College of EDUCATION

Department of Education and Human Development

Ph.D. in Learning Sciences Program Handbook

Updated April 1, 2025

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Clemson, SC 29634

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INTRODUCTION

Welcome to the Department of Education and Human Development (EHD) at Clemson University's College of Education and the Learning Sciences doctoral program. We wish you success at every stage of your academic journey.

This handbook is intended to familiarize you with the requirements, policies and procedures involved throughout your graduate experience. The rules and regulations provided in this handbook govern our academic program and describe the duties and responsibilities of graduate students in the department. Each student is expected to be familiar with the contents of this handbook.

These rules and requirements are in addition to and subordinate to those described in the Graduate School Announcements, which you can find at http://catalog.clemson.edu/.

PURPOSE OF THE LEARNING SCIENCES PROGRAM

This program is designed for individuals who seek practical and theoretical training as research scientists, developers, and practitioners in professional, non-profit, and academic settings.

Learning Sciences advances understanding of learning processes and the design of innovative learning environments. Students in the Learning Sciences program will learn to develop, deliver, revise, and evaluate effective learning experiences and implement rigorous research studies in their chosen context.

Learning Sciences is an interdisciplinary field that offers solutions to understand, design, and implement change as learning is studied across a range of informal and formal real-world settings. The interdisciplinary and personalized nature of the program offers students opportunities to build a strong base of disciplinary knowledge augmented with discrete skills relevant to their area of specialization. Students benefit from multiple perspectives as they apply theoretical, research, and design work to specific topics in learning. For example, they may seek answers to questions regarding best strategies for ensuring that students excel in science, technology and math, or how to leverage digital media to create innovative environments for learning. Psychology, cognitive science, computer science, sociology, technological fields, and anthropology often contribute a context to Learning Sciences.

The Doctor of Philosophy program in learning sciences will train students who are able to:

- develop, deliver, revise, and evaluate effective learning experiences;
- conduct rigorous quantitative, qualitative, and mixed method research;
- design and implement rigorous research studies in areas related to the learning sciences;
- analyze existing research and participate in scholarly discourse in the field; and
- apply leadership skills in areas such as academia, business, government, or health care.

PROGRAM CONTACTS

Learning Sciences Program Coordinator - Dr. Meihua Qian, mqian@g.clemson.edu
Student Services Program Coordinator – Madison Hedden Hudson, mhedden@clemson.edu
Department Administrative Assistant – Suzanne Lusk, lusk6@clemson.edu
Department Chair – Dr. Kristen Cuthrell, mcowanc@clemson.edu

The Program Coordinator is your first contact should any issue arise regarding your academic progress or the program curriculum.

POLICIES AND RESOURCES

University Policies
Graduate School Policy Handbook
Graduate School Resources
Graduate School New Student To Do List

COHORT INFORMATION AND LOCATION OF DEGREE PROGRAM

The Learning Sciences Program accepts one cohort of applicants each year, to begin each fall. The application deadline will be no later than January 15th of each year. Per Graduate School policy, applicants are under no obligation to accept offers of financial support prior to April 15th of each year.

The location of the Learning Sciences Program is at the Clemson University main campus or with an option of in-person or HyFlex formats. For this program, the HyFlex format is defined as participating synchronously online.

ACADEMIC REQUIREMENTS

MINIMUM DEGREE REQUIREMENTS

Minimum Degree Requirements for the Ph.D. in Learning Sciences	
Total hours of coursework	61 credit hours
Core courses required*	13 credit hours
Research courses required*	12 credit hours
Cognate courses required*	18 credit hours
Comprehensive Exam	
Proposal Defense	
Doctoral Research	18 credit hours
Dissertation Defense	

*Note: All courses in a student's program of study must be approved by the student's Advisory Committee. Courses below the 8000-level may not be used to satisfy doctoral program requirements and should not be listed in the program of study.

CORE COURSES

All doctoral students are required to take all core courses below, constituting a total of 25 credits.

