

The Space between: Teaching with Push-Pull Strategies that Reflect Ubiquitous Technology

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Abstract: The theory of “push and pull” from the art world influences contemporary thinking about teaching and learning in current contexts. The theory can be used to change educational pedagogy from that of the printing press era and support a new model of teaching. This article explores the theory of “push and pull” and how this theory, and other innovations from the art world, influence contemporary instructional strategies in the scholarship of teaching and learning. Concepts such as co-creation of content are useful in explaining how the push-pull theory can support practical applications in teaching and learning environments. The article includes a description of a creative approach that uses a social networking tool (NING©) and an evolving idea called “Concept Capture” in an innovative online push-pull teaching strategy for undergraduate nursing students. Educators need to ask themselves if twentieth century methods of instruction are applicable in a rapidly moving twenty-first century world.

Key words: technology, innovation, push-pull theory, instructional strategies, co-creation

1. Introduction

Traditional approaches to education are evolving in order to improve student engagement in course content and enhance learning outcomes. The image of students passively absorbing information from an educator who is lecturing from behind a podium does not reflect the current scope and dimension of higher education. Technology can be used to create learning experiences that actively and meaningfully pull students into course content. This article explores the theory of “push and pull” and how this theory, from the art world, influences contemporary instructional strategies in the scholarship of teaching and learning and educational pedagogy. Concepts such as co-creation of content are useful in explaining how the push-pull theory can support practical applications in teaching and learning environments. The article includes a description of an approach that uses a social networking tool (NING©) and an evolving idea called “Concept Capture” in an online push-pull teaching strategy for undergraduate nursing students.

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2. Innovative Pedagogy

The literature that deals with the future of teaching and learning suggests that learning will be qualitatively different in the upcoming decades (McGonigle & Eggers, 2011; Skiba, 2008). The current model for educational planning and action encourages "...learners to select and transform information, construct hypotheses, discover principles and make decisions beyond the information given" (Jung & Latchem, 2011, Reconciling educational philosophies and the teacher-student dichotomy, ¶7). Tapscott and Williams (2010) encourage universities to move to interactive and collaborative learning environments and teach beyond the printing press era. In a supportive environment that encourages the building of communities, reflection, sharing, and critical thinking help students comprehend, synthesize information, and develop as independent and authentic learners (Dunlap, 2006; Janzen, Perry, & Edwards, 2011). With encouragement, students can be involved in the design, development, and delivery of curricula (Lightner, Bober, & Willi, 2007). Menninger (2011) encourages dialogue among educators about the overarching questions in teaching and learning, especially related to the changes needed in the physical classroom and to consider teaching as a "total work of art" in that "...a total work of art serves not only as an all encompassing intellectual, emotional, and spiritual experience, but also as a means of conceptualizing the act of teaching itself; instruction should inspire while it informs, just as art informs as it inspires" (p. 97). An exploration of the literature about the artist, Hans Hofmann and his work, provides a perspective of the theory of "push and pull" and how this theory, from the art world, could be used to influence and configure contemporary instructional strategies in the scholarship of teaching and learning.

3. Push/Pull Theory: The Art World

Hans Hofmann was born in Bavaria in 1880 and taught for 43 years in both Germany and the United States. He is described as one of the greatest teachers of the 20th century (Brady, n.d., p. 2) and credited with being both an artist and as an educator who continued to influence students until his death in 1966. He stated that "Art is magic...If creation is not magic, the outcome cannot be magic" (Hoffman as cited in Wolf, 2011, On the Magic of Painting, ¶1). Hofmann incorporated the concepts of push/push and dynamic equilibrium in art. "Although Hofmann's idea was grounded in aesthetics, the notion of 'push-and-pull' may have originated with the early American modernist painter John Marin, who in 1913 wrote, "[New York is] made of powers [that] are at work pushing, pulling, sideways, downwards, upwards..." (Wolf, 2011, Push and Pull, ¶2).

Hofmann developed his push/pull spatial theories along with a conviction about the philosophy of art in general. Hofmann felt that push/pull better expressed the world around him and the forces on it such as expansion, contraction, movement, and life. The constant process of "push answering pull, and pull answering push" is what Hofmann tried to capture (Anonymous, 1961). He believed that movement was a manifestation of life and that this movement, in, out, and through a canvas, conveys the sensation of space and movement (Hofmann, 1948). Hofmann believed that all of the forces, push/pull, movement, and light, combined to create a state of dynamic equilibrium in a piece of art (Hofmann). The painting is a living, breathing, dynamic piece that reflects the artists' thoughts and feelings with others; poets, artists, and composers believe in this creative experience (Hofmann).

