# Computers for Learning
# CMSC 209 / 309, MADD 209

Prof. Diana Franklin

# Course Overview

- Learn about Learning
- Learn about Game Design
- Implement a learning application
  - Integrating what you've learned about learning
  - Designed for someone not just like you

# Learning about Learning

- Readings on learning
  - Extra research papers for graduate students
- Writing reflections connecting readings to your own learning
- Discussing your reflections during class
- Engaging in some active learning activities in class

# Designing a Learning App

- Textbook:
  - **Introduction to Game Design, Prototyping, and Development: From Concept to Playable Game with Unity and C#** 3rd Edition
- Learn many dimensions of game development
- There are lots of player types, things that engage players
- **Design** for all players with no resource limits
- **Implement** only a subset of design

# Implementing a Learning App

- Textbook:
  - **Introduction to Game Design, Prototyping, and Development: From Concept to Playable Game with Unity and C#** 3rd Edition
- Work in groups of 2-3
- Unity – a 3-d game engine
- C# - an object-oriented language built on the C language

# Implementing a Learning Application

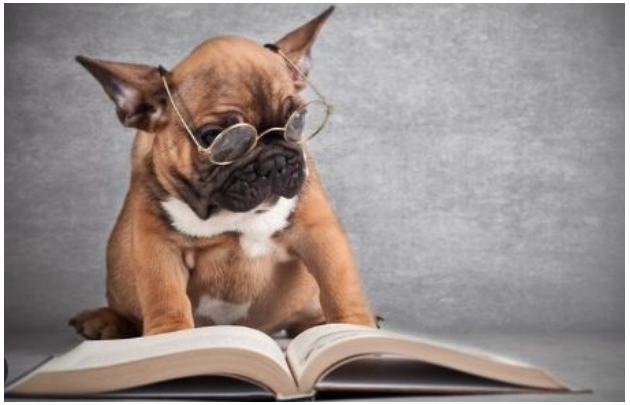
- Design
  - Profiling your own learning
  - Identifying a user (not just like you)
  - Designing a game
- In-class Activities
  - Initial design workshop
  - Final design flash talk video
- Video demonstrating the use of your MVP app
- Paper describing the relationship between your design and the concepts learned in the readings

# Structure of Class

- Asynchronous Independent Learning
- Synchronous, Collaborative Learning
- Assessment

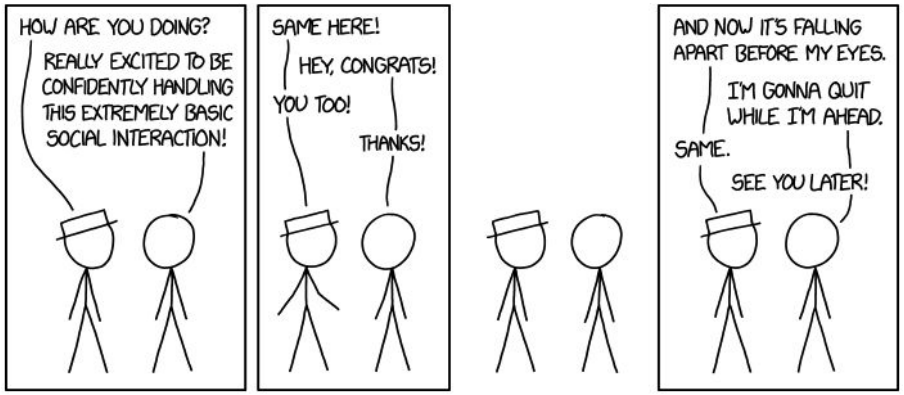
# Asynchronous, Independent Learning

Readings, Videos, HW Questions




# Synchronous Learning

- Me: Ask me questions about material
- Others: Peer Discussions during Class
- Activities: Engage in different types of learning




**Bring your laptop to record group discussions**

# Assessment

- Programming labs
- Written project design milestones & final design
- Exam – 11/12 Take home, untimed
- Minimum Viable Product implementation

