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AUTHOR Tavalin, Fern; Gibson, David
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ABSTRACT

Supported by funds and technical assistance from the U.S. Department of Education Innovation Challenge, the WEB Project has built several dynamic online networks that foster professional growth and measure improvement in student learning. The classrooms and networks of teachers and community professionals involved include work in music, visual arts, history, and literature. By design, the WEB Project serves all students. Each classroom or network incorporates vital learning results like communication, problem solving, critical thinking, civic responsibility, and personal development into its use of technology. Community and statewide organizations aid in the educational process and help to set standards for quality. The project has developed successful advanced technology strategies in three broad areas of work: (1) developing and using online assessment systems; (2) achieving high quality work, including focusing of production and elaboration of ideas, and using a variety of evidence; and (3) sustaining professional growth, including adaptation of existing models to align with standards, using electronic examples of performance, articulation of standards to include evidence of performance and student work samples, demonstration of student achievement via Web-based portfolios, and general guidance for improvement while work is in-progress. (MES)

Creating a Web of Evidence: Multimedia Examples of Student Performance

Fern Tavalin, Ed.D., Co-Director
The WEB Project
University of Vermont Southeast Regional Center
157 Old Guilford Road #4
Brattleboro, VT 05301
tavalin@sover.net

David Gibson, Ed.D., Co-Director
The WEB Project
Montpelier School District
58 Barre Street
Montpelier, VT
dgibson@vismt.org

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Abstract: Students thrive on deep engagement with people who care about their learning, especially when they are trying their hands in new territory. Through experimentation and dialog, mentors, teachers, and students support one another online as they flesh out ideas, sharpen skills, and display new work. Supported by funds and technical assistance from the WEB Project (<http://www.webproject.org>), a US Dept. of Education Innovation Challenge, this Vermont network has built some simple assessment tools to foster improvement by focusing on discussions that lead to high quality work and sustained professional growth.

Overview

Students thrive on deep engagement with people who care about their learning, especially when they are trying their hands in new territory. Through experimentation and dialog as part of the WEB Project, mentors, teachers, and students support one another online as they flesh out ideas, sharpen skills, and display new work. As a result, everyone learns more about the big ideas and essential questions that fuel inquiry and progress in the disciplines. Technology plays a subsidiary role to stimulate new ways of working, new media avenues for expression, and to foster communication at a distance.

Supported by funds and technical assistance a US Dept. of Education Innovation Challenge, the WEB Project (<http://www.webproject.org>) has built several dynamic online networks that foster professional growth and measure improvement in student learning. The classrooms and networks of teachers and community professionals involved include work in Music, Visual Arts, History and Literature.

By design, The WEB Project serves "all students." Each classroom or network incorporates vital learning results like communication, problem solving, critical thinking, civic responsibility, and personal development into its use of technology. Community and statewide organizations aid in the educational process and help to set standards for quality.

The project has thus developed successful advanced technology strategies in three broad areas of work: 1. Developing and Using Online Assessment Systems, 2. Achieving High Quality Work, and 3. Sustaining Professional Growth.

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1. Developing and Using Online Assessment Systems

Assumed in the notion of "excellence for all" is an agreement about what constitutes excellence. The WEB Project develops agreement by bringing teachers and content experts together to identify what it means to meet a standard. This is a thoughtful process that takes about 3 years to accomplish if a school is at a beginning level of aligning standards with curriculum and assessment practices. The development of assessment systems goes through an iterative process. This means that designs begin with a "best guess" that is checked and revised. Multimedia technology, interactive television, and the Internet are critical to the professional development system that allows for this network, separated by distance, to reach agreement. With the aid of these advanced technologies the WEB Project followed the performance assessment steps listed below. Teachers in the WEB Project involved their students in this process as well as professionals in the field.

1. Select standards from the Framework.
2. Base assessment systems on evidence from the standards.
3. Double check assessment systems against real student work through reference to a wide variety of media evidence of student performance.
4. Revise the assessment systems through continued use in classrooms and professional dialog using web-based communications with experts in the field.
5. Exchange a variety of media products via telecommunications and in person.
6. Assess and report student work online, in-person, and with the use of interactive television.

2. Achieving High Quality Work

Standards and benchmarks of student work samples set by WEB Project members represent both the product and process aspects of learning. Student interviews in 1995 revealed that they wanted two different types of input about their work. According to the interviews, students want to know where they stand (yardstick measures) and they want to know how to make what they are doing be better (reflection and critique of work-in-progress).

