



SCE 6634

Current Trends in Elementary & Secondary Science

Education

83734 001

Fall 2026

Instructor Name

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University Course Description

The purpose of this course is to provide students with a forum for interactive discussions of the most recent trends in contemporary science education research literature and understand how they are realized in practice. Hence, current trends are identified in the research base and analyzed in class readings, projects and discussions. Students are invited to examine these topics by way of critical reflection, discourse, observation, tacit knowledge, and with an open mind. Accordingly, we will attempt to acknowledge any psychological predispositions or pedagogical propensities we may have from the onset and examine current practice and potential future trends in science education from multiple perspectives and clear conceptual frameworks.

Course Requisites

Prerequisite(s):

Corequisite(s):

Student Learning Outcomes

By the end of this course, students will be able to:

1. Theory & Literature Comprehension

- **Analyze and synthesize** contemporary disciplinary education literature, research documents, and international journals through a sociocultural lens.
- **Identify and deconstruct** emerging trends, psychological predispositions, and pedagogical propensities within current educational research.

2. Analytical & Critical Thinking

- **Evaluate** current educational practices, future trends, and socioscientific or controversial issues from multiple conceptual frameworks and diverse professional postures.
- **Critically reflect** on the intersections of empirical, philosophical, sociological, and psychological-developmental literature bases and how they translate to classroom practice.

3. Pedagogy & Disciplinary Literacy

- **Formulate** a personal model of functional disciplinary literacy that actively integrates sociocultural perspectives across science, social science, and mathematics.
- **Apply** argumentation, open discourse practices, and tacit knowledge to design and critique contemporary classroom pedagogies.

4. Collaborative Leadership & Civil Discourse

- **Engage** in constructive, open-minded civil discourse and collaborative problem-solving when navigating ambiguity, uncertainty, and complex educational challenges.
- **Communicate** complex disciplinary concepts effectively across academic boundaries, actively participating in a multidisciplinary "community of scholars."

5. Ethical Reasoning & Professionalism

- **Demonstrate** advanced ethical reasoning and professional integrity in collaborative research, classroom interactions, and engagements with peer scholars and invited speakers.
- **Leverage** data literacy and analytical evidence to defend educational positions without dogmatism, maintaining an openness to alternative professional viewpoints.
- **SLOs 1 & 3** can be assessed via *Class Readings Projects* and *Model Designs*.
- **SLOs 2 & 4** are ideal for *Structured Class Debates* and *Critical Reflection Journals*.
- **SLO 5** can be directly tied to *Participation Rubrics* for guest speaker forums and collaborative group projects.

Course Objectives

The objectives of this course are aimed at fulfilling the overarching goal (above) and therefore include (but are not limited to) the following:

- Students will demonstrate comprehension of contemporary sociocultural trends and research of international disciplinary education documents, journals and texts.
- Students will develop a personal model of functional disciplinary literacy that reflects sociocultural perspectives about the nature of science, social science, mathematics and its impact on classroom pedagogy.
- Students will critically examine, observe, analyze, and reflect on current research trends using socioscientific and/or controversial issues, argumentation and discourse practices in disciplinary education and connect that empirical, philosophical, sociological and psychological-developmental literature bases to theory and practice.
- Students will assume the role of a “community of scholars” as they interact and demonstrate ethical reasoning in class, in assignments, with other each other and with invited scholars / speakers.

Required Texts and/or Readings and Course Materials

Textbooks and Readings: There are **no required textbooks**. Readings will be provided as PDF's and include seminal and current literature impacting educational fields. They can be found in the "Files" tab of Canvas for this course. Recommended texts and key readings follow:

Recommended:

APA American Psychological Association. (2019). *Publication Manual of the American Psychological Association* (7th ed.). American Psychological Association.

Helpful Link for APA Citations: <https://apastyle.apa.org/>

Helpful Link for Writing a Review of Literature: Machi, L. A., & McEvoy, B. (2016). *Literature review: Six steps* (3rded.). Corwin. ISBN 9781506336244.