# Grading

- 4 Categories:
  - Reading Questions & Participation
    - You can miss 2 each w/out penalty
    - Looking for depth of thought w/ participation
  - Midterm
    - Combo of C# + design + education
  - Labs
    - Attendance - 0-4% - boosts your lab grade
    - Grading - 21-25%
  - Final Project
  - people.cs.uchicago.edu/~dmfranklin - click on 209
  - https://www.classes.cs.uchicago.edu/archive/2025/fall/20900-1/

# Late Policy

- 4 Categories:
  - Reading Questions & Participation
    - You cannot turn in late
  - Midterm
    - You cannot turn in late
  - Labs
    - < 24 hours, 10% off, 24-48 hours, 20% off
  - Final project milestones
    - < 24 hours, 10% off, 24-48 hours, 20% off
  - Final Project
    - You cannot turn in late

# Logistical questions?!?

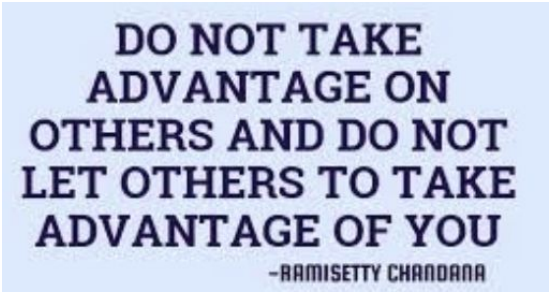
# The Golden Rule


Oh, I'm sorry.
I forgot I only
exist
when you need
something.




How
The Golden Rule
is actually really (kind of) super
WRONG
CHANGE MY MIND

# Levels of The Golden Rule



# Levels of Educational Design

| | |
|---|---|
| Design success for **many people** unlike you | **Flexibility** |
| Design success for someone **unlike** you | **Listening, Empathy** |
| Design **success** for someone like you | **Introspection, self awareness** |
| Design **fail** for someone like you | **Lack of self awareness** |

# Why is sharing important?

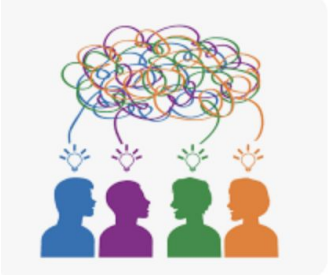
**Listening, Empathy** **Flexibility**

- You can learn from others' learning experiences.
- Others can learn from your learning experiences.
- Learning about what didn't work for others helps us design better.

# Group up!

- Groups of 2-3
- Introduce yourself
  - Name, major, why you are taking this class
  - What is a positive educational moment in your life

# What is required for sharing?



- The entire purpose of sharing is to learn from others not like you.
  - What is normal to you is not normal to others
  - Struggles, challenges are all a normal part of the learning process
- Respectful exchanges

# What is a respectful exchange?

**Respectful words / actions**

- Listening and waiting until someone finishes their thought
- Ask follow-up question before responding if you're confused
- Positive body language - eye contact, etc.
- Acknowledge their point before giving counterpoint
- Ask someone what their opinion is of something

**Disrespectful words / actions**

- Changing the subject without acknowledging what they shared
- Interrupting
- Messaging someone in the middle of the night
- Dominating the conversation
- Dismissing someone's perspective

# What is a respectful exchange?

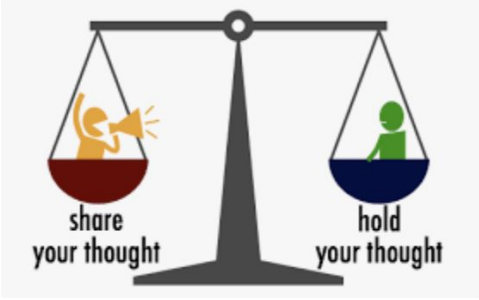
**Respectful words / actions**

- Allowing others to speak - don't dominate conversation
- Asking follow-up questions
- Eye contact + nodding (non-verbal agreement)
- Allowing for people to not always be ready with a response

