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Discovery-Based Learning in World Arts: Creativity and Collaboration in the Undergraduate Fine Arts Class

Catherine Marie Nutting
University of Victoria, cmn@uvic.ca

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Summary
This workshop will begin to prepare instructors to use discovery-based learning methods in order to foster undergraduate education by deepening student learning and developing students' written and verbal communication of their research experiences. Discovery-based learning is like problem-based learning in so far as students formulate a problem, investigate facts, generate a thesis, and test their theses against the evidence. However, discovery-based learning is more individualized because students do not respond to problems that are provided by the instructor, but rather generate their own questions in response to course material in dialogue with the instructor. These methods are based on theories of creativity that highlight the connections among creativity, meaningful inquiry, and self-expression. This workshop will review key elements of creativity in education and discovery-based learning, outline how they promote relevance and enjoyment of the course material, and consider ways to integrate them into classroom projects and activities. Participants will experience the application of discovery-based learning to group work, share with others their hopes and experiences of this kind of teaching and learning, become more familiar with the theory that supports this approach, and learn where to seek further information and activities.

Keywords
creativity, discovery learning, Fine Arts, World Arts

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KEYWORDS: creativity, discovery learning, Fine Arts, World Arts

LEARNING OBJECTIVES

By the end of this workshop, participants will be able to:

- describe discovery-based learning in a Fine Arts context;
- identify the values of discovery-based learning for students' creativity and engagement;
- discuss ways to encourage use of discovery-based learning methods in the classes they instruct;
- create an activity or assignment using discovery-based learning principles; and
- develop a list of resources for relevant scholarship and class activities.

REFERENCE SUMMARIES

Czikszentmihalyi, Mihaly. (1996). *Creativity, Flow, and the Psychology of Discovery and Invention*. New York: Harper Perennial.

Czikszentmihalyi has a joyful definition of creativity and I use it in the workshop to generate a discussion of creativity because it is so easy to understand and discuss. Czikszentmihalyi has written several books on creativity, most of which relate to the world of business, but I apply his theories here to education and to artistic practice. In this book, Czikszentmihalyi shares the results of his interviews of creative individuals. He argues that creativity is founded on an innate instinct to discover, a trait that is characterized by focus, perseverance, and heart-pounding enjoyment. Because Czikszentmihalyi has such a positive attitude toward discovery, indeed arguing that our survival as a species depends upon it, this book contains many useful quotations that generate discussion. Czikszentmihalyi's emphasis on an individual and natural desire for discovery can be applied in the classroom by: giving students scope to set some aspects

of their own research agendas; allowing students' research to be as personally relevant as possible; and through group discussions in which students can talk about their topic and their arduous research paths, giving students the opportunity to re-experience the thrill of "conquering" their research goals.

Weiner, Robert Paul. (2000). *Creativity and Beyond*. Albany, NY: State University of New York.

In the Fine Arts classroom, I use Weiner's book to talk about creativity itself among artists and among undergraduate students as they build up their academic essays and projects. In the workshop, I rely on it for historical and recent trends in creativity, to expand the discussion beyond Western notions of creativity, and to generate enthusiasm for broadening, cross-disciplinary curiosity about the meaning and scope of creativity. Weiner's book is well documented and provides an excellent resource for participants interested in further reading. For this reason, it is one of the books that I bring in to show at the end of the workshop. One of the most interesting aspects of the book is that it illustrates how complicated it is to attempt to define creativity: it provides many engaging vignettes, and I include these in the quotes that I hand out, for participants who respond well to "stories" rather than theories.

Anderson, Harold, ed. (1959). *Creativity and its Cultivation*. Presented at the Interdisciplinary Symposium on Creativity at Michigan State University. New York: Harper and Brothers Publishers.

My commitment to an individualized approach to teaching that respects learners' lifelong paths and personal interests derives in part from some of the chapters in this edited volume. I subscribe to the view that life itself is creative and that individuals co-create our lives through what we choose, what we read, and what we do academically and vis-à-vis broader society. My intention to support meaningful, creative processes in the classroom is supported by, for example, Maslow's chapter on creativity and self-actualization; Anderson's connection of creativity with personality development; and Stoddard's, Hilgard's, and Lasswell's treatments of problem solving and of social and educational aspects of creativity[1]. I use this book in the workshop to show that academic creativity and the development of oral and written skills can be linked to learning that is personally relevant and lifelong. Quotes from this book deepen the discussion beyond the classroom. Also, because it contains chapters from many disciplines including science, anthropology, sociology, psychology and architecture, it is a good source for quotes with broad appeal. Discussion can also be generated by pairing it with the more recent Beghetto and Kaufman (2010) *Nurturing Creativity in the Classroom*.

