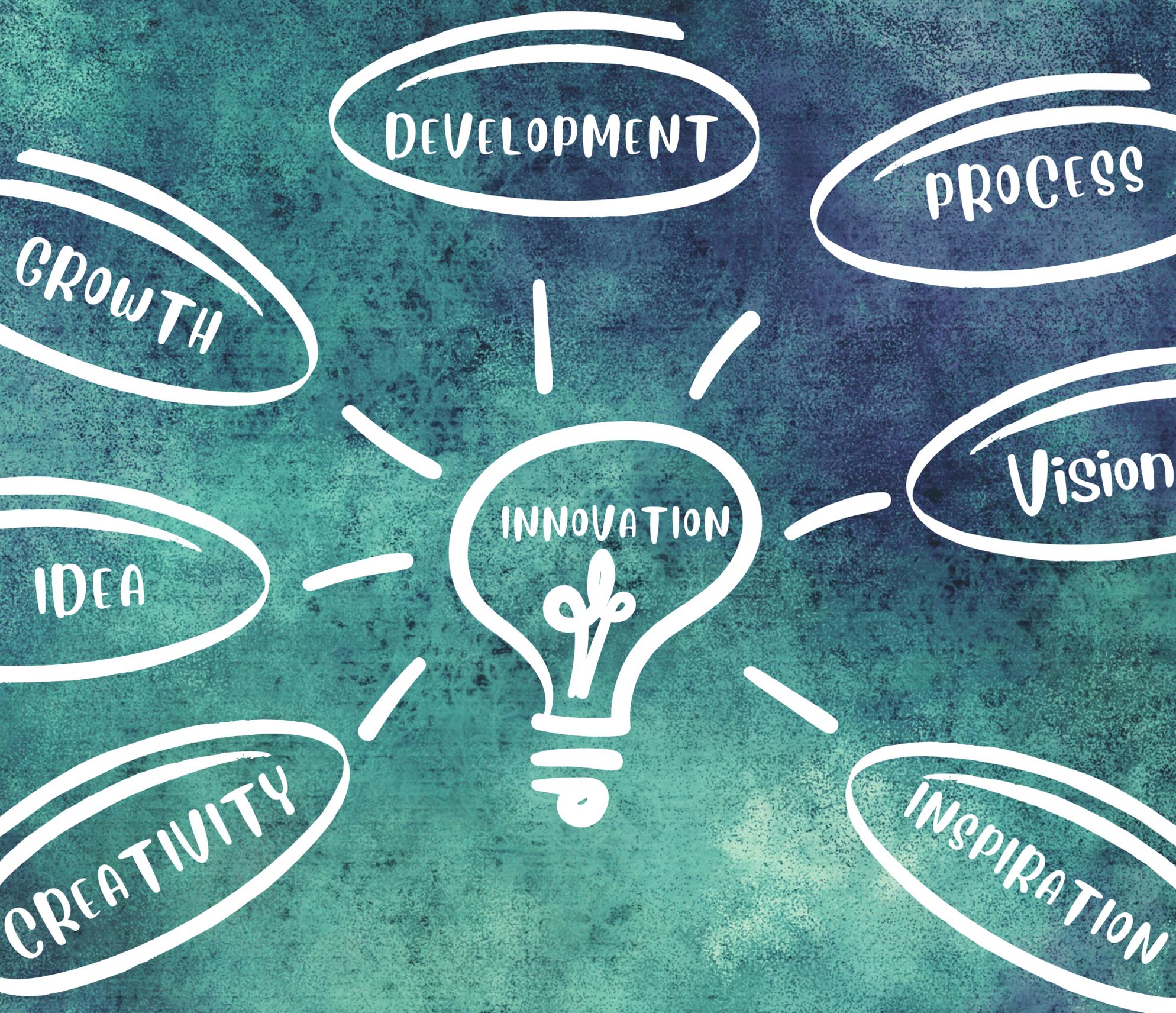


FACILITATOR'S GUIDE

Innovation in Education



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Part I

CHANGES IN THE EDUCATION SYSTEM

Society

The 21st-century society has encountered unimaginable challenges driving the education system to a new era of innovation and collaboration.

The 20th century brought us the industrial economy, pushing for an education reform that would fit the demands of an industrialized society. Students were prepared to work in factories to mass production of items and food. Creating new jobs was necessary, and students needed to be ready for the many different positions this economy required.

