

# Introduction to Theories and Methods in ITLS Part 1

Fall 2025

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## Course Description

Instructional Technologists and Learning Scientists are centrally concerned with how to *design for* and support *learning*. This course provides a broad overview of major theoretical perspectives that attempt to describe how learning works.

## Course Objectives

- Students will be able to *describe* prominent theories of learning and the key characteristics of each theory, including how it frames and explains learning.
- Students will be able to *compare* and *contrast* different theories of learning, including the theories within behaviorist, cognitivist, and sociocultural paradigms of learning.
- Students will be able to *interpret* how a theory of learning influences/shapes designs of learning environments, activities, and pedagogies.
- Students will be able to *interpret* how a theory of learning influences how researchers study learning (what methods they use).
- Students will be able to *describe* how these theories relate to their own experiences as a learner and educator.

## Course Resources

All course readings will be provided as electronic resources linked in the course box folder.

## Class Format

This is a seminar course focused on reading and analyzing texts and in-class discussions. In the ITLS department, we view each classroom as a safe space for all students to engage in thoughtful discussion and inquiry. On the first day of class we will create classroom norms and expectations together.

## Assignments

In order to engage in class discussions, please complete all assignments prior to the class meeting.

1. **Readings:** Each week there are required readings listed in the syllabus. Optional **Additional Resources** are included, such as readings or videos, to provide more

context on the topic. *Note: Readings are subject to change at the course instructor's discretion. Students will be notified of any changes.*

2. **Reading Analysis:** Each week, students will read several papers related to a focal theory. Each student should post their answers to the following questions before **5pm the Sunday before class**.
  - a. How does this theory characterize knowledge and learning?
  - b. How might researchers study learning through this lens? What might the methods look like? What kind of data would be needed?
  - c. What are the implications of the theory for the design of learning environments?
  - d. What questions did the reading raise for you? (Please post at least one question).
3. All students should read each other's posts before class. Please comment on posts with which you resonate, disagree, or which bring you new insight.
4. **Discussion Lead:** Each week, 1 student will be responsible for facilitating the class discussion. The facilitator will read students' posts and come up with discussion questions for class and then lead the in-class discussion on Tuesday. Discussion facilitators will fill out the [class slides](#) and use them to organize the meeting. Each student will end up facilitating 5 sessions over the course of the semester. Students will sign up for classes to facilitate on the first day of class, on [this page](#).
5. **Personal Learning Reflection (Final Assignment due December 9, 2025 at Midnight):** Reflect on your learning over the semester. How have your ideas about knowledge and learning changed? **Using about 2000 words (about four pages single spaced with 12pt font)**, Respond to the following prompts:
  - a. How do you define knowledge and learning? What theory do you resonate with or think you will use in your research?
  - b. How have your ideas about knowledge and learning changed over the semester?
  - c. What is the topic you are interested in exploring (research topic) and how does this learning theory inform your research? How does it shape your perspective or what you want to explore? What does it tell you about the methods? What does it tell you about designing for learning?
6. **Class Discussion:** Since this is a seminar style course, you should attend every class in person and participate in the discussions. If you are feeling unwell, please take care of your health and the health of your classmates by joining the class via the Class Zoom link.
7. **Course Grades:** Your final grade for the course will be composed of your participation in class discussions (50%), your participation in weekly online reading reflections (30%), and your personal learning reflection (20%).

## Course Schedule

Introduction to Theories in the Learning Sciences
<b>Week 1: Foundations</b> - August 26
Course Overview Learning Community Norms Housekeeping Personal Epistemology
<b>Week 2: Overview of the Learning Sciences</b> - September 2
<b>Primary:</b> Roschelle, J., Grover, S., Kolodner, J. (nd). <a href="#">Learning Sciences Primer</a> . CIRCL.  Bransford, J. D., Brown, A. L., & Cocking, R. R. (2000). <a href="#">How people learn</a> . Washington, DC: National academy press. [Ch. 1: From Speculation to Science]  <a href="#">Lee, V. (2017). A short history of the learning sciences. <i>Foundations of Learning and Instructional Design Technology</i></a> . (Online publication)  Listen to: <a href="#">Hoadley (n.d.) A Short History of the Learning Sciences</a> (Audio or Webinar)  <b>Additional Resources:</b> Bransford, J. D., Brown, A. L., & Cocking, R.R. (Eds.). (2000). <a href="#">How people learn: Brain, mind, experience, and school</a> . Washington, DC: National Academy Press.  Bruner, J. (1960). <a href="#">The process of education</a> (25 <sup>th</sup> ed.). Harvard University Press. – Chapters 1, 2 & 3  Fischer, F., Sommerhoff, D., & Keune, A. (2023). <a href="#">Perspectives on learning from the learning sciences</a> . In <i>International Encyclopedia of Education (Fourth Edition)</i> (pp. 44-56). Elsevier.
<b>Week 3: Historical Precursors to the Learning Sciences</b> - September 9
<b>Primary:</b> Bruner, J. (1997) <a href="#">Celebrating divergence: Piaget and Vygotsky</a> . <i>Human Development</i> , 40, 63-73  Piaget, J. (1964). <a href="#">Development and learning</a> . In R.E. Ripple & V.N. Rockcastle (Eds.), <i>Piaget Rediscovered</i> . (pp. 7-20). Ithaca, NY: Cornell University Press.  Vygotsky, L. S. (1978). <a href="#">Mind in society</a> . Cambridge, MA: Harvard University Press. (Chapter 6, pp. 79-91).  <b>Additional Resources:</b> Bransford, J. D., Brown, A. L., & Cocking, R. R. (2000). <a href="#">How people learn</a> . Washington, DC:

National academy press. [Ch. 2 How Experts Differ from Novices]

Crowley, K., & Jacobs, M. (2002). [Building islands of expertise in everyday family activity](#). Learning conversations in museums, 333356.

Kirschner, P. A. (2017). [Stop propagating the learning styles myth](#). Computers & Education, 106, 166-171.

**Week 4: Overview of Behaviorist, Cognitivist, and Constructivist Perspectives**  
- September 16

**Primary:**

[Learning Theories: Understanding How People Learn](#)- stop reading when you reach Activity 3.3

Wortham, S. (2003). [Learning in education](#). (pp.1-10).

Ertmer, P. A., & Newby, T. J. (2013). [Behaviorism, cognitivism, constructivism: Comparing critical features from an instructional design perspective](#). *Performance improvement quarterly*, 26(2), 43-71.

**Additional Resources:**

Doroudi, S. (2021, August 11). [A Primer on Learning Theories](#).

Greeno, J. G., Collins, A. M., & Resnick, L. B. (1996). [Cognition and learning](#). *Handbook of educational psychology*, 77, 15-46.

**Theory in Research:**

Feldon, D. F., & Clark, R. E. (2006). [Instructional implications of cognitive task analysis as a method for improving the accuracy of experts' self-reports](#). In *Avoiding Simplicity, Confronting Complexity* (pp. 119-126). Brill.

**Week 5: Overview of Situated, Distributed, and Sociocultural Perspectives**  
- September 23

**Primary:**

Freire, P. (1996). [Pedagogy of the oppressed](#) (revised). *New York: Continuum*. [Ch.2]

Hutchins, E. (1995). [How a cockpit remembers its speeds](#). *Cognitive science*, 19(3), 265-288.

Gutiérrez, K. D., & Rogoff, B. (2003). [Cultural ways of learning: Individual traits or repertoires of practice](#). *Educational researcher*, 32(5), 19-25.

[How Language Shapes the Way We Think](#) Lera Boroditsky

**Learning and Development are Cognitive Processes**

**Week 6: Knowledge in Pieces - September 30**

**Primary:**

diSessa, A.A. (2018). [A Friendly Introduction to “Knowledge in Pieces”: Modeling Types of Knowledge and Their Roles in Learning](#). In: Kaiser, G., Forgasz, H., Graven, M., Kuzniak, A., Simmt, E., Xu, B. (eds) Invited Lectures from the 13th International Congress on Mathematical Education. ICME-13 Monographs. Springer, Cham.

Hammer, D., & Elby, A. (2012). [On the form of a personal epistemology](#). In *Personal epistemology* (pp. 169-190). Routledge.

**Additional Resources:**

Barth-Cohen, L., & Braden, S. (2018). [A continuum of knowledge structures in an observation-based field geology setting](#). International Society of the Learning Sciences.

diSessa, A. A. (1993). [Toward an epistemology of physics](#). *Cognition and instruction*, 10(2-3), 105-225.

**Theory in Research:**

Swanson, H. (2016). [Prior Knowledge for the Construction of a Scientific Model of Equilibration](#). Singapore: International Society of the Learning Sciences.

**Learning and Development are Constructive Processes****Week 7: Constructionism - October 7****Primary:**

Kafai, Y. (2005). Cambridge Handbook of the Learning Sciences, Ch.3. [Constructionism](#).