Duch, Barbara J., Susan E. Groh, and Deborah E. Allen, eds. (2001). *The Power of Problem-Based Learning*. Sterling, Virginia: Stylus Publishing.

This book defines problem-based learning and argues that it is an effective teaching method that allows education to keep pace with the rapidly changing broader society. In the workshop, I use it to show how classroom activities that foster student discovery promote communication, technological skills, and the connection of critical thinking to

[1] See Appendix C for complete bibliographic information of these articles.

real-world concerns. The book generates discussion because it contains case studies in various disciplines. It also has a large section on the practicalities of using problem-based learning in the classroom, including issues of group work, technology, writing strategies, and assessment.

Evensen, Dorothy H. and Cindy E. Hmelo, eds. (2000). *Problem-Based Learning. A Research Perspective on Learning Interaction.* Mahwah, NJ: Lawrence Erlbaum Associated Publishers.

This edited volume contains chapters on group work, and a large selection on self-directed learning. Specifically, it helps me articulate the overlap and differences between problem-based learning and discovery-based learning. Problem-based learning is experiential, but in discovery-based learning, the student's experience is her own discovery. Consequently, the subsequent formulation of questions about the course material is likely to be personally meaningful and relevant in real terms. I also use the evidence that Evenson and Hmelo provide on how important group work is to this experiential learning approach. Another important contribution of this book to the theory and practice of discovery-based learning is its discussion of self-directed learning. Contributors to this volume assert the connection between self-direction and long term learning, review the literature on self-directed learning, share their valuable research in this issue, and provide case studies that are accessible to a general audience. In addition, it contains generous reference lists for further investigation, and I point this out to workshop participants.

CONTENT AND ORGANIZATION

Duration [min]	Subject	Activity	Purpose
10	Introductions, Housekeeping, Check in	The presenter will introduce him/herself and discuss the purpose of the workshop. Invite group members to introduce themselves and describe their interest in the topic.	To build community among participants in order to set the foundation for the co-teaching that will occur later in the workshop.
15	Lecture: Ways to Implement Discovery-Based Learning to Foster Creativity in the Classroom	Using PowerPoint or other visual aids, draw on Czikszentmihalyi (1996) and Weiner (2000) to teach the theory of creativity in education. In particular, focus on the connections between creativity, productivity and discovery. Then, explain Czikszentmihalyi's theory that productivity and enjoyment of a task increase when a person is engaged in what he calls "creative flow", characterized by focus, excitement, and discerning self-reflection.	Participants learn what discovery-based learning is and how scholarship supports the need for creativity in education.

15	Personal Reflections: Discovery and Creativity	Divide participants into small groups and invite them to discuss their experiences with discovery as defined above. Ask participants to describe any occasion when they have experienced creativity outside or within the classroom, or times when they have tried to use problem-based learning to promote creativity in their classes. If a group is not actively discussing the topic at hand, encourage them to instead review and critique the attached sample project (see Appendix B). Reconvene in the large group, and write on the board or on an overhead projector some of the common features in participants' experiences.	This is an active learning component in which participants are able to personalize the theory they have just learned. Giving them time to talk in both small and large groups and hear others' experiences gives them time to reflect and to better learn the theory.
40 [20]	Relating Theories of Creativity to Classroom Activities Part 1: Engaging with the Scholarship [Lecture]	This a lecture followed by an active earning component that allows participants to personalize the theory they will learn. Drawing on the Problem-Based Learning (PBL) theories of Evensen and Hmelo (2000) and Duch, Groh et al (2001), encourage participants to make connections between PBL and what they now know of Creativity Theory. Divide participants into small groups of 3-5 individuals and give them handouts of quotes from the scholarship cited at the beginning of this workshop. Each small group will have different quotes. Have each participant select one quote and free write for 2-3 minutes on the topic and his/her thoughts about it, and on what questions the quote brings	It is important to make knowledge as tangible as possible so that participants will remember it and begin thinking of how to practically apply the theory.

		up. Ask participants to express the perceptions, the opinions, or the memories that the quote triggers. Specifically, ask if the quote sheds light on ways to restructure teaching/learning in order to better foster creativity?	
[20]	Part 2: Putting It Into Practice [Active Learning]	After participants are finished free-writing, have them discuss their quotes within their respective small groups. Here, participants will get to experience generating questions in response to a scholarly source. Each group should then develop a discovery-based learning activity or assignment that is informed by one or more quotes that is based on the group's discussion and relates to a real or imagined course. Ask participants to think about their current or potential classes and to isolate an assignment or activity that could be taught through discovery-based learning. Since participants have just discussed the scholarship, some of these quotes are likely to be particularly engaging. Each group works together to create an assignment or activity informed by the scholarship on discovery-based learning.	In order to deepen learning and foster post-workshop enthusiasm and informed practice, this activity allows participants to come away from the workshop with a suite of ideas on how to embed discovery-based learning into their own teaching.
15	Co-teaching: Large Group Discussion	Each small group presents their teaching activity or assignment to the larger group for feedback. Specifically, each group gives a very short overview of the kinds of quotes their group discussed, and describes in detail one quote and the discovery-based learning activity they generated from it. As the small groups bring the quotes and their own reflections to the large group, the presenter should	This discussion gives participants a chance to engage more deeply with the material that is most personally relevant to them.

