DOCUMENT RESUME

ED 444 119 CS 014 044

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TITLE Dot.com Lessons Worth Learning: Student Engagement, Literacy, and Project-Based Learning.
INSTITUTION International Reading Association, Newark, DE.
PUB DATE 2000-07-00
NOTE 11p.
AVAILABLE FROM http://www.readingonline.org.
PUB TYPE Opinion Papers (120)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Constructivism (Learning); Elementary Education; *Literacy; *Student Motivation; *Teaching Methods
IDENTIFIERS *Student Engagement

ABSTRACT

Instructors must be steadfast in their intent to alter conventional transmission models of instruction and to embed reading and writing fully in subject area learning so that avid reading and writing become a natural part of all classroom activity. One instructional model offering engagement of students with material is the constructivist approach, as evidenced in project-based learning. In this approach, founded on inquiry and an inner need to know, topics must grow from students' felt needs, and project development involves resources from and exploration of multiple subject areas. Steps to implement project-based learning include: (1) beginning with what students already know; (2) encourage multiple responses to learning events; (3) allow students to help shape the curriculum; and (4) monitor collaborative work and developing students' ability to monitor their own work. Such learning engages students in real reading and writing activities leading to increased knowledge about the world and increased literacy abilities. (Contains 17 references.) (EF)

Dot.com Lessons Worth Learning: Student Engagement, Literacy, and Project-Based Learning.

by Martha Rapp Ruddell

Dot.com Lessons Worth Learning
Student Engagement, Literacy, and Project-Based Learning

Martha Rapp Ruddell

Those of you in the United States may have seen that TV commercial, aired for the first time during the most recent Superbowl game, in which kids are talking -- telling a story collectively, and avidly: "There's these aliens, see..." "and they're coming at us..." "and they keep coming closer and closer...." As they talk, the children gesture and excitedly add details to the story, and there's absolutely no doubt about their engagement in the activity. Then the voice-over says something along the lines of "When we can get them this interested, we can teach them anything" -- followed by a silent visual message that gives a dot.com Web site address.

I was blown away the first time I saw that commercial; it rings so true and offers a lesson well worth learning. Its message is that when kids are fully engaged and avidly interested, when the room crackles with energy and excitement, and when *everyone* (not just the "good" kids) participates fully, real learning happens. This message (and lesson) comes to us not only in dot.com commercials but in recent research reports (e.g., Catterall, 1995; Petrosko, 1998) that confirm the value of engaging, active learning for increasing students' achievement (and, concomitantly, increasing test scores). Such research also serves as a counter-balance to the growing pressure for teachers to engage in transmission models of teaching in the service of students' acquisition of the knowledge and skills measured by newly mandated high-stakes tests.

Transmission models of teaching are well entrenched in schools and are highly resistant to change; further, they are supported and encouraged by the high-stakes testing that is so central to current local, state, and national education reform efforts to increase student achievement. Many policy makers decry and sometimes ridicule recent attempts to move away from conventional transmission models without fully understanding that, in fact, we haven't ever really moved away at all. Consider this description of U.S. classrooms in the early 1980s, developed by John Goodlad and his research team; consider also the accuracy of this passage both in describing the instruction you probably experienced yourself as a student and in evoking a picture of what goes on in schools today:

> The data from our observations in more than 1,000 classrooms support the popular image of a teacher standing or sitting in front of a class imparting knowledge to a group of students. Explaining and lecturing constituted the most frequent teaching activities, according to teachers, students, and our observations. And the frequency of these activities increased steadily from the primary to the senior high school years. (Goodlad, 1984, p. 105)

Thus, the discourse in most classrooms is "fan shaped" (Martin, 1983), with the teacher at the focal point of the fan. Margaret Cintorino (1993) gives us this picture:

> The teacher stands at the front of the room and addresses the large group. Some of the students listen; some do not. Some of the students accept the validity of the teacher's words and the teacher's right to say them; some do not. Some of the students absorb the teacher's proffered construction of knowledge and alter their own systems of knowledge in response; most do not. It is a difficult and detached way to learn. (p. 23)