<https://methods.sagepub.com/book/mono/preview/the-literature-review-3e.pdf#>

Supplementary (Optional) Texts and Materials

Recommended:

APA American Psychological Association. (2019). *Publication Manual of the American Psychological Association* (7th ed.). American Psychological Association.

Helpful Link for APA Citations: <https://apastyle.apa.org/>

Helpful Link for Writing a Review of Literature: Machi, L. A., & McEvoy, B. (2016). *Literature review: Six steps* (3rded.). Corwin. ISBN 9781506336244.

<https://methods.sagepub.com/book/mono/preview/the-literature-review-3e.pdf#>

Grading Scale

The grading system will follow that of the USF catalogue. Note: Late assignments will not be accepted except with a verifiable medical or legal excuse. Please arrive on time for class. Consistently late arrivals or early departures may be counted as an absence at the discretion of the instructor.

+A - Evidence of superior work and performance; a standard by which other professionals

in the field may be evaluated. No more than 1 unexcused absence.

+B- Evidence of average work and performance; has demonstrated a high degree of professional growth and achievement. No more than 2 unexcused absences.

C Evidence of below average work and performance; has not adequately fulfilled the

basic requirements for the course.

D Lack of evidence to demonstrate good or adequate work and/or performance; basic criteria for the course has not been fulfilled.

F Complete lack of fulfilling criteria for the course.

Note: The USF Graduate Studies Catalog states: “No grade below “C” will be accepted toward a graduate degree. This includes C- grades.”

Grading Scale

98-100 = A+

94-97 = A

93-90 = A-

89-86 = B+

85-83 = B

82-80 = B-

79-76 = C+

75-73 = C

72-70 = C-

69-66 = D+

65-63 = D

62-60 = D-

Below 60 = F

Grade Categories and Weights

Weighted Assignments are as follows:

1. 10% Contribution to class seminars and completion of in-class assignments (Self-evaluation with rationale included. See Appendix 3: Rubric for Evaluating Class Discussions)
2. 15% Lead Facilitator(s) for in-class reading(s) and Interrogation of Visiting Scholars. (See Appendix 3. Rubric for Evaluating Class Discussions. More Discussion about this portion will be provided in class.)
3. 25% Analysis of Current Research Related to Trends in Disciplinary Education (select two articles representing two different topics). (10-12 double spaced (12 font) pages total.) See Appendix 1. Note: The focus should reflect K-12 levels.
4. 40% Review of Literature Paper to discern how scholars have approached and explained an issue or topic in the field and connect it to your own future (or current) practice. (See Appendix 2.)
5. 10% Class Presentation of Literature Review / Scholar- Practitioner Identity to class.

Major Topics and Course Schedule

Course Schedule

Aug 27 Topics: I	I Introduction, Historical, Contemporary Perspectives of Disciplinary Educational Trends:	Inasmuch as a large portion of this course will be generative and exploratory in nature, only a general outline of topics can be provided at this time. Students may also play a role in the decisions concerning the topical nature and structure of this course. Finally, since we will have international, national, local (and combinations thereof) experts virtually attending meetings with us, the exact order of topics will need to be flexible; however, most of these topics (and more) will be covered to varying degrees of saturation.
Sept 3 Topics: I		
Sept 10 Topics: I, II	Introduction into Social, Moral and Ethical Perspectives in the Content Areas: Academic Literacy and Functional Literacy in the Disciplines; Democracy and Civic Education; Social Agency and Symbolic Interactionism in Education; Schools vs. Creativity	
Sept 17 Topics: II		
Sept 24 Topics: II, III		
Oct 1 Topics: III *Analysis of Research Assignment Due		
Oct 8 Topics: III, IV	II Contextual Learning	
Oct 15 Topics: IV, V	Theoretical Framework and Conceptual Frameworks	
Oct 28 Topics: V	Sociocultural Science-in- Context (SinC) via	
Oct 29 Topics: VI, VII	Socioscientific Issues (SSI); Understanding the Moral Nature of Inquiry:	
Nov 5 Topics: VII, VIII		