The digital world brought us an information economy, where everything can be purchased, planned, or even created with a click of a button. Computers, the internet, and numerous technology resources have globalized our society. Bring us together through a laptop screen or even a cell phone. Home offices have become a norm, and zoom meetings from the comfort of our home have become part of everyone's work life. A pandemic has normalized cats, dogs, children, and even pajamas in our daily office meetings. Within a year, our society has been pushed to adapt to a new norm of learning and working. Just like the industrial revolution, our 21st-century society requires another revolution. A digital revolution!

Digital natives are struggling to survive in a system created in the 1900s. Students in the 21st century need to be prepared for the challenges ahead of them. Our education system is failing many of them with an outdated system. Globalization and technology transformed our society, where innovation and critical thinking are essential. Standardization of our education system is not supported by the digital society we live in. A radical transformation of the education system will prepare the next generation for the challenges ahead.

Pandemic Impact on Collaboration

Our society was already digitalized, but the pandemic changed the aspect of many things we have been doing, moving us to a more screen base society. Within two years, the world moved from in-person to all online. Teachers within days had to implement different strategies to support students during distance learning. The pandemic exacerbates the major issues countries worldwide struggle with, inequality. Another issue is how students could collaborate during the pandemic. Collaboration has been one of the major tools in the 21st century, where students would work on various projects together. Still, teachers have had to create different ways to support collaboration during the pandemic.

After interviewing two teachers regarding collaboration before and after the pandemic, more than ever, our 21st-century society needs new ideas and innovation.

Mr. Coats is a 5th-grade teacher at the American Community School of Abu Dhabi. Prior to Covid, Mr. Coats used groups where students would do feedback from each other's work. They would use GoogleDocs to comment on each other's work. They would share ideas and make comments. During the pandemic, the teacher just transferred most of the work to an online setting. They still used the same system. He added a few Apps and other techniques to support distance learning. During the pandemic, GoogleMeets didn't have breakout rooms, which was very difficult. He had to create different links where students would join their specific collaboration group. It wasn't very pleasant, but within a year, Google Meets created the breakout room, which he uses to this day for collaboration. He paired students in distance learning with in-person learning for community building when students were allowed on campus. In community building, a student would sit down with a student based overseas. Major drawbacks during distance were, tech function, the internet was down, students didn't have headphones, etc. He had to do a lot of scaffolding and now lots of self-directed learning, just in case students go back online. The biggest challenge during the pandemic was to help students self-direct, which he has been working with students to this day.

His big challenge was to teach math, but the program he uses, "Math Every Day," had a few programs to support online learning. Since then, "Math Every Day" has added more online base programs. He also created a "Snap Time", where students and teachers would share a recipe online and create a small online classroom community. Many of the activities he created supported collaboration, where everyone would try the same recipe and share later. The key to success was the energetic teacher's team, which put a lot of energy and innovation into practice. The teacher's team poured ideas to help students at home; they also created lessons and added new tools to help students at home, helping students become more self-directed learners. That's when tutorials were created, which he uses to this day. He also learned that children are resilient and cope with traumas and changes better than adults; he could see this in his students.

Overall, the changes in collaboration before the pandemic and after were not as drastic as he predicted. Technology played a significant role in keeping his students collaborating.

Ms. Roza is an English teacher in Tashkent, Uzbekistan. Prior to the pandemic, she did many activities with students to improve collaborations. Ms. Ruza before the pandemic she used to take her students on group excursions to parks, museums, to build classroom culture. She didn't use any technology in the classroom because, in Uzbekistan, they didn't have anything available. She used to do group discussions, debates, and role-plays, where she divided the class into groups. This experience helped the class to come together. During the pandemic, Ms. Roza moved her class to Telegram. Telegram is a Russian app used in Russia and most post-Soviet countries, and it is like WhatsApp. She also used social media to communicate with students and parents. Students had challenges such as drawing a picture of a teacher or an object and students had to figure it out. She also made sure to celebrate birthdays and special occasions. Telegram allows students to record short video messages and voice messages, which she used to help students.

Students shared useful links and videos to the Telegram classroom group. They also shared positive messages during the pandemic. They are planning to go out. Now, she is continuing to integrate activities and wholesome activities.

