Educational Psychology
Introduction to Learning Sciences II

Course Info
Instructor
Martina Rau
Office: 1086
Email: marau@wisc.edu
Office hours: by appointment

Teaching Assistant
Joe Michaelis
Office: 1057
Email: jemichaelis@wisc.edu
Office hours: by appointment

Course Overview
This is the second of a two-semester course sequence that establishes the intellectual foundations for research in the learning sciences. In 795, we got to know major theoretical perspectives that are foundational for the learning sciences. In 796, we will look at how these theoretical perspectives have shaped interventions designed to help students learn, and what methods we can use to analyze learning processes to better understand by which mechanisms such interventions enhance learning.

We will revisit foundational theoretical perspectives by discussing theoretical models that are more “applied” because they seek to explain how learning happens and suggest ways in which we can enhance learning. For each theoretical model, we will discuss example interventions that implement theoretical models of learning. The interventions we will discuss are only examples of many other possible interventions that use variants of the same theoretical model. Moreover, the interventions we will discuss tend to combine multiple theoretical perspectives. Therefore, we will discuss which additional theoretical models these interventions draw on and which theoretical perspectives might be useful to analyze how they foster learning.

For each theoretical model, we will also discuss an example research method that is used to study learning processes fostered by interventions that make use of this theoretical model. Again, each research method that we will discuss is only an example of many other possible methods that can be used to study learning processes based on a particular theoretical model. Likewise, the same method can be used to study learning using a different theoretical lens. Therefore, we will discuss alternative research methods that can be used to study learning processes fostered by different interventions using different theoretical lenses.

Expectations
If you are enrolled in this course for credit you are expected to complete all of the required readings, postings, class presentations, major and minor assignments, as well as attend and participate in each class. Absences require a notification, preferably by e-mail, prior to class. Late assignments must be discussed with the instructor before they are due.

Class Cancellation Notices
Occasionally, severe weather, illness, or other circumstances may require cancellation of a class meeting. If this is so, we will send out an email to the class email list. It is the responsibility of each class member to be alert for and check email from the instructor or TA.

Required Preparation Materials
All readings and videos for the course are listed in this document. Dates for completing reading assignments are listed in the Class Schedule, attached. These plans are not set in stone and may be changed if circumstances warrant. For your convenience, articles may be downloaded from the Moodle Course Site: https://ay15-16.moodle.wisc.edu/prod/course/view.php?id=839
Class Participation in Discussions
Each week, you should prepare one question you would like to discuss in class. In addition, you should come to class prepared to participate in class discussions. You should study each reading and be able to share critical analyses in class. While we can expect a healthy debate on some issues, you must demonstrate respect for others with whom you disagree. We also ask that you monitor your own level of class contribution and allow space for others to contribute to the class discourse. We will actively monitor this as well and may ask those who tend to speak often to refrain from dominating and allow others to contribute.

File Formats for Assignments
All assignments are due in PDF format by email to marau@wisc.edu and jemichaelis@wisc.edu. Use Times New Roman, 12pt, single space, margins 1” on all sides. Include figures and tables in line with text. For all other specifications, refer to the APA style manual: http://www.apastyle.org/manual/

Communication
All email communication must include the TA and have the course number in the subject line.

Assignments
Extension Policy
If you need an extension due to unforeseeable circumstances, you need to negotiate with the instructor at least 48h prior to the due date.

Weekly Assignments
Summary and discussion questions
By Mondays, 11:59pm, you have to post a brief summary of the required resources (250 words max), plus a discussion question (100 words max) about the required readings of the given week. The summary should describe your own take-away from the reading. The discussion question should suggest interesting points of discussion; it should not be a factual question. For example, discussion questions may ask about how one of the readings relates to something you have read before in class or outside of class, it may propose examples from your own experiences in the world for topics discussed in the readings, it may ask about differences in viewpoints expressed by the readings, among others.

Capstone Project
The capstone assignment will be a proposal for an empirical research study. The proposal should combine at least two complementary theoretical perspectives. It should propose to test an intervention on learning outcomes and learning processes. To test the intervention, the study should use a multimethods approach in that it combines methods that use a different unit of analysis to gain complementary insights into the mechanisms through which the intervention affects learning. The proposal can build on the projects from 795, but it does not have to.

The deliverables will be done individually. However, one week prior to the deadline for each deliverable, you will share your write-up with a partner from whom you will receive feedback. You are encouraged to implement the feedback in your assignment prior to submission.

