

George Mason University  
College of Education and Human Development  
Advanced Studies in Teaching and Learning



**EDCI 671 DL1: Innovations in Science Teaching**  
3 credits CRN 80883 Fall 2020  
Asynchronous Online, August 24th to December 16th, 2020

**Instructor: Nancy Holincheck, Ph.D., NBCT, Assistant Professor of STEM Education**

**Office Hours:** By Appointment: by phone, or online via Bb Collaborate Ultra

**Office Location:** 2607 Thompson Hall

**Office Phone:** 703-993-8136 (messages will be checked intermittently)

**Email:** [nholinch@gmu.edu](mailto:nholinch@gmu.edu)

**For COVID 19 procedures in Fall 2020:**

**Students, please be aware of and follow all policies and procedures for Mason's Safe Return to Campus:**

<https://www2.gmu.edu/Safe-Return-Campus>

**Prerequisites/Corequisites**

None

**University Catalog Course Description**

Focuses on the development and selection of teaching materials that reflect concepts of technology innovation with an emphasis on middle and secondary school science. Offered by Graduate School of Education. May not be repeated for credit.

*Note:* This course was developed for the Advanced Studies in Teaching and Learning (ASTL) program and is open to any teacher. Pre-service teachers may enroll in the class; job-embedded assignments may be adapted for students who are not currently teaching in a classroom.

**Course Delivery Method**

This course will be delivered online (76% or more) using synchronous and asynchronous formats via Blackboard Learning Management system (LMS) housed in the MyMason portal. You will log in to the Blackboard (Bb) course site using your Mason email name (everything before @masonlive.gmu.edu) and email password. The course site will be available on August 24<sup>th</sup> at 8:00 a.m.

Course delivery will be through mini-lecture, videos, structured collaborative reflective groups; discussion of readings and ongoing critical reflective practice will support learning experiences throughout the course and will complement your experiences and expose you to the major cultural perspectives; individual blogs and online journals based on topics aligned with national standards and program/learner outcomes will support learning. There will be scheduled synchronous Collaborate sessions during the semester.

**Under no circumstances, may students participate in online class sessions (either by phone or Internet) while operating motor vehicles. Further, as expected in a face-to-face class meeting, such online participation requires undivided attention to course content and communication.**

### *Technical Requirements*

To participate in this course, students will need to satisfy the following technical requirements:

- High-speed Internet access with standard up-to-date browsers. To get a list of Blackboard's supported browsers see: [https://help.blackboard.com/Learn/Student/Getting\\_Started/Browser\\_Support#supported-browsers](https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#supported-browsers)  
To get a list of supported operation systems on different devices see: [https://help.blackboard.com/Learn/Student/Getting\\_Started/Browser\\_Support#tested-devices-and-operating-systems](https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support#tested-devices-and-operating-systems)
- Students must maintain consistent and reliable access to their GMU email and Blackboard, as these are the official methods of communication for this course.
- Students will need a headset microphone for use with the Blackboard Collaborate web conferencing tool.
- Students may be asked to create logins and passwords on supplemental websites and/or to download trial software to their computer or tablet as part of course requirements.
- The following software plug-ins for PCs and Macs, respectively, are available for free download:
  - Adobe Acrobat Reader: <https://get.adobe.com/reader/>
  - Windows Media Player: <https://support.microsoft.com/en-us/help/14209/get-windows-media-player>
  - Apple Quick Time Player: [www.apple.com/quicktime/download/](http://www.apple.com/quicktime/download/)

