

Online ITLS 6310: Foundations of Instructional Technology and Learning Sciences

Professor

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Office Hours: Tuesdays 7-8 pm (Adobe Connect) | Thursdays 11:30 am-12:30 pm (Adobe Connect and EDUC 207)

Overview

This course is designed to familiarize new ITLS graduate students with the fields of instructional technology and learning sciences. Through this course you will learn about the history of the fields, important figures, current and future trends, as well as current debates.

This course includes both individual and group assignments because practitioners in the fields need to be able to work in individual and in group settings.

Objectives

Upon completion of this course students will be able to:

- Describe the history of the fields of instructional technology and learning sciences
- Define instructional technology and learning sciences and identify subfields and jobs
- List and describe professions, professional organizations, conferences, and publications associated with instructional technology, learning sciences, and sub-fields (e.g., Human Performance Technology)
- Engage with current issues in the field, and describe positions of people with different perspectives on these issues, and the evidence that supports such
- Describe and apply models used in instructional technology and learning sciences
- Write coherent research papers formatted according to APA

Grading Scale

Please note that none of your assignments will be graded until you have agreed to the academic integrity agreement. The link for this can be found on the course home page.

Your grade will be based on the university grading scale:

A	100-93%
A-	92-90%
B+	89-87%
B	86-83%
B-	82-80%
C+	79-77%
C	76-73%
C-	72-70%
D	69-60%
F	59-0%

Late Penalty

Every day an assignment is late, you will lose 10% of possible points. This means for example if you turn an assignment in more than 1 but up to 2 days late, you can only earn

up to 80% of possible points. If you turn an assignment in more than 6 but up to 7 days late, you can only earn up to 30% of possible points.

Assignments

How to find grades in Canvas: If you click "grades" in the course tools menu on the left side of your screen, you can see all of your recorded grades.

The following course components will contribute to your grade:

Final Project (60 points)

You will choose one of two options for your final project - either a term paper or an interview project. These options are detailed below. The goal of this project is to help you learn more deeply about a particular topic or profession that interests you. Of note is that for either option, there are milestones throughout the semester when you will need to turn in outlines, etc. You will receive points for turning in required project elements at those milestones. **If you do not turn anything in at the milestone due dates, you will lose points.** This is **not** a project that can be completed the night before it is due.

Approximately five days after the due date for submitting required project elements to Instructure Canvas, you can go back to the "assignment" where you submitted the project element to read feedback.

You will need to choose between the two options by Friday, September 9, 11:59 pm.

Option 1 (Term paper).

This is a persuasive paper/ literature review. That is, you are expected to build an argument, not just recite what other people have found.

You will identify a topic within the fields of instructional technology or learning sciences (e.g., electronic performance support systems in health care settings) that interests you, identify at least 10 sources of which 8 must be peer-reviewed journal articles, review the research, identify gaps in the research, and make suggestions for future research and/or guidelines for practice. The paper must be formatted according to APA 6th, and must be at least ten pages double-spaced not including references, 12 pt font. See next page for the rubric.

Term paper rubric.

Milestone	Criterion	Points possible	Due Date
Topic + Annotated bibliography	Topic of paper is identified Annotated bibliography* includes 10 sources, at least 8 of which are peer reviewed	5	Fri, 9/30, 11:59 pm
Outline	Outline clearly lays out the logic of the paper and is sufficiently detailed	10	Fri, 10/14, 11:59 pm
Draft	Draft is reasonably well developed with a sound argument. Meets length requirements of paper.	10	Fri, 11/11, 11:59 pm
Final Paper	Paper concisely reviews research	10	Fri, 12/9 11:59 pm
	Follows clear logic	10	
	Makes suggestions for future research and or guidelines for practice	10	
	Free of typographical and other errors and follows APA	2	
	Is 10 pages and incorporates 10 sources, of which at least 8 are peer reviewed	3	

*Note: Annotated bibliography means that you write the citation and then put 3 or so sentences directly beneath that describe the source.

Option 2 (Interview project).