Research Courses: minimum 13 credit hours (4 courses)

- EDF 9270 Quantitative Research Designs and Statistics for Educational Contexts/EDF 9271 Qualitative Research Designs and Statistics for Educational Contexts Laboratory
- EDF 9770 Multiple Regression/General Linear Model in Educational Research
- EDF 9790 Qualitative Research in Education
- An advanced methods research course (note: as with all courses comprising a student's program of study, the advanced methods research course is subject to approval by the student's advisory committee). Example courses that may meet this requirement include:
  - EDF 9080 Advanced Educational Tests and Measurement
  - EDF 9710 Case Study and Ethnographic Research
  - EDF 9720 Phenomenology and Grounded Theory Research Methods and Design
  - EDF 9730 Narrative and Historical Research Methods and Design
  - EDF 9740 Emerging Qualitative Research Methods and Design
  - EDF 9750 Mixed Methods Research
  - EDF 9780 Multivariate Educational Research
  - EDF 9810 Design Based Research
  - EDF 9830 Data Science in Education

Learning Sciences Core Courses: 12 credit hours (4 courses)

- Doctoral Seminars:
  - EDF 9010 Seminar in the Learning Sciences I
  - EDF 9020 Seminar in the Learning Sciences II

  Note: LS Seminars (EDF 9010 and EDF 9020) must be taken during a student's first and second year in the program.

- Two Learning Theory courses, examples:
  - EDLT 9000 Sociocultural Theories of Learning
  - EDF 9300 Bioecological Perspectives on Development and Learning
  - EDF 9550 Theoretical Bases of Instruction

COGNATE COURSES

All doctoral students are required to take 18 credit hours (6 courses) for a cognate.

The cognate courses are selected by the student and his or her doctoral committee to develop a context in which to embed learning sciences. The selection of the six or more cognate courses may be from more than one content area, as the aim is to give the student a rich background into the multidimensional nature of their focus context. Courses might be chosen from a variety of content areas, for example: Architecture, Communication Studies, Computer Science, Digital Production Arts, Education, Family and Community Studies, Graphic Communications, Human- Centered Computing, Human Factors Psychology, Industrial Psychology, Sociology, Anthropology, History, Communication, and Information Design.

These decisions must be made with your Major Advisor in consultation with your committee, and are designed to enhance your understanding of your cognate area. Credit received for graduate-level courses in other departments may be counted toward your degree, provided those courses involve subject matter that is

relevant to your cognate. You must consult with and receive approval from your Major Advisor *before* taking such classes with the intention of having them count as part of your cognate.

COURSES TAKEN PRIOR TO ADMISSION TO THE PROGRAM

A course taken before admission (at Clemson or another institution) that is equivalent to one of the course requirements, including those from an earned master's degree may be substituted for a required course by demonstration of competency and/or providing evidence of equivalency to the student's Advisory Committee. A special examination may also be offered to meet these requirements.

Substitutions for required courses (12 hours of research, 6 hours of LS seminar, 6 hours of learning theory) are permitted through the following procedure. The student must make his or her request in writing to their Advisory Committee for each course. The doctoral committee must collect evidence from the student demonstrating equivalency via transcripts, catalog description and syllabus and provide it to the chair of the advisory committee. The Department Chair must approve substitutions for required doctoral courses after consulting with the faculty member(s) who teaches the doctoral course in question. Under no circumstances can this process be started before a student has chosen a dissertation chair and formed their committee.

SAMPLE CURRICULUM MAP

Year	Fall	Spring
1st year	LS Seminar*, EDF 9270, Learning Theories	EDF 9770, EDF 9790, Learning Theories or Cognate
2nd year	LS Seminar*, Advanced Methods, Learning Theories or Cognate	Learning Theories or Cognate, Cognate, Cognate
3rd year	Cognate, Cognate, Dissertation (3 hours)	Dissertation (6-9 hours)
4th year	Dissertation (6-9 hours)	Dissertation (6-9 hours)

* LS Seminars must be taken during a student's first (EDF 9010) and second (EDF 9020) year in the program.

A tentative schedule of the COE PhD course offerings available on the COE Canvas Space is provided to assist students develop their plan of study/timeline.

Research Courses: minimum 13 credit hours (4 courses)

- EDF 9270 Quantitative Research Designs and Statistics
- EDF 9770 Multiple Regression/General Linear Model
- EDF 9790 Qualitative Research in Education
- An advanced methods research course
  - One of the following advanced Qualitative methods:
    - EDF 9710 Case Study and Ethnographic Methods
      - EDF 9720 Phenomenology
      - EDF 9730 Narrative and Historical methods
      - EDF 9740 Emerging Qualitative methods
  - One of the following advanced Quantitative methods:

■ EDF 9780 Multivariate Research
■ Other Advanced Quant
○ EDF 9080 Advanced Educational Measurement
○ EDF 9750 Mixed Methods Research
○ EDF 9810 Design Based Research
○ EDF 9820 Quantitative Ethnography

Learning Sciences Core Courses: 12 credit hours (4 courses)

