

**GEORGE MASON UNIVERSITY
COLLEGE OF EDUCATION AND HUMAN DEVELOPMENT
ADVANCED STUDIES IN TEACHING AND LEARNING PROGRAM**

**EDCI 670-DL1 CRN 20821 – Advanced Methods of Teaching Science
3 credits, Spring 2021 (Online)
January 25 - May 10, 2021**

FACULTY

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PREREQUISITES

Admission to the M.Ed. in Curriculum and Instruction, ASTL concentration.

COURSE DESCRIPTION

Application of major principles of education and psychology for the improvements of science teaching.

COURSE OVERVIEW

This course will focus on augmenting the knowledge of experienced science teachers by integrating the reading of current literature in education research that defines best practice with the application of these findings in the educational setting. The course will build on science teachers' existing knowledge and reflect on what it means to teach science, what it means to teach a diverse population of students, and how to develop, implement, and interpret authentic assessment (i.e., product based assessment such as portfolios). Participants will engage in action research to evaluate the impact of instructional modifications on student learning.

COURSE DELIVERY METHOD

This course will be delivered online 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 at <https://mymasonportal.gmu.edu/> using your Mason email name (everything before @masonlive.gmu.edu) and email password. After logging in, click on the COURSES tab at the top of the page to see your list of courses; then select EDCI 670.

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, as explored through the CIP process, individual blogs and online journals based on topics aligned with national standards and program/learner outcomes.

Under no circumstances, may candidates/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

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
- 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/

Expectations

- Course Week: Our course week will run from Tuesday through Monday as indicated on the Schedule of Classes.
- 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 insure accessibility must be registered with George Mason University Disability Services.

LEARNER OUTCOMES/OBJECTIVES

Below is a list of the major course goals.

- 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 student learning.
- Design and modify instruction that is responsive to differences among learners.

PROFESSIONAL STANDARDS

EDCI 670 is the first course in a four-course sequence of Advanced Studies in Teaching and Learning science courses for students seeking an advanced M.Ed. (ASTL). The course builds on students' knowledge of their subject matter and their current or former teaching experience. 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 Interstate New Teacher Assessment and Support Consortium (INTASC). EDCI 670 introduces students to action research in learning and teaching science, adapting inquiry-based lessons, assessment techniques, and the diverse needs of students. This course will also be directly connected to the Core Values of CEHD: Innovation, Research-Based Practice, Ethical Leadership, Social Justice, and Collaboration.

These position statements indicate that the core knowledge expectations in science education include:

- Vary their teaching actions, strategies, and methods to promote the development of multiple student skills and levels of understanding.
- Successfully promote the learning of science by students with different abilities, needs, interests, and backgrounds.
- Successfully organize and engage students in collaborative learning using different student group learning strategies.
- Successfully use technological tools, including but not limited to computer technology, to access resources, collect and process data, and facilitate the learning of science. Understand and build effectively upon the prior beliefs, knowledge, experiences, and interests of students.
- Create and maintain a psychologically and socially safe and supportive learning environment.

Additionally, this course was designed with a vision for accomplished teaching, as indicated by NBPTS Science Standards for Early Adolescence and Adolescence and Young Adulthood's Five Core Propositions:

- 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 TEXT

- Windschitl, M., Thompson, J., & Braaten, M. (2018). *Ambitious science teaching*. Harvard Education Press, Boston.

RECOMMENDED RESOURCES

- Keeley, P. (various). *Uncovering student ideas in science*. Arlington, VA: NSTA Press.
NOTE: This is a series of books. Choose one to purchase. You can pick a general volume or a subject-specific one. Your instructor will provide some examples to preview in class.
<http://www.nsta.org/publications/press/uncovering.aspx>

