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Learning in Context with Technology



Perhaps one of the greatest benefits of the VSTE Edge is its ability to communicate potentially valuable web-based resources for educators like you who likely don't have enough free time to scour the Internet looking for professional development support. There is certainly no shortage of material on the web that COULD have a positive impact on your professional practice. In fact, as of this writing, Google [<http://www.google.com/>] lists over 4 billion unique web pages in its searching database, and there is no doubt that one or two of these pages might actually present resources that could help you grow as an effective professional educator. But where is a good place to begin looking? What words might you type into a search, or what topics might you select when browsing a popular education information site [i.e.: <http://www.newhorizons.org/>]?

Some people might agree that the best way to begin looking for useful education material on the web is to formulate a definite question in advance, such as: "Are there free gradebook programs I can download?" or "Has somebody created an excellent lesson plan that integrates the viewing of 'Spiderman 2' into a standards-based math lesson?" or "I wonder what education-related jobs outside the classroom are posted RIGHT NOW at <http://www.monster.com/>?"

Although a web-accessible grading programs and lesson archives may prove to be valuable resources for some educators hoping to improve classroom management and instructional planning responsibilities, there may be a more useful perspective to adopt when looking at how a rich resource like the web might help teachers improve their practice. Among the billions of web pages, there exists many examples of different ways in which the web has helped some educators invent, or reinvent, *innovative* and *creative* ways of designing effective learning environments. And one thing you might notice about these examples of "reinvention" is that they have one very important factor in common: *context*.

This issue of the *VSTE Edge* presents resources for educators interested in taking a closer look at how web-based resources might help improve instructional practice by supporting the development of contexts for learning skills within meaningful and purposeful environments. It represents a slight departure from the previous issue of the Edge because the links for educators reflect the theme of "Learning in Context with Technology," and the table of links is presented in conjunction with a brief article about technology-supported contexts.

As always, we actively encourage submissions to the Edge that our readers, primarily K-16 teachers in Virginia, will find useful. To submit materials, send an email to edge_submissions@vste.org. If you would like to become active with VSTE in other ways, please be sure to read the "[Get involved with VSTE](#)" note presented in the previous issue of the Edge.

Announcements

Teaching Cyber-Ethics to Students: "What Do You Mean COPYRIGHT Does Not Mean I Have the Right to Copy?" by Diane DeMott Painter [\[article\]](#)

Redesign of a CADD Facility to Nurture Interactivity by Robert Cobb , Jr., Arjun Kapur, Craig Rhodes, Elinor Blackwell [\[article\]](#)

Planning Successful Implementation of Assistive Technologies by Glenna Gustafson [\[article\]](#)

Usability and Accessibility in Virginia Division Websites by John Hendron [\[article\]](#)

What Makes Educational Software Educational? by Keith E. Polonoli [\[article\]](#)

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Learning in Context: Web-Based Examples of Meaningful, Purposeful Technology-Supported Contexts

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"To them, I said, the truth would be literally
nothing but the shadows of the images."

Plato, *The Republic*

Plato's allegory of the cave in *The Republic* has always spoken to me as an enlightening story related to the teaching and learning enterprise. If you recall, the dialogue within the allegory reflects upon a scenario in which residents of a cave (prisoners) are physically restrained so that they can only perceive the world around them by viewing the wall of the cave directly in front of them. All activity in the "real world" is represented as distorted, shadowy movements on the wall. Perceptions of the wall become the reality and truth for the prisoners. When given the opportunity of release, the cave inhabitants presumably experience great difficulty making sense of the reality outside the cave. Prisoners, caves, distorted reality. No wonder I find this story applicable to education! But it isn't the notion of students (or teachers, for that matter) as prisoners in a confined area that I find professionally inspiring; rather, it reminds me that the realities of the instructional world of the student are strongly defined by the direct experiences they have within the instructional experience itself. Although the information presented within instruction might relate to the realities of a bigger world outside the classroom, the context for learning anything inside the classroom is defined by the experiences...inside the classroom [or the textbook or the computer program: etc.].