[Papert, S., & Harel, I. \(1991\). Situating constructionism. \*constructionism\*, 36\(2\), 1-11.](#)

**Additional Resources:**

Papert, S. (1980). "[Mindstorms](#)" *Children, Computers and Powerful Ideas*.

[Seymour Papert -- inventor of everything: Gary Stager at TEDxASB \(Ted Talk about Seymour Papert\)](#)

**Theory in Research:**

Litts, B. K., Lui, D. A., Widman, S. A., Walker, J. T., & Kafai, Y. B. (2017). [Reflections on pair E-crafting: High school students' approaches to collaboration in electronic textiles projects](#). Philadelphia, PA: International Society of the Learning Sciences.

**Learning and Development are Distributed Processes****Week 8: Situated Cognition - October 14**

**Primary:**

Brown, J. S., Collins, A., & Duguid, P. (1989). [Situated cognition and the culture of learning](#). 1989, 18(1), 32-42. [Pg.313 - 331 of PDF Book]

Marin, A., & Bang, M. (2018). [“Look it, this is how you know:” Family forest walks as a context for knowledge-building about the natural world](#). *Cognition and Instruction*, 36(2), 89-118.

**Additional Resources:**

Collins, A., Brown, J. S., & Newman, S. E. (1989). [Cognitive apprenticeship: Teaching the crafts of reading, writing, and mathematics](#). In L. B. Resnick (Ed.), *Knowing, learning, and instruction: Essays in honor of Robert Glaser* (pp. 453-494). Hillsdale, NJ: Lawrence Erlbaum.

[NAPLeS Webinar on Situative Cognition: Jim Greeno and Timothy Nokes-Malach](#)

**Theory in Research:**

Lawrence, L., Guo, B., Yang, K., Echeverria, V., Kang, Z., Bathala, V., Li, C., Huang, W., Alevan, V., & Rummel, N. (2022). [Co-designing AI-based orchestration tools to support dynamic transitions: Design narratives through conjecture mapping](#). *Computer Supported Collaborative Learning*.

**Week 9: Distributed Cognition - October 21****Primary:**

Hutchins, E., & Klausen, T. (1996). [Distributed cognition in an airline cockpit](#). *Cognition and communication at work*, 15-34.

Newstetter, W. C., & Hmelo, C. E. (1996). [Distributing cognition or how they don't: An investigation of student collaborative learning](#).

**Additional Resources:**

Hutchins, E. (1995). [Cognition in the Wild](#). Cambridge, MA: MIT press. – Chapter 9: Cognition in the Wild.

Hutchins, Edwin. "[Distributed cognition](#)." *International Encyclopedia of the Social and Behavioral Sciences*. Elsevier Science 138 (2000): 1-10.

**Theory in Research:**

Matthews, J., & Swanson, H. (2023). [The Pivot: Codifying emergent tactics in distributed epistemic games](#). In *Proceedings of the International Conference of Computer Supported Collaborative Learning - CSCL 2023*. Montreal, Canada: International Society of the Learning Sciences.

**Week 10: Embodied Cognition - October 28****Primary:**

Abrahamson, D. (2021). [Grasp actually: An evolutionist argument for enactivist mathematics education](#). *Human Development*, 65(2), 77-93.

Lindberg, L., Keifert, D., Enyedy, N., & Danish, J. (2019). [When Words Are Not Enough: What Student Gestures and Embodied Responses Tell Us About Understanding Science Through Dance](#).

**Additional Resources:**

Lindberg, L., & Marin, A. (2020). [Designing Dance for Museums: Using Diagrammatic Transcripts to Analyze Embodied Interactions in an Informal Learning Environment](#).

[ISLS Webinar](#) on Embodied Cognition: Dor Abrahamson

**Theory in Research:**

Soto, H., Lajos, J., & Romero, A. (2024). [Teaching Abstract Algebra Concretely via Embodiment](#). *PRIMUS*, 34(4), 376-391.

**Learning and Development are Cultural Processes**

**Week 11: Communities of Practice - November 4**

**Primary:**

Lave, J., & Wenger, E. (1991). [Situated learning: Legitimate peripheral participation](#). Cambridge university press. [Ch.1, pg. 27-42 - LPP, Ch3. pg. 59 - 84 - Case studies]

**Additional Resources:**

Halverson, E. (2007). [Reality Television, Fan behavior, and Participation in Online Communities of Practice](#).

**Theory in Research:**

Lundgren, L. Crippen, K. J., & Bex, R. T., II. (2019, April). [Describing the practices of members within one niche of social paleontology's digital ecology](#). Annual International Conference for the National Association for Research in Science Teaching (NARST), Baltimore, MD.

