

George Mason University
College of Education and Human Development
Learning Technologies in Schools

EDIT 783.6N1– Designing for Problem Solving
3 Credits, Spring 2020
Wednesday 7:20-10:00 pm Room 208 Mason in Loudoun

Faculty

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Prerequisites/Corequisites

Corequisite: EDIT 782

University Catalog Course Description

Examines problem solving as an educational goal, as a cognitive process, and as a series of strategies and habits of mind. Emphasizes and provides practice in the design of digital problem solving environments where technology affords opportunities at the intersection of content learning and problem solving.

Course Overview

Not Applicable

Course Delivery Method

The nature of course delivery uses a blended delivery approach, weekly combining asynchronous online and face-to-face instruction. Blended learning is the thoughtful fusion of face-to-face and online learning experiences. Blended learning is not an addition that builds another layer of instruction. Rather, it represents a restructuring of course activities and assignments to enhance engagement and to extend access to a range of web-based opportunities. Blended learning emerges from an understanding of the relative strengths of face-to-face and online learning to provide learning activities consistent with course goals. Blended learning combines the properties and possibilities of both to go beyond the capabilities of each separately.

Learner Outcomes or Objectives

This course is designed to enable students to:

1. develop a comprehensive understanding of problem-solving as a digital learning goal;
2. develop a comprehensive understanding of the connection between problem-solving and content learning goals;
3. develop a comprehensive understanding of design principles, processes, and patterns for promoting problem-solving within the context of content learning goals;
4. develop comprehensive knowledge of technologies that afford PreK-12 learners' ability to develop problem-solving within the context of content learning goals; and
5. design learning opportunities for PreK-12 learners at the intersection of effective design, technology affordances, and content that promote problem-solving.

Professional Standards

Upon completion of this course, students will have met the following professional standards:

The Designing Digital Learning in Schools (DDLS)-CERG certificate and 6 course core of the MED concentration (DDLS) is informed by the International Society for Technology in Education Standards for Teachers (ISTE Standards•T) (<http://www.iste.org/standards/standards-for-teachers>). For the purposes of evaluation of performance-based assignments and program assessment, the ISTE standards have been collapsed and restated to better reflect program goals. Thus, DDLS-CERG and DDLS concentration standards are:

- Standard 1: Content Knowledge and Reflective Practice - Student demonstrates reflective practice through thoughtful, comprehensive descriptions of their learning with clear connections to concept/theories studied, personal teaching beliefs, experiences, and learning goals, technology's role in supporting and extending learning, and the design of teaching and learning in classroom settings.
- Standard 2: Knowledge of Tools and Designing Instruction - Student demonstrates ability to use a variety of technology tools to produce products that reflect appropriate mechanics, principles of design, and appropriate technology affordances
- Standard 3: Connections to Practice – Designing Learning Opportunities - Student demonstrates understanding and ability to use a variety of technology resources integrated with classroom practice that includes an authentic problem, integration of instructional principles of design, connections with content learning, assessment of learning outcomes, and teacher reflection on implementation.

Required Texts

1. Pink, D. (2005). *A whole new mind: Moving from the information age to the conceptual age*. New York: Riverhead Books.

2. Toppo, G. (2015). *The game believes in you: How digital play can make our kids smarter*. New York: Palgrave Macmillan.
3. Ritchhart, R., Church, M., & Morrison, K. (2011). *Making thinking visible: How to promote engagement, understanding, and independence for all learners*. San Francisco, CA: Jossey-Bass.
4. Selected articles and web resources.

Course Performance Evaluation

Students are expected to submit all assignments on time in the manner outlined by the instructor (e.g., Blackboard, Tk20, hard copy).

- **Assignments and/or Examinations**

1. Lesson Design Document (10 points) - Student will submit a design document detailing the design of a lesson appropriate for their teaching context. Rubric and format will be provided in class.
2. Hypermedia Instructional Game (30 points) – Student will create a design document for an instructional hypermedia game. When design plan is approved, student will produce the project.
3. Online Portfolio (20 points) - Students is required to create and continually revise a professional, online portfolio. This portfolio should not be a collection of what the student has done, but rather a reflection of what they have learned. Templates and assistance will be provided during class to assist students in the creation and maintenance of this portfolio. All exhibits in the online portfolio will include a short reflection. At the end of the semester, a comprehensive, semester-wide reflection and supporting samples of work will be added to the portfolio reflecting student learning related the semester’s work.

- **Other Requirements**

1. Participation is mandatory, as discussions, readings and activities are important parts of the course.
2. Each student is expected to complete all readings and participate in all discussions, both face to face and online.
3. Each student is expected to participate in and complete all projects.
4. Students who must miss either online or face to face activities are responsible for notifying the instructor (preferably in advance) and for completing any revised assignments, readings, and activities.
5. All assignments must be completed electronically. Assignments are to be submitted on the date due. Late assignments will not be accepted without making prior arrangements with the instructor.