For the sake of argument, I am defining instructional CONTEXT as all the factors external to learners that provide meaning for the messages they receive within their learning environment. These are the factors that influence and define what, when, where, how, why, and with whom individual learners learn from instruction. Of course, all instructional experiences have contexts, and all the external factors defining contexts are mitigated by those factors internal to learners that define how they prescribe meaning to information and events throughout the learning experience (i.e. previous experiences, cognitive abilities, and personal learning styles). But when a teacher designs an instructional experience, she/he is arranging the factors external to the learner that defines the context and subsequent instructional processes.

I believe those teachers using computers to define meaningful and purposeful learning contexts

have not only exploited the true value of technology in education, but they have no doubt improved their ability to facilitate the learning of worthwhile outcomes in the process. The following case illustrates my point.

All About AIDS [<http://library.thinkquest.org/03oct/01335/>] is a website developed by six junior high kids at two different schools in Pennsylvania and New Jersey. The site was developed as an entry for Thinkquest, an organization supporting annual website development contests for kids [<http://www.thinkquest.org/>]. All About AIDS presents information about AIDS, including medical facts, informative animations, and an interactive AIDS literacy quiz. This site was developed under the guidance of a teacher at one of the schools, and in order to accomplish the task of creating the site, the development team members needed to learn and apply a variety of skills in the area of AIDS knowledge, computers as tools of creation [web page development: computer animations, scripting, etc.], communication, cooperation, and project management. In the process of guiding the students toward successful project completion, I'm quite certain the value of computers as tools of creation and, consequently, learning was reinforced in the mind and practice of the teacher. Either that or she realized the amount of work involved in managing such an affair and she went running back to worksheets and early happy hours.

Creation represents one type of meaningful, purposeful context that computers can help define within a classroom environment. Other types of computer-supported contexts that can help facilitate the learning of a variety of worthwhile outcomes include simulations, problem-based learning, games and concept-mapping. And there are plenty of online examples available for teachers to help inspire new ways of looking at the role technology can play in the classroom. The following links menu provides access to a handful of web-based examples reflecting different types of instructional contexts defined, one way or another, by computers in the classroom. Each context type includes a brief description of the context, followed by annotated links to example websites.

[Note: Some of the information presented within the context types was obtained from Greg Kearsley's Theory Into Practice Database <http://tip.psychology.org>. This is an excellent resource for anybody interested in comparing instructional theories, strategies, and ideas! Also, most annotations were obtained directly from the corresponding websites].

LINKS MENU

- [Creation](#)
- [Real / Simulation](#)
- [Situation Exploration & Case-Based/ Story](#)
- [Research Problems & Problem-Based Learning](#)
- [Reference Exploration](#) (Treasure Hunt / Scavenger Hunt)
- [Games](#)
- [Storytelling](#)
- ["Big-Picture" Concept Mapping](#)
- [Discussions & Questioning](#)

Creation Contexts

This type of context provides opportunities for learners to create something.

ThinkQuest

<http://www.thinkquest.org/>

The ThinkQuest Internet Challenge is an international program for students ages 12 through 19. This challenge encourages students to use the Internet to create

information-rich Web-based educational tools and materials. Students form teams with their colleagues from around the world and are mentored by teachers or other adult coaches. In the running for scholarships and awards totaling more than \$1 million, student participants learn collaboration, leadership and critical thinking skills that help raise their level of education and technological expertise.

WebQuest

<http://webquest.sdsu.edu/>

http://www.kn.pacbell.com/ssi_includes/webquests.html

A WebQuest presents students with a challenging task, scenario, or problem to solve. The best topics include issues that are under dispute or that offer multiple perspectives. Current events, controversial social and environmental topics work well. Students begin by learning some common background knowledge, then divide into groups. Each student or pair of students has a particular role, task, or perspective to master. They effectively become experts on one aspect of a topic. Students must synthesize their learning by completing a summarizing act such as e-mailing congressional representatives or presenting their interpretation to the world.

Real/Simulation

These context types allow learners to make decisions in the development and/or subsequent operation of a real or simulated environment or situation. Simulations often try to replicate real-world environments.