In an example of an art-school experiment, art students are asked to work on a painting for 10 minutes, and unexpectedly asked by the educator to pass the work to the person on their left, and the experiment continues. In a similar exercise, art students are asked to turn an unfinished painting by quarter turns and then adjust the balance

of colour and movement with each turn to arrange their composition through movement and counter-movement. Each turn of the canvas presents a new series of challenges that each stroke of the brush aims to resolve. Hofmann saw art and colour as ways to evoke more than a simply well-balanced (however vibrant) compositionally structured piece; he also believed a solid composition led to an emotional response depending on the experience of the viewer (Brady, n.d.), but also that an artwork's meaning should be important to the creator (Wolf, 2011). “Artists who are interested in reflecting what is important to the time in which they live, find it necessary to use a different means from previous centuries” (Brady, n.d., p. 8).

In many ways, the changes occurring in post-secondary education directly parallel the inventions and creations in the art world. Photography was created in 1826 by Joseph-Nicéphore Niépce and later simplified by Louis-Jacques Daguerre (Stokstad, 2000). The invention of photography leveled the art world and its notions of art, practice, and most importantly, reproduction and/or distribution (Bassendowski, & Salgado, 2005). At the time of its creation, the process was opposed by individuals in the art world and feared by both expert engravers and master painters (Bassendowski, & Salgado). In short, it was the 'indefiniteness of possibility' presented by the photograph that instilled both uncertainty and amazement at the time. This is not surprising, due to the fact that in any generation “the conventional is uncritically enjoyed, and the truly new is criticized with aversion” (Benjamin, 1935, p. 302). “Around 1900, photographic reproduction had advanced so rapidly as both a technical tool and also as an expressive media that not only permitted it to produce and reproduce [works of art, but it also] captured...a place of its own among the artistic processes” (Benjamin, p. 298). Bazin (1945) argued that photography, so feared by the visual arts, “freed painting” and allowed it to turn to the primary purpose of pure aesthetic expression (p. 196).

4. Push-Pull Theory: Higher Education

Education has garnered the same attention as the arts to “open up” and allow exploration of its history and possibilities through the wide array of media and technology that is available to transform ideas, processes, and strategies. Society is transitioning from an economy that tries to anticipate consumer demand and then push the product into the market, to a pull economy that tries to improve the services to meet the needs and demands of customers and clients (Bollier, 2006). The “push” concept reflects the idea of the educator having the only legitimate knowledge and this knowledge being transmitted one-way to students. Pull models change policy and use the interest and commitment of participants to create communities of trust, knowledge sharing, cooperation, and collaboration (Bollier). As stated previously in the Art World section, individuals value an opportunity to communicate their thoughts and feelings with others in a safe environment and to explore different aspects of the world around them through various modalities.

From a historical point of view, Dr. G. Weir (1932), in the Survey of Nursing Education in Canada, argued in the chapter on “Methods of Teaching and Learning” that training schools of the 1920s “continue to live in the decadent atmosphere of apprenticeship- the imparting of mechanical nursing skills in a mechanical fashion with a few largely unrelated ‘lectures’ thrown in- and have failed to respond to the broader conception of twentieth century education” (p. 316). He asked the reader to consider this question: “Are these nineteenth century methods of instruction applicable in a rapidly moving twentieth century world” (p. 317)? In the late 1920s, very few resources existed and the teaching methods consisted largely of lectures, occasional case studies, and some problem-solving situations. Students were passive learners who focused on note taking, memorization, and the

ability to sit quietly throughout the lectures. They were generally overwhelmed with the “avalanche of factual material” and often dropped behind in the note taking and then sat back with an “air of stoic resignation”. So, in 2011, what tools are critical to support the delivery of selected content? What technology and tools should students use to support their own learning? What percentage of time is committed to lectures in comparison to other methods? The question Weir raised in 1932 is something educators should still be asking themselves today- Are the twentieth century methods of instruction applicable in a rapidly-moving twenty-first century world?

Technology has firmly asserted its ubiquitous impact on today’s teaching and learning spaces (Jung & Latchem, 2009; Sannier, 2011; Selingo, 2011). Pull approaches are exemplified by constructivist and connectivist approaches, which are co-created by students as in virtual and socially shared spaces (Willems, 2009). Pull connotes a demand-style operation in which the students demand, request, or create the particular products or information that they require. Hagel (as cited in Willems, 2009, p. 278) writes that ‘pull’ approaches help students reach out, find, and access appropriate resources as the educational need arises. Richardson (as cited in Willems, 2006) suggests that “pull” educational models are those which “treat students as networked co-creators of media and are designed to accelerate capability building, helping students learn as well as innovate, by pursuing trajectories of learning that are tailored to their specific needs” (p. 279).

In educational contexts, pull models view students as active participants in the sharing of their learning by working alongside the educators in both traditional and online settings (Ahn & Class, 2011; Willems, 2009). The delivery of information (“push”), with student-centred activities (“pull”), participation in collaborative learning experiences, delivery of learning experiences, and effective application of information are characteristics of a shared learning space. “The importance of prior experience, the fitting of knowledge into existing schema or the establishment of new schema, and the active processing of information are all components of this model that emphasize high learner involvement” (Van Note Chism, 2006, Cognitive theory, ¶1). The students actively participate in the learning process as authors, co-authors, members of a community, and contributors of information (Fayne, 2009; Leese, 2008; Willems, 2009). “The sharing and enhancing of their ‘own’ knowledge is a powerful learning exercise. By using pull-based systems, students can function much like businesses in the pull environment: They can access resources they don’t control and put themselves into flows of activity, rather than just building inventories of static, objectified ‘knowledge’” (Bollier, 2006, One Page Summary, ¶10).