**Disrespectful words / actions**

- Minimizing someone's challenges
- Being dismissive of others' questions
- Disagreeing with something subjective
- Sharing what you heard to someone outside this class

# What is required for sharing?



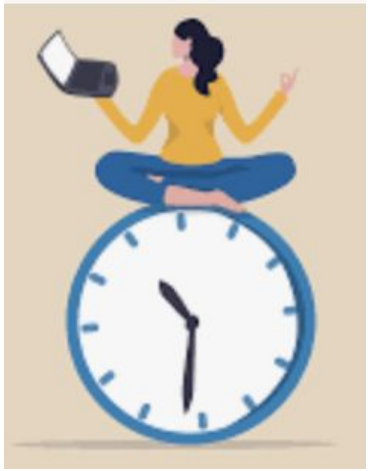

- The entire purpose of sharing is to learn from others not like you.
  - What is normal to you is not normal to others
  - Struggles, challenges are all a normal part of the learning process
- A safe space
  - Only positive responses to sharing
  - Only positive statements about others
- We must all respect, inside and outside the classroom, each others' experiences

# What makes a good partner?

**Helpful actions**

**Unhelpful actions**

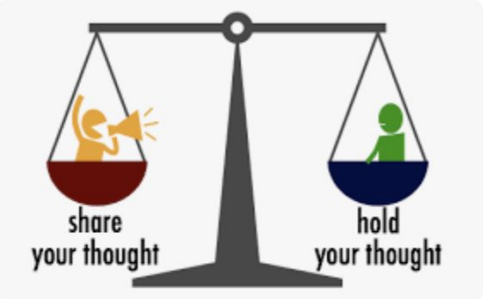
# Being a Good Partner: Prep



**On Time**

**Prepared**

# Being a Good Partner: Design




**Listen**

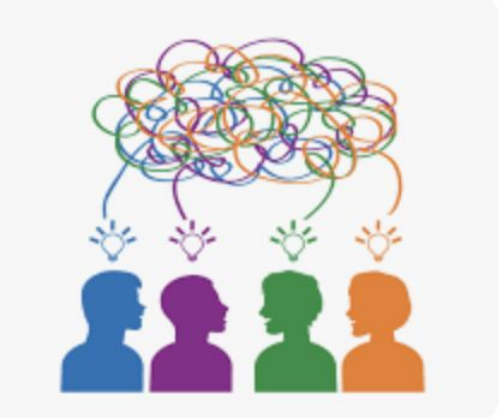