Lego Mindstorms

<http://mindstorms.lego.com/community/missions/mission.asp>

We have a crew of geologists studying glacial movement in the Arctic. These men and women are highly mobile, taking scientific readings on the ground and checking for shifts in the ice flow across a diverse and often hostile terrain. To keep safe - and alive - they have to travel light and maintain a fast pace. We try to fly in supplies to them on a weekly basis, but the weather has often grounded the planes and held up the team's ability to move. We want to start using our new RCV's fitted for cold weather travel to deliver supplies and equipment to our crews during bad conditions. Your mission is to use your RIS 2.0 set to design, build, and program a simulation of an Arctic RCV supply mission.

ThinkerTools

<http://thinkertools.berkeley.edu:7019/>

ThinkerTools is a Newtonian force and motion simulation environment for the Macintosh. The ThinkerTools curriculum scaffolds scientific inquiry using both simulated and "real-world" experiments.

Situation Exploration & Case-Based/Story

Situation explorations and cases don't allow the learners to control parameters of the environment, but they can freely explore within a simulated or real environment or situation. These types of contexts are often "problem solving" in nature.

Case-based/story contexts present stories (fiction or non-fiction), and story elements such as characters, plot, setting, and conflict might be used as “anchors” or themes to help facilitate specific, discrete outcomes. Non-fiction story elements, such as collected and tabulated data, reflect elements of cases that are often used to help facilitate the learning of specific outcomes as well.

Jasper Woodbury Problem Solving Series

<http://peabody.vanderbilt.edu/ctrs/jsi/morejw.htm>

The Adventures of Jasper Woodbury consists of 12 videodisc-based story adventures (plus video based analogs, extensions and teaching tips) that focus on mathematical problem finding and problem solving. Each adventure provides multiple opportunities for problem solving, reasoning, communication and making connections to other areas such as science, social studies, literature and history.

The JASON Project

<http://www.jasonproject.org/>

The JASON Project offers students and teachers in grades 4 through 9 a comprehensive, multimedia approach to enhance teaching and learning in science, technology, math, geography, and associated disciplines. The project delivers its educational content through a print curriculum, videos, fully interactive Internet programming, and live satellite “telepresence” broadcasts in which students become part of real global explorations.

ID Case Event: Chronicles of Rocketboy

<http://curry.edschool.virginia.edu/go/ITcases/Chronicles/>

This 'case event' represents an imaginary case study in which a newly-educated instructional designer takes a job at a California company that provides computer-based special effects for film companies. The ID problems to be solved, as well as viable solutions, are embedded within the case itself. This case was designed to help instruct (and assess) instructional design skills.

BioQuest Cases

<http://www.bioquest.org/case99.html>

Resources for using complex, open-ended problems are presented as narrative cases to initiate student-centered investigation in biology are provided for classroom use.

Research Problems & Problem-Based Learning

In this context type, research problems (problems associated with a specific content domain) are presented to the learners, and they must use computer-based resources to help solve the problems.

Clear View Charter School Science Program

<http://glef.org/>

(type "Introducing Project Based Learning Clear View" into the search engine)

Clear View Charter School was originally featured in the George Lucas Educational Foundation's 1997 documentary film, Learn & Live. The original 23-minute video story follows teacher Jim Dieckmann's 4th/5th grade class as they research insects, create multimedia reports, and prepare questions to pose to entomologists at San Diego State University. Then, through a two-way fiber-optic connection to the University, students and scientists look at insect body parts together using an electron microscope. The interaction with experts helps Albert and Charles deepen their understanding of the scientific process.

Maricopa Center for Learning & Instruction PBL Site

<http://hakatai.mcli.dist.maricopa.edu/pbl/index.html>

This site presents a variety of resources and examples illustrating the nature of computer-supported problem-based learning environments. The site practices what it preaches, with the opening page stating: "You've come to this web site in search of some answers. But how do you find what you are looking for?"

Reference Exploration (Treasure Hunt / Scavenger Hunt)

Reference exploration contexts encourage learners to freely explore and access reference-type information. In a treasure hunt, learners are given a topic or concept, and they are directed to locate interesting information related to the topic. In a scavenger hunt, learners are given a list of interesting questions to answer.

NASA On-Line Resources

<http://education.nasa.gov/multimedia.html>

Although the entire Internet could fall into the reference exploration category, the NASA on-line resources represent a good example of a more specific body of knowledge that is accessible via the web. At this site, learners can explore images, sounds, movies, and other information related to the exploration and study of space.

