

Chapter 1 : 14 Project-Based Learning Activities for the Science Classroom - The Tech Edvocate

2. Watch Case Study Videos. Choose a video from the following list to share with class participants, based on their grade level interest. There are links to accompanying articles from the video pages for more information.

All opinions are my own. This month I had the chance to meet the awesome team behind Project Pals. This is especially true as it relates to using technology effectively to support students during these learning experiences. Project Pals can help students access quality content and collaborate with their peers. At the same time, it provides a space for their teachers to keep track of progress as they support students during PBL experiences. We spoke about their experience at the conference. I was able to film a quick demo of the Project Pals platform, while other educators followed along too! Here is the video from our Facebook Live broadcast: The team at Project Pals has developed a platform full of ready-to-use project-based learning activities. You also have the flexibility to customize and create PBL experiences for students. Project Pals is an interactive platform that schools can use to facilitate student-centered inquiry as well as PBL. Project Pals integrates with Google Classroom, and students can work in collaborative teams as they dive into a subject area specific or cross-curricular activities. One of the challenges with bringing these types of learning experiences into your classroom is keeping student work organized so teachers can check in and students can go to one place to access all of their group materials. The Project Pals platform is updated in real-time, so students can participate in a collaborative workspace as they view the progress of their project and participate in problem-solving activities. At the same time, teachers can access student work and provide feedback to students in a timely and actionable manner. It will give you an idea of all of the resources ready for teachers and students. It shows how to navigate the Project Pals platform. If you want to dive into a few lesson examples, head over to this page. As you explore ways to support students as creators and collaborators, Project Pals is a fantastic platform. It gives teachers a space to facilitate project-based learning and student-centered inquiry while keeping students on task and organized. Want more FREE tips? Grab an eBook too! Sign up for my weekly newsletter and periodic special messages Yours in Learning, Monica: Now check your email to confirm your subscription. There was an error submitting your subscription. Enter your email address

Chapter 2 : Project-Based Learning Activities with Project Pals - Class Tech Tips

Science Activities for Project Based Learning Sensory Weather Bottles for Toddlers - Great for toddlers and pre-K kids, you can use this weather activity from Twodaloo to teach them all about clouds, snow, rain, wind, and the sun.

It starts, as the name suggests, with a problem. In this model, students are presented with an open-ended problem. Students must search through a variety of resources, called trigger material, to help them understand the problem from all angles. What would project-based learning look like in a subject like science? Below you will find a list of 14 project-based learning activities for the K science classroom. Students will learn lessons about science, social studies, math, and economics through planting their organic farm. They can begin by researching the crops they want, figure out what kind of care is needed, and then use a budget to determine what materials they must purchase. They can even sell food from their farm to contribute to a cause or fundraiser. Students begin by studying the engineering of bridge building, comparing the construction of famous bridges such as the Golden Gate Bridge or Tower Bridge in London. Then they work in teams to construct bridges out of Popsicle sticks. The challenge is to get their bridge to hold five pounds for younger students or twenty pounds for more advanced students. Shrinking Potato Chip Bags in the Microwave. Students can learn about polymers through hands-on activities using some of their favorite products, like shoes and sporting equipment. As a culminating activity, they can put a wrapper from their favorite chips or candy bar into the microwave for five seconds to learn about how polymers return to their natural state when exposed to the heat. Students love using the newest apps and games, so take it to the next level by having them design their own! With Apple developer tools, kids can learn how to create an app or online game. They can learn about technology and problem-solving skills while engaged in what they love. For a project-based lesson on osmosis and solubility, you will just need gummi bears and different liquids and solutions water, salt water, vinegar, etc. Children will place a gummi bear in each solution overnight and then measure the results. The Old Egg in a Bottle Trick. This old trick is an impressive PBL activity for kids to learn about the correlation between temperature and pressure. Children will love this hands-on approach to learning how to identify an acid or a base just using purple cabbage and seeing colors change. An uncomplicated way to teach the importance of the various parts of the flower, the carnation color experiment shows kids how stems provide nourishment to the whole plant. If your middle school scientist has a younger sibling at home in diapers, this is a great PBL activity to teach how polymers are essential for products like diapers. Make a Battery Using a Lemon. Anytime a kid can turn produce into a battery, it is fun! So, why not compare a lemon battery to a potato battery to see which one works better? The helmet drop test is a practical PBL project to teach kids the importance of safety helmets. Simply gather different types of helmets and a several melons. Strap the helmets to the melons and drop each from the same height and measure the results. How Much Sugar is in that Soda? Health-conscious parents will love this PBL activity because it teaches kids how much sugar is in their soft drinks. If you have soft drinks, sugar, and measuring cups, you can do this experiment in your kitchen. Ways to Clean a Penny. To teach children how acid reacts with salt works to remove the dullness of pennies, kids can do a simple PBL activity using salt and vinegar. They can also test other acids to compare results. To teach kids about density, all you need are oranges and a bowl of water. You can add to this experiment by testing other fruits with peels. Did we miss any. Please share your favorite project-based learning activities in the comments below.

