Teaching, technology, and the modern classroom

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Abstract

One of Zayed University's publicly articulated missions is to lead higher education in the United Arab Emirates through teaching, learning, research, and outreach and to achieve this leadership in a technologically advanced environment. In fulfilling this goal, the university actively promotes laptop computer use among faculty, staff, and students; delivery (and completion) of lessons though advanced technology; use of sophisticated software; and information gathering via the Internet. (See Moore, Moore, Bodwen, Coasdale, 2003.)

Though the hope is that information technology can add a powerful punch to the modern educational environment, many educators in the United Arab Emirates have found that it is the proper use of available modern technology rather than the presence of that technology that advances learning. Even longtime favorites pencil and paper and the overhead projector still have a place in the well-rounded modern classroom. Whether old or new, each technology has unique qualities (or "affordances") of which advantage can be taken.

Creating a classroom environment

In 100 plus hours of video-taped interviews, focus groups of college department heads, and 200-plus surveys with student respondents conducted during 2003, long-time teachers at a dozen plus institutions of higher learning and students at two universities in the United Arab Emirates discussed what brought a classroom to life and what made that classroom more effective. Both groups agreed that information technology (IT) could successfully contribute to two ends: creating a blend of classroom materials and delivering those materials in multiple ways. Educators believed all available tools, including IT, should be taken advantage of, but they also believed that IT use must be carefully conceived so that sound educational values drove the learning experience. Both believed that an engaging, productive classroom resulted from more than excited electrons.

As a beginning point, they advocated incorporating English-as-a-Foreign Language (EFL) and English-as-a Second Language (ESL) into comprehensive course- and - lesson planning. That was because principles embedded in these approaches helped them communicate the material with which they were already expert. Many encouraged mandatory pre-classroom ESL and EFL training for all uninitiated new hires.

UAE teaching veterans also found that properly structuring the classroom environment helped squeeze the most from precious class time and maximized the potential for good learning experiences. To facilitate structure, they developed routines making what they were doing, why they were doing it, and how they were doing it absolutely clear. At the beginning of each class period, they highlighted the day's objectives, fully explaining the what and why of what was being done. Both the assignments and their assessments were simple and understandable. Long timers and students alike believed that graduated and scaffolded exercises helped in building confidence. By taking small, successful steps, students could build from one achievement to another. By moving from achievement to achievement, each student could develop a greater sense of self worth.

Vocabulary development was integrated thoughout the learning process. That was because most students were simultaneously learning the subject manner and the vocabulary of that subject matter. Students asked that instructors speak slowly and reiterate both the vocabulary or the concept in different ways – and often. Used property, appropriate and meaningful Project Based Learning (PBL) drew together vocabulary and concepts in real-world ways, creating Dewey's authentic learning experiences. Students demanded examples of expected project output.

Because students in the United Arab Emirates are similar to contemporaries living in media-rich environments elsewhere, incorporating activities that changed the pace of the classroom kept the environment stimulating. Even so, the sequence moving from one activity to another needed to be logical. A human-interest angle helped make connections, and, if students could be coaxed to provide their own examples, a culturally appropriate "examples diary" could be built up term by term for future use. Getting these contributions made students part of the classroom. Putting them in front of their classmates with short oral assignments such as teaching part of a lesson developed spoken English-language skills and poise. Building an environment of trust in which students cooperated was facilitated by simple things, including learning who they were, pronouncing names, saying a few basic Arabic phrases, and using appropriately timed public praise as a motivational tool.

Because students were polite or embarrassed (or both) they sometimes refrained from asking questions or challenging information. This lack of candor made it difficult to ensure that students grasped the subject matter. Sometimes they indicated understanding of a concept when they actually didn't. So checking early and often, then adding simple explanation to clarify what was missed became a vital part of each classroom session.

To promote critical thinking in the classroom, processes such as group investigation and jigsaw groups promoted open-ended, cooperative learning. Making real-life issues and problems that they could research and discuss with a clear statement of expected outcomes and a sample helped. Daily journal writing was a tool to gradually improve writing skills.

How can technology help?

Properly designed, learning materials inspired by modern technology and delivered by modern technology add value to a teaching environment in which contact hours are limited. But balancing between the potential of technology and the careful grooming and attention students sometimes require is critical. Technologically inspired teaching materials should create a "cognitive apprenticeship" and use story telling to convey messages in powerful, attention-getting ways. They should help develop underlying thought processes such as critical thinking, analysis, and problem solving. Technology can do other things as well. New materials delivered via the Internet that help with the repetition necessary for developing reading, writing, and listening in English can eliminate drudgery for educators and can be entertaining. Because of

their lifestyles, entertainment value is a key consideration for students in media-rich environments whether they live in the United Arab Emirates or elsewhere.

Educators described rich-text materials (materials combining multimedia such as audio and video among others) as potentially "enriching," "experiential," "flexible," "fun," "powerful," "self-paced," and "time saving." They also believed that properly used technology could "further critical thinking and independent learning," expand "individual exploration," "shift some of the learning out of the classroom," "expand time for other classroom activities," "liberate (student and teachers alike) from the mundane," create an environment of "learning, experimenting, doing, and enjoying," and level "the playing field between public and private schools."

Sample suggested projects included:

- Cutaways, diagrams, and animations to explain how things work
- Dictionaries with English and Arabic pronunciations to help students learn English at their own pace
- Dry labs that help produce reports and practice with research statistics
- Geography games or visual walks about the country, the GCC, and the world
- Interactive scenarios with multiple outcomes
- Numeracy packages with games to develop basic mathematical skills
- Simulations showing how something works or how something is done
- Virtual mentorships and job shadowing to show modern career paths.