### *Expectations*

- Course Week: Because asynchronous courses do not have a "fixed" meeting day, our week will start on Tuesday and finish on Monday.  
We will have regularly scheduled synchronous Collaborate sessions throughout our semester. Attendance is required. You will be informed of the dates for synchronous meetings.
- Log-in Frequency:  
Students must actively check the course Blackboard site and their GMU email for communications from the instructor, class discussions, and/or access to course materials **daily**. In addition, students must log-in for all scheduled online synchronous meetings.
- Participation:  
Students are expected to actively engage in all course activities throughout the semester, which includes viewing all course materials, completing course activities and assignments, and participating in course discussions and group interactions.
- Technical Competence:  
Students are expected to demonstrate competence in the use of all course technology. Students who are struggling with technical components of the course are expected to seek assistance from the instructor and/or College or University technical services.
- Technical Issues:  
Students should anticipate some technical difficulties during the semester and should, therefore, budget their time accordingly. Late work will not be accepted based on individual technical issues.
- Workload:  
Please be aware that this course is **not** self-paced. Students are expected to meet *specific deadlines* and *due dates* listed in the **Class Schedule** section of this syllabus. It is the student's responsibility to keep track of the weekly course schedule of topics, readings, activities and assignments due.

- Instructor Support:  
Students may schedule a one-on-one meeting to discuss course requirements, content or other course-related issues. Those unable to come to a Mason campus can meet with the instructor via telephone or web conference. Students should email the instructor to schedule a one-on-one session, including their preferred meeting method and suggested dates/times.
- Netiquette:  
The course environment is a collaborative space. Experience shows that even an innocent remark typed in the online environment can be misconstrued. Students must always re-read their responses carefully before posting them, so as others do not consider them as personal offenses. *Be positive in your approach with others and diplomatic in selecting your words.* Remember that you are not competing with classmates, but sharing information and learning from others. All faculty are similarly expected to be respectful in all communications.
- Accommodations:  
Online learners who require effective accommodations to ensure accessibility must be registered with George Mason University Disability Services.

### **Learner Outcomes or Objectives**

This course is designed to enable students to do the following:

- Design and modify instruction based on theory, philosophy, educational research, and best practice.
- Incorporate findings from educational literature into instructional strategies to improve student learning.
- Create a learning environment in which all learners feel welcome and can be successful.
- Modify instruction and learning environment based on assessment of student learning problems and successes.
- Seek, implement, and evaluate best pedagogical practice within the context of a specific learning setting.
- Monitor the effects of instructional actions, selection of learning materials, and other instructional decisions on students' learning.
- Design and modify instruction that is responsive to differences among learners.

### **Professional Standards**

EDCI 671 is part of the sequence of Advanced Studies in Teaching and Learning science courses for students seeking an advanced M.Ed. This course is also an Elective option for students in the Secondary Science Teacher Education. The course builds on students' knowledge of their subject matter and from their current or former teaching experiences. The course focuses on teacher as a reflective practitioner in science teaching and learning and meeting the diverse needs of learners as called for by the *Standards of Learning for Virginia Public Schools* and *National Science Education Standards* and as outlined by the National Council for Accreditation of Teacher Education (NCATE), the National Science Teachers Association (NSTA), and the National Boards for Professional Teaching Standards (NBPTS). EDCI 671 helps teachers develop an inquiry stance on their classroom practice as science teachers through action research adapting inquiry-based lessons, formative and summative assessment and evaluation techniques, and a targeted focus on meeting the diverse needs of students. Additionally, this course was designed with a vision for accomplished teaching, as indicated by NBPTS Science Standards for Early Adolescence ([http://www.nbpts.org/userfiles/File/ea\\_science\\_standards.pdf](http://www.nbpts.org/userfiles/File/ea_science_standards.pdf)) and Adolescence and Young Adulthood ([http://www.nbpts.org/userfiles/File/aya\\_science\\_standards.pdf](http://www.nbpts.org/userfiles/File/aya_science_standards.pdf)) the Five Core Propositions of the National Board for Professional Science Teaching:

- Proposition 1: Teachers are Committed to Students and Their Learning
- Proposition 2: Teachers Know the Subjects They Teach and How to Teach Those Subjects to Students

- Proposition 3: Teachers are Responsible for Managing and Monitoring Student Learning.
- Proposition 4: Teachers Think Systematically about Their Practice and Learn from Experience.
- Proposition 5: Teachers are Members of Learning Communities.

