Curriculum Proposal for Board of Education Curriculum Committee

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Guidelines for Curriculum Proposal

Please provide clear, concise, and thorough statements for each of the following that apply.

A. Current Curricular Description
B. Standards for Learning
C. Expected Student Learning Outcomes
D. Time Requirements
E. Personnel Requirements
F. Facilities/Equipment Requirements
G. Teaching Strategies and/or Methodologies
H. Material/Textbook Needs
I. Costs
J. Schedules
K. Evaluation Procedures
L. Follow-up
M. Other Staff Affected

Building Administrator: Don Eastman **Date:** 11.10.2024

Dept./Gr. Level Chair: Brad Lange **Date:** 11.4.2024

Other Staff Affected:

CURRICULUM PROPOSAL FORM

Proposal must be submitted to the Assistant Superintendent of Curriculum & Instructional Technology

2 weeks prior to a presentation before the Board of Education Committee

Proposal / Course Title: Video Game Development - (VGD) NEW COURSE

The video game industry is one of the largest and fastest-growing entertainment industries in the world. It spans the creation, publishing, and distribution of video games across various platforms, including consoles, PCs, mobile devices, and emerging technologies like virtual and augmented reality.

Staff Member Requesting: Brad Lange **Department/Grade Level:** Business/Technology 10-12

THIS IS A PROPOSAL FOR (*italicize* all that apply):

New Course **Course Content Change** **Instructional Methods Change**

Textbook Review or Change **Other**

Number of Classes: 1

Total Number Students: Sophomores through Seniors who have a passion for Video Game Development

Total Number of Teachers: 1

Requirements (facilities, materials, textbooks, anticipated costs, equipment):

A Current Curricular Description

Dive into the exciting world of video game development with this hands-on introductory course! Designed for aspiring game designers, developers, and artists, this course will guide students through the fundamentals of creating engaging, interactive video games from start to finish. Students will learn core concepts in game design, storytelling, programming, and visual asset creation. Using industry-standard tools such as Unity or Unreal Engine, students will work on developing their own projects, bringing characters, worlds, and gameplay mechanics to life. Throughout the course, we'll explore key topics, including game physics, level design, user interface (UI), and user experience (UX), as well as playtesting and debugging. By the end of the term, students will have built a playable game and gained valuable skills in coding, problem-solving, and creative collaboration. Join us to turn your game ideas into reality and take the first steps toward a career in game development growth and skills gained

B. Standards for Learning &
C. Expected Student Learning Outcomes

Game Design Fundamentals

- Objective: Understand and apply core principles of game design.
- Standards:
  - Identify and apply key elements of game mechanics, dynamics, and aesthetics (MDA).
  - Analyze and implement fundamental gameplay loops and player engagement techniques.
  - Develop storytelling skills specific to interactive media, including narrative structure and player agency.

Programming and Technical Skills

- Objective: Gain foundational programming skills to support game development.
- Standards:
  - Demonstrate proficiency in programming basics (variables, control structures, functions, and classes) using a language like C# or C++.
  - Implement object-oriented programming concepts to develop efficient and maintainable code.
  - Use scripts to manage game events, physics, player input, and interactions within the game environment.

Game Development Tools and Environment

- Objective: Develop competence in using industry-standard game engines and tools.
- Standards:
  - Navigate and utilize core features of a game engine (such as Unity or Unreal Engine) for game creation.
  - Set up, manage, and organize assets, scenes, and project files within the engine.
  - Create and manage visual assets, audio files, animations, and physics components within the game engine.

Art, Animation, and Audio Integration

- Objective: Apply basic principles of digital art, animation, and sound design in game development.
- Standards:
  - Design basic 2D and/or 3D assets for characters, environments, and objects.
  - Create simple animations and integrate them effectively with gameplay actions.
  - Source, edit, and incorporate sound effects and music that enhance the game experience.

Level Design and User Experience (UX)

- Objective: Build immersive levels and ensure user-centered design.
- Standards:
  - Construct levels that effectively balance challenge and reward, supporting player engagement.
  - Apply basic UX principles to create intuitive and accessible player interfaces.
  - Conduct playtesting to gather feedback on gameplay flow, controls, and overall user satisfaction.

Problem-Solving and Debugging

- Objective: Develop strong debugging and troubleshooting skills.
- Standards:
  - Identify and resolve bugs, glitches, and logical errors in code and game mechanics.
  - Use debugging tools within the game engine to test gameplay scenarios and refine game functionality.

- Develop strategies for optimizing game performance and ensuring a smooth user experience.

Project Management and Collaboration

- Objective: Build skills in collaborative game development workflows.
- Standards:
  - Apply agile project management techniques to plan, develop, and iterate on game projects.
  - Use version control systems (such as Git) to manage project files and collaborate with others.
  - Effectively communicate ideas and provide constructive feedback within a team setting.

Ethics and Inclusivity in Game Design

- Objective: Understand the role of ethics, diversity, and inclusivity in game development.
- Standards:
  - Recognize and apply ethical considerations in content creation, including representation, accessibility, and inclusivity.
  - Design games that consider diverse player perspectives and avoid harmful stereotypes or biases.
  - Create options for accessibility to ensure games are playable by a wider audience.