1. Introduction
The introduction of the proposal should describe which theoretical perspectives you chose to focus on, how they complement one another, and what open research questions follow from combining these theoretical perspectives. The assignment may not exceed 1000 words, excluding figures and references. Specific assignment details and grading rubric will be provided.

Due to partner: February 3 at 11:59 pm; due to instructor: February 10 at 11:59pm.

2. Methods
In the methods section, you will describe the study design, instructional and assessment materials, as well as planned analyses for the proposed study. The assignment may not exceed 1000 words, excluding figures and references. Specific assignment details and grading rubric will be provided.

Due to partner: February 24 at 11:59 pm; due to instructor: March 2 at 11:59pm.

3. Results and Discussion
The results section should describe anticipated results for each method. The discussion section should describe the anticipated contributions, detailing why they are of theoretical relevance (i.e., yield novel knowledge about how people learn) and of practical relevance (i.e., allow us to better educate learn-
A detailed rubric will be posted on Moodle. Course grades will be based on student performance in the following areas:

- **Class participation & posts**: 20%
- **Deliverable 1**: 20%
- **Deliverable 2**: 20%
- **Deliverable 3**: 20%
- **Final write-up & presentation**: 20%

**Due to partner: March 30 at 11:59 pm; due to instructor: April 6 at 11:59pm.**

### 4. Final Write-Up and Presentation

You will present the final version of your research proposal in a write-up and in class. Integrate the feedback you received on previous capstone assignments. The final write-up may not exceed 4000 words, excluding figures and references. Specific assignment details and grading rubric will be provided. For the class presentation, plan on a 10-minute presentation, followed by 10 minutes of discussion.

**Due to partner: April 20 at 11:59 pm; due to instructor: April 27 at 11:59pm. Final presentations will take place in class on May 4.**

---

### Grading

- **Disability Reasonable Accommodation**
  If you qualify for accommodations because of a disability, please submit a letter to an instructor that outlines your request in a manner that is timely and consistent with established university policies for making such request so that your needs may be addressed. Policies for accommodating disabilities are available through the McBurney Disability Resource Center, 903 University Ave., 608-263-2741 (phone), 263-6393 (TTY), 265-2998 (Fax), mcburney@uwmadmail.services.wisc.edu. For additional information, please see [http://www.mcburney.wisc.edu/](http://www.mcburney.wisc.edu/)

- **Religious Reasonable Accommodation**
  Every effort shall be made to reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled exams, assignments, or required attendance, provided advance notification of the conflict is given. Whenever possible, students should notify the instructor during the first two weeks of the semester to request special accommodation.

- **Student Honesty and Rules of Conduct**
  Academic honesty requires that the course work (drafts, reports, examinations, papers) a student presents to an instructor honestly and accurately indicates the student’s own academic efforts. These policies are available at [http://www.studentaffairs.wisc.edu/](http://www.studentaffairs.wisc.edu/)

  UWS 14 is the chapter of the University of Wisconsin System Administrative code that regulates academic misconduct. UW-Madison implements the rules defined in UWS 14 through our own “Student Academic Misconduct Campus Procedures.” UWS 14.03 defines academic misconduct as follows:

  “Academic misconduct is an act in which a student: (a) seeks to claim credit for the work or efforts of another without authorization or citation; (b) uses unauthorized materials or fabricated data in any academic exercise; (c) forges or falsifies academic documents or records; (d) intentionally impedes or damages the academic work of others; (e) engages in conduct aimed at making false representation of a student’s academic performance; (f) assists other students in any of these acts.”

  If you are accused of misconduct, you may have questions and concerns about the process. If so, you should feel free to call Student Advocacy & Judicial Affairs (SAJA) in the Offices of the Dean of Students at 263-5700 or send an e-mail to dos@bascom.wisc.edu.
### Class Schedule