### Required Texts

All resources will be available through Blackboard or the course Google site.

Full citations in APA format are required for all assignments in course.

### Course Performance Evaluation

Students are expected to submit all assignments on time via Blackboard.

### Assignments

	<b>Points</b>
<b>Participation and Professionalism</b>	30
<b>Teaching and Assessment with Technology</b>	10
<b>Article/Resource Review</b>	10
<b>Development of Grant Proposal</b> <i>Donors Choose Set-up &amp; Initial Project (10 pts)</i> <i>2 Journals (2.5 pts each)</i> <i>Final Proposal, including budget (15 pts)</i>	30
<b>Lead-a-lab with technology activity</b> <i>Lesson Plan Draft Submitted for peer review</i> <i>Instruction video submitted for class</i>	10
<b>Final Reflection</b>	10
<b>Total Points</b>	<b>100</b>

### Participation and Professionalism

This course operates with the assumption that knowledge is socially constructed and the most meaningful learning opportunities are those where you have the opportunity to offer and explore diverse perspectives with peers. To do this, you are expected to regularly contribute to classroom discussions and online discussion forums, as well as to genuinely ‘listen’ to peers as they do the same. Agreement is not mandatory; consideration and respect are. This means that you must be “present” throughout all online discussions and activities. It is expected that you connect, question, and extend the discussion in class and in blackboard discussion posts by citing readings, weekly content, and your personal experiences. In addition to completing assigned module work, participation and professionalism also includes quality participation in online discussion forums and .

We will use Blackboard to communicate regularly in this class. You will be asked to post assignments and responses, read classmates’ postings, and actively participate in discussions. Blackboard serves as an important vehicle for discussing ongoing work on your major project with group members.

### Teaching and Assessment with Technology

Technology should be integrated purposefully in your classroom—not added in just so you can say you teach with technology. For this assignment you will identify a technology that can be used *by students* in your classroom, then create a formative assessment of student learning related to that technology *or*

related to student learning using that technology. (Note: If at all possible, please identify technologies that are not currently in use in your classroom!) You will create a 2-3 minute video in which you present the technology AND the formative assessment and post it as directed on Blackboard.

### **Article/Resource Review & Critique**

A valuable skill for an innovative science teacher is to be able to access information from the current science practitioner publications for use in the classroom. This assignment is given to develop your skills in locating and analyzing new technologies and/or instructional strategies to use in the classroom. For this assignment, you will identify an article in a practitioner publication (e.g. NSTA Publications: *Science & Children*, *Science Scope*, *The Science Teacher*; OR a subject specific publication like *The Biology Teacher* or *Physics Teacher*.) You will write a 2-4 page double-spaced article critique of the article. [Note that the selected article should be 3 pages or longer, and the article must be submitted with the critique.] The article critique should (a) briefly summarize the article, (b) provide details for how the topic is relevant to the elementary classroom and the teacher candidate's interests, and (c) critique the article. The critique should identify strengths and weaknesses of the lesson or ideas expressed in the article. At least one additional citation from the textbook, assigned articles, or other relevant sources should be included in the critique. The article should relate to teaching science in the teacher's subject and/or grade level. APA 7<sup>th</sup> edition citations & references should be included. See rubric at the end of the syllabus.

You will write a 2-3 page critique of the article and provide a 1-2 minute video review in our Blackboard course.