Based on the student remarks, a network formed to develop evidence of student performance with a web-based system of support for reflection and critique. Simple, yet enabling standards from the Vermont Framework such as "Students use a process of reflection and critique to improve their products" and "Students can generate and select from multiple solutions to a problem" allow students to receive feedback and select what makes sense. As a result, students report that they feel that their online mentors (experts, other teachers, and other students) take their work seriously. This is a key to increased motivation, time spent in creating and elaborating ideas through work products, developing new skills, and using feedback to improve work.

Focusing on production and elaboration of ideas

In order to assess learning and reach goals of excellence, we find it key to focus on the production of new elaborated work. The original focus of The WEB Project was exclusively geared toward building assessment systems as described above. Teachers benchmarked rubrics for visual arts, historical research, and reflection and critique. This alone did not improve performance or engage students. However, when we shifted the focus to production (multimedia, music composition, etc.) it increased student motivation and provided activities that built dynamic environments, incorporating assessment as a natural part of the learning process instead of standing out as a single event.

Using a variety of evidence

Using multiple forms of evidence of learning allows students to show what they know in many ways. To quote one parent from Brattleboro whose son worked on a multimedia team that investigated community memories of World War II:

"I was thinking that if you knew Matt by whether he wrote his essays or not, you wouldn't know Matt. And you would think of him as a totally different kind of student than you get from watching him do a technology project. I also think that what he takes, in terms of raising a young man who is going to go out in the world and be accountable to others and responsible to himself, the separate facts of history are not as important as gaining an overview. For me it was a chance to see that this young man is really engaging in positive ways in the world which I don't see in terms of responses to homework and things like that. He came home and talked about this a lot. He related it to contemporary events. It wasn't just that he learned about World War II. He talked about the issues of race and gender that were going on at the time. He was saying that the socio-cultural climate was really different in the 30s and 40s than it is now."

Outside audit confirms our internal sense of progress from school-based measures and individual anecdotes. The latest RMC (1999) evaluation shows that student motivation has increased and student learning is improving.

3. Sustaining Professional Growth

As important as the signs of improving student achievement, teachers also show evidence of change. Teachers in the project begin to routinely use the core ideas and questions of their disciplines to evoke elaborated student communication and performances. The WEB Project is a model of a technology-based professional development system that uses the collaborative efforts of students, teachers, and scholars to establish exemplars of student performance stemming from dynamic learning environments. As a result of efforts on the assessment systems, the core knowledge of teachers and the creation of an environment of high quality work, the WEB Project can show four categories of the implementation of standards in teaching and learning assisted by advanced technologies. The following examples illustrate each category.

Adaptation of existing models to align with standards, using electronic examples of performance

Example: National History Day is a program for sixth through twelfth graders. Each year a common theme is presented for students to explore. They select a topic, relevant to the theme, from any time period or place in history. Using primary resources and extensive research, students then demonstrate what they have learned through a research paper, a project, a media presentation, or a theater performance. The WEB Project sponsored teachers and historians to develop an interface to the national scoring guide, which shows the relationship between History Day criteria and the Vermont Standards in the categories of project and media. The student work samples from the Vermont History Day competition have been included on this site to serve as references for students and teachers in future competitions.

Articulation of standards to include evidence of performance and student work samples

Example: Multimedia Communication Rubric and annotated exemplars
Schools across the United States agree that multimedia communication is important. In Vermont, Standard 5.15 represents this value, "Students design and create multimedia products that successfully communicate (what they intend)." A group of teachers gathered in the fall of 1998 to attach evidence to this standard so teachers across the WEB Project could look at multimedia communication through a similar lens. After trial and revision, this evidence became:

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Evidence

K-4 Students explore media elements that may include sound, images, movement, text and interactivity to communicate. Students contribute in the creation of multimedia products.

5-8 Students communicate through the creation of multimedia products that effectively combine media elements that may include sound, images, movement, text and interactivity with emphasis on clarity and focus, use of media, and attention to detail.

9-12 Students integrate multimedia elements to communicate understanding, synthesize content material, and present new insight.

A 6-point rubric (0-5) was then constructed to show development. The rubric contains benchmarks for Levels 1-3 only because attainment at higher levels requires significant adjustments to school schedule and an interdisciplinary team of teachers (or outside expertise) from technology, the arts, and the content areas under investigation.

Multimedia Level 3 Exemplar (<http://www.webproject.org/multimedia/iguana.html>)

Level 3 users successfully communicate by combining multimedia elements in an engaging, organized, easy to navigate format. Clarity and focus are clear and attention is given to detail.