**Positive Mindset**

**Refine, not Reject**

**Many users, Many ideas**

**Filter later**

# Being a Good Partner: Joint Work



**Discuss,**
**not Dictate**

**Patient,**
**Supportive**

# Being a Good Partner: Solo Work

**On Time**

**Dig for Solutions**

# Learning / Engagement spectrum

**EMOTIONS**

**Evoked Emotions**

**LEARNING**

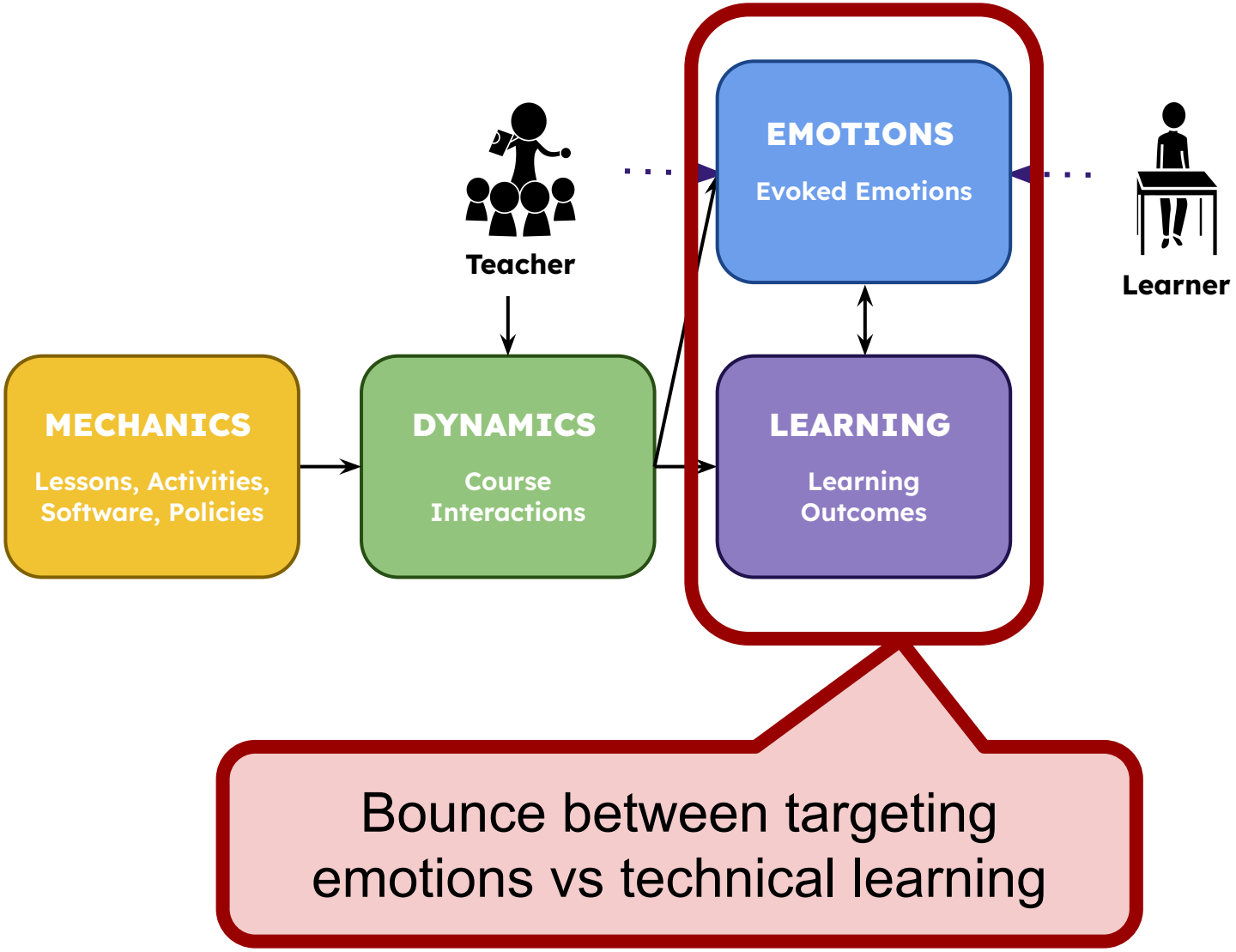
**Learning Outcomes**


***Game*: Fun**, teaches little academic content

*Teaches game skills*

***Lecture***:
Teaches academic content,
***not a game***

# Learning Activity Elements



# Future Prep


Play or

Watch Videos

about Fortnite

Complete 10

DuoLingo lessons

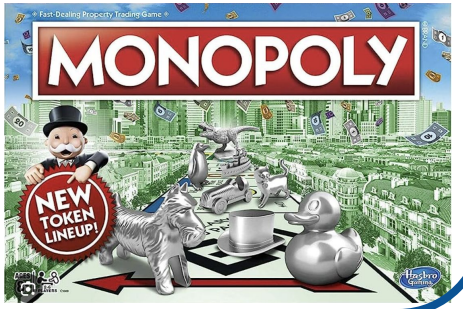
duolingo




Read about or play one of these cozy games

Play Monopoly

online or board