**Week 12: Culture and Learning - November 11**

**Primary:**

de Royston, M. M., Barron, B., Bell, P., Pea, R., Stevens, R., & Goldman, S. (2020). [Learning pathways: How learning is culturally organized](#). In Handbook of the cultural foundations of learning (pp. 195-211). Routledge.

Nasir, N. I. S., Rosebery, A. S., Warren, B., & Lee, C. D. (2005). [Learning as a cultural process: Achieving equity through diversity](#). In Sawyer, R. K. (Ed.) The Cambridge Handbook of the Learning Sciences. Cambridge University Press. (Ch.29, pp.498 - 504).

**Additional Resources:**

Igira, F. T., & Gregory, J. (2009). [Cultural historical activity theory](#). *Handbook of research on*

*contemporary theoretical models in information systems*, 434-454.

Warren, B., Vossoughi, S., Rosebery, A. S., Bang, M., & Taylor, E. V. (2020). [Multiple ways of knowing\\*: Re-imagining disciplinary learning](#). In Handbook of the cultural foundations of learning (pp. 277-293). Taylor and Francis.

**Theory in Research:**

Searle, K. A., Casort, T., Litts, B. K., Brayboy, B. M. J., Dance, S. L., & Kafai, Y. (2018). [Cultural repertoires: Indigenous youth creating with place and story](#). International Society of the Learning Sciences, Inc.

**Learning and Development are Political Processes**

**Week 13: Critical Sociocultural Theories of Learning - Nov 18**

**Primary:**

Vossoughi, S., & Gutiérrez, K. D. (2016). [Critical pedagogy and sociocultural theory](#). In *Power and privilege in the learning sciences* (pp. 157-179). Routledge.

Esmonde, I., & Booker, A. N. (2017). [Toward critical sociocultural theories of learning](#). *Power and privilege in the learning sciences: Critical and sociocultural theories of learning*, 162-174.

**Additional Resources:**

Marin, Halle-Erby, Bang, McDaid-Morgan, Guerra, Nzinga & Booker (2020). [The power of storytelling and storylistening for human being and becoming](#).

Vakil, S., & Ayers, R. (2019). [The racial politics of STEM education in the USA: Interrogations and explorations](#). *Race ethnicity and education*, 22(4), 449-458.

**Theory in Research:**

Searle, K. A., & Fischback, L. (2022). [Using Electronic Textiles to Visualize the Loss of Tribal Lands Over Time](#). In *Proceedings of the 16th International Conference of the Learning Sciences-ICLS 2022*, pp. 1874-1875. International Society of the Learning Sciences.

**Week 14: Moving Forward - December 2**

**Primary:**

Kirschner, P. A. (2017). [Stop propagating the learning styles myth](#). *Computers & Education*, 106, 166-171.

Philip, T. M., Bang, M., & Jackson, K. (2018). [Articulating the “how,” the “for what,” the “for whom,” and the “with whom” in concert: A call to broaden the benchmarks of our scholarship](#). *Cognition and Instruction*, 36(2), 83-88.

Thomas, M. S., Ansari, D., & Knowland, V. C. (2019). [Annual research review: Educational](#)

[neuroscience: Progress and prospects](#). *Journal of Child Psychology and Psychiatry*, 60(4), 477-492.

**Additional Resources:**

[NAPLeS Webinar](#): Neurocognitive Foundations for the Learning Sciences: Shashank Varma

**Attendance Policy**

Regular, **on-time** attendance and thoughtful participation during class discussions are essential not only to your individual learning but also to the success of the course and our community. We all share responsibility for the learning and teaching in this course. Because you will not be able to participate in the class community if you are not present, excessive absences will result in the loss of participation points, except in cases of religious observance or unexpected circumstances (e.g., family emergency, prolonged illness). If you know that you will miss a class session, please notify the course instructor PRIOR to your absence.

**Academic Freedom and Professional Responsibilities**

Academic freedom is the right to teach, study, discuss, investigate, discover, create, and publish freely. Academic freedom protects the rights of faculty members in teaching and of students in learning. Freedom in research is fundamental to the advancement of truth. Faculty members are entitled to full freedom in teaching, research, and creative activities, subject to the limitations imposed by professional responsibility. USU Policy 403 further defines academic freedom and professional responsibilities.