Chapter 3 : What is PBL | Project Based Learning | BIE

Even if you have never heard about all the research showing the effectiveness of project-based learning, it's not hard to figure out that it is a far more engaging way to learn than through traditional methods.

If any of this sounds familiar, then this will help. Who has time to wade through it all? What exactly IS project based learning? In the process of solving the problem, students also meet required standards, but this work is integrated into the project, not separate from it. Take the study of viruses, for example. A PBL project might ask students to educate their peers on the best ways to prevent the spread of viruses in school. In this Edutopia video, we get a good overview of how PBL is different from the kind of instruction most of us are used to. Why is everyone going crazy for PBL? In the top 10 were qualities like the ability to work on a team, problem-solving skills, written and verbal communication skills, and initiative. All of these are developed beautifully in project based learning. Improved Academic Performance The research on project based learning tells us that it closes the achievement gap for underserved populations, improves understanding and retention of content, and increases motivation for all students. Okay, but what does it really look like in real life? To really understand project based learning, you need to see it in action. This project engaged student learning in two content areas: They then met with architects, who shared their own plans and took student suggestions. She also talks about how discovering PBL has changed the way she feels about teaching. How do I plan a project based unit? The short answer is that they are more or less the same, although it could be argued that there are fine points that make them different. How do I handle grading with PBL? Each has a solid collection of well-researched resources that can teach you how to implement PBL and inspire you to make it happen in your classroom. We do this by showing teachers how to use Project Based Learning in all grade levels and subject areas. As a mission-driven nonprofit organization, BIE creates, gathers, and shares high-quality PBL instructional practices and products and provides highly effective services to teachers, schools, and districts. Visiting their site will give a PBL newbie lots of opportunities to see this practice in action. To learn more, visit their website , or watch a few videos showcasing the best projects New Tech students have done. What if I want even more? Although the book is not strictly about project based learning, it offers a flexible framework for learning experiences that PBL fits right into, and it will really get you excited about tapping into student creativity in your classroom. So where will you start? If this has inspired you to get started with project based learning, share your plans with us! If you have questions, this is the place to ask them.

Chapter 4 : A Project-Based Learning Activity That Can Work in Any Classroom – A.J. JULIANI

Project-based learning is a great way to engage students in authentic application of knowledge and skills. This lesson gives you some ideas for different kinds of project-based learning activities.