5. “Push-Pull” Instructional Strategy: Using NING© and Concept Capture

How can the push-pull theory be used to rationalize the co-creation of content? Co-creation of content extends beyond sharing and collaborating on course content to educators and students working together locally on new content and can then making this newly analyzed content available to a global audience through the use of Web 2.0 (or possibly Web 3.0) tools (Al-Bataineh, Erwin, Bonomo, Mercer, & Mustafeh, 2010; Tapscott & Williams, 2010).

Concept Capture is an approach that represents multi-dimensional, open, digital environments for learning as well as building on the scholarship of teaching, learning, and research (Bassendowski, Petrucka, & Salgado, 2010). In the 2010-2011 academic year, I decided to use my idea of Concept Capture and a social networking tool called NING© as an approach to engage fourth year nursing students in co-creation of course content for a blended learning experience. The class enrollment was 125 and the students spent nine weeks in the face-to-face classroom and four weeks online with the social networking tool. I identified the key concepts each week and used them as

the organizers for learning outcomes.

The project was designed as a research study with approval of an ethics application from the University of Saskatchewan in order to use an innovative strategy such as NING© with the designated student group and to assess student responses on blog postings following the end of the semester. Students were asked to complete pre- and post- surveys that asked questions about the types of multi-media tools are they used for their personal or professional purposes. The learning environment was redesigned as a “working lab” for case studies, dyad discussions, question-quests, and other interactive strategies that invited students to share their learning from the Concept Capture tools as well as seek new solutions during class time with other students in their group. Together with the faculty member, students actively contributed to creating and/or editing blogs on professionally relevant topics as well as post photos, videos, links, and articles that related to and added to course content. Student learning assignments consisted of a blog discussion (with inclusion of evidence), posting of relevant research links, and their participation in the addition of relevant course material.

The balance between push-pull strategies was achieved through two strategies, both rooted in principles of minimum interference and maximum inclusiveness. First, as the faculty member, I monitored the discussions on the blogs and commented as needed to provide additional probing questions or comments. Critical questioning contributed to ensuring clarity, comprehensiveness, and correctness within the discussion and contribution threads. Second, monitoring of the discussion and feedback was continuous, real/near real time, and inclusive of the perspectives of both students and educator. These two strategic imperatives were seen as appropriate and necessary to support and catalyze the Concept Capture vision.

6. Evaluation

Re-inventing pedagogy is critical to moving teaching and learning into the 21st century but educators require evidence and evaluation to transition from “push” to “pull” teaching strategies (Dziuban, 2011). Using NING© and Concept Capture within the push-pull teaching strategy, evaluation of the blogging began with an overview of the original discussion of themes. Each student was required to post an initial 250–300 word posting along with research-based evidence and two to three probing questions for group reflection. A thematic analysis of the blog postings was undertaken using Wordle© as the folksonomies or social taxonomies tool.

Each posting was consistently scrutinized through a three-step approach. First, postings were reviewed to look at how the topic was originally introduced by the students- essentially the push. The focus was to determine a student's particular slant on the issue and his/her appropriate use of research and evidence to support a particular viewpoint. Second, the responses — the pull — to the original posting were explored by focusing on areas such as critical thinking, insight, and engagement (i.e., encourage ongoing discussion). Each topic blog and associated postings were submitted to the Wordle© tool resulting in an automatic text visualization. The resulting diagram represented a frequency count in which the most commonly occurring words and/or phrases were operationalized as dominant or larger than other competing terms. The Wordle© clearly identified the concepts that were most prominent for specific topics within the discussion and the less frequently discussed concepts. Based on this presentation, the authors assessed the diagrams (in this sense the push) to determine the breadth and depth of discussion and to identify where gaps in knowledge occurred within the course content and dialogues (the pull).

7. Conclusion

The theory of “push and pull” from the art world influences contemporary thinking about teaching and learning in current contexts. The theory can be used to change educational pedagogy and support a new model of teaching. A wide array of media and technology is available to create new hybrid forms of teaching. The integration of technology enables educators to create learning experiences that actively and meaningfully pull students into course content. What technology and tools should students use to support their own learning as well as the learning for other students? What percentage of time is committed to lectures in comparison to other instructional strategies? How can tools of social media tools be combined with the best practices in teaching and deal effectively with issues of student inattention, passivity, and dis-engagement? I think the question Weir raised in 1932 is critical when considering push-pull teaching strategies — Are the twentieth century methods of instruction applicable in a rapidly-moving twenty-first century world? Perhaps the time is now to make the change!

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