



Australian Government

Department of Education, Employment and Workplace Relations

ICAGAM528A Create games for mobile devices

Release: 1

ICAGAM528A Create games for mobile devices

Modification History

Release	Comments
Release 1	This Unit first released with <i>ICA11 Information and Communications Technology Training Package version 1.0</i>

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to create games for mobile devices.

Application of the Unit

This unit applies to concept artists, games designers, games programmers, animators and other personnel working in the game development industry.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Element	Performance Criteria
<i>Elements describe the essential outcomes of a unit of competency.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.</i>

Elements and Performance Criteria

1. Research and document mobile gaming device technologies	1.1 Research, identify and describe current mobile devices suitable for games 1.2 Identify a suitable mobile device 1.3 Identify technical limitations and constraints of the mobile gaming device 1.4 Research and identify tools and technology for creating applications for the mobile device 1.5 Identify a suitable tool for the mobile gaming device 1.6 Research, identify and describe market successful mobile game devices
2. Plan the project	2.1 Create or obtain project brief and documents 2.2 Identify game production assets required to meet creative and production requirements and technical specifications 2.3 Define developer roles and skills 2.4 Create a schedule for production and testing 2.5 Determine strategies for monitoring production progress against schedule
3. Create game assets	3.1 Create graphics assets using 3.2 Create music and sound assets
4. Develop game prototype	4.1 Develop game prototype using a programming language 4.2 Create and check game-play elements according to creative and technical requirements 4.3 Test and run game play on mobile device 4.4 Identify if the game meets creative, production and technical requirements
5. Evaluate game prototype	5.1 Demonstrate initial prototype to relevant personnel 5.2 Evaluate against criteria, including achievement of a creative and user-friendly product 5.3 Discuss and agree on required changes 5.4 Assist if required in tests and user trials 5.5 Evaluate feedback from user trials 5.6 Confirm endorsement from relevant personnel to develop prototype into complete product

6. Transform prototype into final proof of concept prototype	6.1 Make necessary changes as indicated by user trials 6.2 Integrate all game elements as required by specifications 6.3 Polish the game
--	---

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- analytical skills to evaluate documentation and images to inform implementation of game specifications
- communication skills to:
 - check and confirm design requirements
 - collect, interpret and communicate in visual and written forms effectively for various audiences, including engineers and artists
 - communicate complex designs in a structured format drawn from industry standards, styles and techniques
 - communicate technical requirements related to software development, graphics requirements and code development to supervisors and other team members
 - provide practical advice, support and feedback to colleagues and management
- initiative and enterprise skills to exercise a high level of creative ingenuity in game design and innovation
- literacy and numeracy skills to:
 - develop game design and technical design documents
 - read briefs, work instructions, and technical and conceptual information
 - write instructions for the normal and competent operation and testing of all game features and permutations
- management skills to coordinate teams in order to effectively extract useful feedback
- planning and organisational skills to:
 - balance talent, experience and budget
 - delegate tasks and responsibility appropriately
 - establish clear roles and goals to achieve required game development outcomes
 - meet project deadlines
 - organise equipment and resources to achieve required outcomes
 - organise own time to meet milestones
- problem-solving skills to recognise and address potential quality issues and problems at design development stage
- research skills to undertake practical, technical and desktop research
- teamwork skills to:
 - contribute to and work in a collaborative team
 - realise a unified game-play vision
- technical skills to:
 - resolve basic hardware, software and other technical issues associated with game production
 - translate design requirements into specifications
 - use correct file formats and archiving procedures.

Required knowledge

- basic programming techniques
- budgeting and scheduling considerations for game design
- computer game development, including specific terminology
- current game-play hardware and software products
- risk and critical path management
- technical constraints that hardware imposes on software development, graphics requirements, code development and creative visual design
- techniques for concept visualisation and development.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • apply a variety of strategies for game trialling and testing • demonstrate original and innovative approaches to the creative development of a game • implement game development and production strategies • maintain integrity of the design brief and game design document • undertake risk assessment and critical path planning • produce a working game on a mobile device.
Context of and specific resources for assessment	Assessment must ensure access to: • computer hardware, software, games engines and file storage • copyright and intellectual property legislation • OHS legislation and enterprise policy • appropriate learning and assessment support when required • modified equipment for people with special needs.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • evaluation of a working, original game on a mobile device • direct observation of candidate participating in game document development activities • verbal questioning or interview concerning aspects of game development, including: • capability of game engines and software tools to meet the requirements of the brief • evaluating game prototypes from technical, design and game-play perspectives • game testing and trialling procedures • maintaining integrity of the design brief and game design document • risk assessment and critical path planning • translating design and technical specifications into working game prototypes.

Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate. Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level, language, literacy and numeracy capacity of the candidate and the work being performed. Indigenous people and other people from a non-English speaking background may need additional support. In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge.
--	---

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<i>Mobile devices</i> may include:	• mobile phones • personal digital assistants (PDAs) • tablets.
<i>Technical limitations and constraints</i> may include:	• current technology • future technology and release date • graphics capabilities • memory • pixels • platforms • polygon count • processor speed • software capability • storage space.
<i>Tools and technology</i> may include:	• compilers • debugging software • development software • efficiency • flexible systems suitable for non-programmers • graphics • graphics system design • integrated development environments • middleware • operating systems • plug-in tools • programming for game integration • rendering • sound • system architecture for real time game environments and simulations • tools for designers and play analysis.
<i>Project brief and documents</i> may include:	• concept drawings • designer's notes • development environment description • game design document

	• game-play designs • help notes • information design • operating manual • storyboard • style and design principles • style and medium • target market information • technical design document • technical design review process.
Game production assets may include:	• current work files • development kits • existing digital product libraries: • character models • environments • motion capture data • sound effects • game engines, including customised game engines • personnel.
Technical specifications may include:	• backup procedures • delivery platform • difficulty levels • disc or memory space • format for final product • navigation design • pixel size • polygon count • specifications for phases of game development: • alpha version - pre-production • beta version - playable prototype • gold version - completed game • trialling and testing • systems and workplace standards for documentation, including: • computer file management • job lists • progress reports • source code and game assets archiving • target market.
Schedule may involve:	• allocating work tasks in consultation with other team members • analysing key requirements of the brief

	• assessing concept viability against resource availability • conducting risk assessment regarding possible issues and constraints and potential solutions • creating an overall project plan and schedule • determining workflow with consideration to available resources • identifying key milestones and associated deliverables: • alpha version - pre-production • beta version - playable prototype • gold version - completed game • trialling and testing • identifying stakeholders and devising strategies to meet stakeholder needs • identifying the critical path • researching background information • setting project objectives against achievable timeframes.
Monitoring production progress may involve:	• balancing quality and scheduling requirements • coordinating the efforts of development, quality assurance, sales, marketing, public relations and finance • ensuring the timely production of assets to brief requirements, including: • animation components • graphic • images • interfaces • text • video • identifying and applying testing procedures • monitoring workload allocated to individual personnel • progressive game testing to ensure playability • renegotiating variations and schedule slippage ahead of milestone dates • sound identifying and applying contingency strategies.
Developing game prototypes may involve:	• bug fixing, bug databases, creating stable code bases and game tuning • building flexible systems configurable by others • code review and test harnesses • designing and implementing tests and incorporating feedback from quality assurance • developing a comprehensive design for all missions and levels, including concept visuals • developing a walkthrough for at least one mission or level

	• developing story synopsis and scripts for each level • knowledge of games as dynamic systems: • applying game tuning strategies in light of feedback from actual play • characteristics of a balanced game • working with quality assurance and understanding play-test feedback • use of appropriate tools and skills for fast, interactive development • user-guide development.
Programming language may include:	• ActionScript • C • C# • C++ • Flash Lite • Java • Object Pascal • Objective-C • Pascal • Python • VB.NET.
Check game-play elements may involve:	• chance • fun • logic • playability • rules • skill • strategy.
Personnel may include:	• animators • concept artists • game-play designers • graphic designers • instructional designers • modellers • motion capture technicians • producers • programmers • project manager • sound engineers • team members • technical director • writers

	• other specialist or technical staff.
Evaluating game prototypes may involve:	• examining and analysing the impact of decisions, after the fact: • business decisions • design decisions • methodology and process decisions • product ‘post-mortems’, reviewing actual use of resources to achieve outcomes against initial project plan and schedule.
Tests and user trials may involve play test procedures:	• determining criteria for measurement of success with a given audience • play testing to monitor player frustration, progress and enjoyment • selecting test subjects • testing game with target market and other diverse populations.
Polish may involve enhancing:	• game play • graphics • user control • user interface.

Unit Sector(s)

Game development