Portfolio Development

- Objective: Develop a personal portfolio of game projects and assets.
- Standards:
  - Showcase a final, polished game project demonstrating an understanding of core game development principles.
  - Organize project assets, documentation, and demos in a professional format suitable for future employment or academic opportunities.
  - Reflect on the creative and technical journey through each project, highlighting areas of

D. Time Requirements

Video Game Development (VGD) course is designed to allow Sophomores through Seniors the ability to sign up for this two-trimester course.

GLHS students would have to complete, as a Prereq, Introduction to Computer Science (One Tri Course), as well as, Computer Science & Software Engineering (Two Tri Course)

- Passing grade of a B or higher.
- Students attitudes and educational philosophy will be a consideration

E. Personnel Requirements

Since this course is new both to me and to the district, I would need opportunities for professional development focused on Video Game Development. I'm eager to explore new and emerging technologies, and Video Game Development is right up my alley!

F. Facilities and Equipment Requirements

The computer lab in Room 2211 at GLHS is currently outfitted with industry-standard hardware. To maintain these standards across all Computer Science courses, the hardware should be included in the district's budget forecast for updates on a four-year cycle. This will ensure our technology remains aligned with industry requirements.

G. Teaching strategies and methodologies

Teaching strategies for a video game development course would focus on combining theoretical and practical approaches, emphasizing hands-on learning, collaborative projects, and iterative design. Mr. Lange would start with foundational concepts in game design, storytelling, and player experience, gradually introducing technical skills in programming, 3D modeling, and animation. Students would work in teams to simulate real-world game development, applying agile methodologies like prototyping and playtesting to refine their ideas. Additionally, incorporating industry-standard tools such as Unity to showcase examples of successful games will prepare students for current industry practices and trends. Regular peer feedback, portfolio-building, and an option for students to take an Industry Standard Certification test to put a stamp on their Video Game Development is key to developing students' creative and technical confidence.

H. Materials and Textbook needs

To teach video game development effectively, the course would require a variety of materials, including:

Software: Industry-standard game engines like Unity or Unreal Engine, 3D modeling software (e.g., Blender, Maya), and 2D art programs (e.g., Photoshop, Krita). Audio tools like Audacity or FMOD would also be useful for creating and editing sound.

Hardware: Computers with sufficient processing power and graphics capabilities, as game development software, can be resource-intensive. Access to VR headsets or mobile devices can help students test different platforms.

Project Management Tools: Tools like Trello, JIRA, or Asana can help students learn agile methodologies and manage their workflows.

Development Documentation: Templates for game design documents, project timelines, and user testing feedback forms to guide students in organizing and presenting their projects professionally.

By combining these materials, students gain the theoretical knowledge, technical skills, and real-world project experience necessary to succeed in game development.

I. Costs

Costs for Video Game Development courses include items such as…

1. Computer Hardware to be set on a four-year cycle of life which include updating of computers hardware and Operating Systems
2. At this time I am thinking of offering students an option of taking Industry Standard Certification tests if they wish to continue on with Advanced Video Game Development the following year. I have seen programs require students to pay for these costs and if/when they pass the exam they will be refunded these costs. These costs include but are not limited to…
    a. Unity Programmer Certification Practice Test -. $40
    b. Unity Programmer Certification Certiport Exam - $130

c. OfficePro Certification Testing Procter Services - $30

J. Schedules

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K. Evaluation Procedures

Define Learning Objectives and Outcomes

- Identify core competencies, such as programming, game design, art/animation, and project management.
- Define specific skills students should demonstrate by the end of the course, such as proficiency in Unity/Unreal Engine, scripting, level design, asset creation, and teamwork.

Assessment Methods

- Formative Assessments: Short quizzes, coding exercises, or mini-projects throughout the course to check understanding and provide feedback.
- Summative Assessments: Major projects or exams that require students to integrate skills across areas (e.g., creating a fully functional game prototype).
- Peer Reviews and Collaboration: Evaluate teamwork by having students participate in group projects and provide peer evaluations to assess collaboration skills.
- Project Presentations: Students present their game projects, allowing for assessment of presentation skills, understanding of game design, and ability to handle questions about their work.

Rubrics and Criteria

- Develop detailed rubrics for each assessment, with criteria such as code quality, gameplay mechanics, artistic style, originality, and overall polish.
- Use point scales for each criterion and provide students with the rubric in advance.

Self-Assessment and Reflection

- Encourage students to reflect on their progress, challenges, and learning experiences. Self-assessment forms can help students identify areas for improvement and reinforce learning.

Feedback Mechanisms

- Instructor Feedback: Provide personalized feedback on student projects and assignments, focusing on strengths and areas for improvement.

- Peer Feedback: Use peer review sessions where students give and receive constructive feedback on each other's projects.

Tracking Progress and Final Evaluation

- Track student progress across multiple skill sets to ensure they develop technical and creative skills.
- Final Project or Capstone: A comprehensive final project that includes documentation of the design process and technical specifications is required.

Course Evaluation by Students

- Conduct end-of-course surveys for student feedback on course content, teaching methods, tools used, and the overall learning experience.

Instructor Review and Course Iteration

- Review assessment results, student feedback, and overall course outcomes to identify any gaps or areas for improvement in future course iterations.

L. Follow up

Not Applicable

M. Other staff affected

At this time I do not believe it should affect any other faculty member.

Student Excitement

If you wish to listen to current students working on their Video Game Development Certification as a Pilot, you may do so by following the link to Langes BOGS (Langes Bunch of Geeks) Podcast.

[Lange's BOGS]