In his work, Goodlad (1984) goes on to emphasize that the seatwork activities his team observed were rarely focused on constructing or producing knowledge -- "students were not very often called upon to build, draw, perform, role play, or make things" (p. 105) -- and most independent activity took the form of students working separately on identical tasks rather than on tasks tailored to specific learning styles or circumstances. What we know about seatwork in many classrooms 20 years after the Goodlad study is that it is frequently dominated by drill and practice on the facts and skills measured by standardized tests, and could even involve -- as I recently observed -- a three-hour school-wide hiatus from teaching and learning for children to "practice" taking an upcoming state-mandated assessment!

Goodlad (1984) states repeatedly that, at all levels, classrooms and schools are all too often filled with

students who are passive, emotionally detached, and locked into an unrelentingly repetitive sameness of school days, weeks, months, and years. This picture is in stark contrast to the goals we have long held in literacy education to guide students toward progressively accomplished reading and writing in all subject areas, to lead them toward avid recreational and content area reading and writing, and to engage them fully in the curriculum in all subject areas. It seems we have been loath to learn the lesson of the dot.com commercial, and now, especially, policy makers and school administrators seem intent on ignoring this truth: fully engaged learners are excited, exhilarated, and passionately involved in school; learning *feels* good, satisfies, and becomes not only challenging, but hearty, robust -- and fun. Classrooms do, indeed, crackle with the kind of energy I saw in the dot.com commercial, real work is accomplished, and real learning takes place. It is the kind of learning that Johnston and Allington (1991) refer to as "task involving," that immerses learners thoroughly in the curriculum and, by so doing, increases literacy development -- and general academic achievement as well.

Thus, we must be steadfast in our intent to alter conventional, transmission models of instruction, and we must eliminate all classroom practice that is not rich, complex, and full. We simply cannot tolerate classroom events and assignments that are exercises in tedium, even when the specter of high-stakes testing looms over us. Further, we must embed reading and writing fully in subject area learning so that avid reading and writing become a natural part of all that goes on in the classroom.

Constructivist Teaching and Learning

An increasingly popular approach for engaging students in avid learning (and the many attendant literacy activities) involves the notion of constructivist teaching and learning. Mark Windschitl (1999) defines the "culture of constructivism" as "a coherent pattern of expectations that underlie new relationships between students, teachers, and the world of ideas" (p. 752). Specifically, constructivist teaching and learning are based upon a theoretical stance and teachers' beliefs that

> learners actively create, interpret and reorganize knowledge in individual ways; [that] students' background knowledge profoundly affects how they interpret subject matter and that students learn best when they apply their knowledge to solve authentic problems, engage in "sense-making" dialogue with peers, and strive for deep understanding of core ideas rather than recall of a laundry list of facts. (Windschitl, 1999, p. 752)

Becky Smerdon, David Burkam, and Valerie Lee (1999; online abstract) summarize the assumptions upon which this theoretical stance and these teacher beliefs rest:

> (1) some of our notion of what constitutes "knowledge" may be culturally constructed, rather than truth or fact; (2) knowledge is distributed among group members and the knowledge of the group is greater than the sum of the knowledge of individuals; and (3) learning is an active, rather than passive, process of knowledge construction. (p. 8)

In some circles, particularly among policy makers who believe that "knowledge" is the accumulation of facts and skills as measured by standardized tests, constructivist learning has acquired a negative connotation of "anything goes" -- pointless, undisciplined, and ultimately useless activity in classrooms, and certainly not an instructional approach that could lead to higher academic achievement.

Nothing could be further from the truth. Actually, constructivist approaches, with their emphasis on students' construction of knowledge and the social negotiation of meaning, are highly congruent not only with a picture of children actively participating in learning (Guthrie, Alao, & Rinehart, 1997; Harste, 1994), but -- perhaps just as important -- with high academic achievement, as measured by standardized tests (Catterall, 1995; Petrosko, 1998). To convince policy makers and school administrators of this, however, we must see to it that what goes on in classrooms in the name of constructivist learning is well organized, monitored, and provides guided opportunities for students to direct their own learning and to learn deeply and well.