# Learning / Engagement spectrum

**EMOTIONS**

**Evoked Emotions**

**LEARNING**

**Learning Outcomes**


***Game*: Fun**, teaches little academic content

*Teaches game skills*

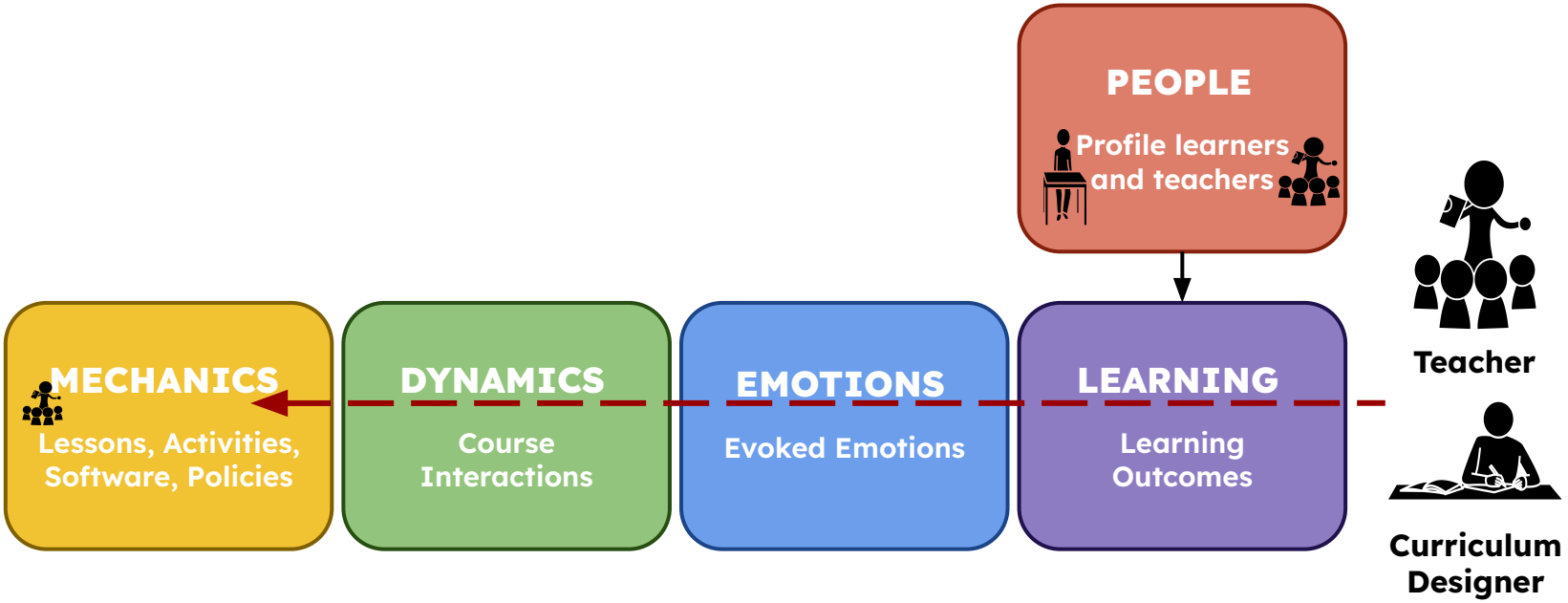
***Educational Game*:**
**Feels** like a game
**Teaches** academic content

duolingo

***Gamification***:
Teaches academic content, *employs game-like incentives*, but **not a game**

***Lecture***:
Teaches academic content,
**not a game**

# Learning Activity Design Path



# You Are a Game Designer!

- As of this moment, you are a game designer…
- and I want you to say it out loud!

**I am a game designer.**

# You Are a Game Designer!

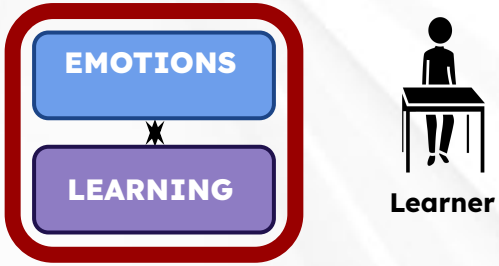
- But, this class is actually teaching you to design more than just games
- The techniques you learn in this class will teach you to design *any* kind of interactive experience:
  - Games
  - Parties
  - Events
  - Learning Experiences
- You're more than just a game designer

