# Learning Adventures: A new approach for transforming real and virtual classroom environments

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*In order to model constructionist non-coercive educational practice, I coined the term, 'learning adventure,' to replace 'assignment' in describing classroom activity. Assignment connotes a requirement to be endured regardless of personal taste, experience, aptitude or motivation. 'Learning adventure' implies excitement, challenge and personal benefit. It is for you; an assignment is for the teacher. This seemingly simple rhetorical shift has had a profound impact on the spirit and effectiveness of my tertiary and P-12 teaching.*

*Details of learning adventures are deliberately absent from syllabi since the element of surprise is critical for open-mindedness or risk-taking. The objective is for students to embrace the experience, learn all they can, share their work with peers and reflect on the experience even if outside their 'comfort zone.'*

*The emphasis of the learning adventures is on the learning process while traditional assignments focus on product. My students provide constant formative assessment, expertise and assistance to their classmates since they are in the same virtual space around-the-clock and because their work is public. The teacher's role shifts from one of judgment to one of supporting each learner. Even face-to-face classes benefit from non-coercive open-ended transparent learning adventures. Critical factors of learning adventures will be presented as well as their theoretical foundations.*

## Learning Adventures

Faculty in Pepperdine University's Online Master of Arts in Educational Technology (OMAET) program work hard to model progressive educational practices that stress experience, personal meaning, intrinsic value and application. Coursework, student expertise, topics and activities continue to change based on the availability of new technology or faculty desire to enhance the learning environment. After seven or eight years of teaching in OMAET I was inspired to improve my *Technology and Learning* course in two ways. From a content perspective, I grew concerned that students enjoy diverse and rigorous learning experiences with computers. Without such a course correction, I feared that students would only use technology for communication purposes without gaining a personal sense of the ways in which can learn by constructing knowledge with computers across a variety of domains.

My second goal was to remove any aspects of behaviourism or coercion from my teaching. Therefore, my primary goal for the course was for students to be active participants in the learning community. Students do so by sharing ideas, asking questions, participating in discussions—regardless of whether it was initiated by a professor or peer, by taking risks and by being reflective in their practice. Many students do not appreciate the value of project-based learning and need to experience such learning in a personal context.

I encourage students to strive for precision in their use of language and I attempt to do the same. Therefore, I do not use the term, *assignment*, in the course or its materials. I referred to what students were to *do* as *learning adventures.* This deliberate semantic shift favours the spirit of learning for intrinsic reasons to the notion of an assignment upon which students would be judged. Learning adventures encourage students to jump in over their heads, take risks, have fun and think about what they learn along the way. Learning adventures take a week or two to reach a point of 'completeness' at which sufficient reflection is possible. Many of the adventures could last a lifetime, but seven to fourteen days is adequate for students to overcome technical hurdles, enjoy an experience and reflect

upon it. In the spirit of constructionism, each adventure affords students with opportunities to construct knowledge through the conscious act of making something shareable. Students are encouraged to use the class forum (asynchronous discussion boards) to post questions, strategies, resources, triumphs and disasters. Each represents opportunities to contribute to the knowledge of the community of practice.

## A Learning Adventure

Space constraints and the continuous changes in course content make it is impossible to detail every learning adventure. The examples provided should be sufficient to capture the spirit of this approach. The first learning adventure introduces cognitive dissonance. Each student is asked to download Finale Notepad, free music composition software and compose a piece of music in five days. The only additional detail provided students was arbitrary. A student asked, 'How long does the composition have to be?' I replied, '12 bars.' I was purposely vague, as I wanted the students to discuss and define all aspects of the project through forum communication. I of course would respond to any question asked of as long as I had the ability to answer it. Some students have never read a note of music; while others studied music theory for years. Neither teacher or students could have known about specific expertise prior to the experience.

Finale Notepad has the benefit of being free, cross-platform and based on traditional music composition—dragging notes and rests onto a staff.