Recommended Online Readings to download

- Achieve, (2013). *Next Generation Science Standards (2013)*. Achieve, Inc.
<http://www.nextgenscience.org/next-generation-science-standards>
- Commonwealth of Virginia (2010). *Standards of Learning for Virginia Public Schools*. Richmond, Virginia. <http://www.doe.virginia.gov/testing/index.shtml>
- Commonwealth of Virginia (2003). *Science Standards of Curriculum Framework Guides*.
<http://www.pen.k12.va.us/VDOE/Instruction/sol.html#science>
- National Board for Professional Teaching Standards (2014). *Science Standards for Early Adolescence and Young Adulthood*. <http://boardcertifiedteachers.org/sites/default/files/EAYA-SCIENCE.pdf>
- National Research Council (1996). *National science education standards*. Washington, DC: National Academy Press. http://www.nap.edu/openbook.php?record_id=4962
- American Association for the Advancement of Science (1993). *Benchmarks for Science Literacy*. <http://www.project2061.org/tools/benchol/bolframe.htm>

COURSE PERFORMANCE EVALUATION

Students are expected to submit all assignments on time in the manner outlined by the instructor.

Assignments

Science education research shows that frequent assessment of small amounts of material is most effective for learning science. Therefore, in this class formal and informal assessment will be continuously provided on assignments and class activities. Assessment is a two-way communication loop that informs both learning and teaching. All written assignments must be submitted through Blackboard. General formatting includes 1" margins, double-spacing, and a traditional, readable font.

Assignment	Points	Due Date
Pre-assessment and misconceptions	10	February 22
Learner profiles	10	March 22
Annotated Bibliography	10	April 12
Unit plan	20	Draft due March 26 Final due May 3
Data analysis and reflection	20	May 3
Participation & Professionalism	30	Online each week
TOTAL	100	

Science Instruction for Diverse Learners Research Project

For this course you will complete a series of assignments to examine the varied learning needs of your students. You will identify a science concept that you will teach in mid/late March to mid-April, and this concept will be used throughout the project.

- pre-assess student knowledge of a science concept,
- identify key misconceptions related to the science concept,
- select two students from your classes and develop learner profiles for them,
- conduct a review of literature in order to identify strategies to use to successfully teach the science concept, particularly to the selected students,
- design and implement a unit to teach the science concept,
- analyze assessment data related to student learning, and
- write a reflection that evaluates how successfully the unit met student needs.

All written components should be submitted via Blackboard. The assignment rubric can be found at the end of the syllabus. Information about each component is detailed below.

Pre-Assessment of Student Knowledge and Misconceptions

For a science concept that you will teach in mid/late-March to mid-April:

- Identify/develop an instrument that assesses students' prior knowledge
- Administer the instrument to a class that contains two students you would like to target for additional support
- Identify common misconceptions – from literature or another reputable source (e.g., <http://assessment.aaas.org>) – of the science concept

Your submission should include

- 1) an analysis of the pre-assessment data regarding students' strengths and weaknesses related to the science concept, and
- 2) a discussion of how your students compare to common misconceptions of the topic.

Learner Profiles

Develop learner profiles for the two targeted students. Information for the profiles should be obtained from multiple sources, including your observations, interviews with the students, and interviews with colleagues (e.g., student's case manager, school psychologist/social worker, student's previous teachers).

Your submission (one profile for each student) should include:

- 1) an overview of the student and her/his background (e.g., demographic information, family

- information, co- and extra-curricular activities, academic history, IEP/504 information),
- 2) a description of classroom behavior (e.g., attendance, participation in activities, interactions with peers and teacher, academic performance),
 - 3) a summary of the student's pre-assessment results, and
 - 4) any other relevant information gleaned from the student interview.

Annotated Bibliography

Identify a minimum of five peer-reviewed research articles that identify strategies that will help you teach the identified science concept, particularly to the targeted students. Relevant articles can be found via Google Scholar (<http://scholar.google.com>) and/or the Mason library search engine (<http://library.gmu.edu>).

Your submission should include:

- 1) a brief description of the research questions, participants, methodology, and measures,
- 2) a synopsis of the findings, and
- 3) a discussion of how the findings can/should influence your classroom practice.

Be sure to provide APA citations for each article.

