LDLS 600 - Foundations of the Learning Sciences and Learning Design

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Topics: History of the learning sciences; Core ideas in the learning sciences; Principles of design sciences; Learning design; Introduction to learning theories

Course Description: This course defines the field of the Learning Sciences and learning design. It serves as an introduction into the origins, epistemologies, praxis, and future issues of the Learning Sciences and Learning Design. Students will delve into the historical evolution of the field, understand its key tenets, and explore design science principles. The course also offers an overview of various learning theories, serving as a contextual bedrock for their journey in reshaping how society understands learning.

Course Objectives: After successful completion of this course, you will be able to:

- Explain important concepts and terminology in the Learning Sciences and learning design
- Describe the evolution of the Learning Sciences and learning design from a historical perspective
- Evaluate the contributions and impact of learning theories in the Learning Sciences and learning design
- Compare and contrast various processes and models in the Learning Sciences and learning design
- Identify and describe current trends in the Learning Sciences and learning design

Learning Activities:

- Weekly discussions (weeks 1-13)
- Individual Learning in the Wild Project (weeks 2, 4, 5, 7, 8, 10, 11, 13, 14)
- Team Concept Mapping Projects (weeks 3, 6, 9, 12, and 14)
- Reflection activities (weeks 2, 5, 8, 11, and 14)

Discussion Assignment Instructions for All Weeks:

Background

The discussions in this course are the CORE of the learning (along with the other learning activities). They are where the real learning takes place. The readings and resources are there to "set the stage," so to speak, and are not intended to be for your learning. They provide information, perspectives, and inspiration that through this discussion we collectively use to construct knowledge. Therefore, please approach these discussions in a deeply thoughtful and reflective way. I know that it may be difficult to find time to engage on THREE different days each week, but the design of this learning experience is intentional and grounded in both theory and evidence.

Instructions

In this discussion, let's get started with following ideas (but the discussion should evolve from here):

- [the prompt for the week goes here]. Let the conversation evolve from here.

When engaging in the discussion, please note the following:

- You must engage in this discussion at least 3 times on 3 different days this week.
- Unless you are the first person posting in this discussion this week, you must always read through the discussion as it has evolved and then respond to the most recent post (the very bottom post - you may have to scroll down). If others have posted already, ***do not start a new post*** (that is, do not click the "reply" button immediately below, but only click reply to the most recent post in this discussion).
- Some of your posts may need to be substantiated from the materials (and cited properly using the APA 7th edition style guide).

Reflection Assignment Instructions for First Four Reflections:

Background

Reflection is an integral part of the learning process. In fact, it is possible that you could engage in learning activities and end up learning almost nothing if you don't take the time to engage in reflection. Metacognition, or thinking about your thinking, is a type of critical thinking through which a learner considers what they know, what they've experienced, and how their previous knowledge and experience intertwines and connects with the new knowledge they are constructing and the new experiences they are having. Regular and guided reflection can greatly enhance the learning process, so we will be doing quite a bit of reflection in this course.

Instructions

Write a short reflection that discusses your experiences thus far in this course:

- What aspects of the assignments in this course have worked particularly well? (~150 words)
- In what aspects of the assignments in this course have you struggled over the last two weeks? (~150 words)
- What actions are you going to take in the next two weeks to address the struggles? (~150 words)

Reflection Assignment Instructions for Final Reflection:

Background

Throughout this course you have had hundreds of unique experiences, some of which could be considered bad experiences (unproductive struggles), some of which could be considered difficult but positive experiences (productive struggles), and some of which could be considered moments of inspiration, clarity, breakthrough, or fulfilment. It is crucial that we take the time to reflect on these experiences.

Instructions

Write a reflection that discusses your experiences in this entire course:

- What aspects of this course have worked particularly well and why? (~250 words)

- In what aspects of this course have you struggled and why? (~250 words)
- How did everything you did in this course impact your work as a learning experience designer and learning scientist?
- If learning is becoming, how are you different today than you were 14 weeks ago? (~250 words)

Outline

Week 1: Introduction to Learning Sciences and Learning Design

Week Overview:
This week lays the foundation for understanding the learning sciences and learning design. As learning scientists, we recognize that learning is an inherently complex and messy process. By delving into key concepts and terminology, we aim to develop a nuanced understanding of how learning happens in diverse contexts. This sets the stage for critically examining traditional notions of learning and exploring more holistic, contextually-grounded perspectives throughout the course.

This week, you will engage in discussions about the complexity of learning, drawing on your own experiences and the course readings. By grappling with these ideas collaboratively, you can begin to construct a shared understanding of the learning sciences perspective. The individual reflection allows you to consider how your own conceptualizations of learning have evolved, fostering metacognitive awareness and personal connection to the course material.

Week Learning Objectives:
After successful completion of this week, you will be able to:

- Evaluate the complexity and messiness of the learning process through reflective comparison.
- Analyze key concepts and terminology in the learning sciences and learning design.
- Create a personal conceptualization of learning informed by the learning sciences.

Readings and Resources:
The readings and resources this week provide a foundational understanding of the complexity of learning and introduce key concepts and terminology in the learning sciences and learning design. By grappling with the inherent messiness of learning processes, you can begin to develop a more nuanced perspective that challenges traditional, simplistic notions of learning. This conceptual grounding is essential for engaging in the reflective discussions and personal conceptualizations of learning that are central to the week's activities.

Dr. Jonan Phillip Donaldson's video on the complexity of learning directly informs the discussion topic, where you'll reflect on how your past conceptualizations of learning differ from learning sciences perspectives. The book chapter by Hoadley provides historical context for the field, which you can draw upon in your discussions to situate your evolving understanding of learning. The casual reading of

Nathan and Sawyer's chapter sets the stage for deeper engagement with foundational concepts in the coming weeks.

- Video (7:00): Conceptualizations of Learning: The Complexity of Learning by Dr. Jonan Phillip Donaldson
- Required RR 1: Book Chapter: Hoadley, C. (2018). A short history of the learning sciences. In C. E. Hmelo-Silver, S. R. Goldman, P. Reimann, & F. Fischer (Eds.), International handbook of the learning sciences (pp. 11-23). Routledge Ltd. https://doi.org/10.4324/9781315617572
- Required RR 2: Book Chapter - Read Casually (next week we will read this again): Nathan, M. J., & Sawyer, R. K. (2022). Foundations of the learning sciences. In R. K. Sawyer (Ed.), The Cambridge handbook of the learning sciences (3 ed., pp. 27-52). Cambridge University Press. https://doi.org/10.1017/9781108888295.004
- Optional RR 1: Lee, V. (2017). A short history of the learning sciences. In R. E. West (Ed), Foundations of learning and instructional design technology.

Discussion Topic: The Complexity of Learning
How is the way you conceptualized learning in the past different than the way learning is defined in the learning sciences? Also, discuss the complexity of learning.

Week 2: Historical and Conceptual Foundations of Learning Sciences

Week Overview:
Understanding the origins and evolution of the learning sciences is crucial for appreciating the field's unique perspective on learning. By examining key figures and their contributions, we gain insight into how the field has challenged dominant, often problematic conceptualizations of learning. Engaging with cognitive constructivist and constructionist perspectives allows us to recognize learners as active constructors of knowledge, rather than passive recipients. This week highlights the central role of theory in the learning sciences, guiding our understanding of learning processes and informing the design of effective learning experiences.

