

Portfolio Project

EDUC 765: Trends and Issues in Instructional Design

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Project Proposal

GDD450/451 – GAME DESIGN SENIOR CAPSTONE

SPONSORING ORGANIZATION

University of Wisconsin – Stout, School of Art & Design,
Department of Game Design & Development

The Department of Game Design & Development offers high quality, challenging academic programs that influence and respond to a changing society. Part of its mission is to preserve and enhance Stout's educational processes through the application of active learning principles. Strong emphasis is placed on promoting excellence in teaching, research, scholarship, and service.

PROJECT DESCRIPTION

UW-Stout currently remains in the top twenty of nationally ranked schools for Game Design & Development, however constant industry growth requires ongoing assessment of learning outcomes, development of skills & technology, and meeting the needs of the students. From my observations, some past projects in GDD450 – “Senior Capstone in Game Design” have fallen short of student and faculty expectations, and it is my belief that addressing these shortcomings in a class of mixed disciplines will require a holistic approach through empowering the students autonomy in learning.

AIM

The aim of this project is to advance class learning and project outcomes through improving students' foundational skills in Design, Communication, and Motivation.

- Confidence in selecting and implementing effective **design** choices improves efficiency. Reinforce ability to make decisions without fear of failure or team retribution. Adopting Agile framework for design practices allowing fluid iteration and regular reflections.
- Effective interpersonal **communication** within a team environment gives students a creative voice and sense of community when they can share their individual skills, ideas, and criticisms. Shared responsibility and accountability come when taking a position of a stakeholder.
- Motivation to conduct autonomous learning and self-directed research as needed. Introduce methods for motivation, and self-directed training, goal setting and task and time management.

TARGET AUDIENCE

The primary audience includes college students in the Game design program who are pursuing a B.F.A. in Game Design Art, or a C.S. in Game Design Programming.

The secondary audience is game design faculty who teach the GDD450/451 - Senior Capstone course.

DELIVERY OPTIONS

This two-semester course repeats every year. Traditionally delivered in a standard classroom lab instruction, however, fall 2020 will be prepared for online or hybrid delivery.

Front-End Analysis: Instructional Need

INSTRUCTIONAL NEED

Program advancement & relevancy:

As an institution, it is important to maintain relevancy by teaching current tools and techniques. A competitive program can yield successful student outcomes and job placement. While UW-Stout games are being recognized at the national level, the expectation to the level of gameplay intricacy, detailed art, and overall functionality continues to grow – driven in part to meet an observed or assumed industry need.

There is a primarily felt need by students to be "better" - however that is subjective to the individual goals or project requirements. As a graduating student looking for employment, is most desirable to contribute to a compelling finished piece.

A secondary comparative need occurred with several faculty after viewing a 2020 GDC (Game Developers Conference) student games competition where many of the top awards appeared “better” in comparison due to perceived art style, scope or complexity.

Student learning & available teaching resources:

Because the class is comprised of two or more educational disciplines; (Art, Programming, & Animation) and several categories of sub-disciplines, (i.e. Game design, Concept Artist, 3D Modeler, Animator, Programming, Texture artist, Physics, AI, User Experiences, & User Interface) much of responsibility of customized training is the responsibility of the individual student. It is important to support students in their ability to conduct research autonomously.

Originally designed for “team-teaching” delivery, this class is now taught by one instructor who may specialize in one, but not all the related disciplines. Current instructors have individual experience in the fields of: Software Development, or Architectural Design, or Art/Animation, and this upcoming year, courses are arranged so that classes overlap, providing each teaching expert ability to interact with each-others classes to provide feedback.

Delivery format:

Learning outcomes can also be affected by class composition, formation process, project emphasis, and instructor. There has been a history of students’ enrollment to “stack” one of the class sections with best available student “talent” to produce the “best” game in terms of experience as well as portfolio. There are other considerations to the class formation as well

- Traditional structure – Students pitch ideas, one is chosen and then game is built
- AAA – Allow students to form a team who desire creating a triple-A style game.
- Client-Driven Project – This upcoming year one section will have an option to work with the MIA (Minneapolis Institute of Art) designing an experience involving a new technology application with photogrammetry.
- Moving forward, it could be possible for the instructor to act more in the role of an Executive producer, "hire" students based on their "applications" to work on a topic chosen by that instructor.