### **Development of Grant Proposal**

We will explore multiple ways in which you might fund innovative technologies or activities for your class, including grant opportunities and crowd-sourcing like donors choose. There are three distinct components of the grant proposal:

1. All students will create a donorschoose.com project—though you are NOT required to go “live” with it. If you are not able to create a donorschoose account, then we will set up a template to use that is similar to it. You may put anything on this project, as long as it is somehow related to your science teaching. You will share the project (or a pdf printout of the fake project) on blackboard.
2. During the semester you will write two short journal entries in which you identify an innovation you would like to incorporate into your classroom/teaching. This may be a technology (e.g. age-appropriate robots, iPads, or Vernier probes), low-tech materials (e.g. STEM books, materials to create a MakerSpace, or an outdoor classroom), or it may be an instructional method for which you would want to attend an expensive professional development session (e.g. Modeling Physics or Project GLAD). It may be something altogether different from these examples—but something that you need money to implement.
  - a. Journal 1 is an opportunity to brainstorm ideas for your full grant proposal. You should start with a topic or issue that you would like to try to address in your classroom. This could be anything, but could include “how to help students understand electric fields” or it may be “how to engage my English Learners in science learning”, or “what school-level problem could I identify for students to help address, and how could I fund it?” Then you should write about how you might address it, and how funding might help. Journal 1 is intended to help your instructor understand your interests/needs, and demonstrate that you have been thinking about how to innovate in your classroom.
  - b. Journal 2 will provide your instructor outline your plan for what you are interested in having funded, and write about how it would impact your teaching and your

students' learning. You will identify a funding source that would make sense for your plan, from the list of teacher grant opportunities provided in class.

3. Each student will identify a potential source from a list of teacher grant opportunities and write a short grant proposal that could be submitted for funding. Deadlines on these opportunities vary, so students are not required to submit the proposal on a particular deadline during the class—but students are encouraged to follow through with the plan.

### **Lead-a-Lab with Technology:**

Imagine a class that has almost no science materials but is rich with computer technology and network accessibility. Students will use online or computer-based technology to design and develop a “lab” experience where students learn the desired science content that they might have learned if they didn’t have access to technology. You will create a video of you leading a lab activity as if you were teaching it to our class. This lab activity should be appropriate for a particular grade level and subject for students in grades PK through 12. The lab must focus on at least one specific standard from the Virginia Standards of Learning for science in elementary, middle, or high school (VA SOLs), Next Gen Science Standards (NGSS), or another state’s science standards.

- The video should be 5-10 minutes long, with appropriate “pauses” for classmates (students) to work on the activity. It will be used in our course, so relevant links or directions for engaging in the activity should be used. Although the video should be less than 10 minutes long, the lab should engage learners in science content for between 15-30 minutes.
- a) You should prepare a lesson plan that identifies the following:
  - (a) the grade level and/or course in which this lab would appropriately be conducted,
  - (b) 1-3 learning objectives, usually framed “the students will be able to...”,
  - (c) VA SOL, NGSS, or other relevant standards that the activity will help students meet,
  - (d) any additional materials or handouts that may be needed,
  - (e) plan for assessing student learning related to the lab activity (formative assessments must be identified, summative assessments may be identified),
  - (f) needed accommodations for students with specific needs, and
  - (g) any other information needed to understand the lesson.

Evaluation criteria include (rubric will be provided):

- Evidence of appropriate planning (Lesson plan: 5 points)
- Evidence of appropriate planning
- Clear purpose for learning was evident
- Appropriate safety measures were demonstrated and applied
- Thought provoking questions were used
- The teacher circulated and assisted students
- The activity facilitated the learning of science process skills
- Smooth transitions between activities were evident
- Selected activities were appropriate for the objective
- Assessment was appropriate and corresponded to the learning objective

### **Final Reflection**

Your final assignment for this class will be a final reflection. The prompt will be provided in class later in the semester.

### **General Requirements**

- A. Class attendance is both important and **required**. If, due to an emergency, you will not be in class, you must *contact your instructor prior to class time*. Learners with more than two absences may drop a letter grade or lose course credit.

