Syllabus for
Cognitive Psychology of Skill and Knowledge Acquisition (PSCH 457)

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Purpose of Course

The purpose of this course is to familiarize students with basic research on cognitive change. There are only a handful of different basic ideas about how knowledge and cognitive skills are acquired, but many variations on each idea. The learning goals for this course are that for each idea about learning, the student should be familiar with (a) its historical source, (b) one or more contemporary formulations, and (c) some recent empirical study or studies. At the end of the course, the student should be able to think with each of those ideas to explain learning phenomena. In addition, the student should have some basis for evaluation, i.e., for choosing whether to believe in any one of these ideas.

Although the focus of the course is on the cognitive psychology of these various change mechanisms, the course has an interdisciplinary flavor, because cognitive change is discussed in a variety of fields: cognitive psychology, developmental psychology, social psychology, educational research, the history and philosophy of science and even artificial intelligence. Scholars in these different fields invent, re-inventing and pass around a limited set of ideas about cognitive change.

Format

The class is taught in a seminar format. The main activity of the class is to read papers, compare the theories and explanatory principles proposed in them and discuss their relations to empirical data. It is assumed that everybody comes to class ready to participate in the discussion about the readings.

Each set of readings will be introduced via a lecture that covers the history and general framework that the readings exemplify.

In addition, each student will undertake a small project (see below).

Schedule

The class is scheduled to meet in room 1076 in BSB, at 2:00 - 4:50, on Wednesdays.

Literature

Ohlsson, 457 Skill & Knowledge Acquisition
There is no textbook for this course, because nobody has written one. The literature consists of journal articles and book chapters. There will usually be two readings per week. They consist of a mixture of classical and recent papers.

Examination

Class attendance. The first criterion for successful completion of the course is that you attend. If something prevents you from attending, you need to contact me ahead of time to verify that you have a valid reason to miss class. If there is an emergency that prevents you from attending, you need to get in touch with me as soon as possible afterwards. You can miss class exactly once without a valid reason without affect on your grade.

Discussion participation. The second criterion is that you actively participate in the class discussions. Everybody is expected to come to class having read the readings well enough to discuss them. I will sometimes issue a list of questions to keep in mind while you are reading; when I do, I expect you to come to class ready to comment on those questions.

Research project/Presentation. Each of you will be assigned a question about skill or knowledge acquisition. Your task is to go into the literature and try to find the answer. You then report back to the class what the answer is. The report is both oral and written. The oral part is a brief (15 minutes) presentation to the class of what you found. I'll schedule those presentations for the last class sessions in the semester, but if you are ready to report earlier, that's fine. The written part should contain a statement of the question, an explanation of why the question is important, a method section describing how you went about finding the answer, and then a presentation of the answer. You and I negotiate the question you should pursue.

Collaborative learning works, so you can team up with a course mate for this project, if we can find a question that both of you find interesting. I don't want more than two students on any one question.

The written paper is due by 5 pm on the last day of classes.

In summary, grading is based on (a) attendance, (b) active participation in class discussions, (c), and (d) pursuing and reporting on a research question.
READING LIST

Week 1: Introduction

**Lecture: Classical ideas**


Week 2: Skill acquisition-1: Basics

**Lecture: History and conceptual framework**


Week 3: Skill acquisition-2: Rule based systems and learning curves


Week 4: Skill acquisition-3: Feedback


Week 5: Skill acquisition-4: Learning from examples


**Week 6: Skill acquisition-5: Transfer of training**


**Week 7: Skill acquisition-6: Learning in the very long run**


**Week 8: Skill acquisition-7: Wrap Up; What's the Complete Theory?**


**Week 9: Knowledge acquisition-1: Introduction**

*Lecture: History and background to complex declarative learning.*

Week 10: Knowledge acquisition-2: Text comprehension


Week 11: Knowledge acquisition-3: Schema theory


Week 12: Knowledge acquisition-4: S Self-Explanation


Week 13: Knowledge acquisition-5: Conceptual change-1


Week 14: **Knowledge acquisition-6: Conceptual change-2**


Week 15: **Life Span Change**