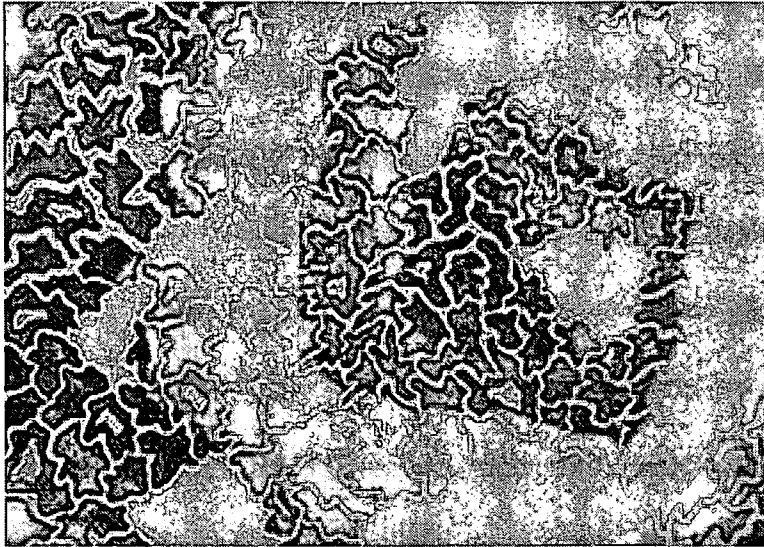


Complex slide show that retells the story "Why Mosquitos Buzzz." Colorful artwork is used along with clever transitions and instrumental/voice audio to keep the viewer engaged in the story. The presentation exemplifies the use of ingenuity rather than reliance on special effects to solve artistic problems. Many solutions combine artistic principles such as perspective with the subtle use of transitions.

Demonstration of student achievement via web based portfolios

Example: Cabot Student Art Portfolio excerpt exemplifying: 1B: Students can create works of art that show how their ideas relate to medium, techniques, and processes. 2B: Students can evaluate the effectiveness of artwork in terms of design elements and principles.

(<http://www.webproject.org/cabot/melissaart.html>)



"This piece has the visual elements focus, contraction, expansion, complexity, and chaos. The focal points are the large negative spaces. The shapes contract and expand as the spaces in between get larger or smaller. I think that this piece is pleasant to look at but it is also chaotic. I believe that this piece is well balanced with all the negative space. It is spread out evenly through the piece. I think that this was one of my favorite pieces of artwork that I did this year." Student quote

General Guidance for improvement while work is in-progress

Example: Rubric for Reflection and Critique

Reflection and critique of work in progress form the basis of the WEB Project's strategy for improving student performance. Students, teachers, and mentors collaborate online to discuss student work as it progresses. A three point scale is used to assess the level of response given to students by adults and by other students.

Reflection and Critique Level 3 Exemplar (<http://www.webproject.org/exchange> [select Projects to view public example])

From: Lee

Organization: VT Elementary School

My name is Lee; I am a sixth grade student. I need help on my pencil drawing; I have no clue what I should do next. Do you think you could give me some help? I like this drawing a lot.

Requested feedback: What can I do to the background? What should I do with the bird's chest? How can I make the values show more than they do?

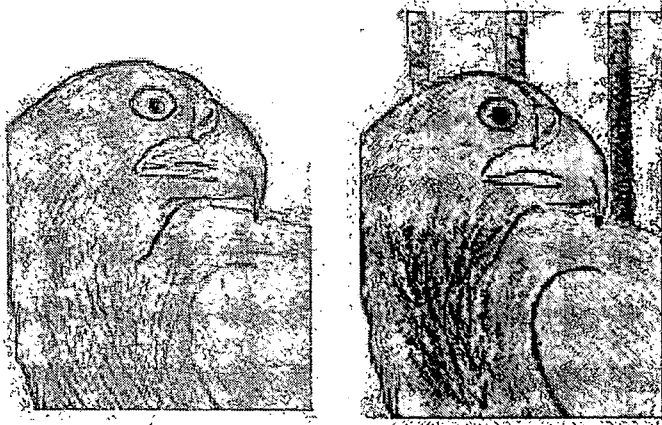
Comment Excerpt from: Joan Curtis, Artist

The strength of your picture so far, I believe, is the interesting composition. The way you have arranged the close-up eagle within the picture's edges is quite powerful.... I would like to see a little more description of the feathers you are seeing.... Is it possible to be more specific with your pencil?....

Comment Excerpt from: Ken Leslie, Johnson State College Visual Arts Center

.... You asked about "background." This is the place where you can add information that will tell a bit of a story. Imagine how different this same drawing would be if there were tree branches and leaves in the background, or hunters

with guns, or zoo cage bars. Not one line of the eagle has changed, yet the meaning of the drawing is completely different for each of those backgrounds....



From: Lee

Thank you so much for all of your remarks. What I ended up doing is I put bars in the back so it looks like it is in a cage in the zoo.

Acknowledgements

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