Within five days *every* student composes a piece of music, some better than others. Some students use modern techniques from chance and serial music, while others struggle to assemble something simple that sounds good. Other compositions feature multiple instruments, harmony and counterpoint. Students listen to each others music during the composition process since the files are shared and all of the finished masterpieces are published online.

During the reflective discussions about individual learning processes, students have reported how useful it was to use the Internet to lookup information, ask each other questions, define terms, seek help, read manuals and share their work. All of these observations are accurate and important. However, students rarely, if ever, recognise that they were *composing music*. A few years ago, only freaks like Mozart or people with an elite education could be composers. Despite music being so important to society, the creation of music is off-limits to most people. The microcomputer and software like GarageBand is changing that by lowering the barrier to participation and allowing a form of bricolage that can lead to formal understanding and art making. Each of my students 'do' the work of a composer with no formal instruction. They merely rely on the intelligence and generosity of their community, plus the role the computer played in the mediation of their own thinking. Personal music compositions may then be used in other presentations, videos, radio broadcasts and multimedia projects. Such is the nature of computer-facilitated media convergence.

In addition to the computer supporting students in becoming composers, this learning activity models the power of distributed expertise. It is indeed possible to learn, even complex processes, without being taught. Such a provocative experience sets the tone for future learning adventures.

## Other learning adventures

Since there is no better way to understand Seymour Papert's learning theories related to the powerful ideas introduced by computers, my students spend time learning and creating with MicroWorlds EX, the latest generation of programmable parallel-processing multimedia environments built upon the Logo programming languages. Working in MicroWorlds EX provides concrete experience with the powerful ideas discussed in Papert's book, *The Children's Machine,* one of the course texts.

Often, the first Logo learning adventure is a twist on a classic Logo activity, quilt making. Each student is provided with one procedure that commands the turtle to draw a square. The challenge is to

use the turtle to illustrate within that square and make a patch for a screen-based quilt. This adventure offers students experiences with turtle geometry, procedure writing and simple programming.

MicroWorlds EX lets users place programs, objects and variables in the 'backpack' of a turtle. That turtle is then exportable and may be emailed to another user or used in other projects. That shareability reinforced the theme of sharing that was so important to constructionism and social learning theory. Turtles could be posted online in the forum and then assembled by students to create an infinite series of quilts. Many students exceed expectations.

Student desires to learn more sophisticated 'tricks' for enhancing their quilt patches are be catered to upon request and questions answered. Students routinely inspire their peers' thinking upon posting their quilt or patch. Students are able to experience the learning of powerful ideas from mathematics and computer science in a collaborative context that supported the learning philosophy of OMAET while offering authentic experience with Papert's theories. I also model a style of teaching that did not rely on lecture, predictable outcomes or the centralised expertise of the teacher.

A subsequent learning adventure requires students to program their own video game. A tutorial is provided as project scaffolding. Students all create working video games, a notion few could have anticipated when the course begun. Many exceed expectations, such as the students who figure out how to publish their interactive video games on the web. Once again students demonstrate a mastery of animation, probability, logic, variables, velocity, feedback, parallelism, collision detection and a host of other powerful ideas by using MicroWorlds EX to create an artefact, the video game, held in high esteem by the culture.

Another MicroWorlds EX project uses the software as a laboratory for exploring a number theory problem known as the Hailstone or Collatz Problem (it is known by several other names). This is a problem third graders can explore and professional mathematicians continue to find fascinating. The MicroWorlds EX tools provided serve as a lab assistant that allows each student to test a hypothesis, collect data and represent it in several ways. The tools and names the problem is known by is shared with students. They are expected to share their hypotheses online and then attempt to disprove the hypotheses of their peers. Some students endeavour to alter the underlying programming code in order to modify or enhance the available tools. Others researched the problem up online and discovered that although simple on the surface, it represents the frontiers of mathematics. One of my classes extended the activity by contributing PowerPoint slides detailing their mathematical observations and hypotheses to be combined in a virtual mathematical conference. Students may draw pictures or use recorded speech to explain their mathematical thinking if doing so with words proves too difficult. This project reinforces the notion that there are many ways to learn and express your knowledge, even in domains normally considered to sophisticated or inaccessible. Students come to recognise the concentric communities of practice they engage in every time they learn something new.

