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Essentials for Project-Based Learning

Some “projects” border on busywork. Others involve meaningful inquiry that engages students’ minds.

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As Ms. McIntyre walked around her high school science classroom, she plopped a packet of papers on each student’s desk and announced a “project.” Each student would create a poster about a water-borne bacterium that can be harmful to humans, the bacterium’s effects, and disease prevention and treatment. The handouts included an assignment sheet with due dates and grading policy, a guide for designing the poster, and a list of websites and books. The teacher would display the best posters.

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Students at Mare Island Technical Academy in Vallejo present their project work to an audience.

“Don’t Close the Beach” project, which included an individually written paper, an oral presentation of students’ work accompanied by media technology, and a product of students’ choice created by teams. Students chose to develop media kits, public service announcements, web pages, brochures, and letters to government and industry officials, among other products.

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This element of project-based learning is key. In terms of making a project feel meaningful to students, the more voice and choice, the better. However, teachers should design projects with the extent of student choice that fits their own style and students.

On the limited-choice end of the scale, learners can select what topic to study within a general driving question or choose how to design, create, and present products. As a middle ground, teachers might provide a limited menu of options for creative products to prevent students from becoming overwhelmed by choices. On the “the more, the better” end of the scale, students can decide what products they will create, what resources they will use, and how they will structure their time. Students could even choose a project’s topic and driving question.

4. 21st Century Skills

Once Ms. McIntyre’s students had decided on actions that would help them respond to their driving question, they got to work. Collaboration was central to the project. Students formed teams of three or four and began planning what tasks they would do and how they would work together.

As they worked, each team regularly paused to review how well they were collaborating and communicating, using rubrics they had developed with the

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teacher’s guidance. To boost collaboration skills, Ms. McIntyre used role-playing and team-building activities. She showed students how to use time and task organizers. They practiced oral presentation skills and learned to produce videos and podcasts. In writing journals, students reflected on their thinking and problem-solving processes, which they knew they would need to explain in their oral presentation.

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A project should give students opportunities to build such 21st century skills as collaboration, communication, critical thinking, and the use of technology, which will serve them well in the workplace and life. This exposure to authentic skills meets the second criterion for meaningful work—an important purpose. A teacher in a project-based learning environment explicitly teaches and assesses these skills and provides frequent opportunities for students to assess themselves.

5. Inquiry and Innovation

After their discussion about encounters with pollution, in addition to choosing a driving question, Ms. McIntyre’s students as a whole class generated a list of more detailed questions about diseases, bacteria and their effects, and sources of water contamination. Questions included, What diseases can you get from water? Do you have to drink it to get sick? and Where do bacteria come from? The teams fine-tuned their questions and discussed how to find answers

from the teacher, books, articles, websites, experts, and visits to Foster’s Beach.

As these learners found answers, they raised and investigated new questions. Students synthesized the information they gathered and used it both to inform their individually written papers on the driving question and to help create their team’s product related to that question.

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Students find project work more meaningful if they conduct real inquiry, which does not mean finding information in books or websites and pasting it onto a poster. In real inquiry, students follow a trail that begins with their own questions, leads to a search for resources and the discovery of answers, and often ultimately leads to generating new questions, testing ideas, and drawing their own conclusions. With real inquiry comes innovation—a new answer to a driving question, a new product, or an individually generated solution to a problem. The teacher does not ask students to simply reproduce teacher- or textbook-provided information in a pretty format.

To guide students in real inquiry, refer students to the list of questions they generated after the entry event. Coach them to add to this list as they discover new insights. The classroom culture should value questioning, hypothesizing, and openness to new ideas and perspectives.

6. Feedback and Revision

As they developed their ideas and products, student teams critiqued one another’s work, referring to rubrics and exemplars. Ms. McIntyre checked research notes, reviewed rough drafts and plans, and met with teams to monitor their progress.

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Formalizing a process for feedback