Nov 12 Topics: VIII	III Transformative Transformations of Pedagogical Content Knowledge Across the Disciplines; Humanizing Interdisciplinary Collaborations	
Nov 19 Topics: IX		
Nov 26 No Class – Happy Thanksgiving!		
Dec 3 IX	IV Exploring and Learning Content Through Socioscientific Reasoning	
	V Reasoning, Decision- Making and Use of Evidence: The Conundrum of Misinformation and Disinformation in an AI Age; The Use of Data in Debates and Discourse; Civic Discourse Across the Content Areas	
	VI Nature of Science and Paradigms of Inquiry	
	VII Conceptual Analysis and Philosophical Inquiry	

	in the Disciplines	
	VIII Reflective Judgment and Personal Epistemology, Literacy in Context Revisited, Epistemic Insight	
	IX Connecting Research to Practice	

USF Core Syllabus Policies

USF has a set of central policies related to student recording class sessions, academic integrity and grievances, student accessibility services, academic disruption, religious observances, academic continuity, food insecurity, pregnancy and related conditions, and sexual harassment that **apply to all courses at USF**. Be sure to review these online:

<https://www.usf.edu/provost/faculty-success/resources-policies-forms/core-syllabus-policy-statements.aspx>

Student Recordings

Florida Statute 1004.097 Free Expression on Campus

Students may, without prior notice, record video or audio of a class lecture for a class in which the student is enrolled for their own personal, educational use (USF Policy 10-048). A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach enrolled students about a particular subject. Recording class activities other than class lectures, including but not

limited to lab sessions, student presentations (whether individually or part of a group), class discussion, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, private conversations between students in the class or between a student and the faculty member is prohibited. Recordings may not be used as a substitute for class participation and class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the USF Student Conduct Code.

Course Policies: Grades

1. **Attendance and participation:** Engagement with class material is very important. Your participation in class sessions is an important factor in the evaluation process. Throughout the course you will be asked to share your thoughts with others and actively participate in discussions. It is imperative that you attend each class and actively participate in exercises and discussion. If an absence is unavoidable due to illness or emergency, please contact the instructor *before* class as soon as possible.
2. **Completion of the readings** *before* class is essential for meaningful discussion and maximum engagement with the issues.
3. **Format:** All written assignments must be processed in MS Word, 12-point font, double-spaced, with 1-inch margins, and follow the 7th edition citation guidelines of the American Psychological Association (APA, 2019). The USF Library offers access to an excellent subscription source, Academic Writer (<https://academicwriter-apa-org.ezproxy.lib.usf.edu>) as does the free-access Purdue OWL (https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_style_introduction.html).
4. **Editing:** Carefully proofread all written assignments to check your grammar, formatting, punctuation, syntax, and spelling. Peer editing will be used for the final literature review.

1. **Submission of Assignments:** Written work is due as noted on the Course Calendar. Instructions will be given for submission of work. All work may be subject to the plagiarism detection program Turnitin, as per University policy. In this course, the use of Artificial Intelligence Text Generators is *not* allowed to complete assignments. It may be used as a tool to help search for topics and information, but the writing of your assignments must reflect your own thoughts and voice – and convince the reader that you have read the extant literature you cite and internalized and reflected on that literature in a manner that informs your own practice.

Grades of "Incomplete"

An Incomplete grade ("I") is exceptional and granted at the instructor's discretion only when students are unable to complete course requirements due to illness or other circumstances beyond their control. The course instructor and student must complete and sign the "I" Grade Contract Form that describes the work to be completed, the date it is due, and the grade the student would earn factoring in a zero for all incomplete assignments. The due date can be negotiated and extended by student/instructor as long as it does not exceed two semesters for undergraduate courses and one semester for graduate courses from the original date grades were due for that course. An "I" grade not cleared within the two semesters for undergraduate courses and one semester for graduate courses (including summer semester) will revert to the grade noted on the contract.