If you select this option, you will identify someone working in the field of instructional technology/learning sciences near where you live, and ask him/her a set of questions that you will develop to learn more about his/her profession (interviews should be no more than thirty minutes). Preparing to conduct the interview will require several tasks, including (a) conducting in-depth research about the profession to learn what skills are required, (b) developing a list of questions to ask, and (c) interviewing the individual. You need to either video or audiorecord the interview and upload the video or audio file to Instructure Canvas. Then you need to (a) listen to/watch two classmates' interviews, and (b) reflect on what you learned through your interview and your classmates' interviews about the career options available to you in a two-three page paper. You will submit your interview file as an MP3 or MP4 file (a) to the Interview recording assignment, and (b) to the Interview Repository (both linked off of unit 12 page). Please make sure to write a sentence or two introducing your interviewee – his/her job, what he/she does, etc.

The Utah State University Institutional Review Board has deemed that this project is not research. However, it is crucial that you do not download interviews to your computer, include the data contained therein in any research reports or conference presentations, or disseminate them in any other way outside of the Instructure Canvas course. This project is solely intended for you and your classmates to learn about career options. Please see the next page for the rubric.

Interview project rubric.

Milestone	Criterion	Points possible	Due Date
Topic + Annotated bibliography	Topic of interview is identified Annotated bibliography* includes 15 sources, at least 5 of which are books or peer reviewed journal articles; please note: the 10 sources other than books or peer reviewed journal articles can be job postings and other web sites	5	Fri, 9/30, 11:59 pm
Concept list of what you want to find out from interview	Includes name and job title of person you want to interview (so multiple students don't try to interview the same person) Lists concepts (e. g., job duties, required training/ experience, daily job duties) about the profession you need to know and is reasonable for a 30-minute interview. (Please note: this is not your list of questions...this is meant to brainstorm what you want to know)	10	Fri, 10/14, 11:59 pm
Draft of interview questions	List of questions is reasonably comprehensive, aligns with what you want to know, and fits a 30-minute interview.	10	Fri, 11/11, 11:59 pm
Interview	Interviewer is courteous to the interviewee	5	Fri, 12/9 11:59 pm
	Questions are relevant, well-formulated, and delivered well	10	
Interview Reflection	Reflection on your interview and that of two classmates' interviews met length requirements (2-3 pages) and was thoughtful and described the way that learning more about the three professions involved helped you to consider future employment opportunities	15	Weds, 12/14, 11:59 pm
	Interview questions and reflection are free of grammatical and other errors.	5	

*Note: Annotated bibliography means that you write the citation and then put 3 or so sentences directly beneath that describe the source.

Participation (70 points)

Up to 30 possible points will be based on your performance as discussion leader. The first week of class, you need to sign up to be a discussion leader on the “discussion leader signup” sheet (linked on unit 1 page). For the week you are discussion leader, you are expected to read all required course readings and be prepared to discuss and apply them. You will lead the class discussion for the readings for the week (you will need to have thoroughly read the assigned articles). You will be serving as discussion leader with 1-3 classmates. The articles will be assigned the first week of class. When you are a discussion leader, you need to communicate with your fellow discussion leaders and together come up with 4 questions related to the readings for the week; one of you needs to then send to the TA the discussion questions by Saturday noon prior to the week you are discussion leader. So for example, if you are discussion leader for unit 3, you would send the discussion questions to the TA by Saturday noon before Unit 3 starts.

Please note, these must be open-ended questions. Then you must monitor your discussion and intervene when necessary to keep the discussion moving. Belland and the TA will also monitor and participate in the discussion.

Up to 40 possible points will be based on your participation in discussions **in the "Unit ____ Readings" thread** (up to 4 points per week...the bottom two weeks will be dropped). To get full points as a participant in a given week, you must:

Make an original posting in response to at least two questions by 11:59 pm on Wednesday of that week (up to 2 points per week).

Rubric for original posting.

Points possible		
2	1	0
Each posting was clearly in response to the question. Additionally, each posting was: to a different question of sufficient depth exhibited application of the weeks readings to the student's experiences	Each posting was clearly in response to the question, but postings were lacking in 1-2 of the following criteria: each response was: to a different question of sufficient depth exhibited application of the weeks readings to the student's experiences	The postings were clearly not in response to the questions, or were lacking in all 3 of the following criteria: each response was: to a different question of sufficient depth exhibited application of the weeks readings to the student's experiences

Respond to at least two classmate postings by 11:59 pm on Friday of that week (up to 2 points per week). Please see the next page for the rubric.