You will explore foundational readings and engage in discussions about the role of theory in the learning sciences. Collaboratively, you will attempt to explain the learning sciences perspective to an imagined newcomer, synthesizing your understanding of key ideas. The individual project on discovering a learning context encourages you to begin applying learning sciences principles to real-world settings, bridging theory and practice. Reflection on your learning and struggles supports self-monitoring and self-regulation of the learning process.

Week Learning Objectives:
After successful completion of this week, you will be able to:

- Evaluate key figures' contributions to the development of Learning Sciences.
- Critique dominant problematic conceptualizations of learning using cognitive constructivist and constructionist perspectives.

Readings and Resources:
This week's readings and resources offer a deeper dive into the historical and conceptual foundations of the learning sciences, highlighting the field's origins, evolution, and core perspectives. Understanding the contributions of key figures and the shift from dominant, problematic conceptualizations of learning to cognitive constructivist and constructionist approaches is crucial for appreciating the learning sciences' unique stance. These ideas inform your discussions about the role of theory and your initial explorations of learning in real-world contexts.

The re-reading of Nathan and Sawyer's chapter provides a more in-depth look at the foundations of the field, which you can use to inform your discussion on explaining the learning sciences to newcomers. The videos and overviews on behaviorism, cognitivism, constructivism, and specific theories like cognitive constructivism and constructionism directly relate to the discussion prompt and your individual project on discovering a learning context. As you explore potential contexts, consider how these theoretical perspectives might apply.

- Required RR 1: Book Chapter - Read Again (you read this last week casually): Nathan, M. J., & Sawyer, R. K. (2022). Foundations of the learning sciences. In R. K. Sawyer (Ed.), The Cambridge handbook of the learning sciences (3 ed., pp. 27-52). Cambridge University Press. https://doi.org/10.1017/9781108888295.004
- Required RR 2: Video (9:26 - please note that in most cases behaviorism is deeply problematic when designing learning for human beings, and could even be unethical): Learning Sciences Theories - Behaviorism, Cognitivism, Constructivism
- Required RR 3: Cognitive Constructivist Learning Theory Overview
- Required RR 4: Constructionist Learning Theory Overview
- Optional RR 1: Website: Explore the resources on the Foundations of the Learning Sciences website from the Network of Academic Programs in the Learning Sciences (NAPLeS).
- Optional RR 2: Journal Article - Read Casually (skim): Lee, V. R. (2023). Learning sciences and learning engineering: A natural or artificial distinction? Journal of the Learning Sciences, 32(2), 288-304. https://doi.org/10.1080/10508406.2022.2100705
- Optional RR 3: Journal Article - Read Casually (skim): Kolodner, J. L. (2023). Learning engineering: What it is, why I'm involved, and why I think more of you should be. Journal of the Learning Sciences, 32(2), 305-323. https://doi.org/10.1080/10508406.2023.2190717
- Optional RR 4: Learning styles don't exist! They are a myth. Video (14:26): The Biggest Myth In Education

Discussion Topic: Theory and the Learning Sciences
As a group, attempt to come to a consensus on how we could explain the learning sciences to someone who has never heard of it. Also, discuss the role of theory in the learning sciences and learning design.

Individual Learning in the Wild Project: Discovering Your Learning Context
Overview

This week, you'll begin your learning sciences journey by exploring and proposing potential learning contexts for your semester project. The goal is to find an environment that inspires you and offers rich opportunities for analysis and innovative redesign.

Step 1 – Brainstorm

Think broadly and creatively about non-traditional learning contexts. Consider museums, games, online communities, or any other innovative learning environment that sparks your curiosity.

Step 2 – Propose

Select 2 of your most promising ideas and create a brief overview of each (in any form you like - written, visual, audio, etc.). Include a description of the context, your rationale for choosing it, and some initial thoughts on relevant learning sciences principles.

Step 3 – Share and Reflect

Post your proposals to your small group discussion. Read and respond to your peers' ideas, offering insights, questions, and suggestions. Use this feedback to help you select one context to focus on for your project.

Step 4 – Decide and Communicate

Create a post sharing your final context choice and reflecting on how the feedback process influenced your decision.

Reflection:
(reflection instructions here)

Week 3: Core Ideas in Learning Sciences 1

Week Overview:
This week explores the interplay between philosophies, theories, and models in the learning sciences. By understanding their relationships, we can develop more robust frameworks for analyzing learning. Situative and sociocultural perspectives emphasize the importance of context and social interaction in learning, challenging the notion of learning as an isolated, individual process. Contrasting the construction-becoming conceptualization of learning with the traditional transfer-acquisition view allows us to recognize learning as a transformative process of personal change and growth, rather than mere accumulation of knowledge.

This week, you will engage in analyzing learning scenarios using situative and sociocultural perspectives, applying theoretical principles to concrete examples. The team concept mapping project allows you to collaboratively construct a visual representation of the relationships between key ideas, fostering a deeper understanding of the interconnections within the field. Discussing the implications of different conceptualizations of learning for instructional design practice helps you connect theory to real-world challenges and opportunities.

Week Learning Objectives:
After successful completion of this week, you will be able to:

- Analyze the relationships between philosophies, theories, and models in the Learning Sciences.
- Evaluate learning scenarios using situative and sociocultural perspectives.

Readings and Resources:
The readings and resources for this week introduce you to the relationships between philosophies, theories, and models in the learning sciences, as well as core perspectives such as situative and sociocultural theories. Engaging with these ideas is essential for developing a robust framework for analyzing learning and recognizing the importance of context and social interaction. These concepts directly inform your discussions and collaborative concept mapping, enabling you to construct a more integrated understanding of the field.

Dr. Jonan Phillip Donaldson's video and article on conceptualizations of learning provide a foundation for understanding the complex systems at play, which you can draw upon in your discussions of human-centered learning design and communicating with stakeholders. The situated learning and social constructivist overviews directly inform your team concept mapping activity, where you'll visually represent the relationships between these key ideas and others you've encountered. Fried's chapter offers insights into theories and models that you can consider as you discuss and map concepts.

- Required RR 1: Video (18:35): Dr. Jonan Phillip Donaldson - Complex Systems, Conceptualizations of Learning, and Practices
- Required RR 2: Journal Article: Donaldson, J. P., & Allen-Handy, A. (2023). What is learning? A complex conceptual systems analysis of conceptualizations of learning. International Journal of Educational Research Open, 4, 100254. https://doi.org/10.1016/j.ijedro.2023.100254
- Required RR 2: Journal Article: Kivunja, C. (2018). Distinguishing between theory, theoretical framework, and conceptual framework: A systematic review of lessons from the field. International journal of higher education, 7(6), 44-53. (you don't have to read the whole article carefully, but pay particular attention to #3 on page 46)
- Required RR 3: Overview Paper: Social Constructivist Learning Theory Overview
- Required RR 4: Overview Paper: Situated Learning Theory Overview
- Optional RR 1: Resource: The Learning Sciences vs. The Science of Learning by Dr. Jonan Phillip Donaldson
- Optional RR 2: Question, critique, and problematize: Chapter 16: Learning Theories in the book Design for Learning (which of the things mentioned here are truly theories, and which are not?)
- Optional RR 3: Explore: Fried, E. I. (2020). Theories and models: What they are, what they are for, and what they are about. Psychological Inquiry, 31(4), 336-344. https://doi.org/10.1080/1047840X.2020.1854011

Discussion Topic: Human-Centered Design and Conceptualizations of Learning
What does it mean to be a human-centered learning designer? If different learning theories can be seen as different conceptualizations of learning, how can we communicate with stakeholders in our contexts who might have problematic conceptualizations of learning based on “folk” theories?