● Doctoral Seminars
○ EDF 9010 Seminar in the Learning Sciences I
○ EDF 9020 Seminar in the Learnings Sciences II
● Two Learning Theory courses, examples:
○ EDLT 9000 Sociocultural Theories of Learning
○ EDF 9300 Bioecological Perspectives on Dev & Learning
○ EDF 9550 Theoretical Bases of Instruction

MENTORED TEACHING (Optional)

During the course of the Learning Sciences Ph.D. program, interested graduate students (who have not yet been hired as Graduate Teaching Assistants) may have the opportunity to pursue mentored teaching under the supervision of a Learning Sciences faculty member. The objective of this developmental experience is to prepare the future learning scientist to design and teach courses within the field of Learning Sciences. Students may be able to complete mentored teaching through one of two options (subject to departmental needs and course availability):

1. Serve as instructor for a course offered by Learning Sciences faculty. Prior to serving as instructor for a course, students will shadow the course as taught by a Learning Sciences faculty member (note: shadowing duties may differ across courses and faculty members but could generally include planning, teaching, and grading responsibilities commensurate of a 1-credit course). After shadowing, students will teach the course in a subsequent semester under the supervision of a faculty member.
2. Co-develop and co-teach a course. It is recognized that course design is an intensive curricular design process that is part of effective teaching. Thus, students could co-design the equivalent of a 3-credit course under the direction of a Learning Sciences faculty member and co-teach portions of the class with the faculty member.

A total of 4 graduate credit hours may be allowed for the mentored teaching experience. For Option 1 (above), 1 credit may be awarded for shadowing, with 3 credits awarded for teaching as instructor of record. For Option 2 (above), 3 credits may be awarded for course design, with 1 credit awarded for co-teaching and assessment. Students should work with their advisor if they have an interest in participating in this optional mentored teaching opportunity.

GRADUATE SCHOOL FORMS AND DEADLINES

The Graduate School sets deadlines for the following items. The specific dates are determined according to the academic calendar for the semester in which you plan to graduate

(https://www.clemson.edu/graduate/students/deadlines.html).

Form	Description	Location	Notes
GS2	Committee Selection and Plan of Study (two-part form)	iROAR	Submit GS2 no later than the beginning of fourth semester of study following matriculation.
GS5D	Results of the doctoral degree comprehensive examination	GS website	Submit GS5D to the Office of Enrolled Student Services within three weeks of examination.
Announcement of Dissertation Proposal	Student provides dissertation information to CoE Student Services.	COE Graduate Canvas	Submit this form no less than 10 days prior to their proposal.
Thesis/Dissertation Research Approval	Advisory committee's approval of student's research proposal	GS website	Student brings form to proposal defense to be submitted when successful proposal defense has been verified.
Apply to Graduate	Student notifies Enrolled Student Services of his or her intent to graduate	iROAR	Submit the Diploma Application only if you are planning to apply for the next graduation date.
Announcement of Dissertation Defense	Student provides dissertation information to CoE Student Services.	COE Graduate Canvas	Submit this form no less than 10 days prior to their defense.
Defense Schedule Notice	Official notification to the Graduate School of student defense	GS website	Submit this form no less than 10 days prior to their defense.
GS7D	Dissertation Defense and Approval Form	GS website	Committee must complete and return to the Office of Enrolled Student Services.
Dissertation Submission	Dissertation electronically submitted for format approval	GS Website	See Graduation Deadlines for exact deadline and procedures

ADVISORS AND ADVISORY COMMITTEE

The Learning Sciences Doctoral Advisory Committee is made up of all faculty members with appointments in the Learning Sciences program within the department of Education and Human Development. Once admitted you will be assigned an advisor who is a member of the Learning Sciences Doctoral Advisory Committee. This advisor will help you begin to plan your degree program and will be available to offer guidance on activities that support your development as a doctoral student and answer any questions you may have.

YOUR MAJOR ADVISOR

Your Major Advisor helps plan your curriculum and guides your research activities and the preparation of your dissertation. By the end of the first year, you must identify a Major Advisor from among tenure-track or tenured Learning Sciences faculty with whom you will work throughout the course of your studies. You may also choose a non-tenure-track Learning Sciences faculty member to serve as a chair; however, if you choose this option, you will also need to identify a tenure-track Learning Sciences faculty member to serve as co-chair.

ADVISORY COMMITTEE

You will form an Advisory Committee in consultation with your Major Advisor. Your Advisory Committee will approve your curriculum, supervise your graduate program, administer your comprehensive examination, evaluate your dissertation proposal and dissertation defense, and initiate the recommendation for awarding your degree. Your Major Advisor will serve as the chair of your Advisory Committee.