Setting expectations:

At the start of each course, students should be required to acknowledge receiving the syllabus and aware of individual roles and responsibilities. An initial pre-class survey should be given for an instructor to determine the class composite of knowledge, skills, and abilities. There may be a need to customize training per the project or for specific disciplines. Optional categories such as interests, gamer player profile, and preferred learning methods may be beneficial. To ensure that student and instructor goals are meeting expectations, survey results from beginning of semester could be compared

with milestones throughout the semester. Milestone reviews with team(s) and individuals and be alert to gaps in outcomes.

Methods of gathering data: A survey given to incoming students could reveal their goals and expectations of the course learning and outcomes. A survey to students who have completed the course could reveal strengths or weaknesses, and a survey to past students could reveal how applicable the course was to their career or employment. In addition, faculty could research other institutions about their program goals, curriculum, and faculty to find comparative strengths or weaknesses.

Front-End Analysis: Learner Characteristics

LEARNER ANALYSIS

Primary Audience

- Students enrolled in the GDD450/451 Capstone class at UW-Stout
 - Game Design - B.F.A. (Art)
 - Game Design - C.S. (Programming)
 - B.F.A. - Animation

Secondary Audience

- Instructional Staff teaching GDD450/451 Senior Capstone Course
- GDD Graduate Assistant
- Program Director

General Learner Characteristics

- Ages 18-24 for Students
- Completed course pre-requisite GDD325 – 2D Game Design
 - Complete pre-requisite DES350 Game Art & Engines, or both

- CS-326 Programming in Game Engines &
- CS-358 Software Engineering Principles
- Fall 2020 Enrollment – 33% Female, 66% Male.
 - Art: 48% Female 51% Male
 - CS: 16% Female 83% Male
 - Estimate ~3% identify as LGBT or Non-Cis-Gender

Entry Characteristics

- Most are passionate about playing and making video games
- All have some small team experience from previous courses
- Most understand game production requirements per their discipline
- Many have a preference in toolset, coding language, or game engine
- Honors students, leaders on campus, exhibit above-average computer technical skills.

CONTEXTUAL ANALYSIS

Orienting Context

- Learner's goals include; fulfilling the degree program requirements, complete a 3D video game project.
- Perceived Utility: Contributing their skills to a group project and understanding how those skills fit in a production pipeline which mirrors an industry experience, furthering skills in their practice area - making quality art assets and producing a portfolio or self-promotional piece.
- Perceived Accountability: Varies widely. Some have high intrinsic drive, while others are extrinsically motivated.
 - Many lack experience estimating time needed to produce work – often creating an unrealistic project scope.
 - Many are unpracticed in interpersonal communication.
 - Many are resistant to making revisions.
- Misconceptions are:

- The entire production process will be without complication.
- That all design work will require a computer.
- The process is fully “linear” and lacks iteration or compromises.

Instructional Context

- Planning for Fall 2020 will be either on-line or Hybrid delivery. M&W 3hr classes
- MH185 computer lab has independently controlled ceiling lighting allowing for full light, no light, or control for certain rows of lighting. Twenty-four high-performance workstations with dual monitors that are rotatable to portrait-format viewing. Quiet environment with entrances located on one end of the room, and two large-screen monitors make for easy viewing anywhere in the room. Near the far wall, white noise is prevalent from computer machinery in the adjacent room. Interior wall contains windows to the MH184 space which allows for additional light, and increased appreciation of space, however the visibility to other student activity can also cause a distraction.
- MH184 has recently been renovated to an open plan coworking space. Has full fluorescent light, allows for flexible seating, wall-mounted drawing surfaces, however, suffers from a frequent white noise from ventilation system. Can be prone to noisy outbursts from boisterous team activity during or outside of class time. In this space, each of (<6) teams will be assigned a work area for the year. Also contains several large screen Wacom Cintiq digital drawing tablets, and a motion capture studio with green screen.
- Both areas have key card restrictions and are ADA accessible.

Technology Inventory

- Students have access to a wide variety of industry standard production software including Maya, Unity, Unreal, Adobe Suite, Visual Studio, and many more.

