned behaviors, not innate ones!)

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    - Giving your students opportunities to practice their SEL skills throughout the day—e.g., in small group scenarios, in partner situations, by role-playing and practicing kindness, and more
    - Taking a more restorative and educative approach to discipline and management in the classroom, so students learn to be responsible about their behaviors but don't associate their classroom with a trauma response
- **Investing in self-efficacy, competence, and self-directed learning.** Our goal as teachers is to guide our students and then to be able to let them work confidently and efficiently on their own. To work toward this end, teachers might (Darling-Hammond and Cook-Harvey, 2018):
    - Focus on assigning creative, meaningful work instead of excessive busywork. One way to go about this is to focus on student-led or project-based learning
    - Interweaving explicit instruction to lower a student's stress level and make an assignment accessible with consistent, appropriate inquiries and assessments that will drive engagement levels, and will spark curiosity and confidence in a student
    - Allowing students to ask questions in class, and even asking students to explain concepts for their peers
    - Using assessments that are based on performance and expertise to help students develop confidence and competence in a specific skill (e.g., building something tactile, or doing a fun activity instead of simply checking off boxes on paper)
    - Investing in opportunities to help students develop metacognitive skills. For example, help them reflect on what they've learned or support students as they learn to break down and organize larger tasks
    - Ask community members to allow students to shadow them when their field is related to something that a student is focusing on in class. This will not only be exciting and engaging, but will also help to build a student's confidence and familiarity with a given skill
- **Focused developmental supports for the young people in our care.** Increasingly, schools need to focus on building the health and happiness of students as well as

their knowledge bases. To do this, schools can prioritize the following strategies (Darling-Hammond and Cook-Harvey, 2018):

- Investing in an inclusive, inspiring, and safe school climate while also establishing ongoing measures to keep improving our schools, assessing our efforts, and making further investments where possible
- Hiring mental health professionals to be resources for the academic community, and ensuring that all teachers and administrators receive ongoing professional development on the importance of mental health and some best practices in that arena
- Reconsider exclusionary discipline (e.g., discipline that takes struggling students out of the community), while instead investing in restorative discipline that supports and educates instead of triggering or harming

- **School design centered around healthy development for students.** As we move forward and prioritize ways to care for and educate the whole child, we need to ensure that the entire school setting is ready for healthy development. To work toward this goal, schools can Darling-Hammond and Cook-Harvey, 2018):
    - Optimize school design to build strong relationships. This can be accomplished by keeping schools as small as possible or building intentional communities within larger schools, making sure that teachers stay with students for more than the traditional one year, building teaching teams, and more
    - Ensure that all students know that they have access to the school's mental and physical health resources, along with the resources associated with any of the school's community partners
    - Ensure that healthy parental outreach is part of the school's approach to education. This might include parent-teacher conferences, regular communication, and even home visits to provide assistance in ensuring that a student is enjoying a safe, productive at-home environment.

After discussing the various types of barriers that face both students and teachers, it's clear that we need to first identify and then strategically implement ways to overcome or reduce these barriers in order to see forward progress.

In a later section, we'll devise practical methods for supporting students. In this section, on a more idealistic level, we'll identify the various domains of support that students and teachers alike require in order to learn and teach as effectively as possible.

The Ways Schools Can Play a Greater Role in Providing Domains of Support for Students Who Experience Common Barriers

Student learning supports need to be more than simply interventions to protect against specific barriers, such as those mentioned in the previous section. In order to see true, long-lasting, impactful change, schools and teachers must ideate and organize interventions that are proactive, supported by all members of the academic community, and based on observations of each school's actual student populations (Adelman and Taylor, 2020).

Here, we'll list out six potential domains of support that your school could decide to focus on. These are generalized options; it's crucial that you seek ways to survey your specific school's needs and the barriers your students face.

Schools can focus on embedding learning supports for students into already-existing strategies geared toward increasing the efficacy of teaching

This domain of potential support assumes that school districts are already working toward ways to make teaching more efficient. In this kind of initiative, a school administration might work collaboratively with its teaching staff and mental health professionals to enhance existing efforts with increased and focused student social-emotional or motivational support. This type of support should be catered to assist all students as they are, but certainly, make a targeted effort to provide support for students with learning disabilities or behavioral issues. Overall, the goal should be to re-engage all students, invest in learning accommodations (and reduce the ways that students who use the accommodations tend to be stigmatized), and invest renewed efforts into identifying and intervening early when it becomes clear that a student is struggling (Adelman and Taylor, 2020).