That means I train – a couple of miles on weekdays, long runs on the weekend. Some training runs are fast and enjoyable; most are slow and sluggish. The obvious answer is adrenaline. But what makes a race different? What gets that juice flowing? Cheering crowds around each corner. A race has meaning. Meaningful Assignments This concept of meaning also applies to the classroom. Completing a writing assignment for you, my teacher audience, to get a grade purpose is like a training run. You might receive some exceptional essays, but most will lack passion. And this is exactly what the research shows: Now consider problem-based learning, or similarly, project-based learning. PBL contextualizes learning, gives it a greater purpose. Students must acquire content knowledge themselves – not through the less-engaging method of direct instruction. Thus, students guide their own learning, add their own meaning and experiences, dig into the material, and actively engage with the content. More importantly, students, not teachers, learn to answer the dreaded question: When will we ever use this stuff? A lot of time. Teachers must manage several moving parts and devote a significant amount of class time. Teachers put a lot on the line to engage students in even a multi-day PBL lesson; some of the most effective take weeks to complete. Teachers must first conceptualize the problem or project, which is more complex than it sounds. Essential PBL elements, according to the Buck Institute for Education, include authenticity, student autonomy and choice, optimal challenge, and sustained inquiry. Next, teachers must identify the components. What tools and resources should be available to the students? Which elements should the kids explore and find? How do you balance autonomy and choice while curating resources sufficient to challenge students without overwhelming them? Where do you find such resources? In sum, planning a PBL lesson is intimidating. From complete lessons to interactive tools and resources, the product is a PBL gold mine. In this project, students gain an understanding of poetic structure, devices, and themes by assuming the role of a composer. Pre-made handouts guide students as they establish background knowledge, define key terms, and explore a vetted list of research websites. Students even take a Blues Road Trip while listening to original pieces and reading biographical sketches of essential musicians. Amped-up on their research and adrenalized by self-reflection, students rip on their digital Gibson guitars in apps like GarageBand and tell their own stories. And remember, this is only one of the hundreds of PBL lessons ready to plug-and-play in any classroom. Have your own creative ideas? Curriculum Pathways also has supplemental tools and resources. Your community has several manufacturing plants, but which plant is doing the most harm? Then open Writing Navigator and compose a letter to your local congressman with recommendations based on your findings. Your neighbor, an aspiring organic farmer, is ready to leave city life behind, buy some land, and open his own organic farm. Using the Organic Farms in the U. Other available resources include blank PDF maps of the U. Your local grocery store would like to create a public service announcement about the average price of food. Consulting the Cost of Food at Home data set in Data Depot, create an infographic using Canva; graphically display what adult men, adult women, and a family of four can expect to pay monthly for food. Several earthquakes occurred from; the Academy of Seismologists wants to know why. If so, can you explain them? Finally, using Writing Navigator, write a report for the seismologists explaining your analysis; use evidence from your map. They talk about them with friends and family. In the classroom or on the track, training exercises are easy to forget. But the races, the runs to which we attach meaning and purpose, the ones with something at stake – these stay with us forever and expand our understanding of who we are and what we can become. White says in another context, between planetary light and the combustion of stars.

Chapter 5 : 7 Examples of Project-Based Learning Activities - The Tech Advocate

The Constantly-Updated List Of Ideas For Project-Based Learning Note: This list will constantly be updated with new ideas, tools, and resources. As such, some fields will be empty, updated, or removed as we build and improve the list over time.

It includes an overview of the project approach as well as tips for curriculum planning. The preschool curriculum should also incorporate opportunities for children to try to develop strategies to cope with testing an idea, and trying again when it fails. One way to provide a curriculum with those characteristics is through the project approach. A project is an in-depth investigation of one single topic. The investigation can be done by a small group of children or the entire class as a whole. The key concept of the project approach is that research is the main focus. The research is often more important than the project itself, and the children will work together with the guidance of the teacher to find answers to the topic. When choosing to provide such a curriculum, it is important to first understand that your lesson plan will probably not resemble a "normal" lesson plan. Often these project-based learning lesson plans look like curriculum webs. A plan will begin with a central idea or theme and branch out in several directions with small projects in all areas of the curriculum. All small projects will lead back to the central theme. Once you have decided on the central theme, ask the children for their input. For example, if your central theme is "Helping", there would be several branches off the main idea. The more involved the children are with the planning of the curriculum, the more apt they will be to take a vested interest in the project. From the central theme "Helping", children may decide they can help animals and they can help people. From each of these ideas, more branches will sprout. From the "Animal" branch can come animals at home, animals at the zoo, animals in the wild, etc. Each smaller theme would then have a project for the children to complete. It is important to remember not to let these lesson plans take away from the usual school curriculum. In other words, be sure to incorporate the usual gross and fine motor activities, sensory activities, etc. When using the project approach, children are empowered to ask their own questions, conduct their own investigations, and make decisions regarding their daily activities. By providing these opportunities to children, we are enabling them to become independent thinkers and lifelong learners. They are able to experience self-motivated learning, which will only increase their desire to dig deeper, ask more questions, and conduct more research. Just be aware that much of this investigation must be guided by an adult, either a parent or the teacher, as preschoolers will not obviously be able to do it independently. Collect resources on the topics you are targeting and help with gathering and recording methods. The Success of Project Based Learning:

Activity based learning Problem based learning Problem solving activities Multiplication Activities Project based learning Student Learning Math Activities Teaching: Math Math Resources Forward Let students learn how math concepts are connected to the real-world as they design their own OBSTACLE RACE COURSE!

By inviting kids to investigate and respond to projects that encourage critical thinking and cross-disciplinary tools, kids will gain knowledge and skills that they can apply to problems in their everyday world. Project-based Learning PBL is a teaching method that invites kids to gain knowledge and skills, over a period of time, through explorations and responses into subjects that apply to the real world. The investigations are intended for use over a period of days to allow time for in-depth explorations and creative responses.

Background Information for Parents and Teachers: Spiders are not insects. Spiders are Arachnids as they have eight legs where insects have six. Spiders, unlike insects, have only two body parts: Spiders have six organs under their abdomen called spinnerets which allow spiders to produce silk during their life cycle. Spiders eat many insects and are beneficial to keeping the ecological balance intact. Most spiders are venomous, but do not cause harm to humans. The black widow and brown recluse spiders are the exceptions. Students will explore a spider webs, the spider life cycle, and investigate why spiders are important to the ecosystem. Students will use technology to investigate, explore, and document learning. Students will engineer a spider web and construct a hands-on spider life cycle. Students will explore geometric shapes and lines, patterns, spatial concepts, and mathematical relationships in the construction of the spider web and life cycle. Spiders have two body parts, eight legs, and organs called spinnerets that allow them to create webs. A spider creates its web one string at a time. Open discussion by asking the following questions: How would a spider know that an insect is caught in the web? The threads on a web vibrate as insects are trapped allowing the spider to know there is something to eat. Triangles and non-triangles How does a web help the spider survive? The web allows a spider to cover a larger area to trap insects than a spider could cover without it. Why are spiders beneficial? They eat insects and help maintain a balance in the ecosystem. Invite the kids to be scientists and mathematicians as they independently construct a spider and a patterned web using geometric shapes and lines as an example, save and print the photo above. White and Black or Brown Wikki Stix Mounting Paper any color Scissors Have the students come together to share their engineered webs and discuss the words ecosystem and spinnerets. Invite the kids to share what strategy they used when designing their web. Have the kids use black or brown Wikki Stix to design and create a spider with two body parts and eight legs on the response sheet provided here. Be sure to take along a digital camera on your search to document your findings! All living things have a life cycle that repeats. Spiders are not insects as they have eight legs and not six like insects do. Spiders are a member of the arachnid family and further distinguished from insects as arachnids have no antennae or wings. Spiders have spinnerets that allow them to construct webs over the course of the life cycle. Basic Spider Life Cycle: The spider life cycle begins with an egg. The female spider lays the EGGS. The children should divide their paper into four sections by placing one Wikki Stix vertically in the middle of the paper and another Wikki Stix horizontally across the middle. As the kids finish their spider life cycle constructions, remind them that a life cycle is a continuous pattern that repeats over and over again. Digital Documentation of Learning: Print photos of each of the four stages and laminate for durability. Use the photos at a center for a spider life cycle sequencing activity or print several copies of each for a matching game. Learning how to inquire, create, explore, and find solutions in the classroom will encourage the development of tools to facilitate finding solutions to problems kids will encounter in their everyday world.

