Course Syllabus
CEP 902, “Psychology of Learning School Subjects”
Spring 2018
Thursday, 9:10am–12:00pm
132 Erickson Hall

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Individual Meetings: Just after class is good for quick check-ins. The hour after class will be open for informal and/or ask-directed meeting, either in the classroom or in my office. Other times are available as needed (just ask, in person or by e-mail).

Overview
In this doctoral seminar we read, analyze, and discuss research (i.e., theory and supporting empirical evidence) on how students learn in different school subjects. Since a major goal of mandatory schooling (grades K–12) is that students become competent in these subjects, an important task for educational research is to develop insightful and educationally useful accounts of how that learning occurs. The research we will examine highlights how different perspectives on learning (behavioral, information-processing, social cognitive, constructivist—both "individual" and "social" variants, and “post-cognitive” socio-cultural or discursive) offer different frames for studying the learning of complicated knowledge and skills and different insights into how that happens. Four broad questions are addressed for each subject-matter, course reading, and theoretical perspective:
  • what does it mean to know (or perform competently in) that subject?
  • how is knowledge/skill/competence acquired—that is, how does learning happen?
  • how convincing is some analysis of learning (claims and evidence)?
  • how educationally useful is the analysis?

The seminar also provides extensive practice in analysis and writing on these issues. Students are expected to (1) participate actively in all class discussions of course readings, (2) write critical analytical summaries of those readings, and (3) complete an individual project that explores research on learning of some content related to schooling.

Objectives
The primary course goal is to provide a structure for students to think more carefully about learning the traditional subjects taught in school (though such learning is not bounded by experiences in school classrooms!). The desired outcome is that you will able to address the question, “what does it mean to learn subject X?,” from a variety of perspectives and weigh the strengths and weaknesses consistent with each perspective. In order to achieve this goal, we will examine and analyze a range of theoretical perspectives and explanations of what it means to learn some subject and the empirical evidence presented by those theories.

Significant progress is anticipated along three dimensions:
  • You will become more sophisticated and clear in your thinking about: (1) the nature of knowledge/skill/competence in various school subjects, (2) the nature of learning, and (3) the role of theories in the study of human learning.
  • You will improve your analytic writing capabilities.
• You will explore and deepen your knowledge of related content not covered in the course that is connected to your longer-term academic interests.

Assignments
Participation in class discussions. The bulk of class time will be spent discussing the assigned course readings each week. You must carefully read (and when necessary reread) the assigned readings and be prepared to engage in such analytic discussions. Much of the discussion—and therefore much of the preparation for it—will center on the same five broad questions/issues each week that structure the Weekly Critical Summaries. Once we get into the flow of the content and the semester, you may also be involved in leading class discussions.

Critical Summaries: You will write four analytical summaries of assigned readings (suggested length: 8–10 double-spaced pages). The goals of these papers are to improve your analytical thinking, inquiry, and writing and to sharpen class discussions. The summaries take time and energy to prepare but have proven their worth in this course. You get to choose the readings for three of the four summaries; all students will write their first critical summary on the same topic/reading. (See the Guidelines for Writing Critical Summaries below for details, including submission deadlines.)

The Course Project: Most of the course work focuses on a common set of readings—reading, speaking & listening, and writing about the ideas they contain. While there are clear advantages to thinking together about shared content, each of you has your own interests and (for some) research goals relative to school subject matter. The course project provides the space to explore other research on learning some content that may be part of or related to some school subject. There are many variants of this general idea, not limited to the following possibilities.

One option is to explore other research on learning one of our featured subjects. A second variant is to explore research on another school subject. A third is to explore research on how a specific population of students (e.g., recent immigrants, limited English speakers, children with some biological or cognitive exceptionality) learn some school subject. This project will be most successful if you make some key decisions relatively early in the course, so that you are not looking for a project topic late in the semester.

The form of the course project will be a paper that presents: (1) the subject or content you chose and your rationale for that choice, (2) your summary of the theory and empirical research that you found and read, (3) a critical evaluation of that work, and (5) a description of what you would read or do next to extend this work. We will revisit these four components later in the semester to see how well they fit.

Completion of the course project involves two written documents:
• A short proposal (@ 1 page) defining the direction of your project is due on or before class time on Week 8 (March 1st, just before MSU’s Spring Break);
• The paper itself is due on May 2nd, the Wednesday of Exam Week.