Project-based learning. One approach that is constructivist in nature centers around major projects that students, as a whole class or in small groups, decide to undertake. Projects may address community needs

("Cleaning Up the Neighborhood"); explore personal, family, and community histories ("The Families, Lives, and Times of Odessa, Missouri, USA"); engage students in exploration of issues with global significance ("Money Makes the World Go 'Round"); or develop any of a myriad other ideas. Effective development of these project topics requires two conditions:

1. Topics must grow from students' felt needs
2. Project development involves resources from and exploration of multiple subject areas

Here is a vignette Windschitl (1999) provides of project-based learning; notice how this classroom "feels" and how engaged students are.

> Ms. Hughes' sixth-grade classroom is a noisy place, and if you come to visit you may have a hard time finding her. Today, students are clustered in small groups, bent over note cards and diagrams they have assembled in order to determine whether they can design a habitat that can support Australian dingoes and marmosets.
>
> The students have just participated in three days of discussion and reading about interrelationships among mammals. They are divided into four groups, each of which has negotiated with Ms. Hughes to devise a complex problem to work on that reflects their interests and abilities. One group chose a design problem: creating a habitat for a local zoo that will support at least three kinds of mammals naturally found in the same geographic area.
>
> The students are now engaged for the next two weeks on this project. They find and share dozens of resources, many of which are spread out on tables and on the floor around the room. Allen brings to class a video he shot at the zoo last week so that everyone can see what different habitats look like. Michelle loads a CD ROM on mammals that she brought from home, and James donates one of his mother's landscape architecture books for ideas on how to diagram spaces and buildings.
>
> During the next two weeks these students will develop an understanding of how mammal species interact with one another, cope with the environment, and follow the natural cycles of reproduction. (p. 751)

Jerry Harste (1994) emphasizes the importance of inquiry as the foundation for project-based learning. He is not talking about inquiry as a methodology here, but rather inquiry as a deeply felt, inner need to know: "Viewing curriculum as inquiry means that I envision classrooms as sites of inquiry, or as communities of learners. Inquiry is not a technical skill be to applied at will, but rather a philosophical stance that permeates the kinds of lives we choose to live" (pp. 1230-31). Inquiry becomes the starting point and sustaining element that propels a classroom project itself and thus emerges as the driving force of project-based learning.

I find this notion of inquiry powerful. Essentially, Harste is saying that students and teachers should examine what they know and then look around their world to decide what it is they want to know. Learning should grow from class exploration of the questions generated in determining what the group wants to know. In addition, I like the idea of projects as a focal point and center for learning. We have all seen children and adolescents go after an idea or hone a skill with absolute concentration and determination (think about young children's play; older kids' participation in athletic, musical, or theatrical activities; the amazing ability of kids of all ages to surf the World Wide Web; their absorption with friends and comic books and popular music). *That's* the energy and motivation that projects based on true inquiry capture. Consider for a moment how, as part of an "Our Bodies, Ourselves" project, student-conducted experiments during a visit to an amusement park (e.g., wind resistance on a roller coaster ride; heart rate and pulse measurements; the speed of the roller coaster in contrast to the speed of the Ferris wheel, the carousel, and the bumper cars) lead naturally both to insight and learning and to new questions and additional study. Consider also the power of students' engagement in literacy processes as they read and write to complete project activities and fulfill needs.

In *Living Between the Lines,* Lucy Calkins (1991) takes the notion of project-based learning one step further. There she tells a story about principals from 20 New York City elementary schools who spent a day aboard an 80-foot schooner, working together as a crew at the same time as they discussed the organization of effective writing workshops. She tells of how barriers dropped and intimacy developed as everyone worked to set sail,

steer a course, and carry out all of the crew responsibilities. Within this shared experience, discussion of curriculum was heartfelt, energetic, and vibrant in a way that simply could not, and would not, have been possible in the confines of the district headquarters box, and the power of that sailing day stayed with the principals throughout the school year. And then Calkins tells the most important thing of all: in her reflection on the power of shared experience to touch individuals deeply and change the way they interact, the way they think about things, and the way they work together to carry out a complex task, she says, "Why is it that we plan special events in school -- week-long outdoor education trips, overnight 'read-ins,' museum and art gallery and Exploratorium trips -- for the *end* of the school year? Why don't we do them at the *beginning* so that they become the foundation for everything we do in the name of curriculum throughout the rest of the year?" Every time I read that, I wish I had been the one to say it.