<table>
<thead>
<tr>
<th>Theme</th>
<th>Date</th>
<th>Topic &amp; Readings</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Introduction</strong></td>
<td>1/20</td>
<td>Week 1: Introduction &amp; Recap</td>
<td>• none</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Required preparation resources:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sawyer (2006): Introduction</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sawyer (2014): Introduction</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recommended resources:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ISLS Video Chris Hoadley</td>
<td></td>
</tr>
<tr>
<td><strong>Theoretical model 1</strong></td>
<td>1/27</td>
<td>Week 2: Scaffolding</td>
<td>• Summary and discussion question</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Required preparation resources:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reiser &amp; Tabak (2014)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tabak &amp; Baumgartner (2014)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recommended resources:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ISLS Video Iris Tabak &amp; Brian Reiser</td>
<td></td>
</tr>
<tr>
<td><strong>Intervention 1a</strong></td>
<td>2/3</td>
<td>Week 3: Cognitive Tutors</td>
<td>• Summary and discussion question</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Required preparation resources:</td>
<td>• Introduction due to partner</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Koedinger &amp; Corbett (2006)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>VanLehn (2011)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recommended resources:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ISLS Video Vincent Aleven</td>
<td></td>
</tr>
<tr>
<td><strong>Intervention 1b</strong></td>
<td>2/10</td>
<td>Week 4: Inquiry learning</td>
<td>• Summary and discussion question</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Required preparation resources:</td>
<td>• Introduction due to instructor</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cobb &amp; McClain (2006)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Linn et al. (2014)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recommended resources:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ISLS Video Sadhana Puntambekar</td>
<td></td>
</tr>
<tr>
<td><strong>Methods 1</strong></td>
<td>2/17</td>
<td>Week 5: Learning analytics and educational data mining</td>
<td>• Summary and discussion question</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Required preparation resources:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Baker &amp; Siemens (2014)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rosé et al. (2008)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recommended resources:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ISLS Video Carolyn Rosé</td>
<td></td>
</tr>
<tr>
<td><strong>Theoretical model 2</strong></td>
<td>2/24</td>
<td>Week 6: Cognitive apprenticeship</td>
<td>• Summary and discussion question</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Required preparation resources:</td>
<td>• Methods due to partner</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collins &amp; Kapur (2014)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collins (1991)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Recommended resources:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jean Lave talk</td>
<td></td>
</tr>
</tbody>
</table>
Week 7: Problem-based learning

Required preparation resources:
Lu et al. (2014)
Savery (2006)

Recommended resources:
ISLS Video Cindy Hmelo-Silver

Methods 2 3/9

Week 8: Discourse analysis

Required preparation resources:
Sawyer (2006)
Chiu (2008)

Recommended resources:
ISLS Video Ming Ming Chiu

Theoretical model 3 3/16

Week 9: Collaborative learning

Required preparation resources:
Miyake & Kirschner (2014)
Dillenbourg et al. (2009)

Recommended resources:
ISLS Video Pierre Dillenbourg

Spring break 3/23

Intervention 2 3/30

Week 10: Knowledge-building communities

Required preparation resources:
Scardamalia & Bereiter (2014)
Bielaczyk & Collins (2005)

Recommended resources:
ISLS Video Jim Slotta

Methods 3 4/20

Week 11: Game-based learning

Required preparation resources:
Steinkuehler & Squire (2014)
Barab et al. (2010)

Recommended resources:
Jane McGonigal talk

AERA 4/13

Intervention 3b 4/6

Week 12: Analyzing collaboration

Required preparation resources:
Enyedi & Stevens (2014)
Koschmann (2013)

Recommended resources:
ISLS Video Tim Koschmann

• Summary and discussion question
• Methods due to instructor

• Summary and discussion question

• Summary and discussion question

• Summary and discussion question

• Summary and discussion question

• Results & discussion due to partner

• Summary and discussion question

• Results & discussion due to instructor

• Summary and discussion question

• Final paper due to partner
<table>
<thead>
<tr>
<th>Conclusion 4/27</th>
<th>Week 13: Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Required preparation resources:</td>
</tr>
<tr>
<td></td>
<td>Sawyer (2014) Conclusion</td>
</tr>
<tr>
<td></td>
<td>Hoadley &amp; Van Haneghan (2011)</td>
</tr>
<tr>
<td></td>
<td>• Summary and discussion question</td>
</tr>
<tr>
<td></td>
<td>• Final paper due to instructor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Finale 5/4</th>
<th>Week 14: Final presentations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Final presentations in class</td>
</tr>
</tbody>
</table>


Videos


ISLS Video Carolyn Rosé – Learning analytics and educational data mining: http://isls-naples.psy.lmu.de/intro/all-webinars/rose_all/index.html

Jean Lave - An Apprenticeship in Critical Ethnographic Practice: http://vimeo.com/28855105


ISLS Video Ming Ming Chiu – Statistical discourse analysis: http://isls-naples.psy.lmu.de/intro/all-webinars/chiu/index.html


Jane McGonigal - Gaming can make a better world: http://www.ted.com/talks/jane_mYGONial_gam-ing_can_make_a_better_world?language=en

ISLS Video Tim Koschmann – Conversation and interaction analysis / ethnomethodological approaches: http://isls-naples.psy.lmu.de/intro/all-webinars/koschmann_all/index.html