Using new technology

Many courses can combine old and new technologies and thus create a more effective and dynamic classroom. The successful combination of old and new means blending the delivery of class materials and creating "rich-text materials". Blending delivery is delivering educational materials in multiple means, including textbook, online Learning Management Systems, the Internet, the Intranet, and CD ROM. Rich-text materials are those that combine multimedia such as print, audio, and video into one well thought out and designed package. With careful consideration, each educational technology can be used for what it does best.

That is because both blending and creating rich-text maximize the *affordances* of a technological medium: what the medium offers, what it provides, what it furnishes, and what it invites. For example, paper offers several common affordances. Paper is thin, light, porous, opaque and flexible. That means you can write on it, fold it and bind it. Digital technology offers several unique affordances too. It is dynamic, keyboardable, and can manage large amounts of information. That means you can create interactivity and dimensionality and can simultaneously appeal to more senses than paper.

Because of complexities and the need for expertise, educators should not be expected to create solutions on their own. While they should be familiar with the technology and the software that powers it, they are not full-fledged technicians and should not be expected to be. Because of workload, lack of dedicated time, and occasional technological intimidation, educators should partnered with others in "production cells" to author rich-text material and to determine means of delivery. Some who have had success in integrating multimedia into course structures have found that these production cells should include a content expert, an instructional designer, and a software expert. The content expert (teacher) develops the objectives, thinks about the skill set and knowledge, and the values and ethics. The instructional designer helps define what

activities are best done with what technology. And, the software expert assembles the package. This, then, is very much a collaborative effort.

Using Bloom's Cognitive Taxonomy adds structure to the process of identifying what affordance works best with specific delivery system and materials. Learning experiences such as comprehension and knowledge that are at the lower levels of Bloom's Taxonomy do not require face-to-face interaction with a teacher. These learning experience can be served by self-paced, stand-alone technological solutions that students can use on their own. These stand-alones might include dual-language speaking dictionaries, numeracy packages, animated how-too illustrations, or basic readings with links.

More involved learning experiences at the top of the taxonomy such as evaluation, synthesis, and analysis probably require guidance in the form of directed threaded discussions over an online Learning Management System or face-to-face sessions in the classroom. While preparation can be done outside the classroom, analysis and synthesis of a concept ought to be done in an active, direct learning session. By using technology efficiently, valuable classroom can be preserved for higher-order processes. Properly motivated and self-disciplined students should be able to learn lower-order elements on their own while the more experienced partner (the teacher) can provide the scaffolding of subject matter to support the student's evolving understanding.

Developing rich-text materials and identifying suitable means of delivery is part of a organic procedure that moves from a specific list of recommendations, to design, to testing, to finished product. This procedure recognizes that limits exist. This means envisioning your project in terms of must haves, should haves, and things that would be nice to have.

Creation requires identification of key course concepts first; then considering how those concepts can be best communicated. This is vital because knowing something is quite different that different than communicating it. After concepts come examples and determining which elements teach which concept the best. Practicing the course one semester beforehand is helpful because developing rich-text and making them available for delivery in multiple ways is labor intensive.

Getting from inspiration to creation to finished product involves several steps. A technological inventory looking at who has done what, who is planning what, and who would like to do what across the campus is a good beginning. This will help identify working groups. Creating a strategic plan with a timeline that is based upon an understanding of technical requirements, materials requirements, the pedagogy, and the students and their needs is very much part of the process of invention as well.

Because ZU students have uneven educational backgrounds, life experience and English language facility, experimenting with techniques that provide learning support is critical. A Blended Learning course at Zayed University should consider second language and foreign language learning issues that affect students and faculty alike and must seek ways to balance available media against classroom needs. This will help in determining which concepts to illustrate and which active learning techniques should be used. Some readings may need to be re-written to minimize readability difficulty. Words that could be difficult for students can be linked to an on-line dictionary providing extra information and pronunciation. Concepts needing further explanation can be linked to back-up resources explaining (and when appropriate) visually demonstrating those concepts.

Conclusion

Developing and managing an effective classroom in the United Arab Emirates is the product of several fundamentals. These include incorporating the best practices of ESL and/or EFL into the classroom; creating a lesson structure and planning that explains the who, what, where, when, how and why of what is being done; and utilizing the affordances of appropriate technologies to enhance the delivery and presentation of classroom materials.

In doing this, educators must remember that developing rich-text materials with audio, video and text presents challenges. On the most basic level, rich-text authorship is unlike traditional authorship because it incorporates cutting-edge technology that requires multiple skill sets. The need for multiple skill sets means that authors must either learn those new skills or that creation must reside in authorship teams. In the latter case, each member contributes specific technological skills.

Despite some obstacles, rich-text materials offer both pedagogical efficiencies and cost savings. Pedagogical efficiencies include ease of change and customization in attention-getting, engaging packages. Cost savings include reduced "replication" and distribution costs, and elimination of all middle man (bookstore) costs. Besides traditional "book purchase" revenue, commercial possibilities include sponsorships with media, software, and hardware companies; licensing agreements; and module-based packaging for continuing education. Because of inherent flexibility, a rich-text can be customized for each class room or for each student as educators pick and choose among the various modules.

Advantages exist for students and educators alike. If designed carefully, students will find that these materials engaging and intuitive and that they combine methods that help them learn best. Educators will find that these materials help them with their educational tasks and can help develop an organic, continually growing resource library for others to use. Because students find them more attractive, rich-text materials facilitate self-paced individualized instruction and remove repetitive and redundant tasks from the classroom. This means that Vygotsky's (1978) inner thinking during which an individual can processes information on her own can be done by students on their own thus reserving the previous available classroom time for interaction with others through discussions, questioning and other critical thinking processes.

References

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