**Academic Integrity - "The Honor System"**

The University expects that students and faculty alike maintain the highest standards of academic honesty. The Code of Policies and Procedures for Students at Utah State University (Student Conduct) addresses academic integrity and honesty and notes the following:

**Academic Integrity:** Students have a responsibility to promote academic integrity at the University by not participating in or facilitating others' participation in any act of academic dishonesty and by reporting all violations or suspected violations of the Academic Integrity Standard to their instructors.

**The Honor Pledge:** To enhance the learning environment at Utah State University and to develop student academic integrity, each student agrees to the following Honor Pledge: "I pledge, on my honor, to conduct myself with the foremost level of academic integrity". Violations of the Academic Integrity Standard (academic violations) include, but are not limited to cheating, falsification, and plagiarism.

**Plagiarism**

Plagiarism includes knowingly "representing by paraphrase or direct quotation, the published or unpublished work of another person as one's own in any academic exercise or activity without

full and clear acknowledgment. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials." In this course, AI (ChatGPT, etc.) is considered "another person." The penalties for plagiarism are severe. They include warning or reprimand, grade adjustment, probation, suspension, expulsion, withholding of transcripts, and denial or revocation of degrees.

### **Grievance Process**

Students who feel they have been unfairly treated [in matters other than discipline, admission, residency, employment, traffic, and parking - which are addressed by procedures separate and independent from the Student Code] may file a grievance through the channels and procedures described in the Student Code: Article VII Grievances.

### **Discrimination and Sexual Misconduct**

USU strives to provide an environment for students and employees that is free from discrimination and sexual misconduct. If you experience sexual misconduct or discrimination at any point during the semester inside or outside of class, you are encouraged to contact the USU Title IX Coordinator via Old Main room 161 in Logan, 435-797-1266, [titleix@usu.edu](mailto:titleix@usu.edu), or at [equity.usu.edu/report](http://equity.usu.edu/report). You can learn more about the USU resources available for individuals who have experienced sexual misconduct at [sexualrespect.usu.edu](http://sexualrespect.usu.edu). Resources for individuals who have experienced discrimination are listed at [equity.usu.edu](http://equity.usu.edu).

### **Required Reporting of Sexual Misconduct**

The instructor is designated by USU as a "reporting employee." This means that if you share information about sexual misconduct (sexual harassment, sexual assault, relationship violence, or sex-based stalking) with the instructor, they will report that information to the USU Title IX Coordinator. The instructor is also required to tell you about designated confidential resources, supportive measures, and how you can file a report with the USU Title IX Coordinator.

### **Students with Disabilities**

USU welcomes students with disabilities. If you have, or suspect you may have, a physical, mental health, or learning disability that may require accommodations in this course, please contact the Disability Resource Center (DRC) as early in the semester as possible (University Inn # 101, 435-797-2444, [drc@usu.edu](mailto:drc@usu.edu)). All disability related accommodations must be approved by the DRC. Once approved, the DRC will coordinate with faculty to provide accommodations.

### **Withdrawal Policy, "I" Grade Policy and Dropping Courses**

If a student does not attend a class during the first week of the term or by the second class meeting, whichever comes first, the instructor may submit a request to have the student dropped from the course. (This does not remove responsibility from the student to drop courses which they do not plan to attend.) Students who are dropped from courses will be notified by the Registrar's Office through their preferred email account.

Students may drop courses without notation on the permanent record through the first 20 percent of the class. If a student drops a course following the first 20 percent of the class, a W will be permanently affixed to the student's record (check General Catalog for exact dates).

Students with extenuating circumstances should refer to the policy regarding Complete Withdrawal from the University and the Incomplete (I) Grade policy in the General Catalog.

### **Mental Health**

Mental health is critically important for the success of USU students. As a student, you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance or reduce your ability to participate in daily activities. Utah State University provides free services for students to assist them with addressing these and other concerns. You can learn more about the broad range of confidential mental health services available on campus at Counseling and Psychological Services (CAPS).

Students are also encouraged to download the "SafeUT App" to their smartphones. The SafeUT application is a 24/7 statewide crisis text and tip service that provides real-time crisis intervention to students through texting and a confidential tip program that can help anyone with emotional crises, bullying, relationship problems, mental health, or suicide related issues.

### **Pregnancy-Related Accommodations**

The University prohibits discrimination based on sex, as mandated by Title IX of the Education Amendments of 1972. Consistent with University policy and applicable law, the University will not exclude a student from participating in any part of an educational program based on the student's pregnancy or pregnancy related conditions. In meeting these obligations, the University will provide reasonable accommodations to USU students, faculty, and staff for pregnancy and pregnancy related conditions. Please see <https://www.usu.edu/equity/pregnancy-accommodations> for more information.