Please note, you will lose up to 1/3 of possible points for posting late. Also, given that there are so many students, there may be a very large number of postings. I do not expect you to read every single one. But please try to read different classmates' posts each week. That is, don't read Joe's posts and ignore Kristen's every week (just random names to illustrate my point).

Rubric for responses.

Points possible		
2	1	0
Each response was clearly in response to an original student posting. Additionally, each response was In response to a different original student posting Of sufficient depth Exhibited application of the weeks readings to the student's experiences	Each response was clearly in response to an original student posting, but postings were lacking in 1-2 of the following criteria: In response to a different original student posting Of sufficient depth Exhibited application of the weeks readings to the student's experiences	The responses were clearly not in response to original student postings, or were lacking in all 3 of the following criteria: In response to a different original student posting Of sufficient depth Exhibited application of the weeks readings to the student's experiences

ITLS 6310 Knowledgebase Entries (3 at 20 points each)

The ITLS 6310 Knowledgebase is a wiki. A wiki is a database-driven website that people can edit without html editing programs like Adobe Dreamweaver. These are linked in two places – there are direct links to the knowledgebase associated with each individual project (e.g., famous figures) in the module for the week in which the project is due, and then in a link in the “miscellaneous” module. **Please note that this is not meant to be a "knowledge dump" wiki, which some people create by copying and pasting stuff from other websites. As with any other assignment, if you simply copy and paste stuff into your wiki, you will fail the assignment!! If you closely paraphrase other websites, you will fail the assignment. The wiki entries must be in your own words, and all information, quotes, and pictures must be cited in APA style.**

This will be a group project. The goal is to create a living database of topics of historical and other interest to the fields of instructional technology and learning sciences. This wiki will be accessible by anyone with an Internet connection anywhere in the world, so be sure to put forth your best work. Future ITLS students will also read and add on to the wiki.

You will have access to group discussion boards and group chat rooms to work on the project.

You may use any mode of communication to collaborate. If you need further resources to collaborate or have trouble finding information, please ask Dr. Belland or the TA for help.

Knowledgebase Entry 1: Professions and Related Professional Organizations

In this wiki entry, your group will answer the following questions:

- What do practitioners of your assigned profession do (peruse a current job announcement for part of this)
- What educational and other requirements are needed to enter the profession (peruse a current job announcement for part of this)?
- Who are two famous historical members from at least 15-20 years ago of the profession?
 - What are they famous for (Major models, theoretical approaches, accomplishments, etc)?
 - What is their influence on the development of the profession?

- Who are two famous current members of the profession?
 - What are they famous for?
 - What is their influence on the development of the profession?
- What are at least two professional organizations members of the profession belong to, what costs and benefits are associated with the organizations?

By Friday, 9/2, 11:59 PM, please submit your top preferences for topics. I will sort through those and assign you to a topic and group accordingly. Check back by Monday, 9/5, 11:59 PM in People ->View student groups to see your topic and groupmates. You can also click on the name of your group to have access to communication tools to collaborate with your group.

To turn in the project, please

1. Create your wiki page at the appropriate page in the Knowledgebase
2. Have one group member copy and paste its text into the text submission box for the submission of the assignment
3. Submit participation ratings for your groupmates

Your score will be based on a Group Score and an Individual Participation Rating average.

Group score rubric.

Required Element	Points possible
Summarized what members of the profession do and described what educational and other requirements are needed to enter the profession	5
Discussed at least two famous historical and two famous current members of the profession (and what they are famous for and their influence on the profession)	5
Listed at least two professional organizations members of the profession belong to, and what costs and benefits are associated with the organizations	5

Additionally, up to five points will be awarded for participation, based on an average of your groupmates' ratings of your participation.

Knowledgebase Entry 2: Famous Figures in Instructional Technology/Learning Sciences

In this wiki entry, your group will answer the following questions:

- What led the famous figure to the field of instructional technology or learning sciences? (e.g., background as a trainer in the Army led figure to study training in other sectors of society in peacetime)
- Where was the entrance of the Famous Figure into the field situated in the historical development of the field?
- What are two major ideas/models of the individual? Please explain these ideas/models
- What is the influence of the ideas/models on current thought in instructional technology/learning sciences? Were the ideas fully understood as the Famous Figure originally intended (e.g., when people cited the Famous Figure's work, did the citation follow the original intention of the Famous Figure)?