Team Concept Mapping:
Background

Becoming a learning designer and learning scientist involves constructing deep understanding of how hundreds of interdependent ideas are related. Therefore, throughout this semester you will be working as a team to construct a visual representation of this understanding.

Instructions

- Use an online collaborative concept mapping tool such as Miro (other tools are okay, and if available it's probably best if you create a free education account). One person in the team create a new board and change the share settings so that anyone with a link can edit. Then paste that link in your team's discussion board.
- All team members: Bookmark the link to your team's concept mapping board. Then on the board put all the important concepts we have studied thus far in this course (if another team member has already put the concept on the board, you don't have to put it again – each concept should show up only once). Use connecting lines to show the relationship between ideas. It's okay to move ideas around in a way that makes sense to everyone on the team. It's okay to move something that someone else already moved.
- Use your team's discussion board in Canvas to discuss any issues or clear up any ideas that are not clear. Also, if you are able, it would be wonderful if you were to arrange a Zoom meeting with your team.
- At the end of the week, every member of the team should create a new post in the discussion board summarizing their experience and contributions to the concept map this week.

Week 4: Core Ideas in Learning Sciences 2

Week Overview:
Continuing our exploration of core ideas, this week introduces 4E cognition and cultural-historical activity theory. 4E cognition highlights the embodied, embedded, extended, and enactive nature of learning, reminding us to consider the role of the body, environment, tools, and actions in learning processes. Cultural-historical activity theory provides a framework for understanding learning as a culturally-mediated, historically-evolving activity, shaped by tools, rules, and division of labor. These perspectives expand our understanding of the factors influencing learning and the importance of designing learning experiences that leverage these insights.

You will continue to apply learning sciences perspectives to analyze learning experiences, now focusing on 4E cognition and cultural-historical activity theory. The individual project on grounding your semester project in theory encourages you to integrate your understanding of core ideas with your own design work, fostering theory-driven practice. Discussions on how these perspectives might inform unique learning designs push you to consider the practical implications and potential of these ideas.

Week Learning Objectives:
After successful completion of this week, you will be able to:

- Apply the principles of 4E cognition to analyze learning experiences.
- Evaluate learning scenarios using cultural-historical activity theory.

Readings and Resources:
This week's readings and resources introduce you to 4E cognition and cultural-historical activity theory, two important perspectives that expand our understanding of the factors influencing learning. Engaging with these ideas is crucial for developing a more holistic view of learning as an embodied, embedded, extended, and enactive process, shaped by cultural and historical factors. These concepts provide a foundation for your discussions and individual projects, allowing you to apply these perspectives to real-world learning contexts.

The 4E Cognition Group website and overview provide a starting point for exploring this perspective, which you can then discuss in relation to cultural-historical activity theory, drawing on Engeström's chapter. Consider how these theories might generate unique design ideas in your discussion. For your individual project, use these perspectives to ground your analysis of your chosen learning context, considering how they might illuminate key features and assumptions.

- Required RR 1: Website: 4E Cognition Group
- Required RR 2: Journal Article: Engeström, Y. (2022). Learning in activity. In R. K. Sawyer (Ed.), The Cambridge handbook of the learning sciences (3 ed., pp. 134-155). Cambridge University Press. https://doi.org/DOI: 10.1017/9781108888295.009 Required RR 3: Overview Paper: 4E Cognition Theory Overview
- Required RR 4: Overview Paper: Cultural-Historical Activity Theory Overview
- Optional RR 1: Video (18:14): Learning styles & the importance of critical self-reflection | Tesia Marshik
- Optional RR 2: Design, Research, and Technology in Conceptualizations of Learning
- Optional RR 3: Book Chapter: Oyarzun, B. & Conklin, S. (2021). Learning Theories. In J. K. McDonald & R. E. West (Eds.), Design for Learning: Principles, Processes, and Praxis. EdTech Books.

Discussion Topic: 4E Cognition and Activity Theory
How would a design for learning be unique if we were to use 4E cognition or cultural-historical activity theory?

Individual Learning in the Wild Project: Grounding Your Project in Theory
Overview

With your learning context selected, it's time to build a theoretical foundation for your project. This week, you'll identify key learning sciences theories and principles that resonate with your chosen environment.

Step 1 – Explore

Review the learning theories and principles we've been discussing in class. Reflect on which ones seem most applicable or illuminating for your context.

Step 2 – Select

Choose 2-3 key theories or principles to focus on. Dig deeper into these ideas, considering how they might shed light on the learning dynamics in your context.

Step 3 – Connect

Create a deliverable (in any form you choose) that articulates the main ideas of each selected theory, how these ideas connect to your learning context, and some initial hypotheses about how these principles could guide a redesign.

Step 4 – Share

Share your deliverable with your small group. Optional but encouraged: Engage in discussion to further explore these theoretical connections and gather additional perspectives.

Week 5: Ways of Doing in the Learning Sciences

Week Overview:
This week focuses on the methodological approaches and practices in the learning sciences. Design-based research and iterative design reflect our commitment to developing and refining learning interventions in real-world contexts. By engaging in cycles of design, implementation, analysis, and redesign, we can create learning experiences that are grounded in theory and responsive to learners' needs. Tinkering, exploration, and productive failure are valued as means of fostering creativity, resilience, and deep understanding. Embracing these practices allows us to create learning environments that empower learners to take risks, learn from setbacks, and actively construct knowledge.

This week, you will discuss the affordances and challenges of tinkering, exploration, and productive failure in learning, considering how these practices can be designed for in learning environments. The individual project on analyzing your chosen learning context through the lens of iterative design and productive failure allows you to apply these ideas to a real-world setting, deepening your understanding of how these practices can be realized in context. Reflection on your learning experiences supports ongoing metacognitive engagement with the course material.

Week Learning Objectives:
After successful completion of this week, you will be able to:

- Articulate the key principles of design-based research and iterate design.
- Evaluate the role of tinkering, exploration, and productive failure in learning.
- Create a plan for incorporating iterative design, tinkering, and productive failure in learning environments.

Readings and Resources:
The readings and resources this week focus on core methodological approaches in the learning sciences, such as iterative design, tinkering, exploration, and productive failure. Understanding these practices is essential for appreciating the learning sciences' commitment to studying and designing for learning in real-world contexts, and for fostering creativity, resilience, and deep understanding. These ideas directly inform your discussions and individual projects, challenging you to consider how these practices can be designed for and realized in authentic learning environments.

Mitchel Resnick's TED talk and video on Seymour Papert introduce key ideas around tinkering, exploration, and learning through failure, which you can draw upon in your discussion of how to design for these experiences. Kapur and Bielaczyc's article on productive failure provides a foundation for considering how to incorporate this principle into learning designs. For your individual project, use the design-based research overview to inform your analysis of your learning context, considering how iterative design and productive failure might be realized in your setting.