Implementing Project-Based Learning

I believe that the lessons taught by constructivists and dot.com commercials are right: if we want students to learn deeply, if we want them to come away from school as fully literate, thoughtful individuals capable of and intent on life-long learning (having met all the standards thrown at them and more), then we *must* make school more than an exercise in knowledge transmission, passivity, and emotional detachment. We *must* engage students in deeply interesting, satisfying learning events and then guide their progress so that they leave our rooms able to seek and acquire knowledge independently, thoroughly grounded in content, and richly literate. Project-based, constructivist approaches make this possible. To institute project-based learning in your class, use the following four principles to guide your instruction (Ruddell, in press-a):

1. Begin with what students already know

Whether you and your class have experienced a special event -- say, a camping trip or other excursion -- or a small event -- perhaps a walking tour to look at the architecture of your area -- begin by leading a class discussion about "Things We Know and Things We Found." Let students work in pairs or groups to list what they know about the topic; give them plenty of time, and expect ideas to range considerably. Share students' lists in whole-class discussion. Then let the students go back to their partners or groups and list first "Things We Don't Know" and later "Things We Want to Know."

Perry Marker (1993, pp. 82-83) suggests the following progression of questions to guide a similar process, which he views as a means for students to develop ideas and topics into thoughtful, transformative projects:

- What do we know about this topic?
- What don't we know?
- What do we want to find out about what we don't know?
- How can we find information?
- What resources do we have to find the information?
- How can we present and share our findings?
- What specific proposals can we make to implement our findings?

Either of these approaches for launching inquiry projects may cover several days and may require that you "prime the pump" a bit; students are wholly unused to being asked what they'd like to learn in school and to being given the freedom to develop their own projects.

2. Encourage multiple responses to learning events

By now, mapping has become a well-known means for capturing student response to all manner of learning events (Davidson, 1982; Ruddell, 1997, in press-b); students can and will create maps from reading and research they have done, and very frequently they find maps useful as precursors to writing and other forms of representation. The value of maps is their flexibility; students may write, draw, outline, sketch, or do any combination of these when creating maps. Second-language learners are free to use both their home language and the target language to represent ideas, or they may choose to construct wholly visual representations. Most important, students map from the transaction between their prior knowledge base, their stance in relationship to the reading and learning event, and the information available in the learning text (Rosenblatt, 1994; Ruddell, in press-b). Thus, any discussion of the learning event invites multiple viewpoints, perceptions,

and perspectives.

Mapping is just one way to encourage multiple responses; part of its value is that from this experience, students begin to perceive alternative means of representing their learning to others. Once students have become experienced mappers you may wish to introduce them to *Inspiration* software that not only gives them new electronic mapping alternatives, but demonstrates how maps convert to outlines.

3. Allow students to help shape the curriculum

By definition, project-based, constructivist learning *begins* with (and continues to support) student choices about curriculum. Your role is to assist student groups in shaping their ideas and topics and to guide them with strategy lessons as they work collaboratively to complete their projects. New, exciting possibilities exist online to enhance project-based learning, and Web sites spanning the globe offer opportunities for students to carry out projects and work collaboratively with peers around the world in so doing (Ruddell, in press-b):

- Global Schoolhouse Collaborative Learning Projects
  This award-winning site, now part of Lightspan.com, provides examples of past projects and includes information on how to join current projects. Links to projects are provided.

- The NickNacks Telecollaborations page contains an index of curriculum-based collaborative online projects.

- I*Earn (International Education and Resource Network)
  A network committed to helping young people undertake projects designed to make a meaningful contribution to the health and welfare of the planet.