The chair of the Advisory Committee must be a tenure-track Learning Sciences faculty at Clemson University. At least two members of your Advisory Committee must be Learning Sciences faculty members at Clemson University. The third member must be a faculty member within the College of Education at Clemson University. A fourth member must be from outside the department of EHD and whom meets the definition of graduate faculty status as defined by the Clemson Graduate School handbook. If there is a fifth member, they must be faculty from the Clemson University Learning Sciences Program or faculty in the student's cognate area whom meets the definition of graduate faculty status as defined by the Clemson Graduate School handbook.

PLAN OF STUDY (GS2)

Your graduate degree curriculum should be planned early in your program, and the graduate degree curriculum form (form GS2) should be submitted no later than the beginning of your fourth semester of study following matriculation.

Prior to graduation, you may revise your degree curriculum as needed subject to the necessary Advisory Committee and dean approvals. If your curriculum is changed, or the membership of your Advisory Committee is changed, you must submit a revised GS2. Courses comprising your program of study are subject to the approval of your Advisory Committee. Courses below the 8000-level may not be used to satisfy doctoral program requirements and should not be listed in the program of study. In order to be approved for graduation, your final GS2 must be filed by the deadline listed on the graduation deadlines web page. Failure to meet these deadlines may result in late fees and/or inability to graduate when desired.

DOCTORAL COMPREHENSIVE EXAMINATION

The comprehensive examination will serve to examine your ability to apply the knowledge you have assimilated in your core and cognate coursework, and often an additional reading list assigned by your committee. Examination questions will be prepared by your Advisory Committee and tailored to your area of study and research topic. Your major advisor will inform you once the examination coverage has been determined. You may discuss the expected areas and format of the exam with your Advisory Committee members. Satisfactory

completion of the comprehensive examination must occur at least six months prior to the date of graduation.

TIMING AND CONTENT

The timing of this exam shall be at the discretion of your Major Advisor but will typically be three written exams within a two-week period, followed by an oral exam. For the written portion, one question will be devoted to examining your foundational knowledge in learning sciences, a second focused on a topic in your area of study, and a third on the methodology to be used during your dissertation research. Each of the three written exam questions is expected to be no more than ten pages in length. The oral exam will follow the submission of your written exam, scheduled with your advisory committee in coordination with your Major Advisor.

GRADING THE QUALIFYING EXAM

At least three members of your advisory committee will evaluate your performance on the exam (see Appendix A for Assessment Rubric for Comprehensive Exams). Grades of Pass (P), Marginal (M) and Fail (F) will be assigned for each question based on their consensus.

- If you receive a P grade on all questions, you may continue in the Ph.D. program.
- If you receive an M grade on any question, you may be given the opportunity to revise your written exam at the discretion of your advisory committee. The sole purpose of the M-grade exam is for the examining committee to obtain additional information in order to determine the final outcome of your exam. The results of the M-grade exam may carry additional committee-determined stipulations such as (but not limited to) taking a graduate level course selected by the committee and achieving an A in that course.
- If you receive an F grade on 1 or more questions on your first attempt, you may or may not be permitted to continue in the Ph.D. program; this determination will be made by your advisory committee if they believe your performance is so poor that it is unlikely a second attempt will be successful. If you receive an F grade on 1 or more questions, you must retake that question (a replacement question will most likely be developed). If you receive an F on a second attempt on any of the questions, you will not be permitted to continue in the Ph.D. program. At least two months must pass between the first and second attempts.

Satisfactory performance on both the written and oral portions of the comprehensive examination will result in you being declared eligible to defend your dissertation proposal.

PH.D. PROPOSAL DEFENSE

Once you have passed your Comprehensive Exam, the Proposal Defense may be scheduled in consultation with your major advisor. You must provide a written plan for your dissertation research that includes, at a minimum,

- An introduction to your project clearly stating your research objectives;
- A review of relevant research to establish uniqueness and originality;
- A description of the method/procedure you will employ;
- A description establishing the significance of the proposed work.

Your committee may require more, for example the full first three chapters (introduction, literature review, and method).

Prior to the proposal defense, you must discuss the IRB process with their major advisor and determine jointly whether IRB approval and approval from school districts/partners (if applicable) is needed before or after the proposal defense.
You then defend this plan orally to your advisory committee (and additional observers as approved by the

committee). Your advisory committee listens to and then discusses the proposal, and if a consensus is reached that the proposal passes a rigorous appraisal, the defense is passed and the results (including committee feedback and signatures) forms the contract for the dissertation research.

If a consensus cannot be reached, the process must be repeated with significant changes at a later date.