- Required RR 1: Video (16:03): Kindergarten For Our Whole Lives | Mitchel Resnick
- Required RR 2: Video (5:45): Mitchel Resnick - On Seymour Papert
- Required RR 3: Overview Paper: Design-Based Research Overview
- Required RR 3: Journal Article: Kapur, M., & Bielaczyc, K. (2012). Designing for productive failure. The Journal of the Learning Sciences, 21(1), 45-83. https://doi.org/10.1080/10508406.2011.591717
- Optional RR 1: Web Resource: Around the World with the 8 Big Ideas of the Constructionist Learning Lab

Discussion Topic: Tinkering, Exploration, and Productive Failure
How can we design for tinkering, exploration, and productive failure? Also, discuss how the lives of learning scientists doing design-based research might be different than learning experience designers, such as those in corporate or higher education environments?

Individual Learning in the Wild Project: Analyzing Your Context
Overview

Armed with your theoretical lens, you'll now conduct a detailed analysis of your learning context. The goal is to understand its current design and functioning, and to identify opportunities for enhancement.

Step 1 – Investigate

Gather information about your context from available sources such as websites, articles, reviews, or personal experiences. Look for insights into its key features, affordances, and assumptions about learning.

Step 2 – Analyze

Using your theoretical principles as a guide, critically examine the design of your learning context. Consider how it aligns or conflicts with learning sciences ideas, and where there might be room for improvement.

Step 3 – Represent

Create a visual, auditory, or interactive representation that captures your analysis. Highlight key features, embedded assumptions, alignments and misalignments with theory, and potential areas for redesign. Be creative in your format!

Step 4 – Share

Post your analysis representation to your small group. Optional but encouraged: Engage in discussion and feedback to further refine your understanding and insights.

Reflection:
(reflection instructions here)

Week 6: Learning Experience Design

Week Overview:
Learning experience design represents a shift from traditional instructional design approaches. By drawing on principles from the learning sciences, we can create learning experiences that honor the complexity of learning and the diverse needs of learners. Evaluating different design models, such as ADDIE, SAM, Gagne, and design thinking, allows us to critically examine their assumptions and limitations. As learning scientists, we emphasize the importance of grounding design decisions in learning theories, ensuring that our learning experiences are theoretically robust and aligned with our understanding of how learning happens.

You will engage in discussions comparing the ways of knowing, being, and doing in the learning sciences with those of traditional instructional design. By examining these contrasts, you can develop a clearer understanding of the unique perspective and approach of the learning sciences. The team concept mapping project allows you to integrate your understanding of learning experience design principles and models with your growing knowledge of the field, fostering a coherent and connected view of the discipline.

Week Learning Objectives:
After successful completion of this week, you will be able to:

- Evaluate various learning experience design models, including ADDIE, SAM, Gagne's process, and design thinking.
- Articulate the key distinctions between instructional design and Learning Sciences-informed learning experience design.
- Evaluate learning experiences using criteria derived from Learning Sciences principles.

Readings and Resources:
This week's readings and resources introduce you to the shift from traditional instructional design to learning experience design, and the importance of grounding design decisions in learning theories. Engaging with these ideas is crucial for understanding the unique perspective and approach of the learning sciences, and for developing a more learner-centered, theoretically-informed approach to design. These concepts directly inform your discussions and collaborative concept mapping, enabling you to contrast learning sciences approaches with traditional instructional design.

The brief history of instructional design video and Wikipedia entry provide context for traditional ID models, while your generative AI discussion will deepen your understanding of specific models like ADDIE, SAM, and Gagne's process. Use these insights to inform your discussion of the differences between traditional ID and learning sciences approaches. In your concept mapping activity, focus on integrating ideas about learning experience design and the importance of grounding decisions in theory.

- Required RR 2: Step 1: Video (7:53 – as you watch this, think about learner agency, authority, and autonomy): Brief history of instructional design
- Required RR 3: Step 2: Website: Wikipedia entry on Instructional Design
- Required RR 4: Step 3: Have an in-depth discussion (at least 12 back-and-forth exchanges) with a generative AI tool about instructional design models – start with getting to know ADDIE, SAM, Gagne's process, and other common instructional design process models, and toward the end of the conversation start discussing design thinking as a model for learning experience design.
- Optional RR 1: Book Chapter: Wagner, E. D. (2021). Becoming a Learning Designer. In J. K. McDonald & R. E. West (Eds.), Design for Learning: Principles, Processes, and Praxis. EdTech Books.
- Optional RR 2: Book Chapter: Raible, J. (2020). History of Instructional Design. In History and Instructional Designers. Pressbooks.
- Optional RR 3: Video (4:28): ADDIE vs. SAM for eLearning

Discussion Topic: Ways of Knowing, Ways of Being, and Ways of Doing
We have been exploring learning scientists' ways of knowing (a.k.a. epistemology), ways of being (a.k.a. ontology), and ways of doing (a.k.a. methodology or practice) – how are these different than those of the traditional instructional designer?

Team Concept Mapping:
Background

Becoming a learning designer and learning scientist involves constructing deep understanding of how hundreds of interdependent ideas are related. Therefore, throughout this semester you will be working as a team to construct a visual representation of this understanding.

Instructions

- Use the same concept map that you created in Week 3.
- All team members: On the board put all the important concepts we have studied since Week 3 in this course.
- Also, add new concepts from other courses you may be taking or other contexts that are relevant.
- In addition to using connecting lines to show the relationship between ideas (as we did in Week 3), this week every line needs to get labelled to explain the relationship. Again, it's okay to move ideas around in a way that makes sense to everyone on the team.
- Use your team's discussion board in Canvas to discuss any issues or clear up any ideas that are not clear. Also, if you are able, it would be wonderful if you were to arrange a Zoom meeting with your team.
- At the end of the week, every member of the team should create a new post in the discussion board summarizing their experience and contributions to the concept map this week.

Week 7: The Role of Theory in Learning Design

Week Overview:
This week underscores the central role of theory in learning design. By critiquing designs guided by tradition or empirical evidence alone, we recognize the limitations of atheoretical approaches. Learning scientists advocate for theory-grounded, high-impact practices that are informed by our understanding of learning processes and mechanisms. Developing strategies for communicating the value of theory-driven design to stakeholders is crucial for fostering buy-in and support for learning sciences approaches. This week highlights the importance of bridging theory and practice in learning design.

This week, you will analyze the limitations of theory-free design approaches and discuss strategies for advocating for theory-driven design with stakeholders. These activities encourage you to consider the practical challenges of implementing learning sciences principles in real-world contexts and to develop communication skills for bridging theory and practice. The individual project on developing design principles for your semester project allows you to apply your understanding of theory to your own design work, fostering a deeper integration of theory and practice.

Week Learning Objectives:
After successful completion of this week, you will be able to:

- Critique tradition- or evidence-based learning designs that lack theoretical grounding.
- Create communication strategies for advocating theory-grounded high-impact practices to stakeholders.

Readings and Resources:
The readings and resources for this week challenge you to critically examine the limitations of designs guided by tradition or empirical evidence alone, and to consider the central role of theory in learning design. Engaging with these ideas is essential for appreciating the value of theory-driven, principled design, and for developing strategies to communicate this approach to stakeholders. These concepts inform your discussions and individual projects, pushing you to apply theory to your own design work and to advocate for theory-grounded practices.