Other learning adventures include an exercise using the Web to answer politically-charged open-ended questions with subjective information on all sides of the issue, exploring the solar system with the open-source simulator, Celestia, (www.shatters.net/celestia/) and podcasting. Podcasting is an Internet phenomena that became popular in 2004. It allows anyone to broadcast audio programs on the Internet in a subscribable format that automatically installs on an iPod or other portable audio device. News of podcasting represented an opportunity for our students, all non-programmers, to get in on the ground floor of a new creative movement made possible by emerging technology. Within hours of presenting my classes with the challenge of producing a podcast, students had succeeded at doing so. They then shared their newfound expertise with their peers. Since then, learning adventures have continued to take advantage of student interests, news of the day or emerging technology, such as the read/write tools known collectively as Web 2.0. Such technology also offers new platforms for enhanced collaboration and project sharing. It also models learning to learn with new tools and in foreign contexts.

## Essential elements of the learning adventure approach

### Surprise

An element of surprise is critical to the success of learning adventures. If I were to list the upcoming adventures in advance or publish them in a course syllabus, students would react in peculiar ways. For example, announcing that students would compose music or 'solve' an unsolvable number theory problem would cause some students to panic, others to drop the course—while others hired a tutor. The relatively short duration of learning adventures ensures that if you find a particular challenge unpleasant, a new one more likely to suit you will be forthcoming

### Product is subordinate to process

The final product is not nearly as important as the learning process. Students provide so much peer feedback on product that may be unnecessary for the teacher to do so as well.

### Socratic teaching

The teacher keeps the conversation going, asks probing questions, makes suggestions throughout the development process and points students to appropriate resources during the learning adventure.

### Distributed expertise

Creative, mechanical, technical and intellectual expertise is distributed throughout the learning community and provides support and inspiration for peers engaged in a common learning adventure. The teacher is not the dominant expert and relies on the talent and knowledge of her students.

### Flexibility

If a learning adventure takes an unexpected turn or morphs into a more grandiose effort, there must be flexibility allowing students to take the time they need to learn, build, grow and reflect.

### Reflection

Students need to be self-aware of their own learning experiences and feelings while engaged in a learning adventure in order to share those insights with their peers and gain benefit from the collective learning experience.

### Technology as building material

To quote Seymour Papert, (Stager 2007) 'If you can make things with computers, then you can make a lot more interesting things.' Since construction is at the heart of this constructionist approach to learning, computers afford a wider range of learning adventures.

### A good prompt is worth 1,000 words

A pedagogical theory has evolved out my development of the learning adventure concept, as well as my research with at-risk learners. I call this theory, 'a good prompt is worth one thousand words.'

With:

- a good prompt, challenge or motivating problem
- appropriate materials
- sufficient time
- a supportive culture

students may learn and do things at a level of sophistication they never imagined. The learning adventure examples shared in this project support this theory.

## Educational philosophy underlying OMAET

Learning adventures embody the philosophical foundation at OMAET. Many online learning efforts are based on delivering repurposed content to students via the Internet. Communication, collaboration, community and construction are afterthoughts graded onto modern correspondence courses. Despite the low-level interactivity that accompanies clicking the mouse and checking email, there is little interaction between the hearts and minds of learners. We at Pepperdine believe that the regular exchange of ideas between colleagues and is more critical than the highly touted information at your fingertips or the potential to manage large numbers of students electronically.

