

Course Syllabus

EDCI 5013D

TECHNOLOGY IN STEM

University of North Texas at Dallas

Instructor: Anita McPartland, M.Ed., M.S., M.Ed.

Course Description

This course is designed to explore strategies and models of effective technology integration in STEM curriculum and classroom instruction. Characteristics of a 21st Century student, teacher, and pedagogy will be presented. Technology pedagogical models, technology fluencies and literacies, digital learning tools and current trends in technology integration will be addressed. An Action Research project and a variety of technology integration activities, assignments and discussions are included in the course.

Course Objectives

At the end of this course students will be able to:

- Integrate (4-Analyze) pedagogical models that support 21st Century teaching and learning that promote higher order thinking, problem-solving and technology integration.
- Interpret (4-Analyze) the characteristics of a 21st Century learning environment, 21st Century teacher and the 21st Century learner as it relates to technology in the teaching and learning environment.
- Formulate (5-Synthesize) instruction that incorporates digital fluencies into the STEM learning environment that develops 21st Century skills.
- Formulate (5-synthesis) a list of 21st Century digital tools for integration into STEM instruction to engage students in their learning.
- Create (5-Synthesis or 6-creating) lessons that address Digital Citizenship.
- Design lessons (6-Create) that incorporate “flipping the classroom” strategies.
- Design lessons that incorporate digital pedagogy and the 21st Century technology fluencies.
- Develop (5-Synthesis or 6-creating) rubrics for assessing digital projects.
- Evaluate (6-evaluate) professional learning resources that support technology integration.
- Participate in a collaborative technology-based environment for discussions that include posting, moderating, and commenting. (6-evaluate)
- Conduct action research and implement findings into practice (4-Analyze)

Required Materials

- November, A. (2007). *Web literacy for educators*. Thousand Oaks, CA: Corwin Press.
- Pitler, H., Hubbell, E., & Kuhn, M. (2012). *Using technology with classroom instruction that works* (2nd ed.). Alexandria, VA: ASCD.

Recommended Text and References:

- Literacy is Not Enough: 21st Century Fluencies for the Digital Age
<http://globaldigitalcitizen.org/keynotes/keynotes-literacy-is-not-enough/>
- Understanding the Digital Generation: Teaching and Learning in the New Digital Age
<http://globaldigitalcitizen.org/keynotes/keynotes-understanding-the-digital-generation/>
- http://globaldigitalcitizen.org/media/GDC_PresentationList.pdf
- <http://allthingslearning.wordpress.com/tag/ian-jukes/>
- <https://edorigami.wikispaces.com/>
- <http://www.schrockguide.net/>
- <http://www.schrockguide.net/samr.html>
- <http://www.the3techninjas.org/#!flipped-classroom/c19h1>

Course Requirements and Expectations

1. Professional Learning Community (PLC) Collaboration and Communication – Students are expected to use Edmodo and Blackboard to for communication and discussion activities along with collaboration and assignment submission.
 - a. Use of learning management for class communication, assessments and discussions
 - b. Use a variety of online resources for class discussions and feedback
 - c. Use of a variety of digital resources for class collaboration and assignments
2. Book Study Presentations – Students are expected to participate in two book studies and complete the following assignments.
 - a. *Web Literacy for Educators* – Students are expected to complete activities selected from the text and be prepared to discuss the content in class.
 - b. *Using Technology with Classroom Instruction that Works* – Students are expected to participate in a group and present the information from an assigned chapter. (Chapters 1 – 9)
3. Digital Tools Project – Students are expected to
 - a. Utilize Web2.0 tools to demonstrate digital fluencies.
 - b. Create a list of digital tools to support technology integration in STEM curriculum
4. Classroom Integration Projects – Students are expected to:
 - a. Create a lesson that integrates technology and incorporates "flipped classroom" pedagogy
 - b. Create a lesson that addresses digital citizenship to implement with students.
 - c. Create a content-based lesson integrating action research findings, digital fluencies and 21st Century pedagogy(Final) – see 5c
 - d. Develop rubrics for assessing student digital projects.
5. Action Research Project –
 - a. Incorporating digital fluencies, digital Bloom's Taxonomy and 21st Century pedagogy
 - b. Submit complete Action Research paper
 - c. Present content-based lesson integrating action research findings, digital fluencies and 21st Century pedagogy(Final) – see 4c

Course Modules:

Week 1 – Module: 1 - 21st Century Learning – The Changing Landscape

- 21st Century Pedagogy
- 21st Century Educator
- 21st Century Student
- Bloom's Taxonomy
- Book Study - *Using Technology with Classroom Instruction that Works*
- Technology Integration Models - LoTi / HEAT / SAMR / TPACK
- Digital Tools: Edmodo - Communication and Collaboration
Integration Technology Models Assignment
- Digital Tools: Google Docs – Collaboration
- Blended/Front Loading/Flipped Assignments:
 - 1-Why Integrate Technology - <http://www.edutopia.org/technology-integration-introduction>
 - 2-Technology Integration Models - <http://www.youtube.com/watch?v=gYYcvADUovY>
 - 3-Web Literacy - <http://novemberlearning.com/educational-resources-for-educators/teaching-and-learning-articles/why-more-schools-arent-teaching-web-literacy-and-how-they-can-start/>
 - 4-The Digital Generation - http://youtu.be/MsHhbac6f_g