- Digital training subscriptions include Pluralsight, Linked-in Learning, and free online training through YouTube.
- Course textbooks includes training on “Unity” game engine.
- Delivery will be through LMS “Canvas” however students often communicate outside of class through other services for chat/voice, and file sharing.
- Each student has a campus-issued Apple or PC laptop. It is under-powered (slow) for many of the high-end applications used in class.
- Due to the recent, unprecedented pandemic, it is requested that students be allowed access to the building or remote access to the workstations and drawing tables that are far more powerful than the University provided student laptops.

Transfer Context

The production skills learned in this class will be relevant to any number of graphics or software development applications.

BFA students tend to pursue careers in:

- Entertainment Industry - Movies or AAA Game work
(i.e. large companies with specialized roles)
- Simulation, Training, Education, Serious games, or Architectural fields
- Multimedia, VR, Mobile, Video Production, Graphic Design, or related field

CS students tend to pursue careers in:

- Game Companies (indie/small) doing gameplay, graphics, or backend programming
- Related programming - Training/Educational, Mobile,
- Other programming fields - Insurance companies, Publishing, web.

Other developed transferable skills:

- Common programming languages include C# or C++, with the Unity or Unreal game engines, respectively.

- Class operates with an Agile framework and 2-week sprints to review progress and revise development. It is a broad approach to experiencing an industry production experience, however many of the techniques built here can apply to AAA game companies.
- Foundational career skills are explored in this class and can provide opportunities for lifelong learning skills; Collaboration with outside organizations, user-centered design, business, marketing, and entrepreneurial skills like getting feedback from user playtest and analysis.

Instructional Impact Based Upon Learner Characteristics

APPLICATION OF LEARNING THEORIES

Instructors may choose to use the Elaboration Theory and epitomize key themes and continue to relate broad and narrow concepts back to the larger production pipeline, and to other related careers. By showing application beyond the task, can improve both relevancy and motivation for adult learners.

The number of intrinsically motivated college seniors varies as they transition into adulthood become self-directed and independent learners.

Students who are reserved may want to participate in the decision-making process yet not voice opinions over other more vocal students. It is important to encourage discussion in and out of large group settings where students are most comfortable and encourage their agency and support within the group.

Some students may desire to explore their own approach to learning, so it will be important to explain advantages of using certain processes or tools and shared goals.

For those who wish to pursue independent studies, it will be necessary to encourage working in parallel and vetting the content before implementing, and potentially disrupting, the team project.

It is also important to recognize the student's Cognitive Load. This class represents a great investment in time that may require self-driven research, independent learning, managing resources and working within a team, along with a great deal of emotional energy required to manage these (often new) responsibilities. Other classes taken concurrently compete for attention, although many will help aid in the capstone production.

Finally - steps should be taken to reduce or eliminate "Crunch." While it may be part of the industry culture to invest long hours of effort late in the process to meet a deadline, it is not conducive to effective learning. Crunch should not be encouraged and avoided through effective project planning.

APPLICATION OF MOTIVATIONAL THEORIES

Kellers ARCS Theory of Motivation, (Attention, Relevance, Confidence & Satisfaction) will be referenced. Supplementing teaching content with video related to current teaching to gain attention, guest speakers can help confirm teaching message and relate to industry, regular feedback from faculty on progress and support will improve confidence. Involving students interested in music implementation as leads to our outside collaboration with Berklee College of Music. Introducing outside play-testers and other faculty to give feedback and critique on project and regular two-week sprint reflections can aid in providing validation and satisfaction to the progress being made.

From my past observations teaching GDD450 Game Design Capstone, many students lost interest or motivation in the project over the course of a year. Other, more structured classes took priority, or there was not a clear direction of where they should

continue. Regular meetings will assist with direction for those unwilling to ask for help. Having a planned social event mid-way in production can give students a stress relief and motivational boost.

IMPACT OF A DIVERSE AUDIENCE ON INSTRUCTION

There is an opportunity to teach through conversation and help relate to real-world applications. With a field that is full of jargon and shorthand terms, it will be imperative to encourage the development of language literacy across the curriculum. This course depends on the combined efforts of and interaction between the Art and CS fields to produce a cohesive project.