- **Grading**

Since this is a graduate level course, high quality work is expected on all assignments. Points for all graded assignments will be based on the scope, quality, and creativity of the

assignments. All assignments are due on the date stipulated in the Schedule of Activities section below. Late assignments will not be accepted without making arrangements with the instructor.

Points will be assigned to all graded assignments using a rubric process. Both course participants and the course instructor will be involved in assessment of graded assignments. Prior to the due date for any assignment, the student will participate in the review and/or development of an assessment rubric. This rubric will provide course objectives and an elaboration of qualities and components associated with excellence in completion of the assignment. See rubric(s) below.

Requirements	Points
Course Participation ¹	40
Online Portfolio	20
Lesson Design Document	10
Hypermedia Instructional Game	30

Grade	Point Range
A	94-100
A-	90-93
B+	86-89
B	80-85
C	70-79
F	69-below

Professional Dispositions

See <https://cehd.gmu.edu/students/policies-procedures/>

¹ Course participation is inclusive of both face to face class participation in all discussions and activities as well as the extensive activities and discussions which occur on the course Blackboard site as part of the blended learning format of the course.

Class Schedule

Topic (Two weeks each)	Face to Face Meeting	Online Collaborative Activities	Individual Activities
A Whole New Mind	Syllabus, Course Expectations Portfolio New Tools and Collaboration Strategies Course Themes, Connections to Design Principles Introduction to Raps	Use online tools to collaborate to write A Whole New Mind Rap	Read Daniel Pink's <i>A Whole New Mind</i> Review links on Blackboard to learn about coding
Thinking, Problem-Solving, and Coding	Perform Raps Discuss coding and problem-solving Meet Sphero Meet Logo	Use online tools to collaborate to create a Logo Design Document for a computer program	Read Ritchhart & Church's, <i>Making Thinking Visible</i> – Chapters 1, 2, and 3 Add Pink Rap and reflection to portfolio
Exit Coding; Enter Gaming	Discuss Ritchhart & Church's <i>Making Thinking Visible</i> Advanced Sphero Activity Turn Logo Design Document into a Program Share Logo Programs		Review links to Arcade, Skills, Problem-Solving, and Interactive Fiction Games posted on Blackboard Read first half of Toppo's <i>The Game Believes in You</i> Read Ritchhart & Church's <i>Making Thinking Visible</i> – Chapter 4 Complete first section of Lesson Design Document and post Add Logo Design Document and a reflection to Portfolio
Exploring and Designing Games	Discuss game links Discuss Ritchhart & Church's <i>Making Thinking Visible</i> Introduction to Hypermedia Games and Problem-Solving Violence in the Media – a role playing game	Spend at least 3 hours playing online simulation – link provided on Blackboard Use online tools to collaborate to create a Hypermedia Content Game Design Document	Finish Toppo's <i>The Game Believes in You</i> Select 10 quotable quotes from Toppo; Print and bring to class Read Ritchhart & Church's <i>Making Thinking Visible</i> – Chapter 5 Add second section to Lesson Design Document and post
Together At Last - Design Documents, Doing, and Making	Quotable Quotes Round Robin Use collaborative design document to create Hypermedia Content Game		Work on individual portions of Hypermedia Game Read Ritchhart & Church's <i>Making Thinking Visible</i> – Chapters 6 and 7 Finish Lesson Design Document by adding third section and Post to Blackboard

Games and the Art of Persuasion	DUE – Lesson Design Document Use collaborative design document to finish Hypermedia Content Game What is an essay? The End of Allusion Write an essay using arguments from Ritchhart & Church’s <i>Making Thinking Visible</i> to parents supporting thinking in classrooms	Use online tools to collaborate to create a write an essay supporting games in the teaching/learning process – use template presented in class Choose a Lesson Design Document posted on Blackboard and review and critique it	Add Hypermedia Content Game Design Document and a reflection to portfolio Add Lesson Design Document and a reflection to portfolio
Thinking, Coding, and Games Go to School	DUE – Hypermedia Game and Share in Class Review Ben Stein Essay Review video making process Create Storyboard Begin filming – green screens and talking heads	Work together to find, select, and organize images for game video	Add a course summative and lessons learned section to portfolio
Transitioning to Literacy	Due – Portfolio Insert images into video Finish and Publish Sharing Videos Introduction to Literacy		Read Eisner’s Cognition and Curriculum Add a link to you video essay and a reflection to portfolio

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

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 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.

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

Additional Course Content

	Exceeds Standard 30 points	Meets Standard 15 points	Fails to Meet Standard 5 points
Hypermedia Instructional Game	Implements creatively all components of the hypermedia content template, presents a robust design plan, Creatively reflects principles of good design, Reflects thoughtful and well-constructed content	Implements all components of the hypermedia content template, presents an adequate design plan, Reflects principles of good design, Reflects appropriate content organization	Has missing components of the hypermedia content template, design plan not well conceived, Principles of design poorly implemented, Content selection fails to address intended audience