By Friday, 9/23, 11:59 PM, please submit your top preferences for topics. I will sort through those and assign you to a topic and group accordingly. Check back by Monday, 9/26 by 11:59

PM in People ->View student groups to see your topic and groupmates. You can also click on the name of your group to have access to communication tools to collaborate with your group.

To turn in the project, please

1. Create your wiki page at the appropriate page in the Knowledgebase
2. Have one group member copy and paste its text into the text submission box for the submission of the assignment
3. Submit participation ratings for your groupmates

Your score will be based on a Group Score and an Individual Participation Rating average.

Group score rubric.

Required Element	Points possible
Provided some pertinent background information (e.g., pertinent work history) on the individual. Also situated the entrance of the figure in the historical development of the field. You will lose points for recounting non-pertinent information such as number of siblings, if he/she had to walk in the snow to school, etc.)	5
Described two major ideas/models of the individual	5
Described the influence of the ideas on current thought in instructional technology/learning sciences	5

Additionally, up to five points will be awarded for participation, based on an average of your groupmates' ratings of your participation.

Knowledgebase Entry 3: Instructional Theories

In this wiki entry, your group will answer the following questions:

- What is this theory about and how it is applied?
- What are the historical reasons the theory was developed? What hole did it fill?
- What is the role of the theory in educational practice?

By Friday, 10/14, 11:59 PM, please submit your top preferences for topics. I will sort through those and assign you to a topic and group. Check back by Monday, 10/17, 11:59 PM in People ->View student groups to see your topic and groupmates. You can also click on your group name to have access to communication tools to collaborate with your group.

To turn in the project, please

1. Create your wiki page at the appropriate page in the Knowledgebase
2. Have one group member copy and paste its text into the text submission box for the submission of the assignment
3. Submit participation ratings for your groupmates

Your score will be based on a Group Score and an Individual Participation Rating average.

Additionally, up to five points will be awarded for participation, based on an average of your groupmates' ratings of your participation.

Group Score Rubric.

Required Element	Points possible
Introduced the theory and how it is applied	5
Gave some pertinent background related to the theory	5
Explained the role of the theory in educational practice	5

Extra credit Opportunities

When fellow students ask questions about technical problems, course content, or course procedure in one of the "Unit ___ Help" discussion threads, and you write a thorough and accurate response to that question, you can earn up to three extra credit points. Please note, if your peer wrote something like "What are the learning objectives for this week" or something else that is easily attainable, you will not earn points for responding. The total number of extra credit points you can earn during the semester cannot equal more than 18 extra credit points.

Important Expectations and Regulations

When You have Questions

My goal is to help you succeed in this class and at USU. Thus, after reading this syllabus, if you have questions about where to find things in Instructure Canvas, grading, what is due, when it is due, and so on, please submit it to the "Questions about unit ____" discussion thread after ensuring that it has not already been asked and/or answered.

Instructure Canvas Email

We will be using Instructure Canvas email for all email communication in this course. This is because it makes it easier for me to keep track of what questions are coming from which class, and helps ensure that your questions do not get buried when I get bombarded with email from other sources. It also makes it easier for me to send out email to the whole class. Thus you need to check Instructure Canvas email at least once per weekday (Mon-Fri).

Office Hours

I will have office hours in Adobe Connect, which is linked off of the course home page. I will only be there during my office hours. If you happen to be on campus and it is not during an evening office hours, you can stop by my office in EDUC 207.

Collegiality

In this course, you will be engaging in many discussions with your fellow students and instructors. Please help us keep all discussions civil. If you feel that you have been treated unfairly or if discussions have been out of line, please let the instructors know immediately, and we will work to ameliorate the situation.

USU Criteria for Make-Up of Missed Assignments or Projects

Students will be allowed to make up assignments or projects only if they meet one of the following criteria:

- Incapacitating illness prevents a student from attending classes for a minimum period of two weeks
- A death in the family

- Financial responsibilities requiring a student to alter a schedule to secure needed employment
- Change in work schedule as required by employer (with verification) or
- Other emergencies deemed appropriate by the instructor

If there are extenuating circumstances, a student may petition the instructor for time beyond the deadline. Documentation of the circumstances cited to justify the make-up is required.

Academic Integrity - “The Honor System”

Each student has the right and duty to pursue his or her academic experience free of dishonesty. The honor system is designed to establish the higher level of conduct expected and required of all Utah State University students.