Your generative AI discussion on the assumptions and goals of traditional education research will provide fodder for your discussion on evidence-based vs. theory-based learning design. Consider how the "what works" assumption and focus on exam scores might lead to problematic practices, and how you might communicate the value of theory-grounded approaches to stakeholders. In your individual project, focus on articulating design principles that bridge theory and practice, grounding your ideas in learning sciences concepts.

- Required RR 1: Have an in-depth conversation (at least 12 back-and-forth exchanges) with a generative AI tool about common assumptions and goals in traditional education research (such as the assumption that learning can be measured, and that it can be measured with exams; or the goal of improving exam scores), and how those assumptions or goals might be problematic. Also, discuss what this means for the “evidence-based high-impact practices” and “what works” body of empirical evidence in the literature.

Discussion Topic: Evidence-Based vs. Theory-Based Learning Design

Most learning scientists believe that traditional educational practices such as lectures, textbooks, and exams are either ineffective or harmful. However, there is a large body of empirical evidence from educational research based on a “what works” assumption that if exam scores go up, an intervention is good – and therefore there is a lot of empirical evidence for improving lecture, textbook, and exam practices. Over the last few decades, there has been a movement toward “evidence-based high-impact practices” mostly based on this problematic empirical evidence. In light of this, how could a learning scientist communicate with stakeholders (who are accustomed to such ideas) about the value of “theory-grounded high-impact practices”?

Individual Learning in the Wild Project: Developing Your Design Principles
Overview

This week, you'll articulate a set of design principles or conjectures to guide your redesign. These should bridge theory and practice, translating learning sciences ideas into actionable strategies for your context.

Step 1 – Synthesize

Review your theoretical grounding and contextual analysis. Look for key insights or themes that could drive your redesign.

Step 2 – Articulate

Develop a set of design principles or conjectures. For each one, clearly state the principle, ground it in learning sciences theory, explain its applicability to your context, and offer examples of how it might manifest in your redesign. Again, feel free to use any representational form.

Step 3 – Refine

Share your principles with your small group and discuss. Use the discussion and feedback to clarify, refine, and expand your thinking.

Week 8: Design-Based Research

Week Overview:
Design-based research is a core methodology in the learning sciences, reflecting our commitment to studying learning in real-world contexts and developing theory-driven interventions. By engaging in cycles of design, implementation, analysis, and redesign, we can generate new knowledge about learning while also creating effective learning experiences. Analyzing published design-based research studies allows us to examine how researchers translate theoretical principles into design decisions, and how they refine their understanding through iterative cycles of research and design.

You will engage in a research review and discussion on design-based research methods, collaboratively analyzing how researchers translate theory into design principles and iterate on their designs through cycles of implementation and analysis. This activity fosters an understanding of the core practices and epistemologies of design-based research. The individual project on prototyping your redesign allows you

to engage in a key phase of the design-based research process, translating your theoretical principles into concrete design artifacts and reflecting on the challenges and opportunities of this process.

Week Learning Objectives:
After successful completion of this week, you will be able to:

- Articulate the key principles and processes of design-based research.
- Evaluate the methodology of a published design-based research study.

Readings and Resources:
This week's readings and resources dive into design-based research as a core methodology in the learning sciences. Understanding the principles, processes, and epistemologies of design-based research is essential for appreciating the field's commitment to studying learning in real-world contexts and developing theory-driven interventions. These ideas directly inform your research review, discussions, and individual prototyping projects, providing a foundation for engaging in the iterative cycles of design and research.

The Design-Based Research Collective's article introduces key principles and processes of DBR, while Hoadley and Campos's chapter provides a more in-depth look at why DBR matters for studying learning. Use these readings to guide your research review and discussion, considering how researchers translate theory into design and iterate through cycles of implementation and analysis. In your individual prototyping project, embrace the spirit of DBR by grounding your design in theory and preparing for iterative refinement.

- Required RR 1: The Design-Based Research Collective. (2003). Design-based research: An emerging paradigm for educational inquiry. Educational Researcher, 32(1), 5-8. https://doi.org/10.3102/0013189X032001005 (focus as you read on translating learning theory ideas into design principles, and then translating those into learning experience designs)
- Required RR 2: Journal Article: Hoadley, C., & Campos, F. C. (2022). Design-based research: What it is and why it matters to studying online learning. *Educational Psychologist, 57*(3), 207-220. https://doi.org/10.1080/00461520.2022.2079128
- Optional RR 1: Video: Introduction to Design-Based Research with Bill Penuel (this video is over 1 hour - skim through if you like, but pay particular attention from 16:18 to 31:20)

Discussion Topic: Design-Based Research
Search the university library for one academic research article reporting empirical findings from a design-based research project. Discuss that article with a generative AI tool, and then engage in this discussion with your peers – focusing not on the findings from the article you found, but what we can learn about design-based research methodologies and approaches.

Individual Learning in the Wild Project: Prototyping Your Redesign
It's time to bring your ideas to life! This week, you'll create a prototype or mock-up of your redesigned learning context, guided by your design principles. Remember that because we encouraged you to be innovative in selecting your context, what a “design” looks like will be context-dependent – and therefore it might not look like what most people think of as a learning design.

Step 1 – Ideate

Brainstorm potential redesign ideas that embody your principles. Think broadly and creatively, considering various forms your prototype could take - sketches, models, storyboards, narratives, etc.

Step 2 – Create

Develop your prototype, iterating and refining as you go. Document your process, including initial ideas, evolution of your thinking, key decisions, connections to principles, and emerging questions.

Step 3 – Share

Post your prototype and process documentation to your small group. Engage in feedback and discussion to push your thinking and design further.

Reflection:
(reflection instructions here)

Week 9: Research Topics in the Learning Sciences

Week Overview:
This week provides an opportunity to explore the breadth of research topics within the learning sciences. By delving into specific areas of interest, we can examine how learning sciences principles and theories are applied to diverse domains and challenges. Analyzing the alignment between learning goals, experiences, and theoretical principles within a chosen topic allows us to appreciate the coherence and rigor of learning sciences research. This week highlights the relevance and applicability of learning sciences perspectives across a range of educational contexts and issues.

This week, you will explore a specific research topic within the learning sciences, examining how theories and principles are applied to address real-world challenges and opportunities. Through discussion and analysis, you will consider the implications of this research for the design of learning experiences, connecting research findings to practical applications. The team concept mapping project allows you to integrate your understanding of this research topic with the broader landscape of the learning sciences, situating new knowledge within your evolving understanding of the field.

Week Learning Objectives:
After successful completion of this week, you will be able to:

- Synthesize key implications of research topics for the design of learning experiences.
- Analyze the alignment between learning goals, experiences, and underlying theoretical principles for a chosen topic.

Readings and Resources:
The readings and resources for this week allow you to explore specific research topics within the learning sciences, examining how theories and principles are applied to diverse domains and challenges. Engaging with these ideas is crucial for understanding the breadth and depth of the field, and for considering the implications of research findings for the design of effective learning experiences. These

concepts inform your discussions and collaborative concept mapping, enabling you to situate new knowledge within your evolving understanding of the field.

