Design beyond content: Changing the focus of educational technology; an examination of the role or the anti-role of content in educational technology.

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It is clear many educators think "covering the content" is the most important aspect of the educational process, and this focus on "content" is really a focus on presentation and retention of information; the lowest level of Blooms Taxonomy. So, within a high-stakes testing environment, our research, discussions, and design efforts center on information retention and retrieval. However, this solitary focus on content is not a *valid* pursuit, for this limited focus is not the most important component of education.

Design, which can be described as a life of problem seeking and solving, can also be described as curiosity applied and formalized. While it works with content, the development of a designer is centered on finding and solving problems. Cognitively it is more complex and the learning deals more with *using* content instead of *knowing* content, that is, the capabilities to synthesize and to generate ideas and to develop knowledge; i.e. knowing in action (Schön, 1985). Design begins without a set destination or answer, and through discovery, it creates a solution and often concurrently, an understanding.

> By experience, delivery and evaluation based on informational content is considerably simpler than a complex form of learning or skill; memorizing the poem is simpler than writing or analyzing; identifying a historical artist is simpler than creating a drawing; teaching about creativity is easier than developing creativity in the learner. It may also detract from true learning; through a "poverty of attention": What information consumes is rather obvious: it consumes the attention of its recipients. [Simon, 1971]

Seeking more for our learners, we must go beyond content and address other skills and capabilities. In reality, *content is a dead end*. It develops the false premise that learning is complete when the information is known -- and not when learners seek more. How we create, how we design learning and instruction is based on the challenges we choose to address, and on the epistemology of our field which must go beyond content.

And this is why I have come, after a lifetime in design, to call myself a *content agnostic:* one who is looking beyond content toward more essential goals.

Within the instructional design process, there is a tacit understanding of the separation of content from the learning experience, through the use of a subject matter expert. Content, per se, can be separated from the learning process.

Of course, this is a relatively narrow conceptualization of content, one of information transmitted and declarative knowledge, delineated to not include skills or the development of character traits. Instructional design may focus on information-based content because of the ease of presentation, ease of evaluation, or a tendency toward quantitative analysis within the field.

Rooted in the famous Clark/Kozma debates on competing media use is the central focus of work in educational technology over the past 30 years; developing the ability for learners to retain information. That debate centered on the concept that media made "no significant difference" in retaining information or content. Clark said, "…media are mere vehicles that deliver instruction but do not influence student achievement any more than the truck that delivers our groceries causes changes in our nutrition" (1983, p. 445).

> That commentary focused instructional design by setting the criteria for evaluation and success. In the field of educational technology, media was removed from the equation, and the field centered on the retention of information. And so we have spent the most time working on delivering content, driving, as it were, the grocery truck, seeking to make the deliveries faster and more efficient.

> Building on that analogy, effectiveness is judged only on the volume of groceries delivered. In other words, we test to see if the grocery truck actually delivered the groceries, not if they were nutritious, or if they rotted on the front porch, or if they were eaten. Those are the more essential aspects of the analogy, and recognizing such should lead us to more broadly examining learning. Currently however, success in education is narrowly defined as the quantity delivered or retained; validity of evaluation which is based solely on information retention is not questioned. [Did you remember to order rutabagas?] The question may be raised about what we learned from driving the truck itself?

Consequently, we in the field of instructional design stopped looking at media; the different affordances and the learning from media use that does occur. It's a limiting feature that is focused on delivery of information, and not on the construction of knowledge through the use of media…in many forms.

In Bruner and Olson's words, Media converge as to knowledge conveyed, but they diverge as to the skills they assume and develop. Instructional media, therefore, cannot be chosen simply in terms of they ability to convey certain kinds of content, but must also be chosen in terms of their ability to develop the processing skills that make up an important part of human intelligence. (17)

This is not just a problem for the field of instructional design, but throughout education. Educators give lip service to Bloom's Taxonomy and other descriptors of higher level learning, but focus most of our effort on content and the lower levels. Forgotten or neglected are the beyond-content aspects that have been shown to be essential to the long-term success and development of students. These are traits such as curiosity, creativity, and persistence. Teachers understand this, and feel constrained by being pushed to "teach for the test". Our educational work should build deep learners; those that can use and apply knowledge, but with a drive to finish their work, with the creativity to do something completely different, and with the curiosity to find out more. [Is this enough? No, it needs to be more.]