Schools can focus more on supporting students who are (or whose families are) tackling difficult transitions

More and more, students who are in the elementary school years are entering this formative period in their lives when they or their family is going through a transitional period. Whether students are transitioning from in-person to remote learning, are moving to the United States for the first time, having difficulty choosing what they want to do with their studies or their lives, navigating the complexities of studying with attention deficits or other challenges, or experiencing a world of other frustrating and overwhelming hardships, schools need to consider the real-life issues their students are confronting and pivot to ensure that their support strategies are ready to help students meet those challenges (Adelman and Taylor, 2020).

Schools can focus more on increasing support for the home-school connection

We know that students do better when their parents or caregivers are working with the school to provide support. Investing in practical strategies to further the teacher-parent bond, ensuring that homes have good Internet and transportation, and providing parents resources to facilitate their ability to support their students all need to be actions for schools to prioritize (Adelman and Taylor, 2020).

Schools can create better systems for preventing and responding to crises on many levels

In order to help reduce the catastrophic levels of identifiable risks and to alleviate the stress levels of both students and families, school officials should take care to invest in systems that prevent the most common disasters facing schools today. They should work with local experts to identify these risks, implement prevention strategies, and create procedures to guide the immediate school response should one of these crises occur. Schools need to convey these plans to every member of the community, including parents. They should also create kid-friendly versions of these resources and communicate disaster plans to children. Finally, schools need to develop far-reaching plans detailing how a school can bounce back should one of these disasters happen. This can feel macabre, unnecessary, or redundant, but knowing that your school is well-prepared for a number of crises will help reduce student and parent anxiety. This, in turn, will free up family bandwidth to focus on investing in student learning strategies instead of more fundamental student safety (Adelman and Taylor, 2020).

Schools can increase their involvement in the community

By bringing in more support via a community connection, a school can both show support for small businesses or innovative resources in the area and outsource some of its own projects (e.g., need to come up with new programs, or purchase its own materials, etc). Schools need to find ways to bring in more volunteers, create more academic programs outside their four walls, increase value-based field trips or community projects, and clearly create a symbiotic infrastructure all geared to support the students. This should increase student safety in and around your school's community, free up teacher and administrator time and energy, and increase the number of support systems available to parents and students (Adelman and Taylor, 2020).

Schools can increase the systemic support they have available to families and students in need of special assistance

Whether a student or family is going through a difficult transition, the student is experiencing learning disorders that make keeping up with peers and academic standards especially difficult, or a family is going through any other type of struggle, a student's school should be a resource that connects families to the specific aid they need. Families should feel comfortable alerting a school that they don't have the financial resources to invest in high-speed internet, space to set aside for their child's projects, or even access to good nutrition or time to cook nutritious food at home. Schools, then, should find diplomatic ways to increase a family's ability to invest in these resources. This may require additional funding from donors or government sources, but creating a school fund to provide specifically required help for families in need is a very practical way to help families and students overcome specific barriers that they face (Adelman and Taylor, 2020).

Schools and the Need for Implementing Substantive, Forward-Thinking, and Permanent Systemic Change

Clearly, many of these support systems are very optimistic and idealistic; however, it's entirely possible to achieve visionary change as long as we make it a priority. As our schools target creating ways to overcome barriers for students, families, and teachers alike, we need to make sure that we aren't accidentally eliminating or replicating current strategies that are already enhancing our academic communities. This requires a

fundamental change in the way we think about addressing barriers: We need to assess already-existing systems, ask people what they really need, and take slow, methodical steps to ensure that we're constantly improving educational access (Adelman and Taylor, 2020).

This is easier said than done. One Californian school district sought to define the essential elements of implementing a more comprehensive and equitable system of support for their academic community. Here's an outline of the elements they identified (Adelman and Taylor, 2020).

- **Schools need to follow up policy presentations with adequate documentation and full integration.** In order to make sure that we not only identify, present, and initiate learning supports to help community members overcome barriers, we need to make sure that our ideas are translated into design and implementation documents, as well as a unified and agreed-upon strategic plan. These supporting documents will serve as critical guides for actually following through on our plans to increase support systems. This will also help us come up with better ideas for support later, and troubleshoot these systems more effectively should issues arise. These strategic plans and design documents should be easily accessible and fully integrated into a school's more general standard operating procedures.
- **Schools need to pull together an effective and repeatable framework for addressing clear barriers to effective education.** The Californian school district further identified that the type of accessible, implementable, equitable framework needed combines two distinct types of interventions: A continuum of school and community interventions, that encompasses both immediate ideas for action and long-ranging, permanent initiatives, as well as wide-reaching organization. This point was crucial: Nothing will get done without impressive levels of organization. Moreover, the frameworks schools develop should be so thoroughly put together that they are easy to repeat and implement swiftly whenever a new obstacle threatening student or teacher success is identified.
- **Schools need to create committees and infrastructure components specifically dedicated to implementing needed learning and teaching supports.** Simply throwing these initiatives on the to-do lists of already-overworked committees, administrators, and educators is a recipe for failing to make progress in the implementation process. It cannot be overstated how overworked and understaffed schools and educators generally are, and as a result, even well-intentioned initiatives may be overlooked. If a school is serious about identifying