Upon approval of the student's research plan, the Approval of Thesis/Dissertation Research Proposal form is to be submitted to the college's Student Services to be forwarded to Enrolled Services.

DISSERTATION FORMATS

The Learning Sciences Doctoral Program allows two different dissertation formats – the traditional dissertation and the manuscript style dissertation. The required sections and proposal procedures for the manuscript style dissertation are different from the traditional format and are described in greater detail in Appendix E.

ADMISSION TO DOCTORAL CANDIDACY

Admission to the Graduate School does not qualify a student as a candidate for a doctoral degree. Such candidacy depends on the acceptance by the dean of the Graduate School of a written request for admission to candidacy. You should file this request, Form GS5, once you have completed a major share of the prescribed graduate residence doctoral course work (research credits excepted), have successfully undertaken the comprehensive examination, and successfully defended your dissertation proposal. Your request for admission to candidacy must list each of the major and minor subjects to be offered for the degree and must contain the title of your proposed dissertation. The request must bear the signed approval of your Major Advisor and the department chair.

PH.D. DISSERTATION DEFENSE

An oral examination will serve to examine your dissertation research. You must hold your defense at least two weeks (14 calendar days) prior to the deadline for submission of the GS7D form, or a minimum four weeks (28 calendar days) prior to the commencement at which you plan to graduate. (See deadlines set by the Graduate School for the specific date for each term at https://www.clemson.edu/graduate/students/deadlines.html.)

You are required to provide a broad and in-depth interpretation of your research project and conclusions. Your committee members should receive a final draft copy of the dissertation at least three weeks before the examination. This examination will be conducted under the authority of your Advisory Committee. All college faculty members will be invited to participate in the examination and to provide comments to your Advisory Committee. The exam is graded on a Pass/Fail basis. A majority is needed to pass.

Successful completion of this examination and your dissertation will result in a recommendation (GS7D Form) by your Advisory Committee to the Graduate School that the Ph.D. degree be awarded.

Unsatisfactory performance on the final examination will result in a requirement for complete re-examination (with or without recommendations for additional work) or dismissal.

In accordance with the Graduate School, all dissertations will be screened with iThenticate to

check for potential plagiarism.

MODALITIES AND ENROLLMENT OPTIONS

The program is offered through a HyFlex option and can be completed through either traditional face-to-face instruction or online synchronously. Students are admitted into the PhD HyFlex program according to the modality selected during the application process (in-person OR synchronous online).

Students will have the opportunity to change their specified modality prior to the start of each semester. No modality changes will be considered once the semester is in progress. Asynchronous and/or synchronous elements will be included in courses at the discretion of the instructor as stated in the syllabus.

In-person students are expected to attend classes in-person unless alternative arrangements have been made with or by course instructors. Students receiving an assistantship should consult their employment contract to verify modality requirements.

Students may also choose to be enrolled full-time (9 credit hours or more) or part-time (less than 9 credit hours)

All Students will be expected to be immersed in research and professional development activities consistent with the expectations of the selected modality and enrollment.

TIME LIMIT

All requirements for the doctoral degree must be completed within eight (8) years from the date you first matriculate into a doctoral degree program at Clemson. The time limit applies to all doctoral programs, even cases where a student is receiving a master's degree en route to the doctorate. Programs may petition for different time limits for their program for good cause. In exceptional circumstances, a student may petition the Graduate School for additional time with approval of the advisory committee. A student who exceeds the time limit without an extension can be dismissed from the Graduate School for failure to maintain adequate academic progress. Please refer to the graduate school handbook for more information.

ASSESSMENT BENCHMARKS

Each student in the Learning Sciences program will undergo an annual review. The purpose of this task is to review the student's progress in the program and provide feedback. The review will include evaluation of the following benchmarks:

1. Preliminary Annotated Bibliography documented in Learning Sciences Seminar 1 (See Assessment Rubric for Annotated Bibliography in Appendix B).

2. Preliminary Literature Review documented in Learning Sciences Seminar 2 (See Assessment Rubric for Literature Review in Appendix C).

3. Professional Competence (documented by advisor for committee, see Yearly Progress Towards Degree in Appendix D). These competencies will be fulfilled before the student is awarded the doctoral degree.
    a. Students will have a national presentation as a primary presenter accepted and/or

demonstrate competency in scholarly communication within a professional setting.

b. Students will submit a manuscript for publication (national level preferred) as a primary author and/or demonstrate competency in scholarly writing.

4. Comprehensive Examination

   The comprehensive examination consists of 3 written examinations, typically administered during a two-week period to be determined by your major advisor. Your major advisor and committee may also request a combination of 1 oral and 2 written examinations as part of the comprehensive examination process.