The Honor Pledge. To enhance the learning environment at USU 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.” A student who lives by the Honor Pledge is a student who does more than not cheat, falsify, or plagiarize. A student who lives by the Honor Pledge:

- Espouses academic integrity as an underlying and essential principle of the USU community;
- Understands that each act of academic dishonesty devalues every degree that is awarded by this institution; and
- Is a welcomed and valued member of Utah State University

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." The penalties for plagiarism are severe. They include warning or reprimand, grade adjustment, probation, suspension, expulsion, withholding of transcripts, denial or revocation of degrees, and referral to psychological counseling. See <http://www.usu.edu/policies/PDF/Acad-Integrity.pdf>

Please note: Plagiarism includes but is not limited to copying and pasting text from web sites. If you copy and paste text from Wikipedia or any other website, for example, that is plagiarism and may result in failure of the assignment or the course, or another appropriate penalty.

Grievance Process (Student Code)

Students who feel they have been unfairly treated [in matters other than (i) discipline or (ii) 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: <http://www.usu.edu/student-services/studentcode/> (Article VII. Grievances, pages 25-30)

Sexual Harassment

Sexual harassment is defined by the Affirmative Action/Equal Employment Opportunity Commission as any "unwelcome sexual advances, requests for sexual favors, and other verbal or

physical conduct of a sexual nature." If you feel you are a victim of sexual harassment, you may talk to or file a complaint with the Affirmative Action/Equal Employment Opportunity Office located in Old Main, Room 161, or call the AA/EEO Office at 797-1266.

Students with Disabilities

The Americans with Disabilities Act states: "Reasonable accommodation will be provided for all persons with disabilities in order to ensure equal participation within the program. If a student has a disability that will likely require some accommodation by the instructor, the student must contact the instructor and document the disability through the Disability Resource Center (797-2444), preferably during the first week of the course. Any request for special consideration relating to attendance, pedagogy, taking of examinations, etc., must be discussed with and approved by the instructor. In cooperation with the Disability Resource Center, course materials can be provided in alternative format, large print, audio, diskette, or Braille."

Withdrawal Policy and Incompletes

Students are required to complete all courses for which they are registered by the end of the semester. In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances, but not due to poor performance or to retain financial aid. The term 'extenuating' circumstances includes: (1) incapacitating illness which prevents a student from attending classes for a minimum period of two weeks, (2) a death in the immediate family, (3) financial responsibilities requiring a student to alter a work schedule to secure employment, (4) change in work schedule as required by an employer, or (5) other emergencies deemed appropriate by the instructor.

Required Readings

Required readings will be linked in Instructure Canvas. If you have trouble accessing them, please let Dr. Belland or the TA know.

Class Schedule

Unit Week	Topic	Readings	Assignments due Please see rubrics in this syllabus for assignment details
Unit 1: 8/29- 9/2	Course intro How to read in this class How to work in groups in this class Library and APA	Gilroy (2011) Heinich (1984) LibGuide Purdue OWL (N. d.)	Weds, 8/31, 11:59 pm 2 initial discussion posts Post introduction Fri, 9/2, 11:59 pm 2 replies to classmate discussion posts Sign up to be a discussion leader online Submit preferences for the professions and professional organizations knowledgebase project

Unit Week	Topic	Readings	Assignments due Please see rubrics in this syllabus for assignment details
Unit 2: 9/5-9/9	Definitions of instructional technology and learning sciences	Richey et al. (2008) Rushby & Surry (2016)	Mon, 9/5, 11:59 pm Find out topic for the professions and professional organizations knowledgebase project and get started Weds, 9/7, 11:59 pm 2 initial discussion posts Fri, 9/9, 11:59 pm 2 replies to classmate discussion posts Final project: Choose final project option
Unit 3: 9/12-9/16	History of instructional technology and learning sciences	DeVaney & Butler (1996) Kolodner (2004)	Weds, 9/14, 11:59 pm 2 initial discussion posts Fri, 9/16, 11:59 pm 2 replies to classmate discussion posts
Unit 4: 9/19-9/23	Professions and professional organizations	Mong (2008) Professions knowledgebase	Mon, 9/19, 11:59 pm Professions knowledgebase project Tues, 9/20, 11:59 pm Professions knowledgebase Participation Rating Weds, 9/21, 11:59 pm 2 initial discussion posts Fri, 9/23, 11:59 pm 2 replies to classmate discussion posts Submit preferences for famous figures knowledgebase project
Unit 5: 9/26-9/30	Introduction to publications, and writing style	Ross & Morrison (2007) Belland et al. (2013)	Mon, 9/26, 11:59 pm Find out topic for the famous figures knowledgebase project and get started Weds, 9/28, 11:59 pm 2 initial discussion posts Fri, 9/30, 11:59 pm 2 replies to classmate discussion posts Final project: Topic + Annotated bibliography

