CENTER FOR LEARNING & TEACHING
NEW CHALK TALK
April 18, 2012
Vol. 11, Issue 10

Visual Thinking in the Classroom (4)
Digital Narratives: Preparing students to be digital authors – PART 1

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NOTE: In this newsletter and the one that follows, we will be sharing our experience with Digital Narratives as a way to engage students with the process of science. However these projects are multi-disciplinary by nature and can be used in any discipline. The only limit is our own imagination

Avraamidou, and Osborne[1] in their paper "The Role of Narrative in Communicating Science" have argued that scientists need to "explore new modes of communicating science" and that by using narratives, science could be made more "meaningful, relevant and accessible to the public". To support their argument they quote Lemke[2] as saying

"In teaching the content of the science curriculum, and the values that often go with it, science education, sometimes unwittingly, also perpetuates a certain harmful mystique of science. That mystique tends to make science seem dogmatic, authoritarian, impersonal, and even inhuman to many students. It also portrays science as being much more difficult than it is, and scientists as being geniuses that students cannot identify with. It alienates students from science"

After several semesters of teaching "Scientific Thinking" we are still struggling with a similar bias towards science on the part of non-science students.

The goals of the Scientific Thinking course are ambitious: as part of their liberal arts education, we want students to know how scientific knowledge is generated and validated, what kinds of questions are asked about nature, what kind of evidence is acceptable, and how hypotheses are tested against experiment and observation. In the process, students learn how test results are evaluated and how to distinguish between good science, junk science and pseudo-science. In short, our goal is to have our students acquire the scientific (critical) thinking skills necessary to make informed decisions on scientific and non-scientific matters as citizens or in their personal lives.

And these are just the objectives of one third of the course. The rest of the course is devoted to the knowledge accumulated about the natural world, with specific emphasis on important theories such as the Big Bang theory, Evolution and DNA etc. To avoid alienating students from material that may seem irrelevant to their everyday life or chosen careers, the material/concepts are designed around seemingly simple questions: "Who are we?" "How did we get here?" "Where are we in this Universe?" (See Canfield's "Intelligent Redesign: A collaborative Approach to "Scientific Thinking"[3].)

Continuous assessment of the course revealed to us that, although students "understood" these theories and could answer exam questions well, they had no appreciation of the process of science. To Dr Mostafa and me, who are instructors of the course, something was missing. We wanted our students to encounter historical figures, to follow the growth and demise of certain scientific theories and most importantly to see how science develops. How could we do this, in parallel with the course material, without assigning a book to read (God forbid) or without adding "content" to a syllabus that is already overloaded with "content"?

The answer to this was through the class project, an important element of the course through which we try to impart some of the 21st century skills (visual literacy, information literacy, technological skills, peer collaboration, effective communication etc) that educators have recognized learners need in order to thrive in a digital world and a digital economy[4]. Having experimented with different multimedia projects in the past we settled in what turned out to be a successful formula.

Taking our cue from such experts as Lippincott[5] (who has argued that we need to prepare our students to be digital authors), and partly inspired by such innovative practices as that of "Born digital" (presented at an Educause conference[6]), we settled on a digital narrative project which we used in conjunction with the collaborative nature of wikis.

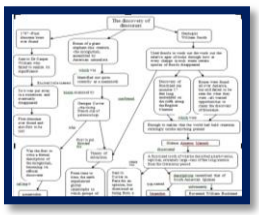
So What Is A Digital Narrative? The simplest definition would be that of "story telling that uses digital technologies". It can take the form of a short movie, a narrated power point presentation, or any other digital medium

which could relate an argument, an analysis or an exposition. The topics can range from personal tales to the recounting of historical events, to reflecting on community-based learning experiences etc. The assignment could be made as academically rigorous as any traditional paper, and the level of difficulty would be determined by the individual instructor.

Our class projects consisted of having our students work in groups and create a digital multimedia representation of a text about science and scientific discovery. Specifically the product was to be a 6-7 min video, and the texts chosen were chapters from Bill Bryson's *"A short history of nearly everything"*.

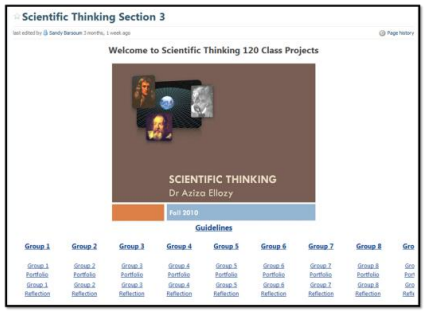
PHASE 2: CREATE STORY BOARD – RECEIVE FEEDBACK

PHASE 1 READ CHAPTER, ANALYZE AND CREATE CONCEPT MAP OR TIMELINE -

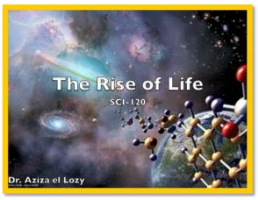


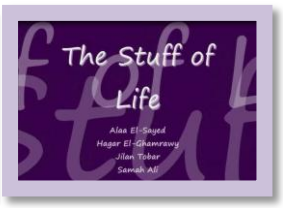
PHASE 5
SUBMIT REFLECTION PAPER

PHASE 3: CREATE VIDEO DRAFT AND POST ON CLASS WIKI



PHASE 4: ONLINE PEER REVIEW ; FINE TUNE DIGITAL PRODUCT





Concept maps and storyboards were to be submitted before the production phase and students would then receive feedback. The final products would be uploaded in a class wiki and students were to peer review the other groups' projects (It was much more engaging for students to watch their peers' videos than to read the book) In addition, a final individual reflection paper was to be submitted

At first students were a little overwhelmed: the chapters appeared to have too many details and many new concepts and events most of which they had never encountered before. How could they translate all this in a meaningful video using only images, narration and music? While creating any type of multimedia project (especially for the first time) needs scaffolding, the need was accentuated in this first year course. Hence a detailed timeline and grading rubrics were submitted to students with the various phases of the project outlined. A summary of these phases is outlined above.

TO BE CONTINUED IN THE NEXT ISSUE

Sources:

1. Avraamidou, Lucy, and Jonathan Osborne. "The Role of Narrative in Communicating Science." *International Journal of Science Education.* 31.12 (2009): 1683–1707. Print.
2. Lemke, J. L. " Talking science: Language, learning, and values." *Norwood, NJ: Ablex Publishing.* (1990): n. page. Print.
3. 21st Century Workforce Commission, *A Nation of Opportunity: Building America's 21st Century Workforce* (Washington, D.C.: National Alliance of Business, 2000), p. 4.
4. Canfield, Brandon. "Intelligent Redesign: A collaborative Approach to "Scientific Thinking". *New Chalk Talk Newsletter.* 9.5
5. Lippincott, Joan. "Student Content Creators: Convergence of Literacies." *EDUCAUSE Review.* 49.6 (2007): 16–17. Print.
6. John Palfrey. *Born Digital.* 2010. video. http://educause.mediasite.comWeb. 17 Apr 2012.