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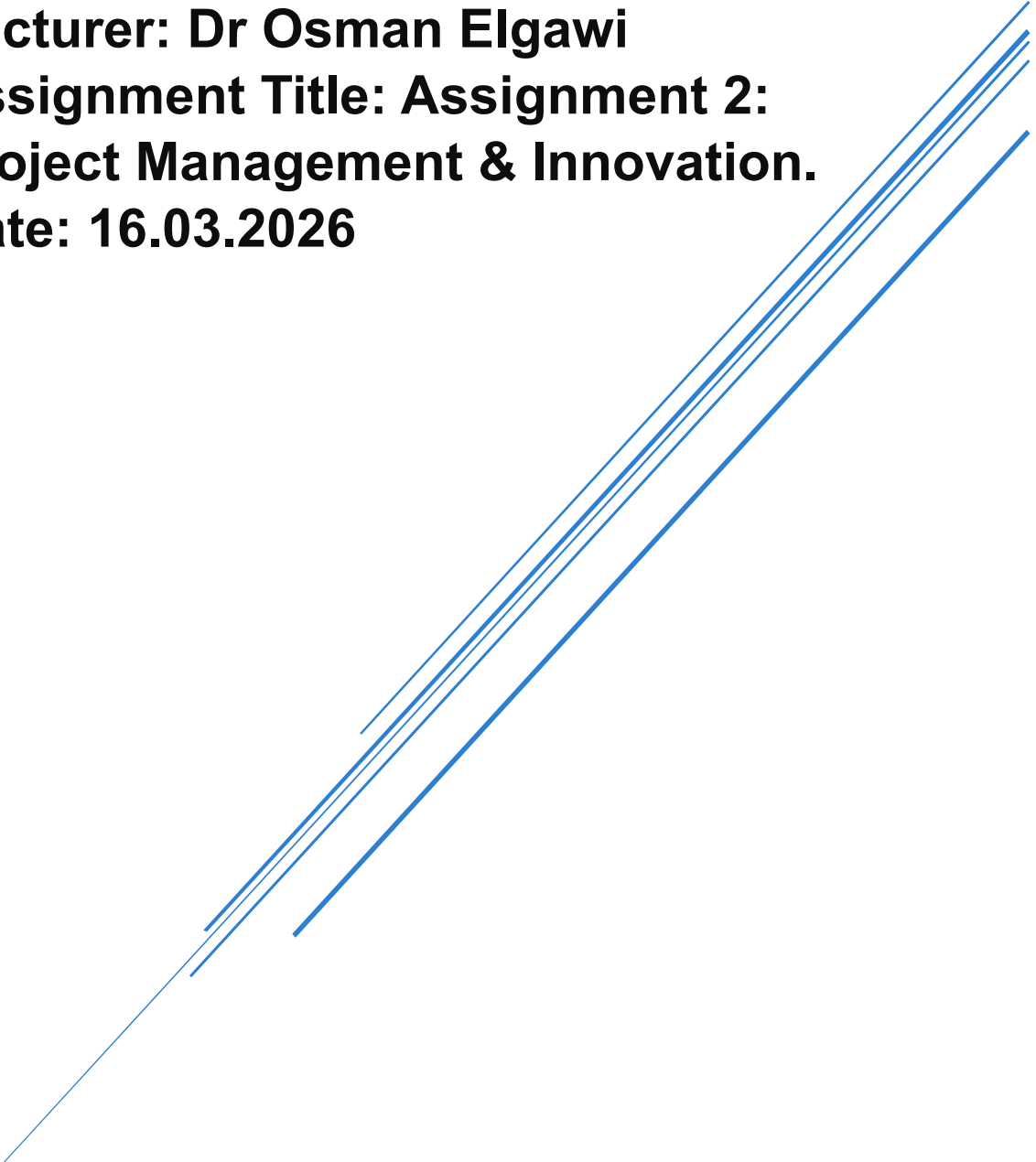
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TASK 1

Q1. Project Management & Planning

Project Overview

DevPlay is a browser-based game development learning platform aimed at undergraduate computing students in UK higher education institutions. The platform addresses a clear gap in the market - while game engines such as Unity and Godot are widely used in industry, there is no dedicated structured learning environment that integrates these tools directly into university curricula [1]. The platform will enable students to write, run and preview game code entirely within a web browser, removing the need to install complex software. University staff will be able to set structured assignments, track student progress and assess submitted projects through an integrated dashboard. Target users: undergraduate students and academic staff on computing and game design programmes at UK universities. Delivery method: web-based SaaS platform, accessible on any modern desktop or laptop browser without installation.