Campus Free Expression

It is fundamental to the University of South Florida's mission to support an environment where divergent ideas, theories, and philosophies can be openly exchanged and critically evaluated. Consistent with these principles, this course may involve discussion of ideas that you find uncomfortable, disagreeable, or even offensive.

In the instructional setting, ideas are intended to be presented in an objective manner and not as an endorsement of what you should personally believe. "Objective" means that the idea(s) presented can be tested by critical peer review and rigorous debate, and that the idea(s) is supported by credible research.

In this course you may be asked to engage with complex ideas and to demonstrate an understanding of the ideas. Understanding and engaging with an idea does not require you to believe it or to agree with it.

Course Policies: Technology and Media

Laptop Usage:

Laptop and cell phone usage: Non course related laptop and cell phone use during class time is not permitted unless we are engaged in a project that requires the use of a laptop or cell phone.

Phone Usage:

Non course related cell phone use during class time is **not permitted** unless we are engaged in a project that requires the use of a cell phone.

Classroom Response Clickers: If your course includes the use of student response devices, provide specifics about the usage and how to get started.

Course Policies: Student Expectations

Health and Wellness

Your health is a priority at the University of South Florida. We encourage members of our community to look out for each other and to reach out for help if someone is in need. If you or someone you know is in distress, please make a referral at www.usf.edu/sos so that the Student Outreach & Support can contact and provide helpful resources to the student in distress. A 24-hour licensed mental healthcare professional, offered through the counseling center, is available by phone at 813-974-2831, option 3. Please remember that asking for help is a sign of strength. In case of emergency, please dial 9-1-1.

Title IX Policy

USF is committed to fostering a safe and respectful learning environment, free from sex discrimination and sexual harassment, in accordance with Title IX and USF Policy 0-004. If a student shares an experience of sexual harassment, sexual assault, stalking, or relationship violence with a USF employee (including faculty), that employee will notify the Title IX Office. This allows the Title IX Office to send the student an email with information about support resources and options—if it is safe to do so. Students are not required to respond to this email. The Title IX Office is a private resource. Information is shared only on a need-to-know basis to provide students with support measures. To speak to a confidential resource, students may contact USF Center for Victim Advocacy at 813-974-5757. Confidential resources do not notify the Title IX Office unless the student requests it. For more information about Title IX, available resources, or to make a report, please visit www.usf.edu/title-ix.

Course Hero / Chegg Policy

The USF Policy on Academic Integrity specifies that students may not use websites that enable cheating, such as by uploading or downloading material for this purpose. This does apply specifically to Chegg.com and

CourseHero.com – almost any use of these websites (including uploading proprietary materials) constitutes a violation of the academic integrity policy.

Professionalism Policy

Per university policy and classroom etiquette; mobile phones, iPods, etc. must be silenced during all classroom and lab lectures. Those not heeding this rule will be asked to leave the classroom/lab immediately so as to not disrupt the learning environment. Please arrive on time for all class meetings. Students who habitually disturb the class by talking, arriving late, etc., and have been warned may suffer a reduction in their final class grade.

Turnitin.com

In this course, turnitin.com may be utilized. Turnitin is an automated system which instructors may use to quickly and easily compare each student's assignment with billions of web sites, as well as an enormous database of student papers that grows with each submission. Accordingly, you may be expected to submit all assignments in both hard copy and electronic format. After the assignment is processed, as instructor I receive a report from turnitin.com that states if and how another author's work was used in the assignment. For a more detailed look at this process visit <http://www.turnitin.com>.