Novels and fiction have, in the past, served to advance our understanding of technological developments. (Hokanson, 2001)

The capabilities to synthesize and generate ideas are not based on specific content, they're based on some content…but we focus on solely teaching the content.

Using a deeper orientation for learning, one which is design or problem-based, may lead to better models of education. We could begin to view simplistic content as a medium, as something which can be used to support stronger forms of learning. If we view content as that which is helpful in developing skills of synthesis, logic, creativity, and curiosity, it does have value. Content could become a medium for education.

This does occur and in ways with which we are familiar. For example, memorizing a poem is not highly valuable for the content of the poem, that is, the specific words, but may be valuable for the considered,

deeper examination of what is truly being said, as well as for the discipline of the act of memorization. Similarly, practicing the piano provides little new experience with melodies and notes, no new notes or "content", but rather it as an activity that supports the development of expertise and the dedication and persistence needed in many fields. Debussey recognized this in characterizing music as "…the space between the notes."

Understanding that "space" within information/content is where we will find the higher qualities of education. Somehow there must be more value in education than solely assessing education by how much people remember. That view, the simplistic understanding that learning can be measured by information retained, is a fallacy.

Clearly this is theoretical argument; we never get to chose one specific aspect of learning; and even not the ironic, default choice of "content". But this question seeks to illustrate the richness that can develop in successful learning. And it begins to create both a set of goals for learning and, perhaps, heuristics for choices in instructional design.

If, then, you could only teach a child one thing, what would you teach them? One set of facts, or one set of skills, or how to learn? Or to be curious, persistent, or creative, to move them forward and be self motivated? The positive attributes we must develop in our learners are skills and character traits, and not the content of information. These are traits that will last for lifetime, a sustainable model for learning, and way past the crap that's on the test.

What are the steps we can take to go beyond content in driving our design of instruction? A recognition that our larger goals in education, as illustrated by Blooms Taxonomy and our own hopes, are more than just information, knowledge, or facts. We must begin to evaluate learning in other and generally subjective ways, as is done in the KIPP schools, in design, and even kindergarten. "Plays well with others" is probably a good indicator for interpersonal skills. A good goal would be to develop instructional methods for persistence and grit, fairness, and curiosity.

How we create, how we design instruction and how we design *learning*, is based on the challenges we choose to address, and on our epistemology. Those choices, ways of thinking and learning have developed over years, but still retain much of their orientation from the history and evolution of our field. For innovation to occur, it is important to significantly shift our outlook and re-direct our efforts.

Design builds value not from the details that one knows, and not through a rigid process that is developed to a pre-ordained end result. Most design education does not focus on content but rather on the process, the end results, how everything works, and the thinking and innovative nature of the work. Design is not a simplistic way of making something "look" better, or of solving a given problem; it is an epistemology and a belief system, a form of living. To be less is to simply manufacture results.

In the end, the field that is educational technology has the responsibility to improve all education, by the expansion of the use of technology and by the innovative nature of the field. And we know there is value beyond the simple information content. For instructional design, that means we need to re-orient our methods. We need to embrace as our role, developing the broader values in education, and separate content from the focus of our work.

References

Anderson, L. W., Krathwohl, D. R., Airasian, P. W., Cruikshank, K. A., Mayer, R. E., Pintrich, P. R., ... & Wittrock, M. C. (2001). A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives, abridged edition. *White Plains, NY: Longman*.

Bloom, B. S., & Krathwohl, D. R. (1956). Taxonomy of educational objectives: The classification of educational goals. Handbook I: Cognitive domain.

Clark, R. E. (1983). Reconsidering research on learning from media. *Review of educational research*, *53*(4), 445-459.

Koomey, J. (2008). *Turning numbers into knowledge: mastering the art of problem solving*. Analytics Press.

Olson, David R., (1974). Introduction, Yearbook of the National Society for the Study of Education ,73d, Chicago: University of Chicago Press.

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action* (Vol. 5126). Basic books.

Simon, H. (1971). Computers, communications and the public interest. *Computers, communications, and the public interest. Johns Hopkins Press, Baltimore*, 40-41.