Students will be English speaking, with majority from the US and specifically Wisconsin area. There may be a small minority of students from culturally different backgrounds (not from USA) and it is important to try to learn their background. For students who identify with LGBT it will be show solidarity to use preferred pronouns and is also prudent to avoid use of the term “you guys” when addressing the group.

An initial survey will help understand students’ interests; however, it is important for the instructor to not make assumptions to baseline knowledge.

Instructors should explicitly (tactfully) introduce work and teach teamwork expectations in class and in future workplace.

Goal and Task Analysis

GOAL ANALYSIS

Through team-oriented participation, students will demonstrate an understanding of a video game development environment. They will conceptualize a design and create an original 3D video game using the skills of their given discipline.

Students will demonstrate effective communication skills both verbal and non-verbal when interacting with their teammates and instructor.

INSTRUCTIONAL GOAL

Present individual work and describe in full, the process in selecting, researching, and solving a design problem. A verbal and visual presentation will aid the student to share subjective thoughts/feelings about decisions, and objective results. (Cognitive/Affective)

TASK ANALYSIS METHOD

Because this course has varied disciplines and unique or changing roles, with an outcome that may require very different tools or processes, a topical method was chosen.

TASK (TOPIC) ANALYSIS

1. Given a flowchart of the production pipeline, student can locate and describe the requirements of their role and how each role contributes to the overall goal.
 - 1.1. Instructor provides lecture overview of production pipeline
 - 1.2. Student writes their personalized job description with responsibilities. (based on needs of the project & existing and desired skills)
 - 1.2.1. Job description is reviewed by team
 - 1.2.2. Student maps their role onto the flowchart.
 - 1.2.3. Students share their responsibilities with others
 - 1.3. Perform a team role-play exercise by moving a series of assets through the pipeline
 - 1.3.1. Using clay, or tape or sticky notes for each student to physically contribute their content.
 - 1.3.2. Students vocalizes their role and task in the additive process. Use correct terms
 - 1.3.3. Repeat exercise and accommodating for unforeseen “revisions”
 - 1.3.4. Define and discuss what “Done” or “Finished” work means at each stage of the process

2. Teamwork and Communication
 - 2.1. Students take a gamer profile survey to understand their own traits and interests related to gaming
 - 2.2. Students take a brief survey to learn about their personality profile “DISC”
 - 2.3. Compare how they communicate to how others may communicate

3. Demonstrate goal setting, task management, presentation of completed work
 - 3.1. Participate in setting larger team project goals, tasks, and sub-tasks
 - 3.2. Contribute to team task tracking system with appropriate tool(s).
i.e. (Excel, Gant chart, Trello / Kanban board)
 - 3.3. Setup personal task tracking system using appropriate tools
 - 3.4. Prepare a brief sprint planning document
 - 3.5. Regularly update self and team goals and communicate those to the team

4. Upon reaching milestones, provide (per assigned role), the assets, code, or contributions
 - 4.1. Write reflection essay(s) to bring awareness to accomplishment, effectiveness of productivity and aid in future planning.
 - 4.1.1. Present a sprint review - Explain contributions during the last milestone
 - 4.1.2. Student take turn presenting a subject (teach back) they have researched.

Instructional Objectives

TERMINAL OBJECTIVES AND ENABLING OBJECTIVES

Present and describe individual work completed to demonstrate students process in selecting, researching, and solving a design problem.

A verbal and visual presentation can allow student to reflect and share subjective thoughts/feelings about decisions, and objective results using correct jargon/terms.
(Cognitive/Affective)

- Student must present work completed – Evaluate
 - Meet individual expectations as assigned - Create
 - Reflect - List individual tasks and how each aid in achieving the main team goal. – (Understand)
 - Describe the process, the outcome - Analyze
 - Describe any attempts that were unsuccessful and why – (Evaluate)
 - Through typed script or spoken delivery, describe the individual contribution to the project – Create
 - Show improvement in process, design decisions, or quality of work

- Create Presentation
 - Understand basic image resolution and capture techniques (photo/scanning) to create ad insert pleasing visuals (Apply)
 - Use tools to create a slide deck (PowerPoint, Google Slides) – (Apply)
 - Use basic design principles of hierarchy, type, alignment, grid - (Apply)

Enabling Objectives Matrix & Supporting Content

GDD450 – Production Pipeline

Team of approximately 10 total Game Design students. Half in the Game Design Art and Animation discipline, and half in Computer Programming for games.