Unit Week	Topic	Readings	Assignments due Please see rubrics in this syllabus for assignment details
Unit 6: 10/3- 10/7	Professional ethics	AECT (N. d.) Belland & Belland (2008) Eastmond & Hayden (2006) Napper (2007)	Weds, 10/5, 11:59 pm 2 initial discussion posts Fri, 10/7, 11:59 pm 2 replies to classmate discussion posts
Unit 7: 10/10- 10/14	Major figures in instructional technology and learning sciences	Famous figures knowledgebase	Mon, 10/10, 11:59 pm Famous Figures knowledgebase project Tues, 10/11, 11:59 pm Famous Figures knowledgebase participation rating Weds, 10/12, 11:59 pm 2 initial discussion posts Fri, 10/14, 11:59 pm 2 replies to classmate discussion posts If Term Paper option: Outline If Interview Project option: Concept list Submit topic preferences for the instructional theories knowledgebase project
10/17- 10/21	Fall Break! Woohoo!	None	None
Unit 8: 10/24- 10/28	Current Issues: Digital natives/digital immigrants?	Prensky (1999) Wang et al. (2014)	Mon, 10/24, 11:59 pm Find out topic for the instructional models knowledgebase project and get started Weds, 10/26, 11:59 pm 2 initial discussion posts Fri, 10/28, 11:59 pm 2 replies to classmate discussion posts
10/31- 11/4	No class: Individual meetings	None	None
Unit 9: 11/7- 11/11	Current issues: Technology Integration	Howard et al. (2015) Inan & Lowther (2010)	Weds, 11/9, 11:59 pm 2 initial discussion posts Fri, 11/11, 11:59 pm 2 replies to classmate discussion posts If final paper option: Draft If interview project option: Draft questions

Unit Week	Topic	Readings	Assignments due Please see rubrics in this syllabus for assignment details
Unit 10: 11/14-11/18	Current issues: constructivism vs. directed instruction	Kirchner et al (2006) Kuhn (2007)	Weds, 11/16, 11:59 pm 2 initial discussion posts Fri, 11/18, 11:59 pm 2 replies to classmate discussion posts
11/21-11/25	No class - thanksgiving break!	None	None
Unit 11: 11/28-12/2	Instructional models	Merrill (2002) Instructional models knowledgebase	Mon, 11/28, 11:59 pm Instructional Models knowledgebase project Tues, 11/29, 11:59 pm Instructional Models knowledgebase project Weds, 11/30, 11:59 pm 2 initial discussion posts Fri, 12/2, 11:59 pm 2 replies to classmate discussion posts
Unit 12: 12/5-12/9	Future of instructional technology / learning sciences	Khaddage et al. (2016) Wu et al. (2013)	Weds, 12/7, 11:59 pm 2 initial discussion posts Fri, 12/9, 11:59 pm 2 replies to classmate discussion posts Final paper/interview due
Final exam week		N/A	Weds, 12/14, 11:59 pm If interview option: Reflection due

Citations of Readings

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- Khaddage, F., Müller, W., & Flintoff, K. (2016). Advancing mobile learning in formal and informal settings via mobile app technology: Where to from here, and how? *Journal of Educational Technology & Society*, 19(3), 16-26.
- Kirschner, P. A., Sweller, J., & Clark, R. (2006). Why minimal guidance during instruction does not work: The failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. *Educational Psychologist*, 41(2), 75-86.
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- Kuhn, D. (2007). Is direct instruction an answer to the right question? *Educational Psychologist*, 42(2), 109-113. <http://doi.org/10.1080/00461520701263376>
- Merrill, M. D. (2002). First principles of instruction. *Educational Technology Research and Development*, 50(3), 43-59.
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