Submitting Your Work: Given our small numbers, the most efficient method of submitting your work is to send attachments to me at the e-mail address given above. Though professional documents are often (and increasingly) submitted in the PDF format, such files are hard for me to comment on, and my commenting back to you on your writing is an important aspect of the course. So please submit your course work in MS Word. If you do not have that application, you can compose in Google docs and download your work as a Word file.

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Readings
All course readings are available for download from the D2L course site, organized by week. You are free to decide for yourself whether you want to work from a paper copy of the readings or an electronic copy, but either way you must have the readings with you in class when we discuss them.

Weather & Other Causes of Absences
MSU calls the semester from January through April the “Spring” semester, but as you know, this is a serious misnomer. “Winter” semester would be entirely more accurate. Because winter in Michigan is “real winter,” we must expect that we will have “weather events” on some Thursday(s). What you need to know now is that a very serious weather event is required for me to cancel class. Unless we are having a blizzard or the roads are all solid ice, I will drive in and hold class in 132. But because our classroom is 132 Erickson, you can participate remotely if you need to. Everyone in class will set a Beam account to support remote participation via the robots in 132 as needed.

If a really serious weather event does happen, I will send a note by 8am canceling class. What is more likely is that what I consider “extreme” weather will not happen, but snow and ice will. If you feel that you cannot get to class on any Thursday morning for any reason, please send me an e-mail before 9am so that I know you will not be attending in person. In most all cases, you should be able to “beam” in and participate remotely. If for any reason, you cannot participate either physically or remotely, your first step in figuring out what you missed is to talk to a fellow student. This is important so that you can be prepared for the next class meeting. After that discussion, if you have additional questions, check with me.

Schedule of Sessions, Assignments, and Readings
Note: Readings are listed on the day when they will be discussed. They must be read prior to that class session.

Week 1, January 11th
Getting Started; Introductions
Introduction to the Course
  Learning vs. development
  The domain-specific/domain-general continuum
  Learning outcomes in subjects: Knowledge, skill, understanding, and more
Student introductions
Major course assignments
  Why we write
  Critical Summaries (everyone for Hayes & Flower)
  Course Project—some ideas
School subjects
  Your “votes” in December
  The problem of silos (versus the unity of human experience)
  The big four subjects in schools
  The current preoccupation with STEM disciplines
Introduction to writing as a school subject
  Why we start with writing
  Your experiences and challenges in writing
What is different in academic (analytic) writing?
Review the weeks of focus on writing

Readings:
Thorndike, E L. (1922). *The psychology of arithmetic* (preface, table of contents, and general introduction (7 pages)

Section on Writing

**Week 2, January 18th**

**Writing I: Hayes & Flower, An Information Processing Perspective**
What is written (product); how it is written (process); who is writing (writers); why are they writing?

Hayes & Flower’s frame and analysis
- Frame: early information-processing psychology
- Limited capacity, juggling constraints, planning & strategies
- Central role of planning
- Evidence presented in support of the theory
- Scientific evaluation: Useful to know about internal (cognitive) processes?
- Practical evaluation: Usefulness to teachers?
- What is Hayes & Flower’s view of learning (as change)?

Brief overview of the Berieter & Scardamalia model

Writing your first critical summary

Readings:
Course Syllabus (especially “Guidelines for Writing Critical Summaries”)
   - chapter 1, “Identifying the organization of the writing process.” (27 pages)
   - chapter 2, “The dynamics of composing: Making plans and juggling constraints”, (20 pages)

Assignments:
Critical Summary on Hayes & Flower (everyone); due Monday, January 22nd (end of the day)
+ Your three “free choice” Critical Summaries (2 “after class discussion,” 1 “before class”)

For Further Study:
   - chapter 1, “Two models of the composing process” (28 pages)

**Week 3, January 25th**

**Writing II: Zimmerman & Risemberg, A Self-Regulated Learning Perspective**
Your work on the Hayes & Flower summaries

The behavioral and cognitive elements in Zimmerman and Risemberg’s view
Connections to Bandura’s social-cognitive perspective
Discussion of Zimmerman and Risemberg’s view and Graham and Harris’ evidence
- The authors’ characterization of previous models
- The self-regulation framework
- Self-regulation applied to writing
- Learning as increasing (and increasingly sophisticated) self-regulation
- Empirical evidence; SR is cause or correlate?
Insights for teachers of writing?