OMAET is built upon the social learning theories of Vygotsky, Lave, Wenger, Piaget and Papert. The cadre acts as a community of practice in which expertise is distributed, knowledge is shared and where work is collaborative. Learning is less about being told something—instruction, than making connections between ideas, resources and experiences—construction.

> Seymour Papert's constructionism/instructionism dichotomy offers a lens through which to view the future of education—real and virtual. Papert coined the term, instructionism, to describe the educational philosophy and related practices based on the notion that you improve education by teaching better. Portals, web quests, instructional management systems, computer-assisted instruction and most online courses are artefacts of instructionism. Instructionists over value content and make the learner the target of instruction. Distance learning is instructionist in nature. Distributed learning is constructionist. (Cannings and Stager, 2001)

'Constructivism is the idea that knowledge is something you build in your head. Constructionism reminds us that the best way to do that is to build something tangible—outside of your head—that is personally meaningful' (Papert, 1990). In subsequent writing, Papert says that knowledge is best constructed in a social context where the participants make something shareable. OMAET is also about sharing. Ideas, strategies, resources, tips, tricks, time, attention and personal work are shared in order to enrich the entire community. The knowledge acquired in the community of practice that is the cadre is often shared with the wider community in which the student works and lives. Notions of overlapping communities of practice are central to the learning theories laying the foundation for OMAET and are reinforced through the practice of OMAET.

> Knowledge that is more or less explicit can be embedded in procedures or represented in documents and databases and transferred with reasonable accuracy. Tacit knowledge transfer generally requires extensive personal contact. The 'transfer relationship' may be a partnership, mentoring, or an apprenticeship, but some kind of working relationship is usually essential. (Davenport, p. 95)

### The OMAET curriculum

OMAET courses include: Educating Today's Learner; Technology and Learning; Curriculum and Technology; Mentoring and Team Leadership; Managing Technology in an Educational Setting; and The Practicing Professional. While these courses all use technologically, none of them is built upon a particular technology. Such an approach would be both technocentric and short-sighted. In the world of academia, a course on designing web pages created in 1996 might be in the course catalogue for decades despite subsequent technology making the process trivial or the lack of intellectual substance inherent in the topic. It has been our informal experience that entering students possess nearly the technological fluency of our recent graduates. This fluency is viewed as a gift that allows us to focus on more powerful ideas and make technological concerns more transparent.

Course content, activities and assigned texts change constantly in OMAET as a result in shifts in practice, emerging technology and particular faculty expertise. In the age of the Internet, articles from

the Web and new texts emerge rapidly and need to be considered by informed scholars. Despite occasional changes in course content, title and syllabi, the structure of OMAET continues to flourish ten years after its creation. Such success may be attributable to the flexibility of the program structure, the autonomy granted faculty and the ongoing role students play in the evolution of OMAET.

## Conclusion

Not every student responds to each learning adventure with the same enthusiasm or finished product, yet every student benefits from the learning associated with using technology to engage in serious intellectual endeavours. By the end of the course, every student had a working understanding of constructionism and used computers in ways they may never have imagined. As Papert suggests in *Mindstorms*, students learned to think mathematically, because they did the work of mathematicians while immersed in a mathland. They are composers engaged in the timeless tradition of music composition and they explored the solar system while wearing fuzzy slippers. All of this is made possible by applying constructionist learning theory in an online community of practice that produced enough stimuli, support and expectations of reflective practice to assist students to learn about learning while learning to do wondrous things. This work offers inspiration for other virtual learning environments as well as more traditional classrooms. If learning adventures represent a viable approach in the online world, its pedagogical lessons are even more relevant for physical classrooms. The success of learning adventures with mid-career professionals leads to its viability as an approach with children. Enhancing the learning environment, increasing engagement, reducing coercion, augmenting collaboration, focusing on mindful process and relying on peer review represents progress in any educational setting—real or virtual.

The world is full of powerful ideas, exciting challenges and amazing things to learn. Distributed learning communities and computers offer a magic carpet for realising our intellectual and creative potential.

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