- B. All assignments are either **due by class-time** OR no later than **11:59 PM EDT** of the date indicated in each week's assignments published in the **COURSE SCHEDULE AND TOPICS** section of this Syllabus. Due dates are also posted on our Bb course site.
- a. **Grades for assignments date-stamped in Blackboard after the due date will be reduced by 10%, unless prior approval from instructor has been granted. No late submissions will be accepted after the course end date.**
  - b. Assignments earning less than a passing grade may be rewritten and resubmitted so that the assignment is satisfactorily completed. In fact, because learning is the goal, I may *require* you to redo an assignment that is far below expectations.
- C. Please adhere to the assignment submission instructions listed in this syllabus. Only assignments submitted as indicated will be graded; incorrect submissions will result in a grade of zero for those assignments.
- a. All assignments submitted should have the filename format LASTNAME-ASSIGNMENT TITLE. Please do not upload written assignments in PDF format. Other editable formats are acceptable (i.e., .doc, .docx, .rtf, .ppt, .pptx, .xlsx, .xls). Supporting documents for assignments can be in PDF format.
- D. *All written work* should be carefully edited for standard grammar and punctuation, as well as clarity of thought. All submitted work should be prepared through word processing and reflect APA style (6<sup>th</sup> edition), as well as double-spaced, with 1" margins, and 12-point font (Times New Roman, Calibri, or Arial).

#### **GRADING SCALE**

| 95-100 =A | 90-94 =A- | 86-89=B+ | 83-85=B | 80-82= B- | 70-79=C | Below 70=F |

#### **PROFESSIONAL DISPOSITIONS**

Students are expected to exhibit professional behaviors and dispositions at all times. See <https://cehd.gmu.edu/students/policies-procedures/>

## Tentative Class Schedule

*Note: Faculty reserves the right to alter the schedule as necessary, with notification to students.*

Module / Weeks	Topic & Readings	READINGS & ASSIGNMENTS DUE
<b>Module 1:</b> Week 1 & 2 8/25 – 9/7	<ul style="list-style-type: none"> <li>What is innovation in education</li> <li>Online simulations &amp; games</li> <li>Intro to donorschoose</li> </ul>	READ: Readings posted to Blackboard <b>Submit by 11:59 pm on Mon 9/7:</b> <b>Teaching and Assessment with Technology</b>
<b>Module 2:</b> Weeks 3 & 4 9/8 - 9/21	<ul style="list-style-type: none"> <li>Sustainability of change &amp; Policy</li> <li>Lab &amp; classroom technologies</li> </ul>	READ: Readings posted to Blackboard <b>Submit by 11:59 pm on Mon 9/21:</b> <b>Grant Proposal Journal 1</b>
<b>Module 3:</b> Weeks 5 & 6 9/22 – 10/5	<ul style="list-style-type: none"> <li>Maker-spaces &amp; the maker movement</li> <li>More online simulations &amp; games</li> </ul>	READ: Readings posted to Blackboard <b>Submit by 11:59 pm Mon 10/5:</b> <b>Article/Resource Review &amp; Critique</b>
<b>Module 4:</b> Weeks 7 & 8 10/6 - 10/19	<ul style="list-style-type: none"> <li>Looking at teacher grants, Grants 101</li> <li>Technology tools for teaching online and in person</li> </ul>	READ: Readings posted to Blackboard <b>Due by 11:59 pm on 10/19:</b> <b>Post DonorsChoose project</b>
<b>Module 5:</b> Weeks 9 & 10 10/20 - 11/2	<ul style="list-style-type: none"> <li>Curricular innovations: PBL, PBL, CCL, and all the others....</li> <li>Curricular innovations &amp; underlying philosophies</li> </ul>	READ: Readings posted to Blackboard <b>DUE by 11:59 pm on 11/2:</b> <b>Grant Proposal Journal 2</b>
<b>Module 6:</b> Weeks 11 & 12 11/3 – 11/16	<ul style="list-style-type: none"> <li>Design thinking &amp; creativity</li> <li>Maker-spaces &amp; the maker movement</li> </ul>	READ: Readings posted to Blackboard <b>DUE by 11:59 pm on 11/16:</b> <b>Submit lead-a-Lab with Technology</b>
<b>Module 7:</b> Weeks 13 & 14 11/17 – 11/30	<ul style="list-style-type: none"> <li>Investigating coding and computational thinking</li> <li>Learn from peers' learn-a-lab activities</li> </ul>	READ: Readings posted to Blackboard <b>DUE by 11:59 pm on 11/30:</b> <b>Final grant Proposal, including budget</b>
<b>Module 8</b> Weeks 15 & 16 12/1 – 12/15	<ul style="list-style-type: none"> <li>Empowering students through innovative instruction</li> <li>Learn from peers' learn-a-lab activities</li> </ul>	READ: Readings posted to Blackboard <b>DUE by 11:59 pm on 12/15:</b> <b>Final Reflection Due to Blackboard by Tues 12/15, 11:59 pm</b>