Readings:

Assignment:
Critical summary of Zimmerman & Risemberg (with additional evidence from Graham & Harris)?

For Further Study:

Section on Mathematics

Week 4, February 1st
Mathematics I: Carnine & Gersten, The Direct Instruction Perspective
The many faces of school mathematics
Mathematics: school and the professional discipline
The skill vs. understanding debate
Review Thorndike’s view of mathematical knowledge and learning
  - Decomposition: Abilities and bonds
  - Focus on small, discrete skills & assessment matches much of today’s practice
Direct Instruction: Teaching well-defined skills
  - Decomposition into discrete skills
  - Focus on special needs (LD) students
  - Emphasis on experimental research
  - What is the theory of learning?
  - Black-box models of process
  - Evidence for lasting effects
  - What else but skills?

Readings:

Assignment:
Critical Summary of Direct Instruction, Darch et al. & Becker & Gersten?

For Further Study:
Thorndike, E. L. (1922). The Psychology of Arithmetic (chapters 1-3)

Week 5, February 8th
Mathematics II: Cobb, The Social Constructivist/Emergent Perspective
Elementary mathematics skills, understanding, problem solving, and beliefs
Moving from individual construction to social meaning-making in classrooms
Coordinating two planes of learning analysis
   An alternate view of learning as knowledge construction
   Coordination of individual psychological and group sociological perspectives on learning
   Learning as a joint process of individual construction and social negotiation
   The learning model and the instructional model (contrast to DI)
   What evidence that the program works?
   The role of the teacher in classroom communities
   Without a research team for support, what are the lessons for teachers?

Readings:

Assignment:
Critical Summary of Cobb and colleagues’ work?

For Further Study:

Week 6, February 15th
Mathematics III: Einat Heyd-Metzuyanim, *The Development of Failure in Middle School*
Introduction to a discursive perspective on learning
Focus on the intersection between cognition and affect
Relations between school content, teachers, and parents in students’ learning
The transition from the expectation of success to the expectation of failure

Readings:

Assignment:
Critical Summary of Stevens?

For Further Study:

Week 7, February 22nd
Mathematics IV: Alan Schoenfeld and Problem-Solving in High School
The mathematician’s view of high school teaching and learning
Problems vs. exercises in mathematics
Discussion of Schoenfeld’s views
   What are the pieces of his theory of learning?
   How does his view of enculturation compare to Cobb’s?
   Does the evidence fit the theory?
   Are his expectations for teaching and learning too high?

Readings:
Schoenfeld, A. H. (1988). “When good teaching leads to bad results: The disasters of well-taught’ mathematics courses” (22 pages)
Assignment:
Critical Summary of Schoenfeld?

For Further Study:

Section on History

Week 8, March 1st

History I: Introduction to History (and “social studies” more generally)
Different perspectives on what makes history distinctive as a school subject
How does 5th grade classroom activity look different in mathematics and social studies?
Two fundamentally different approaches: National heritage vs. doing historical analysis
Why we will explore recent efforts to “do historical analysis” in school

Readings:
VanSledright, B. (2002). In search of America’s past: Learning to read history in elementary school, Chapter 1: “W(h)ither history education?”

Assignment:
**One page course project proposals due before class**
Check and edit (if needed) one of the four basic components of reading ability: phonemic awareness, phonics instruction, fluency, comprehension, “Checking” means looks at at least one other source on the meaning of term.
No Critical Summaries this week

For Further Study:

March 8th: MSU Spring Break; NO CLASS MEETING

Week 9, March 15th

History II: Doing historical analysis in elementary school, part I; Barton
Elementary students’ abilities to evaluate and relate different historical documents
Conflict between “what actually happened” and differing and conflicting perspectives on the same events

Reading:
Barton, K. C. (1997). “‘I just kinda know’: Elementary students’ ideas about historical evidence” (20 pages)

Assignment:
Critical Summary of Barton?
**One page course project proposals due before class**
Check and edit (if needed) one of the four basic components of reading ability: phonemic awareness, phonics instruction, fluency, comprehension, “Checking” means looks at at least one other source on the meaning of term.
No Critical Summaries this week

For Further Study:

Week 10, March 22nd
History III: Doing historical analysis in elementary school, part II; VanSledright
Elementary students’ abilities to evaluate and relate different historical documents
Conflict between “what actually happened” and differing and conflicting perspectives on the same events
Relation between the ability to “do historical analysis” and reading ability
Differential effects of this approach to history on different students
Readings:
VanSledright, B. (2002). In search of America’s past: Learning to read history in elementary school, Chapter 1: “W(h)ither history education?”
Assignment:
Critical Summary of VanSledright?