Development Approach

This project will follow the Scrum framework - a structured form of Agile methodology that organises work into two-week sprints [2]. Each sprint will follow this cycle: Sprint Planning → Daily Stand-ups → Development → Sprint Review → Retrospective → Next Sprint A designated Product Owner will represent student and educator needs throughout development, ensuring each sprint delivers genuine user value. A Scrum Master will facilitate the process and remove blockers for the team. Scrum was selected over a traditional waterfall approach because the platform's educational content and technical features are likely to evolve significantly based on early user feedback from university pilot partners.

Technical Stack

Frontend: Vue.js

- chosen for its lightweight performance and component-based architecture suitable for interactive learning interfaces

Backend: Node.js with Express

- provides fast, scalable API services for handling concurrent student sessions

Game Engine: WebAssembly port of Godot Engine

- enables full in-browser game development without plugins

Database: MongoDB

- flexible document storage for student projects and progress data

Hosting: Google Cloud Platform

- scalable infrastructure with built-in load balancing for peak usage periods

Team required:

1. 1 x Frontend developer
2. 1 x Backend developer
3. 1 x Game development specialist
4. 1 x Educational content designer [1]

Milestones & Constraints

MILESTONES:

Month 1 - Research complete, user requirements documented

Month 2 - Platform design approved by university partner

Month 3-4 - Core platform built and internally tested

Month 5 - Beta pilot with student group complete

Month 6 - Platform launched to first university client

KEY CONSTRAINTS:

WebAssembly integration with Godot is technically complex and may require additional development time beyond initial estimates

Educational content creation requires specialist knowledge and cannot be rushed without compromising quality

University procurement cycles are slow partnership agreements must be initiated at least 3 months before planned pilot

Budget of £150,000 seed funding limits team size and restricts ability to run parallel workstreams [3]

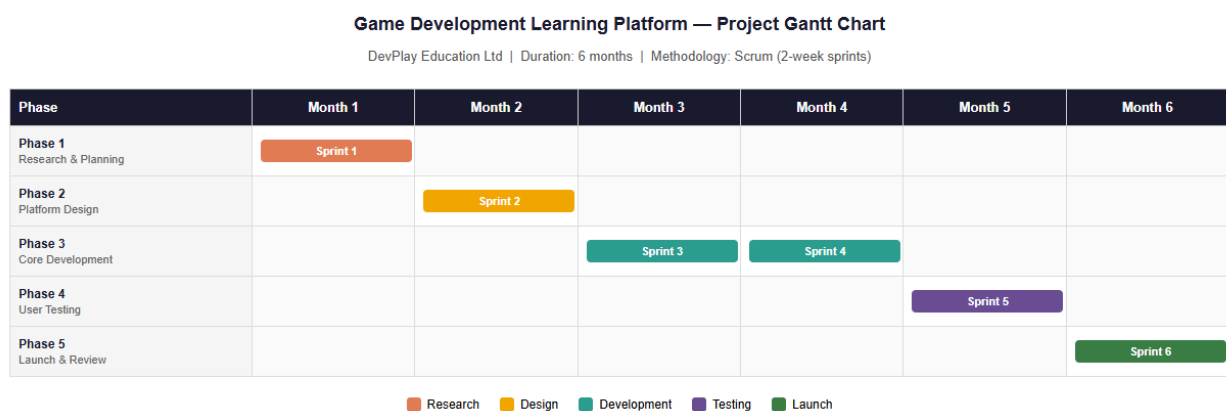


Figure 1 Gantt chart Game Development Learning Platform project timeline

Q2. Project Design

Design Piece 1 - System Requirements

FUNCTIONAL REQUIREMENTS

FR1: The system shall allow students to register and create a personal learning profile

FR2: The platform shall provide structured game development courses from beginner to advanced level

FR3: Students shall be able to write, run and preview game code directly in the browser

FR4: The system shall automatically assess submitted student projects against a defined marking rubric

FR5: Students shall be able to publish their completed games and share them with peers for review

NON-FUNCTIONAL REQUIREMENTS

NFR1: The platform shall support simultaneous access by up to 300 concurrent users

NFR2: Game previews shall render within 5 seconds on standard broadband connections

NFR3: All student project data shall be backed up daily and recoverable within 24 hours of any data loss

NFR4: The platform shall be compatible with Chrome, Firefox and Safari browsers on desktop and laptop devices [4]

Design Piece 2 - Platform Wireframes

The platform wireframe consists of three main screens

SCREEN 1 - Dashboard The student dashboard displays a progress bar showing completion of the current learning pathway, a grid of available courses and a sidebar showing recent activity and achievements. A navigation bar at the top provides access to courses, projects, community and profile sections.