As you browse the NAPLeS research topics and engage in a generative AI discussion on your chosen topic, pay attention to how learning goals, experiences, and theoretical principles align. Use these insights to inform your discussion on designing learning experiences that are grounded in theory and aligned with objectives. In your concept mapping activity, focus on integrating your new understanding of specific research topics with the broader landscape of ideas you've explored so far.

- Required RR 1: Browse through the Research Topics from the Network of Academic Programs in the Learning Sciences (NAPLeS) and select any one of them to explore more deeply.
- Required RR 2: Have an in-depth discussion (at least 12 back-and-forth exchanges) with a generative AI tool about the Research Topic you explored from the NAPLeS website.

Discussion Topic: Developing Learning Experiences
In the Required Readings & Resources this week, you were asked to browse through the Research Topics from the Network of Academic Programs in the Learning Sciences (NAPLeS) and select any one of them to explore more deeply, and to have a discussion with a generative AI tool about your topic. Use this to frame a discussion about the process of designing learning experiences while focusing on grounding the learning experience in principles from theory and simultaneously aligning the learning experience with the learning goals/objectives/outcomes.

Team Concept Mapping:
Background

Becoming a learning designer and learning scientist involves constructing deep understanding of how hundreds of interdependent ideas are related. Therefore, throughout this semester you will be working as a team to construct a visual representation of this understanding.

Instructions

- Use the same concept map that you created in Week 6 (and Week 3).
- All team members: On the board put all the important concepts we have studied since Week 6 in this course.
- Also, add new concepts from other courses you may be taking or other contexts that are relevant.
- In addition to using connecting lines to show the relationship between ideas, every line needs to get labelled to explain the relationship. Again, it’s okay to move ideas around in a way that makes sense to everyone on the team.
- Use your team’s discussion board in Canvas to discuss any issues or clear up any ideas that are not clear.
- At the end of the week, every member of the team should create a new post in the discussion board summarizing their experience and contributions to the concept map this week.

Week 10: Innovation in the Learning Sciences

Week Overview:
As a dynamic and evolving field, the learning sciences are continually informed by technological and methodological innovations. Exploring the potential of augmented intelligence and AI in learning design allows us to consider how these tools can be leveraged to support learning in new ways, while also critically examining their limitations and ethical implications. Analyzing methodological innovations, such as multimodal learning analytics or computational modeling, expands our toolkit for studying and designing for learning. This week encourages us to embrace a spirit of innovation and critical inquiry as we shape the future of learning.

You will investigate emerging technological and methodological innovations in the learning sciences, considering their potential to transform how we understand and design for learning. Discussions will focus on the affordances and limitations of these innovations, and on strategies for leveraging them in principled ways that align with learning sciences values and goals. The individual project on centering the learner experience challenges you to apply these innovations to your own design work, considering how they might be used to support learner agency, engagement, and equity.

Week Learning Objectives:
After successful completion of this week, you will be able to:

- Analyze emerging technological and methodological innovations in the Learning Sciences.
- Evaluate Learning Sciences approaches to integrating augmented intelligence or AI in learning design.

Readings and Resources:
This week's readings and resources introduce you to technological and methodological innovations in the learning sciences, such as augmented intelligence, AI, and computational modeling. Engaging with these ideas is essential for understanding how these tools can be leveraged to support learning in new ways, while also considering their limitations and ethical implications. These concepts directly inform your discussions and individual projects, challenging you to critically examine the affordances and constraints of these innovations for learning design.

The Augmented Intelligence Workshop videos provide a starting point for exploring AI applications in learning, while your generative AI discussion will deepen your understanding of methodological and technological innovations in the field. Draw upon these ideas in your discussion of how learning scientists might uniquely approach AI and other innovations. In your individual project, consider how emerging technologies might be leveraged to center the learner experience in your redesign.

- Required RR 1: Search YouTube for videos on the topic of augmented intelligence and watch at least 2 videos (if you can't find anything that grabs your attention, select two from the Augmented Intelligence Workshop YouTube Channel – but they are long so feel free to skim through)
- Required RR 2: Have an in-depth conversation (at least 12 back-and-forth exchanges) with a generative AI tool about methodological and technological innovations in the field of the learning sciences. Note that you might have to remind the generative AI tool that the field of the learning sciences is different than the field called the science of learning.

Discussion Topic: Innovations in the Learning Sciences
What is unique about the learning sciences as a field in terms of technological and methodological innovations? Also discuss how learning scientists might approach augmented intelligence and AI.

Individual Learning in the Wild Project: Centering the Learner Experience
As learning designers, it's crucial to keep the learner at the heart of our work. This week, you'll put yourself in the shoes of a learner engaging with your redesigned context. You'll also gather feedback from others to gain fresh perspectives on your design.

Step 1 – Empathize

Imagine yourself as a learner in your redesigned context. What is the experience like? How do you navigate the environment? What challenges do you face? What moments of joy or discovery do you encounter? Document this learner journey in a form that captures the experiential aspects - maybe a narrative, a comic strip, a video diary, or any other medium that suits your design.

Step 2 – Gather

Seek feedback on your prototype from others. Share it with friends, family, classmates, or even strangers if appropriate. Gather their reactions, questions, confusions, and ideas. You might create a short survey, conduct informal interviews, or simply engage in open-ended conversations.

Step 3 – Synthesize

Review the experiential insights and feedback you've gathered. What patterns or themes emerge? What seems to be working well in your design? What aspects might need rethinking? How does this input reshape your understanding of the learner experience? Capture these reflections and insights.

Step 4 – Share

Post your learner journey documentation, a summary of the feedback you gathered, and your synthesis reflections to your small group. Discuss what you've learned about centering the learner experience and how you might incorporate these insights as you move forward.

Week 11: Assessment and Evaluation in the Learning Sciences

Week Overview:
This week challenges traditional approaches to assessment and evaluation, which often prioritize measurement of isolated skills and knowledge. Learning scientists recognize the need for assessment strategies that honor the complexity of learning and the diverse ways in which learners demonstrate understanding. Exploring learning analytics and other innovative approaches allows us to consider how we can capture and make visible the rich tapestry of learning processes and outcomes. Recognizing learning as a process of becoming and identity change invites us to rethink assessment as an opportunity for learners to reflect on their growth and set new goals for personal and intellectual development.

This week, you will critically examine traditional approaches to assessment and evaluation, considering their assumptions about learning and their limitations in capturing the complexity of learning processes and outcomes. Through discussion and analysis of innovative assessment strategies, you will explore how learning sciences principles can inform the design of more authentic, meaningful, and equitable forms of assessment. The individual project on envisioning the impact and application of your redesign allows you to consider how your design principles and choices can support transformative assessment practices that align with learning sciences values.

Week Learning Objectives:
After successful completion of this week, you will be able to:

- Critique traditional assessment or evaluation approaches from a Learning Sciences perspective.
- Analyze innovative assessment or evaluation strategies aligned with Learning Sciences principles.
- Create alternative assessment strategies that align with the principles of learning as becoming and identity change.

Readings and Resources:
The readings and resources for this week challenge you to critically examine traditional approaches to assessment and evaluation, and to explore innovative strategies that align with learning sciences principles. Engaging with these ideas is crucial for developing a more nuanced understanding of how to design authentic, meaningful, and equitable forms of assessment that honor the complexity of learning processes and outcomes. These concepts directly inform your discussions and individual projects, inviting you to reimagine assessment as an opportunity for learners to reflect on their growth and set new goals for personal and intellectual development.