Chapter 7 : Problem Based Learning Activities

Project-based learning is a component of an inquiry-based approach to learning. In this approach, students create knowledge and understanding through learning activities built around intellectual inquiry and a high degree of engagement with meaningful tasks.

Students engaged in project-based learning PBL activities "work in groups to solve challenging problems that are authentic, curriculum-based, and often interdisciplinary" McGrath, Project-based learning is a component of an inquiry-based approach to learning. In this approach, students create knowledge and understanding through learning activities built around intellectual inquiry and a high degree of engagement with meaningful tasks. Within the context of this inquiry-based approach, projects take the role traditionally afforded to assessments such as tests and quizzes. Projects are designed to allow students with a variety of different learning styles to demonstrate their acquired knowledge. Therefore, a well designed project-based learning activity is one which addresses different student learning styles and which does not assume that all students can demonstrate their knowledge in a single, standard, way. A classic project-based learning activity usually involves 4 basic elements: Within this basic framework, students and teachers can adapt activities to showcase and assess understanding. What does it feel like to do one as a teacher or a student? How can you, as a classroom teacher, identify a particularly good PBL activity for your students? Through the following task, you will explore project-based learning from the perspective of how such activities support different student learning styles. You will investigate several different sample projects -- appropriate for a range of grade levels and subject areas -- and consider the feasibility of implementing such units with your students. After this exploration, you will be in a good position to begin developing your own activities. The Task In this activity, you will critically analyze a number of PBL examples and prepare to discuss them from multiple perspectives. By the end of this exercise, you will have gathered sufficient information to answer the following questions: What elements of this project would be worth doing with your students? What elements of this project would be difficult to implement with your students? These are Adobe Reader rights enabled forms. You can type right in them, save them, and print them out with your input. Step 2 -- Examine the learning styles chart below. Then choose the style that either most closely matches your own, or that which would be most representative of the students you currently teach. Using board games and memory devices to create visual patterns. Visual elements in reading. Visualization of story and scenes at intervals, Writing via colored pens, computers, drawing, with multimedia tools. Can be a good reader or prefer the spoken word more; has excellent memory for names, dates and trivia; likes word games; enjoys using tape recorders and often musically talented. Creation of own word problems, stories, presenting aloud, putting together taped sessions for later playback, creating songs and poetry KINETIC LEARNER Processes knowledge through physical sensations; highly active, not able to sit still long; communicates with body language and gestures. Shows you rather than tells you; needs to touch and feel world; good at mimicking others; likes scary amusement rides; naturally athletic and enjoys sports. Any task involving physical action such as nature walks, gathering data, hands-on activities and experiments, art projects, or acting out stories. Performing science experiments, recording and analyzing results, Using computer learning games and word puzzles, Examining relation of story to real-life situations and people. Step 3 -- Having chosen an appropriate learning style, critically analyze PBL projects appropriate to your approximate grade level listed below based on this perspective.

Chapter 8 : Project Search | Project Based Learning | BIE

Develop students' creativity, critical thinking, problem solving, communication, and teamwork with Project-Based Learning Packs. Each pack provides a depth of grade-appropriate resources for reading and activities.

