Project-based Learning, Data Literacy, and Online Resources

In the 1960’s students spoke of the “mind-blowing” Age of Aquarius. Today they speak of something even more amazing — and a good deal more data intensive: the Internet of Things (IoT), in which objects like doors and light switches can collect and exchange data. Of course, students are also bombarded with information on social and scientific issues, along with facts, opinions, advertisements, political speeches, blogs about health, the environment, technology, and so on.

Project-based learning (PBL) helps students survive this data deluge and voice their ideas on local and global issues.

The Inquiry-Based Disciplinary Literacy (IDL) Model provides unique student-driven opportunities to solve authentic problems in a collaborative environment. Planning, action, and reflection are crucial.

Students direct their own learning by developing real-world questions and conducting research to answer those questions. Students also decide what they will create and how they will share their findings. As students acquire new knowledge and embed it in the project, they learn and apply skills from all content areas.

The IDL process has five phases: (1) Ask a compelling question; (2) Gather and analyze sources; (3) Creatively synthesize claims and evidence; (4) Critically evaluate and revise; and (5) Share, publish, and act (Spires, H.A., Kerkhoff, S., Graham, A. & Lee, J., 2014).

Students begin with a list of topics. These can be derived from content-area standards, interdisciplinary units, news stories, books, social media, and other sources. Next, students learn to write a compelling question — one that motivates them to seek answers supported by sound evidence. In the process, students learn to identify the position and motivation of various stakeholders.
In the research phase, students make decisions about the credibility and relevance of the information they find — skills crucial to success for anyone confronting the IoT. To make these evaluations, students must build knowledge from data (i.e., they must be data literate). That means answering some key questions: How was the data collected? Is it credible and relevant?

Now students can present and defend their opinions by making sound judgments based on reliable information. Key challenges in this phase involve choosing the best way to organize and display information for a specific audience.

PBL lends itself to differentiated instruction since students must make decisions about their roles in creating the final product. Striking differences in abilities will emerge. Students have a natural affinity to work on tasks that highlight their own strengths and interests. By working collaboratively in PBL groups, students can demonstrate those strengths and take responsibility for their roles in completing the project.

Students think critically to create the question and plan the investigation, as well as when they collect, evaluate, and display the data. Decision-making skills are crucial if students are to select appropriate digital tools to research, synthesize, evaluate, and publish the end product.

SAS Curriculum Pathways provides quality resources for supplementing PBL lessons — for free! You’ll find hundreds of standards-aligned lessons in the five core disciplines, each equipped with guides that include learning objectives, assessment rubrics and keys, and a detailed procedure.

A constraint in teaching data literacy is the lack of grade-level appropriate data sets. With SAS Curriculum Pathways, that’s no longer an issue. Data Depot provides an online repository of more than 100 downloadable, user-friendly data sets that enable students to work with real-world statistics.

Discover Writing Navigator, a writing tool that guides students through the writing process: planning, drafting, revising, and publishing. By integrating these resources, teachers can create project-based learning lessons and teach data literacy in any discipline.

Want to learn more...

If you are attending ISTE in Denver this summer, stop by our poster session, PBL, Data Literacy and Online Resources, on Wednesday, June 29, from 8:00 am–10:00 pm MDT.

Our goals are as follows:

1. Introduce participants to free K-12 resources for supplementing PBL lessons including:
Data Depot, a repository of data sources and focused lessons that will help your students become more data-literate.

Writing Navigator, four interrelated products that guide students through the writing process: planning, drafting, revising, and publishing.

Explore! Primary Sources, a repository of materials in which we’ve clarified the historical context and provided content-based questions that encourage active reading.

Science Virtual Labs, online experiments across a broad range of core topics.

Interactive Atlas, view and generate customized maps; use draw tools to add information.

2. Answer questions about PBL implementation.
3. Gather feedback and recommendations for improvements.

Hope to see you there!