Pellegrino's chapter provides a learning sciences perspective on assessment design and use, highlighting key principles and considerations. Your generative AI discussion will deepen your understanding of how learning scientists have problematized traditional assessment approaches. Draw upon these ideas in your discussion of the assumptions underlying traditional assessment and alternative approaches learning scientists might take. In your individual project, consider how your redesign might support transformative, learning sciences-aligned assessment practices.

- Required RR 1: Book Chapter: Pellegrino, J. W. (2022). A learning sciences perspective on the design and use of assessment in education. In R. K. Sawyer (Ed.), *The Cambridge handbook of the learning sciences* (3 ed., pp. 238-258). Cambridge University Press. https://doi.org/10.1017/9781108888295.015)
- Required RR 2: Have an in-depth conversation (at least 12 back-and-forth exchanges) with a generative AI tool about how learning scientists have problematized assessment and evaluation. Note that you might have to remind the generative AI tool that the field of the learning sciences is different than the field called the science of learning.
- Optional RR 1: Video (6:07): Sir Ken Robinson and assessment | HundrED

Discussion Topic: Problematizing Assessment and Evaluation
What assumptions (unspoken, unwritten, below the surface) do traditional approaches to assessment and evaluation make about the nature and processes of learning? How might learning scientist

problematize assessment and evaluation? What might we do instead of traditional approaches to assessment and evaluation?

Individual Learning in the Wild Project: Envisioning Impact and Application
Overview

As you near the end of your design journey, it's important to step back and consider the broader implications and potential of your work. This week, you'll reflect on the impact your redesign could have and how the principles you've developed might be applied to other contexts.

Step 1 – Imagine

Envision a future where your redesign is fully realized in your chosen context. What does this look like? How are learners engaging? What kinds of experiences and outcomes are possible? Capture this vision in a compelling form - a story, scenario, visuals, or any other medium that brings it to life.

Step 2 – Evaluate

Critically assess the potential impact of your redesign. Consider benefits, challenges, and unintended consequences. How might it transform the learning experience? What barriers might need to be overcome? What ethical considerations come into play? Document your evaluation.

Step 3 – Extend

Reflect on how the principles and insights from your project might be applied more broadly. What other contexts or challenges could benefit from a similar approach? How might your work contribute to the larger field of learning sciences and design? Capture these reflections and ideas.

Step 4 – Share

Post your vision, impact evaluation, and extensibility reflections to your small group. Engage in discussion around the implications and potential of each other's work. Consider how your projects might build off each other or combine in interesting ways.

Reflection:
(reflection instructions here)

Week 12: Equity and Accessibility in Learning Design and the Learning Sciences

Week Overview:
Designing for equity and accessibility is an ethical imperative in the learning sciences. This week examines how principles of universal design for learning (UDL) and critical pedagogy can inform the creation of learning experiences that are inclusive of diverse learners. By considering the intersections of identity, power, and privilege in learning, we can work to dismantle barriers and create conditions for all learners to thrive. Broadening our definitions of accessibility beyond accommodations for disability, we recognize the need to design for cultural, linguistic, and socioeconomic diversity. This week challenges

us to critically examine our assumptions and practices, and to commit to designing for equity and justice in learning.

You will engage in critical discussions about the intersections of diversity, equity, inclusion, and accessibility in learning design and the learning sciences. By examining the affordances and limitations of different frameworks, such as universal design for learning and critical pedagogy, you will develop a more nuanced understanding of how to design for equity and justice in learning. The individual project on analyzing your redesign through an equity and accessibility lens challenges you to interrogate your own assumptions and biases, and to propose design enhancements that center the needs and experiences of marginalized learners.

Week Learning Objectives:
After successful completion of this week, you will be able to:

- Evaluate the alignment between UDL and critical pedagogy approaches to equity and accessibility.
- Analyze the intersections between equity, accessibility, and inclusive learning design.
- Apply equity and accessibility principles to the critique of learning experiences.

Readings and Resources:
This week's readings and resources introduce you to principles of universal design for learning (UDL) and critical pedagogy, and their applications for designing equitable and accessible learning experiences. Engaging with these ideas is essential for understanding how to create inclusive learning environments that dismantle barriers and support the diverse needs and experiences of all learners. These concepts inform your discussions and individual projects, challenging you to critically examine your own assumptions and practices, and to commit to designing for equity and justice in learning.

The UDL videos and web resources provide an overview of key principles and guidelines, while Donaldson and Allen-Handy's article introduces critical perspectives and the role of agency and empowerment in learning. Use these ideas to inform your discussion of the alignments and differences between UDL and critical pedagogy. In your individual project, apply equity and accessibility principles to critically analyze your redesign, considering how it might support marginalized learners.

- Required RR 1: Video (3:02): Universal Design Principles (3:02)
- Required RR 2: Video (4:36): UDL At A Glance
- Required RR 3: Video (4:25): UDL Guidelines 3.0: Proposed Updates
- Required RR 4: Web Resource: The UDL Guidelines from CAST
- Required RR 5: Journal Article (focus on the Agency and Empowerment in Conceptualizations of Learning section, and then focus on the Educational Psychology Research, Critical Pedagogy, and Conceptualizations of Learning section): Donaldson, J. P., & Allen-Handy, A. (2020). The nature and power of conceptualizations of learning. Educational Psychology Review, 32(2), 545-570. https://doi.org/10.1007/s10648-019-09503-2
- Optional RR 1: Book Chapter: Chapter 3 (The Principles of Universal Design and Their Application) from: Story, M. F., Mueller, J. L., & Mace, R. L. (1998). The Universal Design File: Designing for People of All Ages and Abilities. North Carolina State University Center for Universal Design.

- Optional RR 2: Book Chapter: Read: Gachago, D., Bali, M., & Pallitt, N. (2023). Changing from Within: Narratives of Resistance from Equity-Oriented Learning Designers. The Journal of Applied Instructional Design, 12(2). https://dx.doi.org/10.59668/722.13022

Discussion Topic: Critical and Inclusive Perspectives
What are the areas of alignment and differentiation between universal design for learning (UDL) and critical perspectives/critical pedagogy?

Team Concept Mapping:
Background

Becoming a learning designer and learning scientist involves constructing deep understanding of how hundreds of interdependent ideas are related. Therefore, throughout this semester you will be working as a team to construct a visual representation of this understanding.

Instructions

- Use the same concept map that you created in Week 9 (and Week 3 and 6).
- All team members: On the board put all the important concepts we have studied since Week 9 in this course.
- Also, add new concepts from other courses you may be taking or other contexts that are relevant.
- In addition to using connecting lines to show the relationship between ideas, every line needs to get labelled to explain the relationship. Again, it's okay to move ideas around in a way that makes sense to everyone on the team.
- Use your team's discussion board in Canvas to discuss any issues or clear up any ideas that are not clear. At the end of the week, every member of the team should create a new post in the discussion board summarizing their experience and contributions to the concept map this week.