and implementing strategies to help its community overcome barriers, it needs to bring together a specific and mindful group of people to do this; and each member of that group needs to have the immediate availability to focus on this need. Why? Implementing these solutions successfully will require far more than simply establishing a quick plan and setting it in motion. This committee will need to oversee the aggregation of data across the entire academic community (surveying teachers, students, and families alike) to see what real-time needs the community has. The committee will need to map and analyze already-existing resources, create a prioritization system to address the most pressing needs first, coordinate efforts across every level of their community, and establish ways to evaluate progress over time. All of these efforts will take a considerable amount of time and work. This is not something that can be put on someone's back burner. It may be necessary for schools to bring in community volunteers or hire additional staff to tackle these problems.

- **Schools need to continuously invest in capacity-building strategies.** In short, a school system needs to be ready to meet the needs of more students and more families in the future, not less. To do this, schools must be able to hire more capable and interested teachers, provide those teachers with meaningful teaching experiences to improve retention and provide on-the-job professional development and other similar opportunities to enhance the capabilities of existing teachers and volunteers. This training can include specific educational offerings for teachers and volunteers that will help them address barriers for their students.

- **Finally, schools need to invest in ways to keep themselves accountable, assess their own ongoing progress, and pivot when necessary.** Without monitoring our initiatives to see whether they are having the intended effect, we may find that we're not actually moving forward as desired. Any plan that we have to help our community overcome barriers must include feasible plans for continuously monitoring the efficacy of the way that we are rolling out our plans as well as the effect these strategies are having on struggling students and families. For example, it may be helpful to send out a recurring survey to impacted families over the course of a year after you have put your plan into action.

Section 2 Key Points

- On a neurological level, our brains are equipped to overcome the barriers we face. Often, we just need a little help.
- Educators can help students rise to the occasion by providing a careful balance of explicit instruction (to alleviate stress) and inquiry-based instruction (to foster a sense of creative curiosity).
- Schools need to focus on supporting the family-school connection, providing resources to struggling families, and making their own procedures for crises both clear and accessible. These are practical methods for reducing stress, which can help with many different barriers to effective education.
- Schools need to follow up policies geared toward reducing these barriers with effective project management techniques.

Section 2 Summary

With a greater understanding of the neuroscience underlying barriers to education and the domains of support needed, the next step is to evaluate practical ways to increase our needed levels of support.

Section 3: Practical Strategies for Addressing Barriers in Learning

In order for any student to be able to learn well, we need to first realize that learning is work. It's hard work. And it's work that requires different strategies and supports for every child. Part of being a good teacher is guiding your students as they figure out how to learn and progress in their own way. In doing so, you're going to have to teach them that they are capable of overcoming barriers and difficulties in their lives. While this is not meant to take the place of very real, very needed support from schools for struggling families in any way, it is an individual set of skills that all students need to learn.

Here are six practical and efficient ways you can work toward helping your students adopt a barrier-busting mentality (Crockett, 2021).

1. **Believe in your students.** Not only must your students believe they are capable of overcoming barriers, but you must sincerely believe in them as well. All too often, even relatively innocuous obstacles can be incredibly overwhelming for young people. As an influential mentor in their lives, it's up to you to teach students a growth mindset. You need to help them realize that they're stronger and smarter than they may think. In addition, it helps to model and practice ways to think creatively and to teach students to be advocates for themselves so they can overcome the struggles in their lives, or know how to ask for help when it is needed. This starts with you behaving in ways that make it clear you strongly believe in your students' potential.

2. **Infuse your educational strategies with relevance and context.** Children are relentlessly practical people. They will naturally concentrate more on content that seems like it has a connection to who they are and where they live. If your students are repeatedly facing barriers related to focus and motivation, see if you can find ways to connect the dots for them. Where would your students come across this concept in their daily lives? How will they interact with this information in the future? If nothing immediately comes to mind, consider whether there's a way to add some fun pop culture reference in the lesson, or use an example coming from the music you know your students are listening to. This will make your lessons more naturally compelling, and likely help your students be more interested in doing the work as a result.