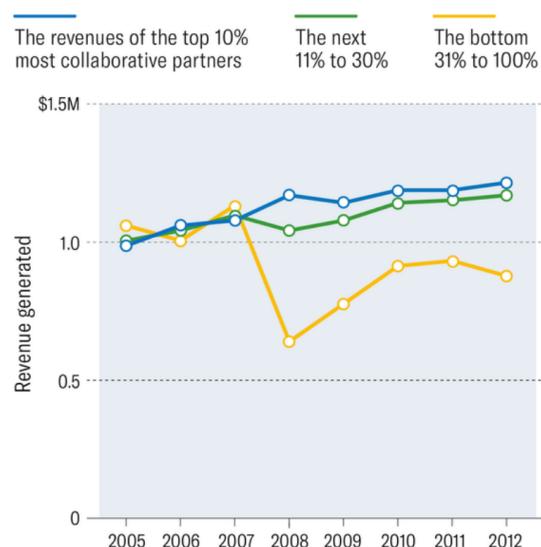
HGSE Dean Bridget Long, in the video COVID and Education: Challenges, Opportunities, and the Future of Learning, gives an overview of the challenges in education during the pandemic. She emphasized how the loss of in-person impacted children's mental health, delayed growth, lack of interaction which affects collaboration.

Benefits of Collaboration

Harvard Business review article, 7 Strategies for Promoting Collaboration in a Crisis, highlights the benefits of Collaboration. The study took 10 years and a good amount of data to back the analysis. The study called attention to how a team of lawyers was successful because they had a strong culture of collaboration. Decade's worth of data on Collaboration and financial performance across dozens of organizations, including professional service firms, financial institutions, and health care organizations. In interviews with some subjects, we asked open-ended questions about how they handled work during the crisis. Very different collaboration patterns became apparent. The exhibit below shows the outcomes for one law firm, which were typical across many of the companies we studied.

The Benefits of Collaboration

The most collaborative partners of a global law firm outperformed their colleagues during and after the 2007-2008 financial crisis.



Note: Chart plots average revenues generated by three groups composing 400+ of the firm's partners, grouped by the proportion of their work conducted with fellow partners. Excludes partners whose precrisis performance was in the top or bottom 10% for the firm; also excludes groups that typically flourish in a downturn, such as bankruptcy/restructuring.
Source: Heidi K. Gardner and Ivan Matviak's analysis of the timesheet, billing, and financial records of a global law firm.

21ST. CENTURY SKILLS

Is it time to think outside of the box? The educational structure of the 20th century is outdated for the 21st-century student. Schools, districts, administrators, teachers, and students are still following a mindset from an educational system set up for the industrialized world of the 1900s. How about an education system for students who are part of a digital world? A new age of education is starting now. Innovation is a must in education; 21st Century skills could answer what our world needs.

The article "What are the 21-Century skills," explains the 12 base skills that help educators understand the 12 skills. Each 21st Century skill is broken into one of three categories:

1. Learning skills
2. Literacy skills
3. Life skills
4. Critical thinking
5. Creativity
6. Collaboration
7. Communication
8. Information literacy
9. Media literacy
10. Technology literacy
11. Flexibility
12. Leadership
13. Initiative
14. Productivity
15. Social skills

Each 21st Century skill is broken into one of three categories:

1. Learning skills
2. Literacy skills
3. Life skills

Learning skills (the four C's) teaches students about the mental processes required to adapt and improve upon a modern work environment.

Literacy skills (IMT) focuses on how students can discern facts, publishing outlets, and the technology behind them. There's a strong focus on determining trustworthy sources and factual information to separate it from the misinformation that floods the Internet.

21st Century Skills

How today's students can stay competitive
in a changing job market

Learning Skills



critical thinking



creativity



collaboration



communication

Literacy Skills



information



media



technology

Life Skills



flexibility



leadership



initiative



productivity



social skills

Part II

PBL

Challenges and Obstacles in the Classroom

As mentioned in Part I of this guide, collaboration is among the most important skills we can develop in our students in order to prepare them for life in the 21st century. As information becomes more and more available to all of us through technology, it is these soft skills that will be essential for our students to thrive in their future endeavors. As the old saying goes, bring a man a fish, he eats for a day. Teach a man to fish, and he can eat for a lifetime. So, we as educators must move away from trying to fill our students with the knowledge, and rather teach them these critical 21st-century skills so they are able to “eat for a lifetime”.

As experts, we see the importance of communication and collaboration in our classrooms. However, there are many obstacles in both online classrooms and traditional classrooms that can make the implementation of collaboration and communication a bit of a challenge. As school districts feel budget crunches, class sizes have grown significantly. This requires greater planning on the teacher’s part, but this is an opportunity to really take advantage of collaboration and communication among the students. By forming groups, such as PBL working groups, the teacher is able to create smaller groups of students to take on a problem and solve it together.