   Earning a "passing" score for each of the three portions of the examination will allow the student to proceed to a dissertation proposal defense. A "marginal" score on any of the three portions will require an additional oral examination or a written revision. (See Assessment Rubric for Comprehensive Exams in Appendix A).

5. Dissertation Proposal includes a written proposal and an oral defense.

6. Dissertation Defense includes a written dissertation and an oral defense.

ASSISTANTSHIPS AND FELLOWSHIPS

Admittance decisions to the Learning Sciences Ph.D. program are made separately from assistantship decisions. After a student has been admitted, they may be contacted regarding an assistantship offer.

For more information, refer to the Graduate School information on assistantships and fellowships.

STATEMENT ON ARTIFICIAL INTELLIGENCE

Students are not permitted to use any generative AI writing tools (e.g., ChatGPT) without the express written consent of an instructor or advisor. This includes coursework as well as work on comprehensive exams, the dissertation proposal, and the dissertation. Doing so will be a violation of the university's Academic Integrity policy.

Please be aware that large language models have been trained using biased data and may provide biased and/or inaccurate results. You are responsible for ensuring that your work does not replicate the biases or factual errors of any resources you draw on, including information provided by generative AI tools.

Appendix A

Assessment Rubric for Comprehensive Exams

Learning Sciences

Student's Name: **University ID:**

Degree/PhD __

Cognate: **Date:**

Question #: 1 2 3 **Holistic Score: Pass Marginal Fail**

	Criteria	**Advanced (3)**	**Proficient (2)**	**Unsatisfactory (1)**
I	Completeness and Breadth	Responses reveal a comprehensive level of knowledge of the topic at hand.	Responses reveal a satisfactory breadth of knowledge of the topic at hand.	Responses are brief and/or reveal a narrow level of knowledge of the topic at hand.
II	Accuracy and Depth	Responses demonstrate depth of knowledge and the ability to analyze and synthesize information.	Responses demonstrate depth of knowledge of the topic at hand.	Responses are inaccurate and/or superficial.
III	Logic and Organization	Responses are logical and easy to follow.	Responses contain all of the elements but take effort to follow.	Responses are poorly organized and difficult to follow.

Comments to committee:

Comments to student:

Appendix B

Application of Relevant Theory and Research

Learning Sciences Seminar I – Annotated Bibliography Assessment

Name of Student:
Course Professor:
Semester Assessed:

The Annotated Bibliography is an individual assignment in Learning Sciences Seminar I. The goal of this assignment is to help students develop their understanding of foundational theory and research connected to their interests.

	1 Not Evident	2 Fair	3 Proficient	4 Advanced
Summaries Summaries should provide a clear and concise encapsulation of the article. They should also illuminate important points related to the individual's research interests.				
Annotations Annotations should make explicit connections between the source and the individual's research interests, defining how the source applies to their work.				
Collection The overall collection should include annotations of assigned readings and self-selected readings. The self-selected sources should connect assigned readings to the individuals' research interests.				

Comments:

Rating scale

1 – not evident: does not show evidence for this criterion
2 – fair: provides minimal evidence for this criterion
3 – proficient: provides acceptable evidence for this criterion
4 – advanced: provides exceptional evidence for this criterion

Rating expectation

Assignment rubric to be completed after course completion by professor who taught Learning Sciences Seminar I. Students are expected to achieve an average score of 3.

Appendix C

Application of Relevant Theory and Research

Learning Sciences Seminar 2 – Literature Review Assessment

Name of Student:
Course Professor:
Year Assessed:

Students will complete a literature review on a topic relevant to their cognate and research interest in the learning sciences. For this assignment, students will present evidence of improving critical thinking skills and meeting each of the critical thinking objectives below.

	1 Not Evident	2 Fair	3 Proficient	4 Advanced
Situate the review as a problem of learning / problem of the Learning Sciences				
Identify, analyze, and evaluate key assumptions				
Build an argument from literature proximal and relevant to the selected topic; Comprehensive in nature; Include a variety of scholarly sources				
Identify and evaluate alternative positions or competing interpretations, explanations, evidence, and conclusions				
Make evidence-based claims; Identify and evaluate implications of research findings				
Develop and justify one's own hypotheses, positions, or interpretations				
Communicate complex ideas effectively				

Comments:

<u>Rating scale descriptors</u>

1 – Indicates that the student has failed to show evidence of the critical thinking objective in the literature review.