For Further Study:

Week 11, March 29th
History IV: Doing historical analysis in high school; Reisman
Change in research method from observational work to quasi-experiment
Developing a “document-based” high school curriculum
Curricular differences between the traditional text and the document-based text
Role of the teachers in implementing the document-based course
Comparison of outcome measures: traditional vs. document-based
Readings:
Assignment:
Critical Summary of Reisman?

For Further Study:

Section on Science

Week 12, April 5th
Science I: Intro to science & Lehrer, Schauble & colleagues: Modeling & experimentation in elementary school
School science as the study of often invisible and intangible phenomena (Johnstone)
A visit to a different kind of elementary science classroom (Lehrer & colleagues)
  Different origin of content (problems and activities)
  The meaning of experimenting (inquiry and dialogue)
  Modeling in science: What are models and why are they powerful
  The role of teachers in student-centered inquiry

Reading:

For Further Study:

Week 13, April 12th
Science II: McCloskey, Naïve theories of motion
Intuitive understanding of physics cast as an obstacle to learning
  What are misconceptions (about motion) and where do they come from?
  How do they effect learning? Is the effect all negative? Why are they so durable?
  Are there “intuitive conceptions” that are not “misconceptions”?
  Is McCloskey correct in calling them “naive theories”?
  Should the educational objective be to replace them?
  Insights for teachers of science?

Reading:

Assignment:
Critical Summary of McCloskey?

Week 14, April 19th
Science III: diSessa, Knowledge in Pieces & Reshaping Intuitive Knowledge
What are p-prims and where do they come from?
How are they used in reasoning about “why things happen the way they do?”
How does intuitive physics knowledge (p-prims) orient learning physics in school?
Implications of large-scale knowledge systems for learning
How does diSessa’s account differ from McCloskey’s?
Insights for teachers of science?

Reading:

Assignment:
Critical Summary of diSessa?

For Further Study:

Week 15, April 26th
Science IV: Lemke, Learning science as learning a discourse
Learning science as situated in school classrooms
Knowing = talking effectively; learning as acquiring the ability to talk (science)
Power, discourse, and the shaping role of language
How compelling is Lemke’s dismissal of cognitive states?
Strong role for teachers
Insights for teachers of science?

Readings:
Lemke, J. (1990). *Talking science*
    Introduction & chapter 1, “Two minutes in one science classroom” (30 small pages)
    chapter 4, “The science in the dialogue” (40 small pages)

Assignment:
Critical Summary of Lemke?

Exam Week, May 3rd
Wrap-Up and Synthesis
    Short meeting
    Wrap-up on learning school subjects
    Two sentence reports on projects
    Group course evaluation

Assignment:
Course Projects, due Wednesday, May 2nd, 5pm
Assigned Readings


**Recommended for Further Study**


Green, J. L. (1990). Reading is a social process. In J. Howell, A. McNamara, & M. Clough (Eds.), *Social context of literacy*. Canberra, Australia: Department of Education, Canberra.


National Reading Panel report (1999).


Guidelines for Writing Critical Summaries
CEP 902, Spring 2017

Purpose. One major course goal is that you will develop your abilities to read, summarize, and critique empirical research on learning. You will use these abilities repeatedly as a professional, and they are in no way tied specifically to research on learning school subjects. They are involved in any critical evaluation of empirical research (that is, research that makes claims from observable data). Clear thinking and clear writing are also closely associated (as both are with clear speaking), as often we don’t really know what we think until we try to write down our ideas. Developing your analytic writing skills will help you think clearly and critically. It will also help you write more powerfully and persuasively in your own area of research and educational practice.