### Core Values Commitment

The College of Education and Human Development is committed to collaboration, ethical leadership, innovation, research-based practice, and social justice. Students are expected to adhere to these principles: <http://cehd.gmu.edu/values/>.



## GMU Policies and Resources for Students

### *Policies*

- Students must adhere to the guidelines of the Mason Honor Code (see <https://catalog.gmu.edu/policies/honor-code-system/> ).
- Students must follow the university policy for Responsible Use of Computing (see <https://universitypolicy.gmu.edu/policies/responsible-use-of-computing/>).
- Students are responsible for the content of university communications sent to their Mason email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students **solely** through their Mason email account.
- Students with disabilities who seek accommodations in a course must be registered with George Mason University Disability Services. Approved accommodations will begin at the time the written letter from Disability Services is received by the instructor (see <https://ds.gmu.edu/>).
- Students must silence all sound emitting devices during class unless otherwise authorized by the instructor.

### *Campus Resources*

- Support for submission of assignments to Tk20 should be directed to [tk20help@gmu.edu](mailto:tk20help@gmu.edu) or <https://cehd.gmu.edu/aero/tk20>. Questions or concerns regarding use of Blackboard should be directed to <https://its.gmu.edu/knowledge-base/blackboard-instructional-technology-support-for-students/>.
- For information on student support resources on campus, see <https://ctfe.gmu.edu/teaching/student-support-resources-on-campus>

### **Notice of mandatory reporting of sexual assault, interpersonal violence, and stalking:**

As a faculty member, I am designated as a “Responsible Employee,” and must report all disclosures of sexual assault, interpersonal violence, and stalking to Mason’s Title IX Coordinator per University Policy 1202. If you wish to speak with someone confidentially, please contact one of Mason’s confidential resources, such as Student Support and Advocacy Center (SSAC) at 703-380-1434 or Counseling and Psychological Services (CAPS) at 703-993-2380. You may also seek assistance from Mason’s Title IX Coordinator by calling 703-993-8730, or emailing [titleix@gmu.edu](mailto:titleix@gmu.edu).

**For additional information on the College of Education and Human Development, please visit our website <https://cehd.gmu.edu/students/> .**

Rubrics:

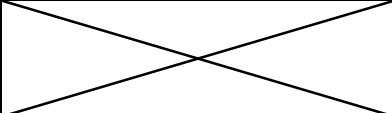
**Participation and Professionalism**

	<b>Evolving</b>	<b>Competent</b>	<b>Accomplished</b>
<b>Overall Participation</b>	Very few tasks are completed on time AND/OR completed tasks do not demonstrate thoughtful consideration of the content. Collaborate session, if scheduled, may not have been attended.	Most tasks for all weeks are completed on time and demonstrate thoughtfulness. Collaborate sessions, if scheduled, were attended and student somewhat engaged with peers and instructor.	All tasks for all weeks are completed on time and demonstrate thoughtfulness. Collaborate sessions, if scheduled, were attended and student actively engaged with peers and instructor
<b>Discussion Quality</b>	Discussion posts and most replies are limited; Readings are not at all integrated to support posts; Some to no posts utilize and demonstrate learners' prior and/or new knowledge; Replies do not go beyond superficial responses; Replies may not build on others' responses to create connected threads.	Most discussion posts and most replies are one <i>robust</i> paragraph to three paragraphs; Readings are somewhat integrated to support posts; Most but not all posts utilize and demonstrate learners' prior and/or new knowledge; Replies typically go beyond superficial responses; Most replies build on others' responses to create connected threads; Questions may be posed for further thought and discussion; Some questions from peers may be addressed (there is some evidence that you went back to read discussion replies)	All discussion posts and all replies are one <i>robust</i> paragraph to three paragraphs; Readings and weekly content are integrated to support thoughtful posts ( <i>and explicitly referenced</i> ); Posts utilize and demonstrate learners' prior <i>and</i> new knowledge; All replies go beyond superficial responses; Replies build on others' responses to create connected threads; As appropriate, questions are posed for further thought and discussion; Questions from peers are addressed (there is evidence that you went back to read discussion replies).