3. **Constantly debrief and assess how you and your students are doing.** Not only will constant assessments give you useful information about how your teaching methods are working and your students are comprehending your information, but interesting assessments provide intrinsic motivation. Whether you offer some kind of accessible and appropriate reward after a relatively routine pop quiz or you find a fun way (such as class jeopardy) to quiz your students, many students will have a natural inclination toward performing well throughout testing scenarios. However, it's important to remember that administering frequent tests is not the endgame; honing our teaching strategies to ensure that we're serving our students well should be the goal. After you've completed and graded an assessment, it's time to do a debrief. Look at the results of your class as a whole: Is there anything you can tweak in your teaching strategy to improve outcomes? Are there any telling trends in your students' performance that might let you know that your students are encountering an obstacle? When you look at individual students' results, is it clear that any one of your students is struggling?

Taking the time to absorb this information and rethink your teaching strategy as necessary will lead to greater educational efficiency all around.

4. **Prioritize the use of enabling language.** This point is closely related to the first. In short, the language we use matters. Often, when adults and young people realize that they will have some difficulty completing a task, the initial, instinctive response is to say "I can't do this!" While it may seem inconsequential, it's important to realize that saying this leads us to believe that we cannot, in fact, complete the task. Rather, it's key to use language and teach our students to use language that reflects our ability to grow to meet the tasks and obstacles in front of us. Researcher Carol Dweck shed some light on a simple switch we can make in our verbiage to adopt this strategy: "By asking learners to add 'yet' to the end of their 'I can't do this' comments, possibilities are opened up for success in future attempts and iterations. It changes their fixed or failure mindsets to growth and possibility ones." This philosophy should extend to the way we leave feedback for our students. As we provide constructive feedback on papers, presentations, or a student's participation level, we need to remember to choose language that doesn't shut down a student's ability to rise to the occasion.

5. **Provide opportunities for your students, and model the behavior you wish to see.** As you teach your students, you need to remember that you're an educator in more ways than one. Your students look up to you! Make sure that you're modeling a growth mindset to remind you of what's possible throughout your day. Be curious, be energetic, and be empathetic; you'll find your students will be much more likely to adopt these behaviors and match your energy if you set this type of tone. Your levels of empathy and understanding should extend into very practical ways in which you meet your students where they are. If it's evident that specific students are struggling, give them the opportunities they need to regroup and find success. For example, extend deadlines. or allow students to take a makeup test. Try to find ways to allow them to rest if they seem overextended. If you hear that they're dealing with personal struggles—from relationship issues to serious stress at home—see if you can connect them with a mental health professional at school, or speak with your administrators to see if there's any way you can direct resources their way. Teaching with this level of practical, proactive empathy and problem-solving will go a long way for your students.

6. **Guide your students—and then step aside.** Part of believing in your students is realizing that you won't be there to guide them forever! While stepping aside

takes courage for everyone involved, sometimes letting them find their own path around an obstacle or challenge can give them the confidence they need to tackle bigger problems in their lives. We can help them by giving them problem-solving frameworks, teaching them to think creatively, and helping them believe in their ability to succeed. Then, however, we need to realize that our job is done and that it may be time to let our students do their own thing. We can do this in a gentle way by asking questions of our students that help them form their own questions, connections, and conclusions. Examples of questions that may go a long way here include:

1. Now that we've solved this problem, where would you go from here?
2. What do you think about this problem (or topic, or story)?
3. Where else have you seen this type of problem?
4. What does this problem remind you of?
5. We'll talk about how to solve this problem in a minute, but, for now—how would you solve it?

Practical Strategies for Removing Barriers to Learning and Teaching

In this section, we'll provide first a brief recap of the primary barriers facing children as they learn. As we do so, we'll provide a high-level suggestion for a strategy that schools can use to overcome that specific obstacle. Finally, we'll go a little more in-depth into the solutions that can effectively match with each identified barrier.

The main barriers students face and constructive suggestions for meeting them (Herberger, Holdheide, and Sacco, 2020)

1. Teachers struggle to keep all of their students engaged and focused.

   Strategies to help overcome this barrier include: Emphasizing the need for practical, explicit instructions in classroom activities and for homework. Teachers can also prioritize teaching both cognitive and metacognitive strategies to help students as they work to gain their own sense of independence in their learning journey

2. Students often have a hard time feeling connected at school. It's difficult for them to learn if their emotional and social needs are not met.

   Strategies to help overcome this barrier include: Establishing an organized, consistent, and respectful environment in your classroom that can help your students feel comfortable. Helping students learn and practice healthy social behaviors can also be of assistance.