**I am an experience designer.**

# You Are a Game Designer!

- Why am I asking you to do this?
- According to Robert Cialdini's book, *Influence: The Art of Persuasion*, people are more likely to follow through if they state out loud that they will do so
- Say it one more time:

**I am a game designer.**



# Bartok: A Game Design Exercise

- Bartok is a classic card game that is similar to the commercial game *Uno*
- All you need to play are three to five players and a standard deck of playing cards
  - Break into groups of 3-5 players each
  - Remove the Jokers from the deck
  - Shuffle the cards

# Bartok: A Game Design Exercise

- **Objective**
  - **Be the first person to run out of cards**
- **Standard Rules:**
  - **Deal 5 cards to each player**
    - The remaining cards become a draw pile
  - **Flip over the top card of the draw pile to start a discard pile**
  - **The person to the left of the dealer plays first, and play proceeds clockwise**
  - **Each player must play a card onto the discard pile that matches the suit or number of the top card of the discard pile.**
  - **If they can't, they must draw a card.**

# Bartok: A Game Design Exercise

- Example

**The player can choose to play any one of the cards highlighted with blue borders (7C, JC, 2H, 2S).**

# Bartok: Asking the Right Questions

- **Analysis**
  - Is the game of the appropriate difficulty?
  - Is the outcome of the game based more on strategy or chance?
  - Does the game have meaningful, interesting decisions?
  - Is the game interesting when it's not your turn?

# Bartok: Modifying the Rules

- **Each group should pick a number (1 – 3)**
- **Based on the number, add the following rule to the game:**
  - **Rule 1:** If a player plays a 2, the person to their left must draw two cards instead of playing.
  - **Rule 2:** If any player has a card that matches the number and color (red or black) of the top card, they may announce "Match card!" and play it out of turn. Play then continues with the player to the left of the one who just played the out-of-turn card. This can lead to players having their turns skipped.
  - **Rule 3:** A player must announce “Last card” when they have only one card left. If someone else calls it first, they must draw two cards (bringing the total number of cards to three).

## WATCH OUT FOR PLAYTESTING FLUKES

- A strange shuffle or other external force can cause one playtest of the game to be very different from others
- You must playtest several times to ensure that you experience an average playtest and not a fluke
- However, you must also note any flukes that happen because they can also happen to players

# Bartok: Asking the Right Questions

- How did the single rule change the game?
- Have the answers to your questions changed?
  - Is the game of the appropriate difficulty?
  - Is the outcome of the game based more on strategy or chance?
  - Does the game have meaningful, interesting decisions?
  - Is the game interesting when it's not your turn?
- Discuss the changes to these answers for each of the three rules
- Changing a single rule can have a drastic effect on the feel of the game!

# Bartok: Making Your Own Rules

- **Now, how do you *want* the game to feel?**
- **Try designing a rule to make the game feel more like this specific emotion**
  - **Change only one rule at a time**
  - **Test with the new rule and see how it feels**
    - You don't need to complete an entire game if the rule really doesn't feel right
  - **Work with your group to make the game your own**

# Bartok: Discussion

- What game feel was your team seeking?
- What rule(s) did your team create?
- How well did they work?

# The Definition of Game

**"A game is the voluntary attempt to overcome unnecessary obstacles"** – Bernard Suits, ***The Grasshopper*** *(1978)*

**"A game is a series of interesting decisions"** – Sid Meier

**"A game is a closed, formal system that engages players in a structured conflict and resolves its uncertainty in an unequal outcome"** – Tracy Fullerton, ***Game Design Workshop*** *(2008)*

**"A game is a problem-solving activity, approached with a playful attitude"** – Jesse Schell, ***The Art of Game Design*** *(2008)*

**"A game is a system of rules in which agents compete by making ambiguous, endogenously meaningful decisions"** – Keith Burgun, ***Game Design Theory*** *(2013)*

# Game Defition

- Which definition resonates most with you?
- What elements of different definitions do you like?
- Take one or more and modify to fit your definition