2 – Indicates that the student has shown minimal evidence of the critical thinking objective in the literature review. There are either few examples present or the examples present do not represent good examples of the particular critical thinking objective.

3 – Indicates that the student has shown evidence of the critical thinking objective in the literature review that is commensurate with progress in the program. There are multiple examples present, and the examples present represent emerging expertise in the particular critical thinking objective.

4 – Indicates that the student has shown extensive, high-quality evidence of the critical thinking objective in the literature review that is commensurate with progress in the program. There are multiple examples present, and the present examples represent emerging expertise in the particular critical thinking objective.

Rating expectations

Assignment rubric to be completed and scores rated by professor who teaches Learning Sciences Seminar II; successful students should receive an average score of 3.

Appendix D

Application of Relevant Theory and Research

Yearly Progress Towards Degree
Learning Sciences - Advisor Rubric

Name of Student:
Advisor:
Year Assessed:

	1 Not Evident	2 Fair	3 Proficient	4 Advanced
Coursework				
Ethical Judgment				
Communication Skills				
Research Activities				

Comments:

Rating scale descriptors

1 – indicates student is not progressing in coursework; fails to use ethical judgment during research, writing, collegial interactions or collaborative work; does not communicate with peers, professors, participants in research, or others; evidences no effort towards research commensurate with progress in program.

2 – indicates student is making minimum progress in coursework; at times demonstrates a lackof ethical judgment in research, writing, collegial interactions or collaborative work, communicates ineffectively with peers, professors, participants in research, or others; evidences little effort towards research commensurate with progress in program.

3 - indicates student is making adequate progress in coursework; demonstrates ethical judgment in research, writing, collegial interactions or collaborative work, communicates effectively with peers, professors, participants in research, or others; evidences steady effort towards research commensurate with progress in program.

4 - indicates student making excellent progress in coursework; uses outstanding ethical judgment during research, writing, collegial interactions or collaborative work; posses excellent communicate skills with peers, professors, participants in research, or others; evidences commendable research commensurate with progress in program.

Completion and progress in program rubric to be completed and scores rated by advisor each year; students should receive an average score of 3.

Complete if applicable:

(1) Conference submissions:

(2) Journal submissions:
(3) Completion of Comprehensive finals (date, pass/fail):
(4) Successfully defended dissertation (date, pass/fail)

Appendix E

Manuscript Style Dissertation

Introduction

A manuscript-style or three-article dissertation is one that takes the form of three thematically linked papers plus an integrative introduction and conclusion. The integrative introduction is a narrative that explains how the papers collectively make progress on the same broad research questions but focus on the questions in different ways. Each of the three papers needs to be stand alone in that they could be submitted independently for publication. The manuscripts-style dissertation entails special preparation and comes with its own set of requirements. Students should decide as early as possible, in concert with their dissertation chair, whether to pursue the manuscript-style format.

The manuscript-style dissertation is not the ideal format for all students and is not suitable for all cognates. The manuscript-style dissertation is a useful alternative for students who intend to pursue academic careers and want to build a publication record. There must be coherence among the articles that make up the dissertation, and the rationale for grouping the three articles together must be clear. Students may find it difficult to manage their time between writing the dissertation and the publishing "revise and resubmit" cycle, so careful consideration of the time commitment is needed before undertaking this dissertation format. The manuscript-style option is *as rigorous* as the traditional dissertation.

Requirements

- The completion of a manuscript-style dissertation must be approved by the student's dissertation committee. Ideally this conversation should be undertaken with committee members early in the student's graduate work.
- Each manuscript included in the manuscript-style dissertation must represent an original contribution to the field. The dissertation must contain a minimum of two empirical articles, each of which must be suitable for submission to refereed journals for publication. A third article, could describe a relevant *theoretical framework* (e.g., propose a theoretical model pertinent to the students' empirical papers), be a *critical review of the literature* (a systematic or integrated review) that is broader than the literature review provided for each article (i.e. a state of the field type of article), or take the form of an *additional empirical article*.
- Students must be first author on all articles. As first authors of each article, students are responsible for developing and articulating the concept or idea for research, developing the proposal to pursue this idea, developing the research design, conducting research and analysis, writing major portions of the manuscript, designing an intervention or assessment (if relevant), and interpreting results.
- The journals to which the articles are being submitted must be approved by the dissertation committee. The committee should assist in choosing refereed research journals that represent high quality and offer a reasonable chance of publication success.
- A maximum of one article initiated prior to the proposal defense may be included. This article must represent work undertaken while the student is enrolled in the PhD program and be approved by the committee at the time of the student's proposal defense. This article must be connected to the theme or themes of the dissertation. This is the only article out of the three that may have co-authors. Co-authors for this article must be identified and approved, including their relative roles and contributions, at the student's proposal defense. If a previously published article is approved by the committee, the student will be responsible for securing necessary permissions from the copyright holder and role confirmation signatures from other authors.