3. Students may not have familiarity with managing a stressful workload. Overwhelmed students have difficulty learning effectively.

   Strategies to help overcome this barrier include: Working to adapt your curricula to avoid unnecessary student overwhelm. In addition, it's key to teach children to prioritize, help them with coping skills, and provide support for them when they get confused or overwhelmed by what they need to get done. Additionally you can encourage them to focus on one task at a time whenever possible.

4. Students require lots of support as they learn new content, figure out ways to process it, and eventually are able to manipulate and work with new content.

   Strategies to help overcome this barrier include: Providing both constructive and positive feedback as children learn and process a great deal of new information, and helping them learn behaviors that will make effective learning easier. In addition, teachers should focus on teaching children how to learn, in addition to teaching them new content

5. Often, students with many different types of needs and varied personalities are all required to learn in one way. This can be most often seen in the sudden widespread use of distance or remote learning.

   Strategies to help overcome this barrier include: Finding creative, outside-of-the-box ways to disseminate information and provide interactive learning strategies within required learning frameworks. Teachers can also try to provide multiple redundant forms of information—e.g., a video, podcast, and text passage that all cover the same material—so students can select their own learning experiences whenever possible.

6. Students do better when their families are engaged, but that can be difficult to achieve.

Strategies to help overcome this barrier include: Working with professionals to establish academic goals, projects, and routines that the entire family can work on together. Communicating empathetically and efficiently with families is also critical. Reminding parents that they are partners in their child's learning journey, and ensuring that parents have support systems in place and the tools they need to be resources for their children.

Now that we've laid out this framework of common barriers and initial strategies, let's dive into each category in a little more detail.

Barrier One: Keeping students engaged and focused.

Working to overcome this barrier is important because, in order to help our students own their learning journeys, they need to have an internal level of focus, discipline, and motivation. This can be difficult when students are faced with challenging content, external distractions, inaccessible content, or emotional or personal struggles.

In addition, higher levels of student engagement tend to lead to higher levels of academic achievement, satisfaction, and even graduation rates. In other words, this can be a long-reaching win-win, as long as it's a barrier that's prioritized and overcome in a strategic way (Herberger, Holdheide, and Sacco, 2020).

Teachers need to focus on establishing the right conditions for students to become and remain engaged in their studies. For example, as mentioned above, giving them very practical, accessible, and explicit instructions regarding their work can make it easier for students to feel confident moving forward on their own. Whenever students are learning more material or new ways to think about the material, there needs to be very comprehensive resources available for students to take advantage of. For example, there should be examples included in all resources to help students picture a successful way to move forward (Herberger, Holdheide, and Sacco, 2020).

Teachers can also focus on helping students learn cognition and metacognition, or ways to learn new things and commit them to memory. Focus on giving your students not only new materials but tools to understand what you're talking about, critical thinking skills, problem-solving skills, and ways to realize when they're not focusing or not paying attention (Herberger, Holdheide, and Sacco, 2020).

Specific strategies to include in this effort might involve (Herberger, Holdheide, and Sacco, 2020):

- Investing in step-by-step instructions to give your students, at least for the most commonly-used processes in your classroom. Also consider adding pictures and other visuals.
- Using the technology features at your disposal (e.g., discussion boards, chat boxes) to drive student engagement during learning sessions.
- Offering resources for your students that span different types of media, such as recorded videos and podcasts, and passages to read
- Teaching your students learning strategies as well as new content
- Building check-ins into your teaching process and your students' learning processes (e.g., asking students to stop at the end of a chapter and ask themselves if they've understood what they've read, or what the most important takeaways were).

Barrier Two: Ensuring that students' emotional needs are met.

As you're likely already aware, Maslow's Hierarchy of Needs dictates that a student needs to feel safe and fed in order to be able to learn properly. A similar strategy could be applied to a students' ability to learn in light of their social-emotional health.

Whether your students are transitioning to a new type of learning environment or they're simply undergoing the normal stress that accompanies being a young student, it's key for educators to remain aware of a young student's needs (Herberger, Holdheide, and Sacco, 2020).

One of the difficulties in implementing this strategy is that the types of symptoms that anxious, terrified, or depressed students will show can vary widely. They may shut down; they may act out. They may be rude or unresponsive. Two students in the same circumstances may have opposite reactions, and one student may behave differently over time (Herberger, Holdheide, and Sacco, 2020).

An important component in the art of teaching lies in reading your students and coming to them where they are. As their teacher (e.g., a stable adult in their lives), you have the opportunity to teach your students clear expectations, healthy routines, self-regulation strategies, and how to create an environment in which they will thrive (Herberger, Holdheide, and Sacco, 2020).