With all of that said, it is more important than ever to prepare our students for life outside of school, so we need to focus on building these important skills each and every day we see our students. Many teaching styles can do just that, but one of my favorite options is Problem Based Learning. By presenting students with an open-ended problem that needs to be solved, we are able to teach our students HOW to think, rather than WHAT to think. So, let's take a look at some important strategies to help foster collaboration and communication skills in our students.

Some other challenges teachers have reported recently include poverty, family factors, technology needs, student attitudes and behaviors, and lack of family support. Personally, I am beginning to see a major institutional problem with the lack of teachers, substitute teachers, and other support staff. On top of that, we are seeing major philosophical differences among students, parents, staff, and the school boards on what we should be teaching in our schools. Now, more than ever, education is mixed up with politics on both the local and national levels. It truly feels as though we are in a very vulnerable time in education, and how we proceed in the immediate future will determine the role of public education in our future.

With all of that said, it is more important than ever to prepare our students for life outside of school, so we need to focus on building these important skills each and every day we see our students. Many teaching styles can do just that, but one of my favorite options is Problem Based Learning. By presenting students with an open-ended problem that needs to be solved, we are able to teach our students HOW to think, rather than WHAT to think. So, let's take a look at some important strategies to help foster collaboration and communication skills in our students.

Establish a Classroom Culture

It is important to set an expectation and culture in your classroom immediately to let the students know what you expect. It is helpful to show how the information in your class and PBL projects will be relevant and important to your students, and it is critical that you emphasize that the process is just as important as the products in your classroom. By linking relevant and important information to your projects, students are much more willing to buy in and engage in the project.

Focusing on the little steps through the process, rather than simply the finished product, will emphasize how highly you value the collaborative process and communication required to complete the work.

It is also very important to have your classroom set up to enhance collaboration and communication. In a traditional setting, you want to have space for groups to work together, and perhaps even work with other groups. In an online setting, you need to ensure that you have adequate online access and programs for student use. As the teacher, you need to familiarize yourself with online platforms for asynchronous and synchronous collaboration and make sure your students are skilled in using these platforms.

Another important part of creating a culture that values collaboration and communication is to establish routines that require the use of these skills on a regular basis. These are both skills that need practice, and the more opportunities students have to practice these skills, the better they will be able to communicate and collaborate with their peers. A fantastic resource on the use of PBL is *Project Based Teaching: How to Create Rigorous and Engaging Learning Experiences*. In this book, they discussed many protocols and routines to enhance collaboration and communication, such as:

- Class starters help students engage immediately and can encourage communication
- Gallery walks increase student ownership and allow students to see progress/ideas of other students/groups



- Morning meetings can have a specific focus or general check in to foster relationship building and comfortability
- Thinking routines and fishbowl to allow for both discussion and listening practice.
- Closers and reflections allow for students to reconnect, review the work for the day and make a plan for the next class.
- Start small - Begin the course/year with a small project to introduce all of the above. They can learn in a low-pressure situation where they don't have to focus as much on content.

Design and Plan your Lessons to Spark Communication and Collaboration

When planning your lessons, it is imperative to listen to your students and figure out their interests. Students are much more likely to engage in topics they are interested in. It can also be helpful to create projects based on relevant current headlines that are of interest to students. Additionally, students show increased interest when we connect to pop culture to bring the information into the students' world. This simple step of planning appropriate, relevant, and interesting topics can set the stage for students that are more engaged and willing to collaborate and communicate within their group.

When it comes to planning a project that will incorporate high levels of collaboration and communication, it is important to consider the essential elements of high-quality PBL projects. Once again, the authors of *Project Based Teaching: How to Create Rigorous and Engaging Learning Experiences* did an excellent job of breaking down the planning process to help engage students. Some of their noted recommendations include:

- Pose an open-ended challenging question to force students to dig deep and ask many questions in an effort to solve the problem. This begins conversations among group members to chart a path forward for the project.