Unit Plan

Design and implement a unit plan to teach the selected science concept. Your plan should incorporate practical and theoretical aspects of science teaching, including safety, inquiry, differentiation, pedagogical methods, and assessment.

Your unit plan submission should include:

- 1) a one-page unit schedule,
- 2) daily lesson plans, and
- 3) all support materials. (e.g. copies of student handouts, assessments, rubrics, presentation materials)

You may use any lesson plan format you would like; however, the following aspects should be included:

- *Standards (e.g., SOLs, AP, IB, NGSS)*
- *Learning objectives written as measurable student behavior (e.g., SWBAT)*
- *Activity descriptions with sufficient detail (e.g., materials, directions, guiding questions) that a substitute could implement them*
- *Differentiation strategies*
- *Safety notes (as relevant)*

Data Analysis and Reflection

Select at least two assessments from your unit plan to analyze in depth. If possible, include one performance-based assessment.

Collect data from the class containing the targeted students and analyze it for

- 1) evidence of student learning,
- 2) areas that need remediation, and
- 3) ways in which the assessments need to be adjusted.

Item analyses should be done for multiple-choice questions.

Your submission should include the above analysis and a reflection that addresses:

- 1) how well the unit met the whole classes' learning needs,
- 2) how well the implemented strategies helped the targeted students, and
- 3) suggestions for improvement. Be sure to address the technical, contextual, and dialectical levels in your reflection.

Professionalism

EDCI 671 operates under the assumption that knowledge is socially constructed and the most meaningful learning opportunities include those where learners have the opportunity to offer and explore diverse perspectives with peers. To do this, it is expected that you will regularly contribute to and engage in discussion forums, as well as to genuinely 'listen' to peers as they do the same. While agreement is not mandatory, consideration and respect for others are. In addition to quality participation in discussion forums, each week will include tasks to be completed which are related to each week's content. Attendance and participation in all scheduled synchronous Collaborate sessions is also included in Weekly Work.

****Please note:** as this is an online course, the majority of our class discussion will be in the form of the electronic discussion board. **Each module will begin on a Tuesday and run through the following Monday.** To this end, initial postings for each discussion forum should be completed by **11:59 pm on Friday (EST)** so that class members will have until Monday to interact with the posted material and engage in "conversation." When required, discussion board replies are due by Monday night.

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.

General Requirements

- A. Please note that this online course is **NOT self-paced**; it consists of *weekly modules* that progress sequentially through the semester. You will be expected to complete one learning module every week. It is critical that each student complete all readings and activities on a weekly basis. Class 'attendance' is both important and **required**. If, due to an emergency, you will not be participating in course activities on time, please contact your instructor prior to due dates or time. Please note that learners with more than two 'absences' risk a letter grade drop or can lose course credit.
- B. All assignments are due no later than **11:59 PM EST** 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. Late submissions are not acceptable 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 mastery learning is our program's goal, we may ask (or *require*) you to redo an assignment that is far below expectations. Thank you for making genuine learning your goal.
- C. Please adhere to the assignment submission instructions listed in this Syllabus. Only assignments submitted as indicated will be graded; incorrect submissions may result in a grade of zero for those assignments.
 - a. All assignments submitted should have the filename format as follows: Last name-Assignment Title. *Please do not upload written assignments in PDF format.* Other

editable formats are acceptable (i.e., .doc, .docx, .rtf, .ppt, .pptx, .xlsx, .xlxs). Supporting documents for assignments can be in PDF format.

- D. *Please Note: 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 (6th edition), as well as be double-spaced, with 1” margins, and 12-point font (Times New Roman, Calibri, or Arial).

Instructor Role

- Your professor will read online discussion forums regularly, however, her active role as faculty is to support the discussion development and not so much to “enter into each one” so that the dialogue is authentic among participants. Please note that during this time, your professor will be noting the quality and extent of your participation.