To help manage and meet these needs, educators might focus on (Herberger, Holdheide, and Sacco, 2020):

- Helping students come up with their own healthy ways to manage their stressors
- Working hard to create a calming, respectful atmosphere and environment
- Facilitating connections for each student to the entire school community
- Making sure that all students are aware of the expectations the school has of them
- Making the daily procedures and expectations that your classroom goes through very clear
- Modeling good interpersonal behaviors for students
- Teaching good communication skills
- Becoming an adult in their lives that students can fully trust

Barrier Three: Helping students avoid being overwhelmed by their workload.

Whether your students are in pre-K or twelfth grade, they're capable of being overwhelmed by to-do lists. (This isn't limited to kids, obviously—this is a human experience.) As their teacher, you can truly impact your students' lives in a very practical way just by teaching them how to manage their task lists. Often, it's been assumed that good students pick up organizational skills innately, or figure out how to keep themselves pulled together along the way. These types of skills—-now referred to as 'executive functioning' skills, or perhaps 'self-regulation' strategies—can be taught. Students who don't know this may rightly feel hopeless about their potential. Fortunately, there are ways that you can help them realize they can learn how to be less overwhelmed, and practical measures you can put in place to facilitate better processing, comprehension, and organization (Herberger, Holdheide, and Sacco, 2020).

Some specific strategies for helping students avoid overwhelm might include (Herberger, Holdheide, and Sacco, 2020):

- Creating easy and memorable procedures for students to ask questions, request support, and clarify any concerns surrounding homework assignments

- Having clear, communicated systems in place for students to play catchup on any missed work, or to qualify for extra credit
- Providing tiered content, assessment, or project structures for students that they can tackle as they feel able to
- Teaching students how to take good notes, how to manage their homework time, and how to solve problems or complete assignments efficiently. For example, you might consider teaching them time management strategies like the Pomodoro technique, a method of working for 25 minutes, taking a quick break, and diving back in.
- Defining and communicating the learning goals for each semester up front, so students have context for each of their assignments
- Using easy-to-master tech tools (and preferably a relatively small number of these tools) to facilitate project completion and communication in the classroom
- Providing scaffolded support options, or methods of temporary assistance for students to lean on. This gives students the confidence that they need to tackle tasks that may be, in some way, just outside of their reach. Once the student gains familiarity with the task, the scaffolds and support systems can fade away as necessary.
- Making the grading rubrics and expectations extremely clear for students. Students should be able to tell exactly how they will be graded, so that very little about your assessment procedures comes as a shock or surprise.
- Allowing students to reflect upon and demonstrate their learning in many different ways. For example, if writing lengthy reports causes undue stress, you might consider allowing students to tell a story, create a poster, record a video, or otherwise find a creative medium to demonstrate that they've learned new content.
- Facilitating engagement in your classroom in varied ways. When you're having a class discussion, make sure to offer small breakout sessions, question-and-answer sessions, and more to help avoid spiking the stress levels of students who might be overstimulated by speaking on the spot.

Barrier Four: Helping students process and retain new information efficiently.

The school years are, at their core, about taking in and processing an incredible amount of information. The likelihood of saturating our student's brains is quite high. As teachers, we need to seek a way to balance the number of things we're asking students to do and recognize the ability of our students to meet all required state standards while managing their own stress levels. It's a delicate balancing act to say the least. The name of the game has to be learning smart, as it were—and increasing our students' abilities to be extremely efficient with their comprehension, practice, research, and creative work (Herberger, Holdheide, and Sacco, 2020).

This is also a lot to assess, particularly when we as teachers are tasked with overseeing the academic development of a full classroom of energetic students. We need to find effective and efficient ways, ourselves, to monitor student understanding, progress, and engagement (Herberger, Holdheide, and Sacco, 2020).

Strategies in this arena may include (Herberger, Holdheide, and Sacco, 2020):

- Scheduling frequent check-in times with our students. Students can find one-on-one discussions with their teachers to be stressful in themselves, but in order to be a good resource for our students, we need to find a way to normalize our presence in their lives. Taking time to have frequent meetings can make each individual meeting less worrisome (as students will learn to stop assuming that a one-on-one meeting automatically means bad news). This will give you the chance to help students reflect on their own learning needs and strengths in a healthy, fair, and objective way. (Of course, this assumes that teachers have the time and bandwidth to give each student recurring pockets of individualized attention, which is not always the case.)