- Sustained Inquiry. From start to finish, students need to engage in research, questioning, hypothesis, review, etc.
- Authenticity. Information should be real-world issues, relevant to the students' lives. They should use real information, real tools and come to a solution that is applicable in real life.
- Student voice and choice. Students should have to say in all steps of the project, which not only leads to more engagement but more ownership among the group members.
- Reflection. Students should reflect on their projects throughout the process. What obstacles are they encountering/overcoming, what tools and information are valuable, etc?
- Critique and revision. Students should use feedback throughout the process to continue improving their products. Feedback comes from self, teacher, peer, and even outside experts.
- Public Product. By having students present their work in public, they will take more ownership and see its value in a real-world application.

Manage Activities

Once you have your classroom and lessons designed to facilitate communication and collaboration, it's time to put the work into practice. It is critical that the teacher is able to facilitate and manage activities within the classroom to encourage these skills.



Creating Groups

First, we must decide how we will create groups within our classrooms. Depending on the project and students, you want to consider the pros and cons of each option before deciding how students will be placed into groups. Let's take a look at the 3 options

- Teacher Assigned Teams:
 - Pros: This helps the teacher to save time, reduces hurt feelings and disagreements among students, allows the teacher to balance teams and abilities, and is the most authentic method as we rarely get to choose our team in work projects.
 - Cons: Takes teacher time, students can be disgruntled about the team, doesn't allow students to practice choosing teammates wisely, students can lose the sense of ownership.

- **Teacher Assigned Teams With Student Input:**
 - **Pros:** Minimize student disagreements and hurt feelings, allows for more student ownership and practice in the skill to choose teammates wisely.
 - **Cons:** Still allows for disgruntled students, takes teacher time, difficult to honor all student preferences.
- **Teacher Manages Process for Students to Choose Teams:**
 - **Pros:** Mostly eliminates disagreements, students have an increased sense of ownership, students get experience dealing with teams they have picked.

Cons: Might take more time if students need to be taught how to pick teams, class culture must be solid to avoid cliques and student exclusion, can lead to hurt feelings, not great for younger students, students don't realize the variety of skills needed to complete the work effectively.



Maximizing Teamwork

Once students have been placed into groups, there are many steps the teacher can take to enhance the communication and collaboration occurring within the group. This is perhaps the most important part of a teacher's job in PBL and other collaborative classroom efforts and requires intentional effort on the teacher's part to ensure the most effective environment for all group members. Here are some suggestions for maximizing these skills once your groups are established.

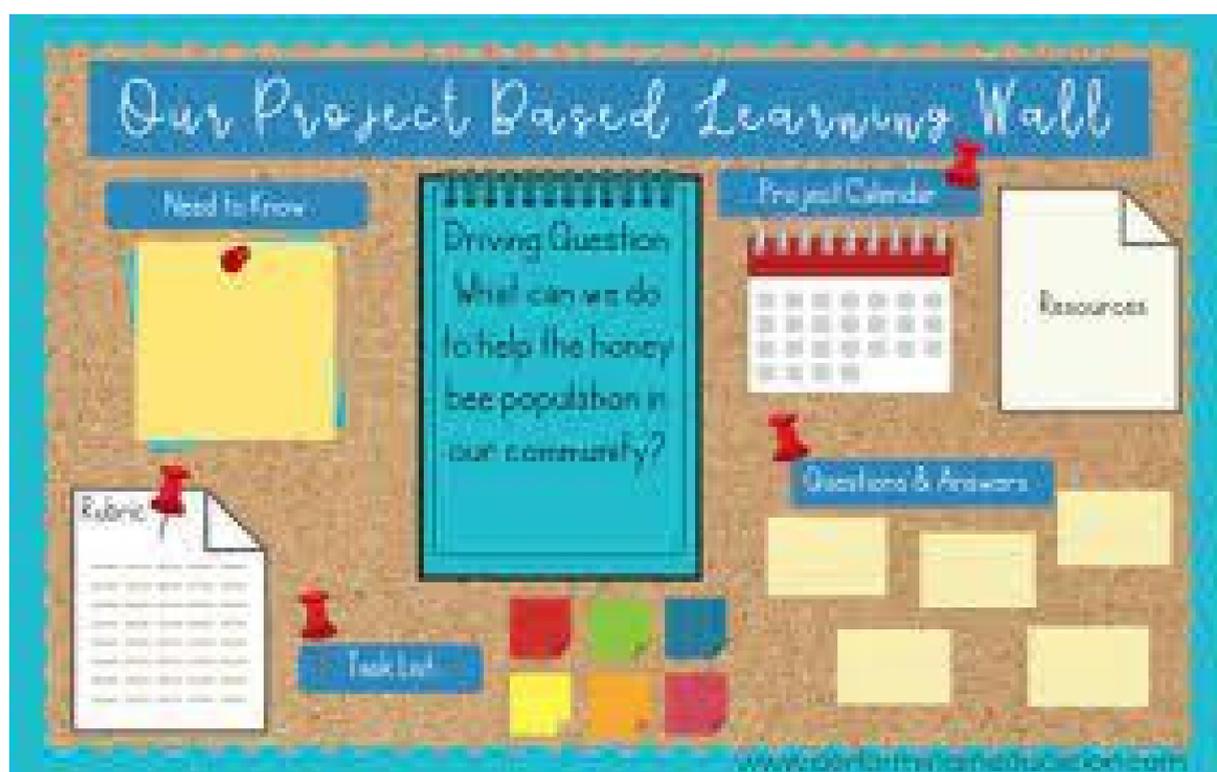
- Consider **WHEN** to create teams. Is there a portion of the research that is best done individually so they all bring something to the table? Or, is this work something where the entire group needs to collaborate from the beginning? Many times, it is beneficial to offer students individual time before creating groups so they all have an opportunity to bring something to the table.
- Peer assessment of teammates is critical before, during, and after the project. Rubrics with clear questions are easy to use for this (strengths, interests, needs, goals).