**Teaching and Assessment with Technology Holistic Rubric**

<b>Evolving</b> (0-3 points)	<b>Competent</b> (4-7 points)	<b>Accomplished</b> (8-10 points)
Video is not submitted, or is grossly misaligned with the instructions.	Video describes technology insufficiently, or is actually technology for teacher use. Insufficient details or examples of the assessment are provided.	Video clearly identifies technology for student use, what students will learn from engaging with the technology, and how student learning would be assessed.

### Article/Resource Review & Critique Rubric

	<b>Evolving</b> (0-1 point)	<b>Competent</b> (2 points)	<b>Accomplished</b> (3 points)
<b>Article Summary</b>	Article summary is not included OR is unclear and poorly written.	Article summary is excessively long or extremely short and/or is somewhat confusing.	Article summary is clear, articulate and brief.
<b>Relevance to your teaching</b>	Fails to raise relevant questions and/or make a relevant personal reaction to elementary science.	Relates a few personal reactions and/or raises relevant questions to elementary science.	Relates personal reactions and raises relevant questions throughout response.
<b>Critique</b>	Critique is missing or unclear.	Critique may identify strengths or weaknesses, but not both. Weaknesses may not relate to the classroom implementation, or are not thoughtfully discussed.	Critique of article is clearly written and identifies strengths and weaknesses of the ideas expressed in the article. Weaknesses are authentic and thoughtfully discussed in relation to the teacher's own or future classroom.
<b>APA Reference</b>	No references are included in the paper.		At least two relevant references are included using APA 7 <sup>th</sup> ed. style.

### Lead-a-Lab Video & Lesson Plan Holistic Rubric

<b>Evolving</b> (0-3 points)	<b>Competent</b> (4-7 points)	<b>Accomplished</b> (8-10 points)
Lesson plan or video is not submitted, or is grossly misaligned with the instructions.	Lesson plan and video are submitted. Assessment may be missing from the video and/or lesson plan. Lesson may be a lecture without a hands-on activity. Video may be an explanation of the activity rather than an example of teacher instruction during a student-centered activity.	Lesson plan using provided template and video are submitted, along with a "Read before you watch" paragraph. Formative assessment is evident in the video and lesson plan. Student takes on teacher role within the instructional video, providing clear direction to their peers as if their peers were actually K-12 students. Teacher asks questions and anticipates questions students may ask, and summarizes main ideas at the end of the video.

### Holistic Rubric for Final Reflective Essay

<b>Evolving</b> (0-3 points)	<b>Competent</b> (4-7 points)	<b>Accomplished</b> (8-10 points)
Student does not address the writing prompt. There is little evidence that the student has drawn on their readings, assignments and class discussions. Neither growth nor reflection is evident.	Student may not fully address the writing prompt, or does not make clear how their ideas have extended beyond those expressed in readings, assignments and class discussions. Minimal growth evident. Reflection is present, but is not critical.	Student thoughtfully addresses the writing prompt, building upon ideas from their readings, assignments and class discussions. Growth across the semester and critical reflection regarding their experiences and expectations is evident. Course readings are referenced using APA 7 <sup>th</sup> edition style.