

**TED 5319 Special Topic:
Research of Toys and Gamification in STEM Education**

University of Texas at El Paso
College of Education, Department of Teacher Education

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Office Hours	Education Building 201 T & W 10:00 am– 1:00 pm (Other time by appointment)	
Class Format	100% Online Course	
This syllabus is subject to change as needed.		

I. Rationale for the Course

This course provides an in-depth exploration of the role of toys and gamification in K-12 STEM Education. It also covers the role of play in human development and learning. The course will provide foundational knowledge in the field that can be used and applied in the culminating experience/capstone course for the MA in ED-STEM Education program.

II. Course Description

This course focuses on research related to the fusion of toys, games, music and sports with informal and formal STEM Education. Theories and research on the role of play in human learning and development will also be addressed. Students will explore the pedagogical significance of, and guidelines for, the use of toys and gamification in K-12 STEM curricula.

III. Course Objectives/Purpose

Upon completion of this course, students will demonstrate the ability to:

- Evaluate the role of play in the physical, emotional, social and intellectual development in K-12 Education;
- Analyze biological and socio-cultural theories and related empirical research regarding play in K-12 education;
- Conceptualize the pedagogical relationship between STEM Education, everyday life and pop culture;
- Deconstruct play/game based learning theories, curriculum theories and their related implications for K-12 STEM Education teaching practice;
- Compare major approaches to game-based learning in terms of their: curricular focus, teaching methods, design of interactions and use of environmental/educational materials.

IV. Possible Materials (Texts and/or Readings)

- *How people learn: Brain, mind, experience, and school.*
- *How people learn II: Learners, contexts, and cultures.*
- Assigned articles provided in Blackboard (See general calendar)

Course Objectives/Student Learning Outcomes

<i>Students enrolled in this section will have multiple academic goals to achieve:</i>	<i>Instructor will use following assessments to evaluate students' learning outcomes</i>
1. Evaluate the role of play in the physical, emotional, social and intellectual development in K-12 education	a. Course graded assignments b. Critical Reflection
2. Analyze biological and socio-cultural theories and related empirical research regarding play in K-12 education.	a. Course graded assignments b. Weekly discussion
3. Conceptualize the pedagogical relationship between school education, everyday life and popular cultures.	a. Course graded assignments
4. Deconstruct play/game based learning theories, curriculum theories and their related implications for K-12 education teaching practice.	a. Course graded assignments b. Weekly discussion
5. Compare major approaches to game-based learning in terms of their: curricular focus, teaching methods, design of interactions and use of environmental/educational materials.	a. Final Paper b. Individual Meeting

V. Student Requirements/Assignments

A. Critical Article Reflections (80 points total)

Each week you will write a comprehensive critique report (no less than 400 words) for the assigned articles. Not to just summarize the contents, the key task is for you to synthesize EVALUATE the texts. A critique does not necessarily have to criticize the piece in a negative sense. Your reaction to the text may be largely positive, negative, or a combination of the two.

B. Discussion Postings and Discussion Feedback (16 points total)

Each week, you will out up a discussion posting based on the given prompt. For the weeks that required "Feedback to Classmates' Postings" are assigned (see detailed directions outlined in the individual weekly class sessions in our online course site), you will offer:

- Feedback to TWO classmates' Discussion Postings: (2 points for EACH feedback x 2 responses = 1 points per class session x 8 class sessions= 8 points total)
- Feedback to TWO classmates' Critical Reflections: (2 points for EACH feedback x 2 responses = 1 points per class session x 8 class sessions= 8 points total) Note: you do not have to give feedback to the same student for each type of response (Discussion and Critical Reflection) in any given class session. Please do not provide feedback to the same classmate every week. Instead, you should always try to respond to a classmate who does not already have feedback and/or who you have not provided feedback before.

C. Weekly Assignments [Mission for the Assistant Principal] (100 points total)

Each week, you will have assigned mission to complete related task for a whole school of students. You will then compose a whole school pedagogical guideline shares your thoughts and

insights in a particular topic. Mission for the Assistant Principal should be at least 400 words total (you will include the word count at the end). Missions for the Assistant Principal are due by midnight MT on Sunday of the weeks that they are assigned. [50 points x 6 reflections = 300 points total]

- Warm-Up Mission 1: Playdoh
- Warm-Up Mission 2: LEGO
- Mission 1: Commercial toys
- Mission 2: Makerspace
- Mission 3: Re-invention of traditional resources
- Mission 4: Space, air, sound, lights and water as educational resources
- Mission 5: Evaluation of play and learning

D. Personal Position Statement on Play and Gamification in STEM Education (20 points)

Your final paper is the creation of a Personal Teaching Statement on Play and Gamification in STEM Education. It is meant to both showcase the knowledge you have gained over the semester and to solidify your beliefs on pedagogy in STEM education. Your portfolio will consist of the following six sections:

Section 1: Opening

Section 2: Your personal definition of Play and its role in STEM education

Section 3: The role of Play in mathematics and science

Section 4: The role of Play in technology and engineering

Section 5: The role of Play in informal STEM learning

Section 6: Concluding Statement

General Calendar

Changes may be made in this syllabus when judged appropriate by the instructor

Dates	Class Topics/Activities		Reading
Week 1	Module 1 Big Ideas of Theories	<i>What's wrong in our current education?</i>	<i>How people learn Chapter: 1 & 2</i> Willingham (2009) Biddle et al. (2013) White (2012)
Week 2		<i>Who says "No" to play and why?</i>	<i>How people learn Chapter: 3 & 5</i> Hmelo-Silveraaa (2007) Kirschner et al. (2006) Sweller et al. (2007)
Week 3	Module 2 Let's Fill Toys into Our Classrooms	<i>Commercial toys as learning resources</i>	<i>How people learn: Chapter 6 & 7</i> Francis (2010) Yelland (2011) Project Zero (2016)
Week 4		<i>Developing a makerspace for promote learning</i>	<i>How people learn: Chapter 4 & 8</i> Cohen (2017) Kurti (2014) Sandberg (2011)
Week 5		<i>Re-invention of traditional manipulatives, toys and game</i>	<i>How people learn II: Chapter 1 & 2</i> Wood (2013) Katz (2015) Carr & Luken (2014)
Week 6		<i>Space, air, sound, lights and water as educational resources</i>	<i>How people learn II: Chapter 4 & 5</i> Aiono (2019) Pyle & Daniels (2016) Samuelsson & Joahnsson (2006)
Week 7	Module 3 Research Development for Play	<i>How do we assess learning through play?</i>	<i>How people learn II: Chapter 6 & 7</i> Kelly-Vance & Ryalls (2008) Edwards (2017) Taylor & Boyer (2019)