Big Six Skills for Information Problem Solving

<http://www.big6.org/>

This site presents information problem-solving strategies for young (and not-so-young) learners. It also includes a variety of activities associated with information problem solving.

Games

This type of context usually engages learners in competition, cooperation, puzzles, or strategies, often for the sake of entertainment. Other contexts may employ this context because of the motivational advantages of games.

SimCity

<http://simcity.ea.com>

SimCity is a simulation program in which the user designs a city and then turns it loose to see if its population grows, thrives, and ultimately survives the many different challenges introduced (like natural disasters, disease etc.). Although this could be classified as a simulation, players can compete against other teams, and even introduce variables into their opponents' cities.

Storytelling

A storytelling context encourages learners to construct and communicate fiction and nonfiction stories. This context type is presented separately from "creation" contexts simply because the act of storytelling falls somewhere in-between creation and communication.

Stories.com

<http://www.stories.com>

This Web site enables users to create a free account and post a story.

Blogger.com

<http://www.blogger.com>

The word "blog" represents the abbreviated form of "Web log." A Web log is a Web site designed to communicate information in diary fashion by presenting text and picture posts according to the day they were posted. Blogger.com allows users to create free accounts and develop easily-updatable "blogs" within minutes!

Fan Fiction

<http://www.fanfiction.net/>

This site is designed to allow fans of novels/books/stories/characters to write stories of their own based on existing characters and stories. FanFiction.Net provides writers and readers with a place to post and read stories, review stories and to communicate with other authors and readers through forums and chat rooms.

"Big-Picture" Concept Mapping

This context type encourages the learners to create conceptual "Big Pictures" that represent the scope of particular content domains.

Inspiration

<http://www.inspiration.com/vlearning/index.cfm>

Inspiration is a software tool designed to help learners construct concept maps or "mind maps" depicting their understanding of a particular issue or topic. This Inspiration site presents background information on the benefits of concept mapping, and it portrays a good sampling of different types and applications of concept maps creating with the Inspiration software.

Discussions & Questioning

Discussion contexts are simply environments in which a moderator presents or facilitates the articulation of topics to be discussed by the learners.

A moderator can also direct questioning strategies specifically designed to challenge and uncover depth. Playing Devil's Advocate, answering questions with questions, the Socratic method of questioning, and redirecting questions to different learners represent various strategies that can be employed.

Kidlink

<http://www.kidlink.org/>

Kidlink is a non-profit grassroots organization working to help children through the secondary school level be involved in a global dialog. The work is supported by 83 public mailing lists for conferencing, a private network for Real-Time Interactions (like chats), an online art exhibition site, and volunteers living throughout the world. Most of our volunteers are teachers and parents. Since the start on May 25, 1990, over 175,000 kids from 137 countries on all continents have participated. Their primary means of communication is electronic mail (email), but Real-Time Interactions (like "chats"), various types of web-based dialogs, ordinary mail, fax, video conferencing, and ham radio are also being used.

Knowledge Forum

<http://www.knowledgeforum.com>

Knowledge Forum is an electronic group workspace designed to support the process of knowledge building. With Knowledge Forum, any number of individuals and groups can share information, launch collaborative investigations, and build networks of new ideas? together.

This type of tool could probably be used within any of the different context types presented in this table, but it is included in the "Discussion" section because its principal feature is to promote the sharing of ideas between learners.

Yahoo Groups

<http://groups.yahoo.com>

Yahoo groups represent online communities designed by the members of each group. You can create your own group and allow specific members to join. Electronic bulletin boards are the most prominent feature of an individual group.

Students and teachers involved in computer-supported learning experience need different types of support throughout the experience to ensure its success. In the next issue of the *VSTE Edge*, we would like to include some specific ways in which computers can be used to help provide support for teachers and learners throughout the instructional design and implementation process. If you have some specific resources, ideas, and/or examples of ways in which you have used computers to support the implementation of meaningful learning contexts in your own classroom, pass them along to us! edge@vste.org

VSTE Membership Records can be updated online at:

<http://www.vste.org/community/membership.html>