The Importance of Analytic Summary. Though the term “summary” may sound straightforward, it can be quite challenging to summarize research that presents some analysis of human learning in a clear, fair, and comprehensive manner. If you cannot summarize the research fairly, you cannot critically evaluate it.

Quoting key passages from the text usually produces neither effective summaries nor lasting understanding. You have summarized a piece of research if you can locate the key ideas (e.g., central concepts) and findings in the text and express them into your own words. Summarizing means getting the gist of things; excellent summaries are accurate, concisely stated, and given the author’s own words. This is not to say that excellent summaries never use quotes; they can and do. But if you resist the temptation to quote and instead try to express the author’s ideas in your own terms, you will certainly get more of the work and remember more.

Number. You will write summaries on four different weeks this semester. Everyone will write a summary of the Hayes and Flower reading (due in Week 3); the remaining three will be your individual choices. Two of them will be due the Monday after the class discussion that focuses on that reading(s); the third will be due before the class in which we discuss the reading(s). Typically, students have felt that class discussions clarify their understanding of the reading(s) and support their writing, so submitting summaries after class is easier. I am asking you to submit one summary before the class discussion so that you can assess your “stand-alone” summary skills. In making your choices of the three “free-choice” summaries, consider your interests in the subjects and the topic (as described in the Schedule) and your assignments in other courses.

Parts of the Summaries. Each critical summary will address the same five general questions. Organize your summaries so that it is clear which of these issues you are addressing. One simple way to do that is to use section headers the underlining phrase below to demarcate each section. Section headers are very effective ways of directing the attention of your reader. If it feels uncomfortable to start your summary with what feels like an abrupt beginning (describing the theoretical perspective) you are welcome to start with a short introductory paragraph.

1. What is the theoretical perspective (or model) that the authors use to explain how students learn? Theoretical perspectives (and models) describe the process that students traverse in learning (becoming more able or knowledgeable). Try to find all the important pieces of the perspective and write them down as clearly and succinctly as possible. This question may sound more difficult to address than it usually is. In many cases, authors are explicit about their
theoretical perspective in text and/or diagrams. Authors’ perspectives or models often include two components: (1) a “grand” theoretical perspective/model of learning that has oriented the research and (2) an application of the grand perspective/model to explain the learning of the specific content (in this case, some school subject). A third sub-question to attend to is: What role (if any) do teachers play in the learning process?

2. What evidence do the authors offer to support their analysis? Evidence will often be empirical in nature. Empirical evidence of learning derives from observations or measures of learning—what learners say and do in naturally-occurring contexts or on assessments. Other kinds of evidence (e.g., historical or theoretical) may also be cited. Remember that authors can be quite convincing without being clear about their evidence. Rhetoric is powerful, even in academic research! Watch out for it.

3. What is the authors’ view of the skill/competence they are studying? For example, if the research focuses on learning to write, what is the author(s)’ view of competent writing? Is it a process, the ability to product a kind of written product, or both? This is an important issue as researchers often differ on their views of the target competence, although they use the same word (e.g., “writing”). Without a clear view of the authors’ view of the hoped for skill or competence (that is, what the goal of learning a subject actually is), it is hard to make sense of their perspective and evidence. Perspective, evidence, and view of the target competence are three equally important elements in any study of learning.

Over time, this question has been the hardest for students to address because (1) authors are often not very explicit on this issue in their writing, and (2) it can be hard to separate the authors’ theory of learning from their view of the target competence. For a long time, this section of the critical summary came first; lately I am experimenting with a different order.

4. What are the strengths of the author’s analysis? Most often, there are some. For example, does the analysis provide you with new insights on learning in that subject-matter area? Explain why you think the features you cite are strengths. How are those insights useful and to whom (e.g., to researchers or teachers or both)?

5. What are the limitations or problems with the analysis, including: (1) the authors’ conceptualization of the competence they are studying, (2) the adequacy of their theoretical perspective, (3) the linkage between that perspective and the evidence they cite, and (4) the usefulness of the overall analysis? If you see many weaknesses, it is fine to name many, but focus your writing on the few that seem most important. Most of the time you will find that you need to rank order limitations and discuss that seem most consequential.

Suggested Length. 8–10 pages, double-spaced.

Submission. Please submit all your critical summaries to me by e-mail and make your first or last name the first word in your filename (this is for my storing and retrieving your work).