		guide the larger group discussion in order to tease out the salient points. This is an opportunity to flesh out information on the scholarly source the quote is taken from, and to highlight best practices for discovery-based teaching. Using the board or an overhead projection, write down key terms and authors as participants mention them. Additionally, this is an opportunity to frame the participants' experiences of the workshop in order to clarify which aspects that are in fact discovery-based learning. Now that participants have experienced this type of learning themselves, ask them to discuss ways that they might integrate it into the classes they are or will be teaching.	
10	Wrap-Up, Summary and Final Questions	Ask participants to share any questions, concerns and final thoughts. To conclude the workshop, hand out a summary of the workshop (Appendix A) and a bibliography of useful information (Appendix C). If possible, bring some of the books listed on the handout and give participants a chance to look at them.	Elicit comments and questions to gauge participants' experience of the workshop and direct them to additional resources.
Total Time: 105 minutes			

PRESENTATION STRATEGIES

To prepare for the workshop, the presenter should read the attached bibliography (Appendix C) on creativity and problem-based learning in order to become familiar with the major components and rationale of these theories. After reading the literature on creativity and on problem-based learning, the presenter will need to choose about twenty short, pithy quotes and print these out on individual pieces of paper. For example, "The key element of an optimal creative experience is that it feels like an end in itself. The person would do it even if he didn't have to." and, "Whether a person uses his talents is likely to be affected by the motives and emotions he or she experiences when using that talent – talented people may relate to their environment in ways that

influence their inner experience." The presenter can tailor her use of the literature to the interests of the participants, if she has information about the participants in advance.

The workshop itself uses free writing, small-group discussions, and personal interpretations of scholarly sources, to create the feeling of discovery that is the topic of the workshop itself. The combination of scholarship-based mini-lecturing with time for participants to remember their own experiences and to engage personally with definitions of core concepts reinforces participants' learning. Participants experience the sense of discovery that they are learning about.

APPENDIX A: Handout for "Principles of Discovery Based Learning"

> "In all the creative work that I have ever done, what has come first is a problem, a puzzle." Bertrand Russell

How can we inspire students to delve into rich, complex topics that relate to their lives in meaningful ways? How can we respect individuality and integrate a diversity of learning approaches within the context of shared class goals? Discovery-based Learning engages students in articulating interesting questions, following leads based on existing knowledge, developing research and communication skills, and sharing their findings within their classroom community. This collaborative, process-oriented approach encourages an ongoing sense of discovery and contributes to the joy of creativity. In this workshop we will brainstorm how to empower each other in using these methods with our students, and will share our experiences of trying discovery-based learning. We will also discuss the scholarship that supports discovery-based learning and creativity in education, and why such classroom practices are important.

What is discovery-based learning ?
Discovery-based learning, like exploratory learning or problem-based learning is an educational process in which students formulate questions, investigate and research them, respond to information that they deem relevant, form possible solutions and additional lines of inquiry, share their findings, and respond to feedback. Its foundation is in creativity theory, which prizes meaningful tasks and shows that excitement, interest, and relevance are integral to learning.

Principles of discovery-based learning:

- learning is a natural process
- knowledge is multifaceted
- learning styles (and moods) are very diverse
- learners can play important roles in directing and motivating their learning processes
- learning is process-oriented, not just fact- or goal-oriented

Discovery-based learning is creative:

- people learn most deeply when they experience the feeling of discovery
- experiencing a sense of discovery brings out a person's creativity
- creative learning has emotional appeal. Creativity activates positive emotions.
- personal involvement in the work is crucial for creativity; creativity and discovery involve developing personal criteria for discernment
- creativity requires space and freedom to play with concepts

APPENDIX B: Sample Assignment Handout

A. Essay Preparation Project:

I. Choose a painting, building, sculpture, object, or artistic practice that you believe relates to the course's key concepts as outlined in the course syllabus, and make a pitch for an essay topic related to it. In one to two pages, describe why you might like to write your essay on it. What are your initial responses to the painting or object? What are you curious about? What do you wish you knew more about? In order to learn more about the art (object or practice), what will your lines of inquiry be? What will be the guiding questions for your research, and how do you plan to follow them up?