- Finding ways to mix positive and constructive feedback in such a way that students learn not to feel attacked, but appreciative of the specialized information they're receiving and hopeful about their chances to do better in the future. In order for feedback to feel helpful, even when it's calling out practices that may need to be modified, it needs to be goal-directed, impersonal, and strategically delivered. Although the student may see this as a setback, he or she must be given the room and time in which to apply constructive feedback and grow.

- Teaching students ways to remember and incorporate new content and principles into their worldviews. In order to help students actually learn and retain

something (instead of hearing something and immediately forgetting it), they need strategies for maintaining newly-acquired skills and knowledge. One way to help do this is to use many different types of examples for new knowledge points acquired. This helps students see a new piece of knowledge in several different lights (e.g., situations, places, and environments) and so helps them understand and remember the new knowledge more. As an additional bonus, providing varied examples may help students with differing learning modalities and preferences "get" a concept better, too.

- Prioritize leaving your students feedback in very accessible and varied ways. For example, instead of just leaving notes in red pen in the margins of an essay, leave your student an audio note in a friendly tone of voice. This can make criticisms feel much less harsh.

Strategies for schools to enhance home involvement and engagement in schooling

Many schools that have been able to overcome a significant number of learning barriers have noted that they've been able to boost parental/family involvement and engagement for their students. Researchers have even looked into the relationship between home involvement and success and theorized that boosting parent involvement can go a long way toward closing the achievement gap (Larson, 2019).

Most parents agree with this notion (one study found that some 85% of parents agreed with this general thesis). Yet the same study found that there's a great deal of room for us to improve in this area: Almost 50% of parents found that they wanted to do more to support their child's education, but either did not know how or did not feel that they had the resources to be more involved (Larson, 2019).

One of the best strategies for a school system to boost home involvement is to communicate with families consistently and well. Every member of the school community - administrators, teachers, club leaders, coaches, parents, and students themselves - should be equipped with tools and methods to communicate consistently and effectively (Larson, 2019).

In order to adequately implement specific strategies for successful communication and top-tier home engagement, it's imperative to understand the specific challenges that can often lead to difficulties with parent involvement. The factors that might adversely

affect good communication between a students' homes and their school include (Larson, 2019):

- **Increasingly diverse family living arrangements.** This is not necessarily an adverse situation for families, but it does mean that educators can no longer assume that each child is living in one home with two parents. This can make it more difficult for educators to create plans for students to do work at home, or it can help educators create support systems that involve adult assistance for students in the home, provided there is someone able to help the student.
- **More and more frequent familial relocations.** The United States has one of the most mobile school-age populations in the entire world. Since, often, it can be hard to rely on a student remaining in one place for a long time, teachers may struggle to create a consistent learning environment without necessary disruptions.
- **Increasing newcomer populations.** Although being bilingual or multilingual can be an asset for a student, if an educator's student community includes several students for whom English is a second language, the educator may struggle to communicate adequately with parents or family members or to create reliable translation systems for those who might require that assistance.
- **More and more student support teams.** With modern educational strategies, we often see that many educators may be working to support the success of each child. This is also a good thing—but it simply means there are more people to coordinate and communicate with, which may increase the level of difficulty associated with high-quality communication.

There are also practical reasons that communication between home and school is difficult. Some reasons that a specific mode of communication might fail to land effectively with parents and guardians include the following (Larson, 2019):

- **Reduced accessibility.** If a teacher or other school officials send out communication that is only accessible digitally, or only available in one language, then parents may be far more likely to dismiss the message as unimportant or, at least, requiring too much effort to access.
- **Too many required tools.** Consider a student's parent who receives a variety of different communications from their student's many teachers, the attendance office, the principal, and so on. If each of these uses a different type of

communication, from the way a message is written to the tool used to send that message, then a parent can easily become frustrated and overwhelmed.

- **Confusing buzzwords.** In the educational community, teachers can rely on current jargon in order to quickly and effectively get their points across to administrators and other educators. Non-educators likely won't understand jargon — or, at the very least, high levels of confusing buzzwords could reduce easy comprehension. This will, over time, lead to few opened emails and even fewer responses.
- **Too much communication.** We know, this can seem a little counterintuitive, as we've been talking about the importance of frequent communication. However, fractured communication, an overabundance of messages, or confusing check-ups can overwhelm parents and incentivize ignoring messages. As a result, the needed information may still fail to land with the targeted recipient.

Along with acknowledging the main issues that can cause poor communication, it's critical to have specific methods in place to boost the quality of home and school communication. This will in turn help to reduce barriers to learning for our students.

