

ECI 709 CREATIVITY AND CRITICAL THINKING

Spring 2018
 Tuesday 4:10pm-6:55pm, 118 Tompkins Hall
 3 credit hours
 Graduate standing requirement

Instructor Information:

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COURSE DESCRIPTION

This course provides an in-depth study of how creativity and critical thinking impacts learning in a variety of ways. The emphasis in the course will be a survey and critical examination seminal research articles related to both topics.

TEXTS, READINGS AND INSTRUCTIONAL RESOURCES

Required Text: Research article packet



LEAD and **SERVE** constitute the conceptual framework for all programs for professional educators in the College of Education at NC State. They are the touchstones that assure that our students graduate with the following:

- ❖ **LEAD:** four forms of knowledge; general pedagogy, content-specific pedagogical strategies, content or discipline knowledge as well as knowledge of the content of education, including foundations, historical perspectives and school settings.
- ❖ **SERVE:** elements that show the range of dispositions developed in our candidates; scholarly, ethical, reflective, valuing diversity and experienced in practical application of knowledge.

Course Overview

This course objectives address the following elements of the conceptual framework:

- ❖ **L:** Learn general pedagogy
- ❖ **E:** Educate with content specific strategies for teaching, may include technology
- ❖ **A:** Apply discipline or content specific knowledge
 - Translate findings from existing literature into a unique research proposal.
 - Articulate how findings from studies of creativity and critical thinking impact personal professional development
 - Compare and contrast theories of creativity and critical thinking and discuss their implications for teaching and learning.
- ❖ **D:** Demonstrate understanding the educational context, i.e., school culture, societal issues
- ❖ **S:** Scholarly knowledge base to guide educational decisions
 - Define creativity and critical thinking and explain their significance for learning.
 - Develop a knowledge base about the role of creativity and critical thinking in learning and cite current research findings related to educational implications of such research
 - Identify strategies for encouraging creative abilities and critical thinking in students.
 - Develop empirical research proposals to further research in the field of creativity and critical thinking.
 - Develop critical evaluation skills when reading journal articles with empirical investigations
- ❖ **E:** Ethical disposition for behaving with respect, integrity, personal responsibility
- ❖ **R:** Reflective and self-evaluative
- ❖ **V:** Value diversity with a sensitivity to cultural, economic, developmental, ethnic, racial, gender, religious and sexual orientation differences
- ❖ **E:** Experienced in practical application of knowledge

Teaching strategies: Class discussions, group work, reflection, electronic communication, inquiry activities, lecture

Major Assignments:

Class Format	
Participation & Manuscript Review	20 points
Session Leadership	20 points
Weekly Response Sheets	20 points
Research Proposal	40 points

Class Format

The purpose of this course is for you to develop a coherent understanding of research in the areas of creativity and critical thinking. In addition, a focus will be on you translating this knowledge into something that is usable to you in your present/future career and/or research agenda. Being a doctoral seminar, I expect you to take ownership over the course and work in a self-directed manner.

A variety of topics will be covered (see tentative schedule) and class members will take turns leading the discussion each week. Assigned articles should be read before coming to class, and you should have access to them in class on the day they are to be discussed. Each student will lead or co-lead two class sessions. Session leaders will: (a) facilitate the class discussion by preparing discussion questions, (b) present one outside empirical article related to the week's topic, and (c) conduct a short activity (10 minutes) illustrating the use/practice of one creative strategy or one approach to critical thinking that align with the weekly topic (see provided strategies for ideas). When you present your additional article please take 5-10 minutes to give an overall summary of the findings, the major research questions, the target population, the dependent measures, and any important implications. Your activity should be something relevant and challenging for the class members (as opposed to other populations). All students are expected to attend each class ready to discuss the topic assigned for that week. The typical class format will be an interactive discussion involving the instructor and all students.