SCREEN 2 - Code Editor View The code editor screen is split into two panels. The left panel contains a syntax-highlighted code editor where students write their game code. The right panel shows a live preview of the game output that updates as the student writes code. Below the editor, a console displays error messages and feedback.

SCREEN 3 - Project Submission The submission screen allows students to add a title, description and screenshot to their project before submitting for assessment. A checklist confirms all requirements have been met before submission is enabled [1].

User Flow Diagram — DevPlay Game Development Learning Platform

Student journey and Educator journey through the platform



Figure 2 Platform wireframe DevPlay student and educator journeys

TASK 2

Q1. PEST & SWOT Analysis

PEST Analysis

Unity Technologies

POLITICAL FACTORS:

UK and EU governments are increasing regulation around digital platforms and data privacy, affecting how EdTech companies handle student data [5]

Growing government investment in STEM and computing education in UK schools and universities creates opportunities for game development education platforms

Political support for the UK games industry - the UK is the largest games market in Europe, supported by Video Games Tax Relief [5]

ECONOMIC FACTORS:

The global games industry was valued at \$197 billion in 2022 and continues to grow rapidly, creating strong demand for skilled game developers [7]

The EdTech market is projected to reach \$605 billion by 2027, presenting significant commercial opportunity for game-based learning platforms

Economic pressure on universities to demonstrate graduate employability drives demand for industry-relevant computing education tools

SOCIAL FACTORS:

Gaming is now the most popular form of entertainment among 18-34 year olds, making game development a highly motivating context for learning programming [4]

Growing awareness of the importance of digital skills is driving demand for practical, hands-on computing education

Increasing diversity initiatives in the games industry create demand for accessible pathways into game development careers

TECHNOLOGICAL FACTORS:

WebAssembly technology now allows full game engines to run directly in web browsers, making browser-based game development education feasible

Cloud computing reduces the cost of hosting complex interactive platforms at scale

AI-powered code assistance tools are increasingly being integrated into development environments, creating new opportunities for automated learning support [5].

SWOT Analysis

Unity Technologies

STRENGTHS:

Unity is the world's most widely used game engine, powering over 50% of all mobile games globally

Strong brand recognition among both students and industry professionals

Extensive existing educational resources through Unity Learn platform

Large developer community providing peer support and shared resources

WEAKNESSES:

Recent controversial changes to Unity's pricing model damaged trust among developers and educators

Steep learning curve for beginners compared to simpler alternatives like Godot

Heavy software requirements limit accessibility for students with lower-spec devices

Limited browser-based functionality compared to web-native alternatives

OPPORTUNITIES:

Growing demand for game development skills in non-gaming industries such as healthcare, architecture and military training

Expansion of game-based learning into K-12 education presents a large new market

Partnership opportunities with universities to embed platform into computing curricula

THREATS:

Strong competition from free alternatives including Godot and Unreal Engine

Open source tools increasingly match commercial engine capabilities at zero cost

Rapid technological change means platforms must continuously update to remain relevant [8]

LEGAL CONSIDERATIONS:

GDPR requires that all student data including project files, progress records and personal information is stored securely and only processed with informed consent [5]

Intellectual property rights must be clearly defined students must retain ownership of games they create on the platform

The platform must comply with the UK Equality Act (2010) by ensuring accessibility for students with disabilities

ETHICAL CONSIDERATIONS:

The platform must ensure equal access regardless of device quality or internet speed to avoid disadvantaging students from lower income backgrounds

Automated assessment systems must be transparent students should understand how their work is being evaluated

Peer review features must include moderation to prevent bullying or unfair criticism of student work

The platform should actively promote diversity in game development by featuring projects from underrepresented groups [5].

Q2. Enterprise Tech Startup

STARTUP NAME: DevPlay Education Ltd

LOGO CONCEPT: The DevPlay logo combines a controller icon with a code bracket symbol, representing the fusion of game development and programming education. The colour scheme uses teal and dark navy to convey professionalism and creativity.

BUSINESS TYPE (LEGAL CLASSIFICATION): DevPlay Education Ltd will be registered as a Private Limited Company (Ltd) in England and Wales. This structure limits personal liability for founders, allows investment through share issuance and presents a professional image to university partners and investors [9].

BUSINESS STRATEGY: DevPlay will adopt a B2B (Business-to-Business) SaaS (Software as a Service) model, selling annual licences directly to universities and further education colleges rather than to individual students. This strategy is appropriate because:

Universities have established procurement budgets for EdTech

Institutional sales generate larger and more predictable revenue than individual subscriptions

University partnerships provide access to large student user bases for testing and growth

PRICING STRATEGY:

Starter: £2,000/year (up to 100 students)

Professional: £5,000/year (up to 500 students)

Enterprise: £10,000/year (unlimited students + custom content support)

FUNDING INITIATIVES: DevPlay will pursue the following funding sources to support development and growth:

1. Innovate UK Smart Grant The UK government's Innovate UK programme provides grants of up to £500,000 for innovative technology projects with clear

commercial potential. DevPlay's focus on closing the digital skills gap aligns strongly with Innovate UK priorities [10].