Week 2 – Module 2 –Technology Integration and Meaningful Engagement

- Book Study – *Web Literacy for Educators*
- Web2.0 Tools - <http://www.livebinders.com/play/play?id=942527> and <https://delicious.com/>
 - Assignment: Delicious activity (option: Symbaloo) Due Thursday, July 24, 2014
- 21st Century Fluencies – <http://globaldigitalcitizen.org/21st-century-fluencies/>
 - Assignment - Blogging - <http://time2integrate.blogspot.com/>
- The Flipped Classroom - <http://www.the3techninjas.org/#!flipped-classroom/c19h1>
- Assessing Digital Integrations/Projects – Rubrics - <http://rubistar.4teachers.org/>
- Creating with Digital Tools: Edmodo - Communication and Collaboration
 - Assignment 1 – Digital Fluencies activity – Due Friday, July 18, 2014
 - Assignment 2 – Digital Fluencies activity – Due Saturday, July 19, 2014
- Blended/Front Loading/Flipped Assignments:
 - 5-Global Digital Citizenship
<http://globaldigitalcitizen.com/21st-century-fluencies/global-digital-citizenship/>
 - 6-Flipping the Classroom
<http://youtu.be/nTFEUsudhfs>

Week 3 – Module 3 – Researched-based Technology Integration

- Group Presentations: Book Study - *Using Technology with Classroom Instruction that Works*
- Action Research Project
 - Introduction and assignment details
 - Select focus
 - Clarify theories
 - Establish research question
- Assignment - Web2.0 *Delicious* Resources - Due Thursday, July 24, 2014

Week 4 – Module 4 – Technology Integration in Action

- Action Research Project
 - Data collection
 - Data analysis
 - Reporting results
 - Taking informed action
- Digital Citizenship Lesson Plan – Due Monday, July 27, 2014
- Flipped Classroom Lesson Plan – Due Wednesday, July 30, 2014
- Action Research Paper submission – Due Friday, August 1, 2014

Week 5 – Module 5 – Transforming Instruction with Technology

- Final Lesson Presentation– content-based lesson integrating action research findings, digital fluencies, 21st Century pedagogy and assessment tool.
- Technology Integration Reflection – Due Wednesday, August 6, 2014
<http://youtu.be/ebJHzpEy4bE>

Course Grading Matrix

Instrument	Weight	Notes
Professional Learning Community (PLC) Collaboration and Communication	8	Complete communication postings as designated using selected resources (Edmodo, blog, and various digital tools) Complete collaboration activities using digital tools
Book Study Presentations	15	Book Study discussions by group/assigned chapters/activities <ul style="list-style-type: none"> • <i>Using Technology with Classrooms that Work</i> (10) • <i>Web Literacy for Educators</i> (5)
Digital Tools Projects	20	<ul style="list-style-type: none"> • Digital tools for technology integration (5) • 21st Century Fluencies (5) • 21st Century Learning (5) • Bloom's Taxonomy (5)
Classroom Integration Project	12	Create a lesson plan integrating technology with an assessment rubric included <ul style="list-style-type: none"> • Digital Citizenship (5) • Flipped classroom model/strategies (5) • Rubrics created for Evaluation (2)
Hybrid/Blended Learning Activities	20	Complete e-assignments and required response postings
Action Research	25	Conducting Action Research (5) Action Research Paper(10) Content/standard lesson plan(10)
Total Points	100	

Grading Legend

90 - 100 = A

80 - 89 = B

70 - 79 = C

60 -69 = D

Below 60 = F

University Policies

Academic Integrity

Academic integrity is a hallmark of higher education. You are expected to abide by the University's code of Academic Integrity policy. Any person suspected of academic dishonesty (i.e., cheating or plagiarism) will be handled in accordance with the University's policies and procedures. Refer to the Student Code of Academic Integrity at <http://www.unt.edu/unt-dallas/policies/Chapter%2007%20Student%20Affairs,%20Education,%20and%20Funding/7.002%20Code%20of%20Academic%20Integrity.pdf> for complete provisions of this code.

In addition, all academic work submitted for this class, including exams, papers, and written assignments should include the following statement:

On my honor, I have not given, nor received, nor witnessed any unauthorized assistance that violates the UNTD Academic Integrity Policy.

Bad Weather Policy

On those days that present severe weather and driving conditions, a decision may be made to close the campus. In case of inclement weather, call UNT Dallas Campuses main voicemail number (972) 780-3600 or search postings on the campus website www.untdallas.edu. Students are encouraged to update their Eagle Alert contact information, so they will receive this information automatically.

Attendance and Participation

The University attendance policy is in effect for this course. Class attendance and participation is expected because the class is designed as a shared learning experience and because essential information not in the textbook will be discussed in class. The dynamic and intensive nature of this course makes it impossible for students to make-up or to receive credit for missed classes. Attendance and participation in all class meetings is essential to the integration of course material and your ability to demonstrate proficiency. Students are responsible to notify the instructor if they are missing class and for what reason. Students are also responsible to make up any work covered in class. It is recommended that each student coordinate with a student colleague to obtain a copy of the class notes, if they are absent.

Diversity / Tolerance

Students are encouraged to contribute their perspectives and insights to class discussions. However, offensive & inappropriate language (swearing) and remarks offensive to others of particular nationalities, ethnic groups, sexual preferences, religious groups, genders, or other ascribed statuses will not be tolerated. Disruptions which violate the Code of Student Conduct will be referred to the Office of Student Life as the instructor deems appropriate.

Students with Disability Act (ADA Compliance)

The University of North Texas Dallas faculty is committed to complying with the Americans with Disabilities Act (ADA). Students' with documented disabilities are responsible for informing faculty of their needs for reasonable accommodations and providing written authorized documentation. Grades assigned before an accommodation is provided will not be changed as accommodations are not retroactive. For more information, you may visit the Student Life Office, Suite 200, Building 2 or call Dr. Chapple at 972-338-1779 or 972-338-1779. **(Meets QM Standard 7.2)** Revised Fall 2013