Grading Scale

Letter Grade	% Correct Needed	What this grade means
A+	97 %	Demonstrated the highest level of mastery of concepts, including the ability to apply these concepts to real situations
A	93 %	
A-	90 %	
B+	87 %	Demonstrated mastery and ability to apply at least some of these concepts to real situations
B	83 %	
B-	80 %	
C+	77 %	Demonstrated mastery of basic concepts
C	73 %	
C-	70 %	
D+	67 %	Demonstrated minimal mastery of topics
D	63 %	
D-	60 %	
F	< 60 %	Failed to demonstrate mastery of any topics

Class Participation (20%). The class participation grade will be determined by class attendance, active participation in class discussions, and completion of one manuscript review. Absences will affect the participation score (1 point deducted for each of the first two misses; 2 points deducted for each miss after this). The manuscript review (5pts.) will involve you taking the role of a journal reviewer and writing a review of a blind manuscript provided by John.

Session Leadership (20%). The session leadership grade (10 points per each leadership session) is determined by: (a) the ability to engage the group in active discussion, (b) the outside article presentation, and (c) presentation of the creativity/critical thinking activity. A high-quality supplemental exercise/reading is one that stimulates

thought and relates to the week's topic. Successful facilitation will hinge on you having thought provoking questions and well-organized summaries. In addition, consider a novel or creative activity or exercise to illustrate your topic and/or the readings. The goal here is to promote discussion and elaborate on the readings so that class members gain well-organized knowledge

and also consider what to do next with this knowledge. For the outside article presentation, the session leader should select an article that is relevant, upload a digital copy to the class Google Drive at least one day in advance of class, present the material clearly, and field questions about the article as they arise. Finally, session leaders should review the Weekly Response Sheets submitted on the Google Drive in order to assist the class discussion.

Weekly Response Sheets (20%). I will provide you with a template (Word doc) that provides questions for you to answer regarding each session's readings. You should complete a Response Sheet for each class session and upload it to the class Google Drive folder by 9pm the night before class. The Response Sheets will aid us in our group discussion and hopefully provide you with a succinct set of notes that you can refer back to in the future.

Research Proposal (40%). Each student will write a proposal for an empirical research study, preparation of an empirical paper for publication, or a conceptual overview or argumentative manuscript related to creativity or critical thinking. The final form of the project will include (a) a written paper between 10 and 20 pages in length; and (b) an oral presentation of that paper in class. Research proposals should conform to APA style. The paper should focus on a study that could conceivably be executed and submitted in the next year to a national or international conference (e.g., AERA, APA, IRA, etc.) or to a journal for publication.

Class Discussion

This is a doctoral seminar class and a unique opportunity for you to delve deeply into a subject area with your peers. The success of the class depends upon your interactions with each other and your conscientiousness towards the readings and subject area. I strongly encourage you to participate in classroom discussion and to ask questions when you do not understand something. I hope to encourage a class with a relaxed atmosphere in which all students feel comfortable participating. It is my goal that you look back on this class as a challenging yet rewarding learning experience that furthers your career and ability to think and analyze research in general.

IMPORTANT INFORMATION

- Students are bound by the academic integrity policy as stated in the code of student conduct. Therefore, students are required to uphold the university pledge of honor and exercise honesty in completing any assignment. See the website for a full explanation: <https://policies.ncsu.edu/policy/pol-11-35-01/>
- Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. For more information on NC State's policy on working with students with disabilities, please see <https://dso.dasa.ncsu.edu>

Creative Strategies and Critical Thinking Skills

Creativity Strategies:

1. Brainstorming / Reverse Brainstorming
2. Lateral Thinking
3. Random Input
4. Analogy Technique / Forced Analogy / Mind Mapping
5. Metaphorical Thinking
6. Synectics
7. The Discontinuity Principle
8. Storyboarding
9. Lotus Blossom Technique
10. Assumption Smashing
11. Escapism Technique
12. Search and Reapply Technique
13. Idea Checklist / SCAMPER
14. Attribute Listing / Morphological Charts / Morphological Forced

Collegiate Learning Assessment (CLA) skills important for critical thinking:

1. Determine what information is or is not pertinent
2. Distinguish between rational claims and emotional one
3. Separate fact from opinion
4. Recognize the ways in which evidence might be limited or compromised
5. Spot deception and holes in the arguments of others
6. Present his/her own analysis of the data or information
7. Recognize logical flaws in arguments
8. Draw connections between discrete sources of data and information
9. Attend to contradictory, inadequate, or ambiguous information
10. Construct cogent arguments rooted in data rather than opinion
11. Select the strongest set of supporting data
12. Avoid overstated conclusions
13. Identify holes in the evidence and suggest additional information to collect
14. Recognize that a problem may have no clear answer or single solution
15. Propose other options and weigh them in the decision
16. Consider all stakeholders or affected parties in suggesting a course of action
17. Articulate the argument and the context for that argument
18. Correctly and precisely use evidence to defend the argument
19. Logically and cohesively organize the argument
20. Avoid extraneous elements in an argument's development
21. Present evidence in or order that contributes to a persuasive argument?

Tentative Schedule

Date:	TOPIC
1/9	Course Overview
1/16	An Overview of Creativity
1/23	An Overview of Critical Thinking
1/30	Assessing Creativity and Critical Thinking (Rebecca M. & Fulya)
2/6	Instructional Approaches to Enhance Creativity (Rebecca M.)
2/13	Instructional Approaches to Enhance Critical Thinking (Wayne)
2/20	Cross Cultural Issues in Creativity & Critical Thinking (Rebeca C. & Beatriz)
2/27	The Relationship between Metacognition and Creativity (Ryan Hargrove) Manuscript Review Discussion; Research Proposal Discussions
3/6	Spring Break – No Class!
3/13	Creativity in Advanced Learning Technologies (Fulya)
3/20	The Role of Gender and Creativity (Beatriz)
3/27	The Impact of Rewards on Creativity (Wayne)
4/3	Open Topic Week (Everyone leads one article)
4/10	Issues of Transfer in Creativity and Critical Thinking (Rebeca C.)
4/17	AERA – No Class!
4/24	<i>Research Proposal Presentations</i>
4/27	<i>Research Proposal Papers Due</i>

Readings in Creativity and Critical Thinking

An Overview of Creativity:

Hennessey, B. A., & Amabile, T. M. (2010). Creativity. *Annual Review of Psychology*, *61*, 569-598.

Beghetto, R. A., & Kaufman, J. C. (2007). Toward a broader conception of creativity: A case for “mini-c” creativity. *Psychology of Aesthetics, Creativity, and the Arts*, *1*, 73-79.

Robinson, K. (2011). *Out of our minds: Learning to be creative* (pp. 139-166). Westford, MA: Capstone.

Gajda, A., Karwowski, M., & Beghetto, R. A. (2017). Creativity and academic achievement: A meta-analysis. *Journal of Educational Psychology*, *109*, 269-299.

An Overview of Critical Thinking:

Halpern, D. F. (2006). The nature and nurture of critical thinking. In R. Sternberg, R. Roediger, & D. F. Halpern (Eds.). *Critical Thinking in Psychology* (pp. 1-14). Cambridge, MA: Cambridge University Press.

Huber, C. R. & Kuncel, N. R. (2016). Does college teach critical thinking? A meta-analysis. *Review of Educational Research*, *86*, 431-468.

Assessing Creativity and Critical Thinking

Instructional Approaches to Enhance Creativity:

Instructional Approaches to Enhance Critical Thinking:

Marin, L. M., & Halpern, D. F. (2011). Pedagogy for developing critical thinking in adolescents: Explicit instruction produces greatest gains. *Thinking Skills and Creativity*, *6*, 1-13.

Cross Cultural Issues in Creativity and Critical Thinking

The Relationship between Metacognition and Creativity and Critical Thinking:

Kaufman, J. C., Beghetto, R. A., & Watson, C. (2016). Creative metacognition and self-ratings of creative performance: A 4-C perspective. *Learning and Individual Differences*, *51*, 394-399.

Kuhn, D. & Dean, D. (2004). Metacognition: A bridge between cognitive psychology and educational practice. *Theory Into Practice*, *43*, 268-273.

Creativity in Advanced Learning Technologies:

Shute, V. J. & Ventura, M. (2013). Measuring and supporting learning in games: Stealth assessment. White paper for *MIT series*, published by the MacArthur Foundation.