- Start Strong! Team building activities can help, such as creating a team logo or name, ice breakers, etc. Beginning with some low-pressure interactions before the real work begins can help group members connect with one another.
- Encourage accountability. Team contracts, expectations, member roles, etc. are all positive strategies towards creating a team environment where everyone understands what is expected of each member throughout the group project.
- Model your desired behaviors in collaboration and communication. It is critical that teachers are able to model these skills so students are able to witness what is expected of them. These are skills that students must learn, and modeling is one of the most effective ways for students to learn.
- Highlight real-life examples of teamwork, collaboration, and communication. Many videos are available to show students what effective and ineffective examples of teamwork look like.
[Good Teamwork and Bad Teamwork - Teamwork Motivational Video](#)
- Mix up dynamics. Small mini-lessons within the PBL allow for collaboration across groups.
- Start and end group work with check-ins to monitor team and individual progress.
- Reflect on teamwork throughout the process. Students need a chance to reflect on the work of their partners, as well as themselves, throughout the process. Waiting until the end allows for a summative evaluation opportunity from group members, but regular feedback allows students a chance to learn how to improve their group work skills.

Celebrate the Process

As we put more focus on the process of learning, rather than the product being created, there are many strategies to reinforce the importance of the progress made throughout the group work process. One great tool is a Project Wall, which serves as a central bank of information where students can find common information regarding the project, such as a rubric, resources, due dates, roles and responsibilities of group members, etc. These informational hubs place more of the onus on students and their groups to answer questions they may have and encourage students to try to find the answers to their questions on their own without reaching out to the teacher.

The Buck Institute for Education has some great information on how Project Walls can enhance a PBL, as well as some fantastic examples to help you get started.



It is important to remember that all students have individual strengths and weaknesses. A well-planned collaborative assignment takes into consideration different needs and helps each student find their role in a group setting. Assigning duties and roles can help with students that don't display leadership characteristics, and teachers are typically aware of what roles best suit each individual student to enhance collaboration.

Communication can be challenging for many students, and there are tools to help students initiate communication with classmates. For instance, sentence starters can help students of all abilities begin conversations. Not only do these help initiate conversation and communication among group members, but they can also be used as open-ended questions to help groups identify the topic of a project they want to research. [The PenPal Schools Blog](#) has shared a list of 14 effective starters.

It is also helpful to break down the project into smaller milestone assignments. This helps students and groups stay on track, but also allows the group to focus on immediate goals rather than long-term goals.

Students that struggle to keep up with their partners can often become overwhelmed, and this offers the higher achieving students a chance to check in more regularly on these milestone assignments with their partners to ensure group progress is occurring. This is just one example of differentiation where teachers can set realistic expectations for each individual student and set each student up for success in group settings.

Whether online or in a traditional setting, it is important that we shift our focus as educators to how we can best prepare our students for life, rather than filling their heads with knowledge. It is clear that collaboration and communication have become essential skills that each student must learn through their school years, and we as educators have the most direct impact on our students' opportunities to learn, practice, and master these skills before entering the "real world". Hopefully, this guide will help you take steps towards turning your classroom into an environment where kids come to learn how to think, rather than what to think.