- Pacific and Southwest Regional Technology in Education Consortium
  PSR*TEC utilizes global networking projects to link students in geographically distant locations. It provides a variety of technology and equity resources.

- The GLOBE Program: Global Learning and Observations to Benefit the Environment is a worldwide network that works to study and understand the global environment. Students and teachers from more than 8000 schools in 85 countries work with research scientists to learn more about our planet.

- The Genesis mission educational Web site, created and maintained by educators at Mid-continent Research for Education and Learning (McREL) and hosted at the Jet Propulsion Laboratory, offers quality, standards-based instructional materials related to NASA's Genesis mission. There are many opportunities for teachers, students, and community members to participate in the mission.

- KIDPROJ projects from KIDLINK involve students from ages 5 to 15 in global communities of learning and interaction.

- The Alphabet Superhighway assists secondary and upper elementary students to create, locate, and communicate information through active learning, guided discovery, mentoring, competitions, and other online activities.

4. Monitor collaborative work and develop students' ability to monitor their own work

When students are working in collaborative groups, especially on projects, one of the most important things you can do to make the experience successful is to maintain an organizing system that assists them in focusing their attention and energy on the work at hand. A very simple way to do this is to provide time at the beginning of class each day for students to list the work to be done, and at the end of class (or the project work period) to reflect on and summarize the day's accomplishments and plan for the next day's work. I recommend a "status of the group" roll call at the beginning of project work (Ruddell, 1997, in press-b) that asks each group in turn, "What are you doing today? What do you plan to accomplish? How may I or anyone else help you?" At the end of class, guide students similarly in reflecting on the work done -- "What did you accomplish today? What are your plans for tomorrow?" -- and give groups and individuals the opportunity to monitor their own progress by asking and answering the questions that parallel yours. Thus, the students stay

focused on the work at hand and share with you and their classmates what they've found in their research and the problems they may be encountering.

Create a worksheet for yourself and your students that resembles the following:

Date:	Group:
Group Members:	
Work Planned:	Work Accomplished:

Distribute these worksheets to students and require that they keep them stapled in the front of their work folders and fill them out at the beginning and end of project work each day. You fill one out for each group, too.

Analytical discussion of this kind increases students' ability to monitor their progress and develops their planning and strategic inquiry skills. It keeps them on task and aware of how well they're doing. It keeps project groups from falling apart, allows you to stay informed of student progress, and provides information for your record-keeping and evaluation procedures. This type of monitoring may be used equally effectively to document student accomplishment and achievement on any content and performance standards that they are expected to fulfill in your classroom. One way to do this is simply to modify the group worksheets for your own records:

Date:	Group:	
Group Members:		
Work Planned:	Work Accomplished:	Standard:

You can then enter something like "1.4 -- Identify topics; ask and evaluate questions; and develop ideas leading to inquiry, investigation, and research" or "1.5 -- Give credit for both quoted and paraphrased information in a bibliography by using a consistent and sanctioned format and methodology for citations" (two Grade 7 standards from the California English Language Arts Standards) to indicate activities that meet particular content and learning standards. These records can then be transferred to a matrix in which student names are listed vertically and content and learning standard numbers are noted horizontally. Thus, you are able to summarize not only each student's achievement of standards but also to see at a glance how students individually and collectively are progressing on the standards for which they (and you) are accountable.

Student Engagement, Literacy, and Project-Based Learning

Launching a project-based learning unit is an act of faith -- faith in students' ability and desire to explore questions deeply; faith in the power of collaborative, constructivist learning; and faith in one's own ability to manage the whole thing. It's well worth the risk. It's also much more likely to get students eargerly involved in their own learning (as the children in the dot.com commercial were eagerly telling their aliens tale). It has the additional and very important benefit of engaging students in real reading and writing activities that lead both to increased knowledge about the world and to increased literacy abilities. It is an important and effective alternative to the passive, emotionless classroom so characteristic both of yesterday -- and all too often of today. The lesson taught by the dot.com commercial is, indeed, worth learning.

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Reading Online, www.readingonline.org
Posted July 2000
 ISSN 1096-1232

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
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