The Role of Gender in Creativity:

Abraham, A. (2016). Gender and creativity: An overview of psychological and neuroscientific literature. *Brain Imaging and Behavior, 10*, 609-618.

Critical Thinking in Advanced Learning Technologies:

Halpern, D. F., Millis, K., Graesser, A. C., Butler, H., Forsyth, C., & Cai, Z. (2012). Operation ARA: A computerized learning game that teaches critical thinking and scientific reasoning. *Thinking Skills and Creativity, 7*, 93-100.

Saade, G. S., Morin, D., & Thomas, J. D. E. (In Press). Critical thinking in E-Learning environments. *Computers in Human Behavior*.

The Impact of Rewards on Creativity

Friedman, R. S. (2009). Reinvestigating the effects of promised reward on creativity. *Creativity Research Journal, 21*, 258-264.

Eisenberger, R., & Rhoades, L. (2001). Incremental effects of reward on creativity. *Journal of Personality and Social Psychology, 81*, 728-741.

Pink, D. H. (2009). *Drive: The surprising truth about what motivates us* (pgs. 32-57). New York: Riverhead Books.

Issues of Transfer in Creativity and Critical Thinking:

Halpern, D. F. (1998). Testing critical thinking for transfer across domains. *American Psychologist, 53*, 449-455.

Helsdingen, A., van Gog, T., & Merriënboer, J. (2011). The effects of practice schedule and critical thinking prompts on learning and transfer of a complex judgment task. *Journal of Educational Psychology, 103*, 383-398.

Additional Topics:

O'Connor, A. J., Nemeth, C. J., & Akutsu, S. Consequences of beliefs about the malleability of creativity. *Creativity Research Journal, 25*, 155-162.

Jarosz, A. F., Colflesh, G. J. H., & Wiley, J. (2012). Uncorking the muse: Alcohol intoxication facilitates creative problem solving. *Consciousness and Cognition, 21*, 487-493.

Birney, D. P., Beckmann, J. F., & Seah, Y. Z. (2016). More than the eye of the beholder: The interplay of person, task, and situation factors in evaluative judgements of creativity. *Learning and Individual Differences, 51*, 400-408.

Kaufman, J. C., Beghetto, R. A., & Dilley, A. (2016). Understanding creativity in the schools. In A.A. Lipnevich et al. (eds.), *Psychosocial Skills and School Systems in the 21st Century*, The Springer Series on Human Exceptionality, DOI 10.1007/978-3-319-28606-8_6.

- Merrotsy, P. (2013). A note on big-C creativity and little-c creativity. *Creativity Research Journal, 25*, 474-476.
- Runco, M. A. (2014). "Big C, little c" Creativity as a false dichotomy: Reality is not categorical. *Creativity Research Journal, 26*, 131-132.
- Hong, E., O'Neil, H. F., Peng, Y. (2016). Effects of explicit instructions, metacognition, and motivation on creative performance. *Creativity Research Journal, 28*, 33-45.
- Puryear, J. S. (2015). Metacognition as a moderator of creative ideation and creative production. *Creativity Research Journal, 27*, 334-341.
- Mullet, D. R., Willerson, A., Lamb, K. N., & Kettler, T. (2016). Examining teacher perceptions of creativity: A systematic review of the literature. *Thinking Skills and Creativity, 21*, 9-30.
- Davies, D., et al. (2014). The roles and development needs of teachers to promote creativity: A systematic review of literature. *Teaching and Teacher Education, 41*, 34-41.
- Karwowski, M., et al. (2016). Is creativity without intelligence possible? A necessary condition analysis. *Intelligence, 57*, 105-117.
- Kandler, C., et al. (2016). The nature of creativity: The roles of genetic factors, personality traits, cognitive abilities, and environmental sources. *Journal of Personality and Social Psychology, 111*, 230-249.
- Grohman, M. G., et al. (2017). The role of passion and persistence in creativity. *Psychology of Aesthetics, Creativity, and the Arts, 11*, 376-385.
- Williams, R., Runco, M. A., & Berlow, E. (2016). Mapping the themes, impact, and cohesion of creativity research over the last 25 years. *Creativity Research Journal, 28*, 385-394.