Student Expectations

- Students are also expected to adhere, to the extent possible, to a 24-hour turnaround time for emails.
- Students are expected to visit our Blackboard site *at least three* times during the week: thus, once at the beginning of each week, once in the middle of the week, and then again at the end to read any new posts and replies. Please note that you can subscribe to forums/threads to be notified when new posts are added. Kindly access the posted directions in Blackboard for doing this.
- Students are expected to read all posted/mailed Course Announcements. These contain important information from your instructor. In addition to being sent by email, these will be available in the Course Announcements link in Blackboard.
- It is also expected that you will monitor your participation to remain timely and responsive and be able to complete all tasks on-time without reminder. Successful students in an online learning environment are proactive, self-regulated, and manage their time well. You should expect to spend 12-15 hours a week on work for this 3-credit course (including reading and posting). This commitment is commensurate with the commitment expected for F2F classes, which also includes preparation, class time, and assignments.
- Questions are welcome, and your professor is available to respond to individual class members as needs might arise.

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/polices-procedures/>

COURSE SCHEDULE

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

Date	Topic(s)	Readings & Assignments Due
Week 1 Jan 26 – Feb 1	Introduction to the Course What is Science?	READ: Text chapter 1 (scan on Blackboard)
Week 2 Feb 2 – 8	Reflective Practice	READ: Articles in Bb: <ul style="list-style-type: none"> • Wiggins & McTighe (1998) • Larivee (2000) • Bondy & Ross (2008)
Week 3 Feb 9 – 15	(Mis)conceptions Collaborate Session this week – Time TBD	READ: Articles on Bb: <ul style="list-style-type: none"> • Campbell, Schwarz, & Windschitl (2016) • Gooding & Metz (2011) • Achenbach (2015) WA Post article
Week 4 Feb 16 – 22	Planning for Engagement	READ: Text chapter 2 Assignment due by 2/22: Pre-assessment and Misconceptions
Week 5 Feb 23 – Mar 1	Classroom Discourse	READ: Text chapters 3 & 4
Week 6 Mar 2 – 8	Inquiry: Eliciting Students Ideas Collaborate Session this week – Time TBD	READ: Text chapter 5 <ul style="list-style-type: none"> • Rothstein & Santana (2011) • Sharkawy (2010)
Week 7 Mar 9 – 15	Scientific Modeling	READ: Text chapter 6 & 7
Week 8 Mar 16 – 22	Supporting Students' Thinking	READ: Text chapter 8, 9, & 10 Assignment due by 3/22: Learner profiles
Week 9 Mar 23 – 29	Scientific Argumentation	READ: Text Chapter 11 Submit to critical friend & instructor in Blackboard by 3/26: DRAFT of Unit Plan Provide feedback to critical friend by 3/29
Week 10 Mar 30 – Apr 5	NO CLASS – FCPS SPRING BREAK: WORK WEEK	
Week 11 Apr 6 – 12	Collaborative Learning in the Classroom INDIVIDUAL Collaborate Conferences this week – Time TBD	READ: Text Chapter 12 Assignment due by 4/12: Annotated Bibliography
Week 12 Apr 13 – 19	Collaborative Learning with your Colleagues	READ: Text Chapter 13 AND choice of articles posted in module
Week 13 Apr 20 – 26	Reflecting on you Learning Collaborate Session this week – Time TBD	READ: Text Chapter 14
Week 14 Apr 27 – May 3		NO READINGS Assignment due by 5/3: Final Unit Plan + Data Analysis and Reflection

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/>. EDCI 670 focuses on all five of these core values through promoting culturally based action research that is intentional and committed to social justice, ethical and collaborative research. Through online groups and creative solutions to classroom puzzlements, this course also promotes innovative classroom practices that are data driven and aimed at making a difference for all students and improving instructional decisions and promoting social justice for all learners through research-based practice.

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 <http://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 follow the university policy stating that all sound emitting devices shall be silenced during class unless otherwise authorized by the instructor.

Campus Resources

- Support for submission of assignments to Tk20 should be directed to tk20help@gmu.edu or <https://cehd.gmu.edu/aero/tk20>. Questions or concerns regarding use of Blackboard should be directed to <http://coursessupport.gmu.edu/>.
- 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.