Netiquette Guidelines

- Act professionally in the way you communicate. Treat your instructors and peers with respect, the same way you would do in a face-to-face environment. Respect other people's ideas and be constructive when explaining your views about points you may not agree with.
- Be sensitive. Be respectful and sensitive when sharing your ideas and opinions. There will be people in your class with different linguistic backgrounds, political and religious beliefs or other general differences.
- Proofread and check spelling. Doing this before sending an email or posting a thread on a discussion board will allow you to make sure your message is clear and thoughtful. Avoid the use of all capital letters, it can be perceived as if you are shouting, and it is more difficult to read.
- Keep your communications focused and stay on topic. Complete your ideas before changing the subject. By keeping the message on focus you allow the readers to easily get your idea or answers they are looking for.

- Be clear with your message. Avoid using humor or sarcasm. Since people can't see your expressions or hear your tone of voice, meaning can be misinterpreted.

Email and Discussion Board Guidelines

- Use the subject line effectively by using a meaningful line of what your email or discussion is about.
- Keep your emails and postings related to the course content. You should not post anything personal on a discussion board unless it is requested by the instructor.
- Any personal, course or confidential issues should be directly communicated to the instructor via email. The discussion boards are public spaces; therefore, any issues should not be posted there.

End of Semester Student Evaluations

All classes at USF make use of an online system for students to provide feedback to the University regarding the course. These surveys will be made available at the end of the semester, and the University will notify you by email when the response window opens. Your participation is highly encouraged and valued.

Food and Drink Policy (for in-campus sessions only).

Please adhere to the firm policy of no beverages (other than bottled/capped water), food, tobacco products, or like items in the classroom. Your understanding of the necessity for this policy and cooperation will be greatly appreciated. This policy will be strictly enforced.

Learning Support and Campus Offices

Academic Accommodations

Students with disabilities are responsible for registering with Student Accessibility Services (SAS) in order to receive academic accommodations. For additional information about academic accommodations and resources, you can visit the SAS website.

[SAS website for the Tampa campus and Sarasota-Manatee Teachout site.](#)

[SAS website for the St. Pete campus.](#)

Academic Support Services

The USF Office of Student Success coordinates and promotes university-wide efforts to enhance undergraduate and graduate student success. For a comprehensive list of academic support services available to all USF students, please visit the [Office of Student Success website](#).

Canvas Technical Support

If you have technical difficulties in Canvas, you can find access to the Canvas guides and video resources in the “Canvas Help” page on the homepage of your Canvas course. You can also contact the help desk by calling 813-974-1222 in Tampa or emailing help@usf.edu.

[USF IT Services](#)

Center for Victim Advocacy

The [Center for Victim Advocacy](#) empowers survivors of crime, violence, or abuse by promoting the restoration of decision making, by advocating for their rights, and by offering support and resources. Contact information is available online.

Counseling Center

The Counseling Center promotes the wellbeing of the campus community by providing culturally sensitive counseling, consultation, prevention, and training that enhances student academic and personal success. Contact information is available online.

[Counseling Center website for the Tampa campus and Sarasota-Manatee Teachout site.](#)

[Counseling Center website for the St. Pete campus.](#)

Tutoring

The Tutoring Hub offers free tutoring in several subjects to USF undergraduates. Appointments are recommended, but not required. For more information, email asctampa@usf.edu.

[Tutoring website for the Tampa campus and Sarasota-Manatee Teachout site.](#)

[Tutoring website for the St. Pete campus.](#)

Writing Studio

The Writing Studio is a free resource for USF undergraduate and graduate students. At the Writing Studio, a trained writing consultant will work individually with you, at any point in the writing process from brainstorming to editing. Appointments are recommended, but not required. For more information or to make an appointment, email: writingstudio@usf.edu.

[Writing studio website for the Tampa campus and Sarasota-Manatee Teachout Site.](#)

[Writing studio website for the St. Pete campus.](#)

Student Ombuds Office

Florida Statute 1006.51 and Florida Board of Governors Regulation 6.011 require that all public institutions provide ombuds services to students. The Student Ombuds Office at USF is a confidential, impartial, informal, and independent resource for students experiencing challenges related to the university. Ombuds can help students safely explore options, clarify processes, and consider next steps. [Learn more or make an appointment at usf.edu/student-ombuds.](https://usf.edu/student-ombuds)