Share Tweet In our last post, we dove into a three-step system to get students to do the talking. Getting them to open up and do the majority of talking and learning is not as easy as some make it out to be. In fact, for me, it was incredibly difficult. The three-step system scaffolded a way for students to take on more and more of the discussion responsibilities until they were ready to take over. Here are the three steps in a nutshell: Now that I had students talking in my classes, I also wanted to get them creating, making and designing. But, I had the same problem with project-based learning that I did with getting students to own the discussion and do the talking instead of me doing all the talking. I was really bad at scaffolding PBL opportunities for my students to own that process as well. Teach the students about a concept or particular content. Have them demonstrate their learning in various ways. Give them an end of the unit project. Provide detailed steps to complete the project in a handout. Provide detailed unit to assess the project in a handout. Give students a detailed timeline on when things should be done for the project. Help students navigate project. The problem with these projects was the recipe-like nature that happened when students began handing things in. My students were still just trying to follow the rules, instead of actually creating something on their own that they could be proud about. During one of these projects when students had inevitably gone through the motions I had to ask my students the question: What was the last project or school assignment you did that left you with a feeling of accomplishment? The responses all fell into two categories: Most of them said this happened outside of school. I mean, at the very least, you are like me and have had times where something catches you off guard and makes you rethink your purpose and impact on the world. This happened when Patrick Larkin shared a video of students in his school district who created a PSA Public Service Announcement that went viral online. It really spoke to me seeing how much of an impact these students could have on their world while still in school 7th grade. The project itself was so simple. First, choose a problem in your school that is also impacting the world. Then, figure out how to solve this problem and share your solution with your classmates, school, and world. They only used printed out paper with text could have wrote it by hand and a phone to video their PSA. The key was the final piece. Share their PSA project with the world. This authentic audience kept the students engaged and empowered them to create something that mattered more than fridge art. I realized that this type of short project is exactly how you can scaffold PBL for students of any age. This PSA project can be done in any subject and in any grade level with modifications of course. The key elements are that you choose content that you want the students to learn, but give them a choice in which content they choose. After that, the project is simple. Then create a PSA to demonstrate that information and understanding. For my example, I want my students to learn about the United Nations Goals. So it would look like this: Some students will have background knowledge, others may not have much background knowledge and that is ok. For this example, I give learners the topic of the UN Goals. Second, I ask them to get into small groups people and choose a goal that resonates with them personally. This is key because the more meaningful and relevant the activity becomes, the more effort and commitment the team will have towards the project. Thirty minutes max amount of time. It should be a one-class activity in school where time and resources may be limited. The key here is to research quickly and efficiently. If you have younger kids, provide stations that have bits and pieces of the research ready to consume. Things like videos, articles, pictures, graphs are key to giving young students a head-start on the research. If you have older students or adult learners feel free to point them towards a couple websites or directions to research online. You have to also give very specific things they are looking for such as what the world needs to know about the goal and what they can do about it to help out. When you use this activity with a specific piece of content Goals, Periodic Table of Elements, historical figures, scenes from a play, author study etc the project becomes about demonstrating your understanding of this content through creating the PSA. You can give the option of creating a PSA much like the one shared above The R-Word or learners can create it with video, with a slideshow, a skit, or any other

type of way to spread their knowledge and understanding. We are scaffolding PBL here so a key point to remember during the creation stage is that many times students will want to mimic or copy what they saw as the example or exemplar given to the whole class. Once students are finished creating, the project is not yet done! Two key pieces remain. First, they have to share this with a bigger audience than just themselves and their classmates. Sharing it with the world gives the students an authentic audience. The final product should never be the end of a learning experience, only the beginning of the next learning experience. The mark of many great projects is that the learners teach what they know and understand through the project. The goal here is for students to be documenting, sharing, creating, and teaching while they are learning. This process enables a constant reflection and dialogue to take place between the learning, the collaborator, the mentor, the teacher, and the audience. That is what makes true PBL so authentic. It is the connections we can make throughout the learning process that do not happen when sitting in a seat listening to a lecture, or sitting in a seat answering multiple choice questions. How do you get students started down the PBL path? What activities do you begin with? How do students reflect and share what they have made? Share out in the comments below! Now check your email to confirm your subscription. There was an error submitting your subscription. Unsubscribe at any time. Powered by ConvertKit Next Post.

Chapter 9 : Project-Based Learning Activity

Project Based Learning Checklists and evaluation developer Preparing Your Daughter or Son for the Next Century Student Process Guides prepare your students to be more successful problem solvers and group participants.