II. Let's workshop it. a) Talk to a small group of your classmates about your topic, why it interests you, and how it is shaping up. b) Articulate how your topic will engage with the core concepts of the course. Does it exemplify some of them, complicate them, disprove them? c) Get ideas about how to pursue your research: do others know of websites, books, journals, people, or other resources you could follow up on ? Following this conversation, revise your Topic Pitch, and hand it in.

III. Proposed Bibliography, Annotated. Having seen my response to your Topic Pitch, write a paragraph describing your essay topic. Then list seven to ten sources, describe each book or chapter, and explain how you will use it in your essay. Which of your questions does it respond to? What kinds of evidence does it provide? Does it open up new lines of inquiry?

B. Post-Essay Project:

I. Having handed in your essay, you have been assigned to a small group of classmates whose essays have something in common. Tell your group members about your essay. How did you come to the topic? How did you approach it? What was your thesis, and how did you prove it? Are there things you would have liked to do differently? Are there tangents that could become future research projects? After each of you has discussed his/her essay, then consider: what might your essay topics have in common, or do you as researchers have similar approaches, interests, or plans?

II. With the other members of your group, spend the next three classes preparing a presentation that derives from your research projects. Do not summarize your essays, but use the valuable research contained in your essays as raw material for something new. Now that you have learned from each other in your group, what can you create together? For example, do your essays provide value contextual information for each other's topics? What aspects of your topic were most touching, frustrating, or complicated, and how did you deal with this? How have your and your group members' topics affected how you see the world, or how do they relate to future plans, to travel, art projects, applications for grad school, future courses? Discuss your presentation ideas with me next class.

APPENDIX C: Handout of Useful Resources

Allan, Dave, Matt Kingdon, Kris Murrin, and Daz Rudkin. *Sticky Wisdom: How to Start a Creative Revolution at Work*. London: John Wiley & Sons, 1996.

Audet, Richard H. and Linda K. Jordan. *Integrating Inquiry Across the Curriculum*. Thousand Oaks: Corwin Press, 2005.

Baptiste, Sue. *Problem-Based Learning: a Self-Directed Journey*. Thorofare, NJ : SLACK, 2003.

Barell, John. *Problem-Based Learning: an Inquiry Approach*. Thousand Oaks, CA: Corwin, 2007.

Beghetto, Ronald A. and James C. Kaufman. *Nurturing Creativity in the Classroom*. Cambridge: Cambridge University Press, 2010.

Best, Brin and Will Thoma. *The Creative Teaching and Learning Resource Book*. New York: Continuum Books, 2008.

Collins, Mary Ann and Teresa M. Amabile. "Motivation and Creativity," in Robert J. Sternberg, ed. *Handbook of Creativity*. Cambridge: Cambridge University Press, 1999, 297-312.

Cropley, Arthur J. *Creativity in Education and Learning: a Guide for Teachers and Educators.* London: Kogan Page, 2001.

Czikszentmihalyi, Mihaly. *Creativity, Flow, and the Psychology of Discovery and Invention*. New York: Harper Perennial, 1996.

Duch, Barbara J., Susan E. Groh, and Deborah E. Allen, eds. *The Power of Problem-Based Learning: a Practical "How To" for Teaching Undergraduate Courses in Any Discipline*. Sterling, Virginia: Stylus Publishing, 2001.

Evensen, Dorothy H. and Cindy E. Hmelo, eds. *Problem-Based Learning. A Research Perspective on Learning Interaction*. Mahwah, NJ: Lawrence Erlbaum Assoc. Publishers, 2000.

Getzels, Jacob and Mihaly Csikszentmihaly. *The Creative Vision: a Longitudinal Study of Problem Finding in Art*. New York, Toronto: Wiley, 1976.

Hicks, Chelsea (2011) "Guiding Group Work: Activities to Maximize Student Learning from Group Projects," *Teaching Innovation Projects*: Vol. 1: Issue 1, Article 6.

International Journal of Problem-Based Learning.

Kagan, Jerome. *Creativity and Learning*. Boston, Beacon Press, 1967.

McGill, Ian and Anne Brockbank. The Action Learning Handbook. *Powerful Techniques*

for Education, Professional Development, and Training. London: Routledge, 2004.

Nickerson, Raymond S. "Enhancing Creativity," in Robert J. Sternberg, ed. *Handbook of Creativity*. Cambridge: Cambridge University Press, 1999, 392-430.

Slavin, Robert E. *Cooperative Learning*. New York: Longman Inc., 1983.

Stoddard, George D. "Creativity in Education," in *Creativity and its Cultivation*. Harold H. Anderson, ed. New York: Harper and Bros. Pub, 1959, 181-202.

Thornton, Chris. *Truth From Trash: How Learning Makes Sense*. Cambridge : MIT Press Feb. 2000.

Weiner, Robert Paul. *Creativity and Beyond*. Albany, NY: State University of New York, 2000.