2. Angel Investment Early-stage angel investors from the UK games and EdTech sectors will be approached for seed funding of £150,000 in exchange for equity. This will fund the first 12 months of development and the initial university pilot programme.
3. University Research Partnership DevPlay will apply for joint research funding through Innovate UK's Knowledge Transfer Partnership (KTP) scheme, partnering with a UK university to co-develop the platform's educational content and assessment methodology.
4. Revenue Reinvestment Following the first university pilot, revenue from early institutional licences will be reinvested into platform development and sales [3].

TASK 3

Working on the DevPlay project has been one of the most practically useful experiences of this module. Unlike purely theoretical assignments, this project required me to think like both a developer and an entrepreneur simultaneously - planning a technical product while also considering how it would survive as a business.

Skills development

The most significant technical skill I developed was understanding how WebAssembly enables complex software like game engines to run inside a web browser. This is a technology I was previously unaware of, and researching it has opened up new possibilities for how I think about web application development [1]. Applying the Scrum framework in a project planning context was also new for me. I had heard of Agile before but had never structured a project using sprint cycles, a product backlog or defined sprint goals. Going through this process has made me much more confident about applying these methods in future group projects and eventual workplace environments [2]. The enterprise section pushed me outside my comfort zone in a productive way. Researching B2B SaaS pricing, company registration and funding mechanisms like Innovate UK grants gave me a practical understanding of how technology products reach the market - something that is rarely covered in technical computing modules [3]. Going forward, I plan to build a small game using Godot as a personal project to consolidate my technical understanding, and to explore the Innovate UK website further to understand what funding might be available for student-led technology projects.

Societal impact

The potential societal impact of DevPlay extends beyond education. The UK games industry contributes over £4 billion to the economy annually and faces a persistent shortage of skilled developers [5]. By creating a more accessible and structured pathway into game development, DevPlay could directly address this skills gap and strengthen one of the UK's most successful creative industries. There is also a strong equity argument for the platform. Game development tools currently require powerful hardware and significant self-directed learning to get started - barriers that disproportionately affect students from lower-income backgrounds. By running entirely in a browser and providing structured guided learning, DevPlay removes these barriers and creates a more level playing field for aspiring game developers [4]. As Schwab notes, the Fourth Industrial Revolution demands new kinds of technical creativity from the workforce [6]. Game development combines programming, design, mathematics and storytelling in a way that few other disciplines do - making it an ideal vehicle for developing the broad digital skills that employers increasingly require.

Risks and how to manage them

The most significant risk facing DevPlay is the technical complexity of building a browser-based game development environment. If WebAssembly integration proves too slow or unstable on lower-spec devices, the platform's core value proposition collapses. This will be mitigated by building a simplified lightweight version first and testing extensively on a range of devices before committing to full engine integration [2]. A second major risk is slow university adoption. Institutional procurement is notoriously slow, and academic staff may be resistant to replacing existing teaching tools. Offering a free pilot programme to three universities in year one will generate the outcome data and case studies needed to accelerate broader adoption [3]. Finally, the threat from free alternatives like Unity Learn and Godot tutorials is real. DevPlay must clearly differentiate itself through curriculum integration, automated assessment and institutional reporting - features that free tools simply do not offer to universities as organisations [1].

CONCLUSION

This report has presented a comprehensive project proposal for DevPlay Education Ltd, a browser-based game development learning platform designed to teach programming and computational thinking to undergraduate computing students in UK higher education. The project management section demonstrated that the platform can be realistically delivered within a six month timeframe using the Scrum framework, with a clearly defined technical stack, resource plan and milestone schedule. The requirements specification and wireframe designs provide a solid foundation for the development team to begin work immediately. The enterprise analysis revealed that while the EdTech and games industries present significant commercial opportunities, success will depend on careful navigation of legal and ethical responsibilities, particularly around student data protection and accessibility. The B2B SaaS model targeting universities directly, combined with a diverse funding strategy including Innovate UK grants and angel investment, provides a credible and sustainable path to market. The reflection demonstrated that this project has developed valuable technical, project management and business skills that are directly applicable to a future career in the computing and games industry. Most importantly, DevPlay has genuine potential to make a meaningful contribution to society closing the digital skills gap, increasing diversity in the games industry and making high quality game development education accessible to all students regardless of background.

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