Week 13: Current Trends and Future Directions

Week Overview:
As learning scientists, it is crucial to stay attuned to emerging trends and future directions in the field. By analyzing current trends in the learning sciences and learning technologies, we can identify promising areas for research and innovation. Examining hype cycles allows us to critically evaluate the potential and limitations of emerging technologies, and to consider how they might be leveraged to support learning in principled ways. This week encourages us to take a long view of the field, envisioning how learning sciences perspectives and approaches can continue to shape the future of learning and education.

This week, you will explore current trends and future directions in the learning sciences and learning technologies, considering their implications for research, design, and practice. Through discussions and analysis of hype cycles and emerging developments, you will develop a critical perspective on how to evaluate and adopt new ideas and approaches in principled ways. The individual project on crafting your final deliverable challenges you to synthesize your learning and insights from throughout the course,

envisioning how you will continue to engage with and contribute to the learning sciences beyond the course.

Week Learning Objectives:
After successful completion of this week, you will be able to:

- Analyze trends in the Learning Sciences and learning technologies.
- Evaluate the educational potential of emerging technologies using Learning Sciences principles.

Readings and Resources:
The readings and resources for this week invite you to explore current trends and future directions in the learning sciences and learning technologies. Engaging with these ideas is crucial for staying attuned to emerging developments in the field, and for considering their implications for research, design, and practice. These concepts inform your discussions and individual projects, encouraging you to adopt a critical and forward-thinking perspective on how to evaluate and adopt new ideas and approaches in principled ways.

Browsing recent ISLS papers and exploring educational hype cycles provides a foundation for identifying trends, which you can then discuss more deeply with a generative AI. Use these insights to inform your discussion of recent trends in learning sciences and learning technologies. In your individual project, consider how emerging trends and technologies might shape the impact and application of your redesign in the future.

- Required RR 1: Step 1: Browse through the repository of papers from the most recent International Society of the Learning Sciences annual meeting, noting things that might be trends.
- Required RR 2: Step 2: Website resource: Gartner Hype Cycle Wikipedia page
- Required RR 3: Step 3: Search the internet for images of the educational hype cycle from past years and identify trends.
- Required RR 4: Step 4: Have an in-depth conversation (at least 12 back-and-forth exchanges) with a generative AI tool about the (potential) trends you identified.

Discussion Topic: Trendspotting
What are some recent trends in the learning sciences? What are some recent trends in technologies for teaching and learning?

Individual Learning in the Wild Project: Crafting Your Final Deliverable
Overview

As your project culminates, you'll create a final deliverable that synthesizes your learning and design work across the semester.

Step 1 – Envision

Brainstorm potential forms your final deliverable could take. Think beyond traditional formats - consider websites, interactive presentations, video walkthroughs, physical installations, or multimedia combinations. Choose a form that best showcases your work and insights.

Step 2 – Craft

Develop your deliverable, incorporating key elements such as an overview of your context and rationale, discussion of guiding theories and principles, presentation of your redesign, reflection on your process and learning, and considerations for future iteration and application.

Step 3 – Polish

As you refine your deliverable, consider principles of effective design and communication. Aim for a product that is engaging, informative, and showcases your unique perspective.

Step 4 – Share

Post your near-final deliverable to your small group for a final round of feedback and celebration of your collective achievements.

Week 14: Synthesis and Integration

Week Overview:
The final week of the course is an opportunity for synthesis and integration of learning sciences perspectives and theories. By considering how learning sciences principles can inform practical applications in learning design, we bridge theory and practice in meaningful ways. Integrating diverse perspectives and experiences from throughout the course, we develop our own unique ways of being, knowing, and doing as learning scientists and designers. This week is a time for reflection on personal and professional growth, and for envisioning how we will continue to engage with learning sciences ideas and practices beyond the course.

In this final week, you will reflect on your learning journey throughout the course, considering how your understanding of the learning sciences has evolved and how you will apply these insights to your future work as a learning designer and learning scientist. The individual project on showcasing your work and engaging with your peers' projects allows you to practice the key skills of communication, critique, and collaboration that are essential to participation in the learning sciences community. The team concept mapping project challenges you to collaboratively integrate and represent your collective understanding of the field, preparing you to engage in ongoing learning and discovery beyond the course.

Week Learning Objectives:
After successful completion of this week, you will be able to:

- Evaluate the integration of learning sciences perspectives and theories into practical applications.
- Articulate a personal philosophy of learning design grounded in the Learning Sciences.

Readings and Resources:
This week's readings and resources support you in synthesizing and integrating learning sciences perspectives and theories into practical applications. Engaging with these ideas is essential for bridging theory and practice in meaningful ways, and for developing your own unique ways of being, knowing,

and doing as a learning scientist and designer. These concepts inform your individual project and team concept mapping, challenging you to articulate a personal philosophy of learning design grounded in the learning sciences, and to collaboratively represent your collective understanding of the field.

Bereiter's article on principled practical knowledge and Sandoval's piece on conjecture mapping provide frameworks for integrating theory and practice, which you can draw upon as you craft your final individual project deliverable. Use these ideas to inform your reflections on how learning sciences principles can guide practical applications. In your team concept mapping, focus on synthesizing and integrating the key ideas and perspectives you've encountered throughout the course, working towards a shared understanding of the field that can guide your future learning and practice.

- Required RR 1: Bereiter, C. (2014). Principled practical knowledge: Not a bridge but a ladder. *Journal of the Learning Sciences, 23*(1), 4-17. https://doi.org/10.1080/10508406.2013.812533
- Required RR 2: Sandoval, W. (2014). Conjecture mapping: An approach to systematic educational design research. *Journal of the Learning Sciences, 23*(1), 18-36. https://doi.org/10.1080/10508406.2013.778204

Individual Learning in the Wild Project: Showcasing and Reflecting
Overview

In this final week, you'll share your completed deliverable with the class and engage with your peers' work. You'll also reflect on your learning across the project and the course.

Step 1 – Share

Post your final deliverable to the class showcase space.

Step 2 – Explore, Discuss, and Celebrate

Explore and engage with your peers' work, offering appreciations, insights, and questions. Within this discussion, spend some time reflecting on the learning and growth you've experienced through the project and course. Consider insights, challenges, and how you might carry this learning forward. Take a moment to celebrate your achievements and those of your peers. Recognize the insights, creativity, and effort you've all put into this learning journey.

Team Concept Mapping:
Background

Becoming a learning designer and learning scientist involves constructing deep understanding of how hundreds of interdependent ideas are related. Therefore, throughout this semester you will be working as a team to construct a visual representation of this understanding.

Instructions

- Use the same concept map that you created in Week 12 (and Week 3 and 6 and 9).
- All team members: On the board put all the important concepts we have studied since Week 12 in this course.

- Also, add new concepts from other courses you may be taking or other contexts that are relevant.
- In addition to using connecting lines to show the relationship between ideas, every line needs to get labelled to explain the relationship. Again, it's okay to move ideas around in a way that makes sense to everyone on the team.
- Think back to the discussion in our first week about how we could explain the learning sciences to someone who has never heard of it. As a team, consider all the ideas you have encountered in this course (reflected in your concept map) and come to a team consensus on a short explanation that you can put somewhere in your concept map.
- Every member of the team should download a copy of the map for themselves for future use (in case something happens to the original map).
- Nominate one person in your team to share your team's concept map with the whole class.
- Look at all the other concept maps from other teams and give feedback.

Reflection:
(reflection instructions here)