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

Science Instruction for Diverse Learners Research Project Rubric

	Exceeds Expectations	Meets Expectations	Approaching Expectations	Does Not Meet Expectations
Pre-Assessment of Student Knowledge and Misconceptions				
Analysis	Thorough and accurate analysis of data	Substantial and accurate analysis of data	Partial OR inaccurate analysis of data	Partial AND inaccurate analysis of data
Discussion	Thorough comparison of students to literature	Substantial comparison of students to literature	Partial comparison of students to literature	No comparison of students to literature
Learner Profiles				
Overview of Student	Thorough overview of student and background	Substantial overview of student and background	Partial overview of student and background	No overview of student and background
Description of Classroom Behavior	Thorough description of classroom behavior	Substantial description of classroom behavior	Partial description of classroom behavior	No description of classroom behavior
Pre-Assessment Results	Thorough summary of pre-assessment results	Substantial summary of pre-assessment results	Partial summary of pre-assessment results	No summary of pre-assessment results
Annotated Bibliography				
Articles	Five research-based articles from peer-reviewed journals; APA citations	Five research-based articles; APA citations	Five non-research-based articles; APA citations	Less than five articles AND/OR no APA citations
Description of Articles	Thorough description of research questions, participants, methodology, and measures	Substantial description of research questions, participants, methodology, and measures	Partial description of research questions, participants, methodology, and measures	No description of research questions, participants, methodology, AND/OR measures
Synopsis of Findings	Thorough synopsis of findings	Substantial synopsis of findings	Partial synopsis of findings	No synopsis of findings
Discussion of Application	Thorough discussion of application to classroom practice	Substantial discussion of application to classroom practice	Partial discussion of application to classroom practice	No discussion of application to classroom practice
Unit Plan				
Schedule		One-page schedule of unit activities		No schedule provided
Lesson Plan: Standards and Objectives	Relevant standards linked to measurable, student behavior-based objectives from a variety of cognitive levels	Relevant standards linked to measurable, student behavior-based objectives	Relevant standards linked to objectives, which are either not measurable OR not student behavior-based	Irrelevant OR no standards AND/OR objectives
Lesson Plan: Activities	Nearly all activities are inquiry-based and student-centered	Majority of activities are inquiry-based and student-centered	Some activities are inquiry-based and student-centered	Very few, if any, activities are inquiry-based and student-centered
Lesson Plan: Activity Sequence	Highly effective sequence	Effective sequence	Somewhat effective sequence	Ineffective sequence
Lesson Plan: Strategies	Research-based strategies for all students	Research-based strategies for targeted students	Strategies for targeted students	No strategies
Support Materials		All support materials are provided	Some support materials are provided	No support materials are provided

	Exceeds Expectations	Meets Expectations	Approaching Expectations	Does Not Meet Expectations
Data Analysis and Reflection				
Assessments		Two formative and one summative; performance-based component	Two formative and one summative	Less than two formative AND/OR no summative
Analysis: Student Learning	Thorough analysis of student learning	Substantial analysis of student learning	Partial analysis of student learning	No analysis of student learning
Analysis: Remediation	Thorough analysis of needed remediation	Substantial analysis of needed remediation	Partial analysis of needed remediation	No analysis of needed remediation
Reflection: Whole Class	Thorough reflection of how unit met whole classes' learning needs	Substantial reflection of how unit met whole classes' learning needs	Partial reflection of how unit met whole classes' learning needs	No reflection of how unit met whole classes' learning needs
Reflection: Targeted Students	Thorough reflection of reflection of how unit met targeted students' learning needs	Substantial reflection of reflection of how unit met targeted students' learning needs	Partial reflection of reflection of how unit met targeted students' learning needs	No reflection of reflection of how unit met targeted students' learning needs
Reflection: Improvements	Thorough reflection of how to improve the unit	Substantial reflection of how to improve the unit	Partial reflection of how to improve the unit	No reflection of how to improve the unit