First, an overarching strategy: Instead of equipping educators with more ways to communicate effectively, we need entire schools to create new and innovative ways to focus on communication. If the whole school has a focus on high-quality, simple, and consistent communication, it'll become an aspect that the community counts on. As such, it'll be far easier to get individual parents to be more excited about school communication and participation in the academic community (Larson, 2019).

Practical ways to pivot an entire school's focus toward productive and positive communications may include (Larson, 2019):

1. **Picking one tool to manage the bulk of your school's communication needs.** Have your school conduct an audit of its communication needs and preferences. This should include a survey sent out to all the teachers and parents in your community, to learn more about the types of emails or messages they'd like to receive and therefore would actually open. After you learn about what modes of communication your community prefers, see if you can find one platform for all educators to use. Include specific reasons why you've chosen that platform, as well as support systems for the educators who may need time to onboard themselves effectively to a brand-new platform. This will, overall, make things much simpler for everyone and reduce overwhelm for all concerned.

2. **Sending more frequent communications—but making them incredibly simple and digestible.** Try not to send start-of-semester emails that require intense scrolling. Instead, make your messages as short and succinct as the average Tweet. If parents know that they'll be able to open an email (or a message from another platform) from your school and be able to understand its contents in a minute or less, they'll be more likely to pay attention. They'll also understand that each email is more important than a lengthy digest. This is a win-win strategy since short, to-the-point messages will be much easier for your staff to manage and send as well.

3. **Personalize your communications and make it possible for parents to personalize their communication streams.** Parents are much more likely to open a communication that is catered to their interests. However, this doesn't mean that every communication needs to be centered around a specific student. One way to personalize a parents' communication streams is to allow them to do it themselves: Use an education communication platform that allows parents to subscribe to channels that give them the updates they want. Allowing parents to opt-in, in this way, to the information they want in the way that they want makes it much more likely that they'll stay connected via the updates you send.

4. **Set a warm, sharing, and open tone: Ask your teachers to share some information about themselves at the beginning of the year.** This will make them seem more like real people to your students' parents, and set the stage well for open communication between your school's administrators and the at-home caregivers. Humanizing your staff in this way will make it much more likely that parents will actually open the emails you send them.

5. **Share positive information and events that will actually be of interest to parents.** School communication will by nature require sending sometimes-unwanted or banal information. However, it's very important to ensure that parents don't dread school messages as a matter of course. Taking time to share the good news about students, funny stories about things that happen in class, photos of school events, and more will make it far less likely that the parents simply associate your school's communication with unpleasant feelings.

6. **When you feel ready, make at-home resources available to the parents.** This has to be a bit of a balancing act: Loading the parents up with homework of their own at the beginning of the year can seem incredibly overwhelming. Waiting until too late in the year can make it very difficult to change habits and routines that can

already be set in stone. Your school will have to gauge the right time and method based on your knowledge of your unique community, but one example could be sending out resources paired with one of the first big exams of the fall season. Helping your families with clear guidance to support students as they prepare for those exams at that time will infuse the recommended activity with stakes, and help make it clear that the students are facing an obstacle they need family help to clear. Once the student has made it to the other side of the exam, you can send out more positive messaging to help reinforce good at-home support for beneficial academic habits.

Ultimately, it's key to remember that your students' parents are partners in the learning journey. However, they are busy people, living full lives of their own. Even the most dedicated parents need very simple, easy, and clear ways to support their children at home, or they may fumble when it's time to act. Working on clear messaging and providing resources when the time is right can go a long way toward removing at-home barriers to effective education (Larson, 2019).

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Section 3 Key Points

- To help students overcome learning barriers, schools and teachers need to focus on practical strategies for meeting children where they are. These strategies may vary widely, from ways to gamify lessons to providing financial aid or food resources to families in need.
- Helping our students invest in growth mindsets and forward-focused, hopeful mental patterns will serve them well for their entire lives.
- In order to strengthen the teacher-student-family team, schools and educators need to focus on effective communication strategies as well as getting families the resources they need.

Section 3 Summary and Course Conclusion

As we have discussed, external and internal barriers to learning and teaching have continued to pose some of the most pervasive and entrenched challenges to educators. Although students will continue to face obstacles as they grow and develop, it is imperative that we address such barriers to ensure that young people thrive in school. In addition, as strategies are developed and implemented in this arena, teachers will

benefit by being able to focus on classroom learning and engagement for all students rather than having to resolve issues on a constant basis. Furthermore, educators will benefit from helping students meet these struggles with perseverance and optimism. This will both empower our students to rise above their struggles and will help focus on reducing consistent issues wherever possible. As a result, we'll be able to make meaningful education more accessible for the next generation—and ultimately make teaching easier and more effective for educators as well.

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