- If three new articles are proposed, each must be sole authored by the student. Co-authors are only allowed on a paper initiated prior to the proposal defense.
- The articles submitted for the defense must be of publishable quality. The student's dissertation committee decides whether the articles meet this standard.
- The dissertation must follow our field's formatting requirements (i.e., APA) and the same style guide must be used throughout the entirety of the dissertation, even if the journals to which you have submitted or plan to submit utilize different style guides. In the event of a discrepancy between style guides, the Graduate School's formatting standards will take precedence over others.

The Dissertation Proposal

The dissertation proposal for the manuscript-style dissertation involves additional considerations and requirements. The written proposal should include a completed manuscript, another manuscript that is partially complete, and a description of plans for the remaining manuscript(s). The proposal should be introduced by a 10 to 15-page introduction or integrative statement, describing the conceptual and theoretical linkages among all three manuscripts. Further, a timetable should be included that details the completion and planned submission of each paper to a peer-reviewed journal.

The proposal meeting typically presents the rationale and logic for each of the three papers. The dissertation committee chair and the dissertation committee will ultimately determine the details of the proposal defense. A successful proposal defense entails:

- approval to conduct a manuscript-style dissertation instead of a traditional dissertation;
- approval of the existing manuscripts that will constitute part of the dissertation or approval of revisions to the existing manuscripts;
- approval of the proposed work for the final manuscript(s);
- review and approval of the student's principal authorship role on each of the manuscripts that comprise the dissertation.

Copyright Considerations and Requirements

The inclusion of any previously published articles or articles that have been accepted for publication requires permission from the copyright holder as required by US law. The sections not copyrighted by another party may be covered under the publication of the new manuscript. Up to one article may have been published before the defense. However, if so, the student must obtain copyright permission from the publishing journal to include the article in his or her dissertation. Doing so is required by U.S law.

Order of Required Manuscript Elements for the Three-Article Dissertation

The final dissertation manuscript must follow the Graduate School's formatting standards. Beyond those requirements, the three-article dissertation should include the following:

Prefatory Material

- Copyright Information
  Please see the introductory information, above, regarding copyright concerns

- Abstract
  The abstract should synthesize the three articles and the work as a whole.

- Acknowledgements and Dedication (Optional)
  Follow the same layout and format as for a traditional dissertation.

Table of Contents

Each article included should be identified in the Table of Contents as a separate section by giving the complete title as it appears on each manuscript. Do not list subheadings that occur within the individual manuscripts (unless required by the Graduate School's formatting requirements). List subheadings from the introductory and summary sections.

- Lists of Tables and List of Figures (if applicable)
  List all tables and figures that appear within the entire document. Numbering of tables and figures will be dependent upon the chosen style and formatting guide for the document as a whole.

Main Body

- Introduction
  The introduction should explain why the previously published or publishable papers were chosen, including a substantive discussion of the relationship between the various articles and parts of the research that tie together the articles. The introduction should include a clear statement of the student's purpose or singular research hypothesis to be tested. It should provide necessary background information and a broad statement summarizing study findings. The minimum of three articles should form a cohesive body of work that supports themes that are expressed clearly in this introduction. The need for three articles should be clear and, as noted previously, must be approved by the dissertation committee. Minor tweaks of a work that would be more appropriately reported in just one or two articles is not permitted.

- Chapter/Article 1
  - Subsections (e.g., Introduction, Review of Literature, Method, Results, Conclusions)
  - Article 1 Reference List
  - Article 1 Appendices (if applicable)

- Chapter/Article 2
  - Subsections (e.g., Introduction, Review of Literature, Method, Results, Conclusions)
  - Article 2 Reference List
  - Article 2 Appendices (if applicable)

- Chapter/Article 3
  - Subsections (e.g., Introduction, Review of Literature, Method, Results, Conclusions)
  - Article 3 Reference List
  - Article 3 Appendices (if applicable)

Concluding Material

- Overall Conclusion
  State the conclusions for the dissertation as a whole. The conclusion should include a general discussion, applications, and ideas for future research that emerge from the three separate articles as well as from the dissertation as a whole.

- References
  All general references from the introduction, overall conclusion, and any supplementary sections should be included here and should conform to the same style and format as the articles.

- Appendices

Include here only any additional appendices that relate to the manuscript as a whole.