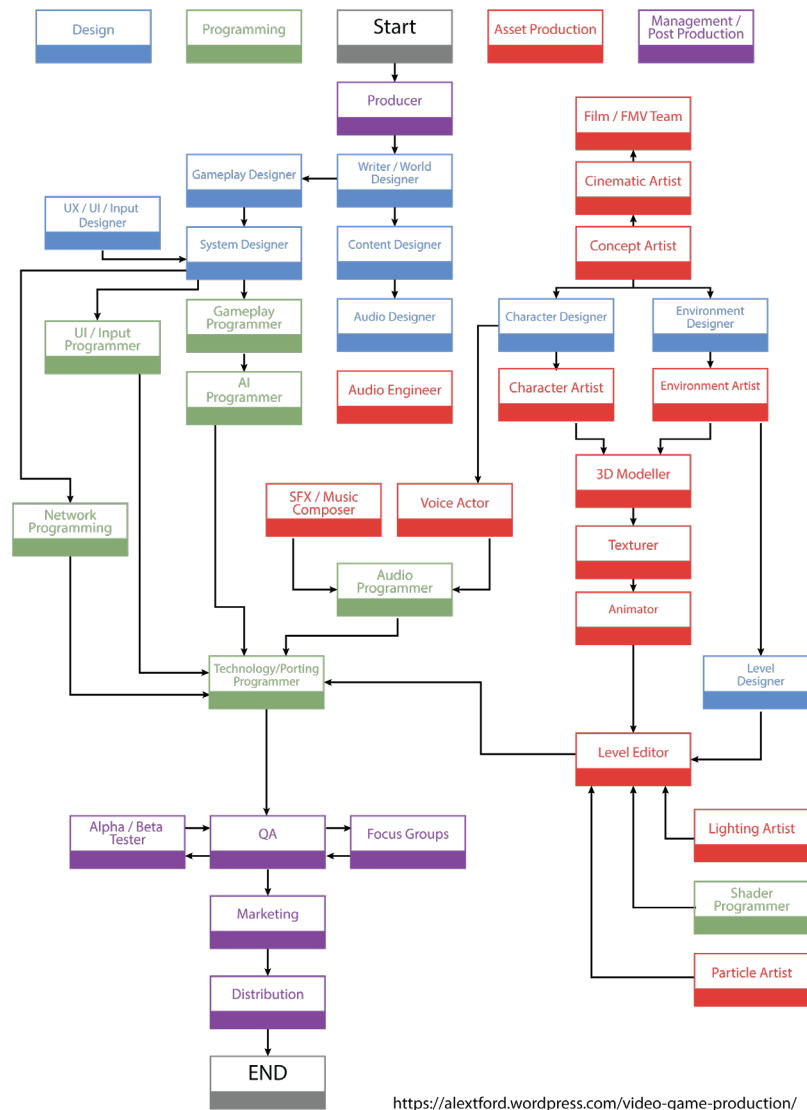
List Terminal Objective Here: Students will demonstrate an understanding of a video game development production pipeline.

List Pre-Instructional Strategy: Overview - Instructor lecture to introduce the topic. Reference includes a poster-sized flowchart of production workflow– print or digital (pdf)

Enabling Objective	Level on Bloom's Taxonomy	Learner Activity	Delivery Method
Learn industry-related role & responsibilities	Knowledge	Student selects role from existing job titles. Read/research position	Lecture/Small group
Demonstrate awareness of applied skills for self and coworkers	Application	Team role-play activity advancing 3D asset or player controller mechanics through the production pipeline.	Small group activity – facilitated by instructor
Apply skills to project needs	Synthesis	Student writes job description based on existing skills, interests and needs of the team/project.	Self-paced
Create custom pipeline with current resources	Create	Group refines pipeline to their specific workflow	Small Group



Production Pipeline for Games Introduction video: <https://youtu.be/dKZ01BcPYFQ>



Flowchart of video game roles and production pipeline

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References

Ford, A. (2015, March 08). Video Game Production. Retrieved June 17, 2020, from <https://alextdford.wordpress.com/video-game-production/>