Technical Handbook
3D Digital Game Art

About WorldSkills UK

WorldSkills UK is an independent charity and a partnership between employers, education and governments. Together, they are raising standards in apprenticeships and technical education to enable more young people to get the best start in work and life. They are leading the charge to ensure that all young people have equal access to high quality apprenticeships and technical education by:

- Inspiring young people through their careers advice resources, to choose excellence through apprenticeships and technical education as a prestigious career route on their path to reaching their potential, whatever their background.

- Developing excellence in young people by testing and assessing their skills and knowledge against their peers through their national and international competitions programmes, improving their confidence and potential.
- Innovating to mainstream global excellence to help improve the standard of teaching, training and assessment through international benchmarking to help young people, employers and the UK economy succeed.

They are also part of WorldSkills, a global movement supported by over 80 member countries, which celebrates young people achieving world-class standards in the biennial 'Skills Olympics'.

This link can be used to access more information about WorldSkills UK and the work it undertakes.

Cheshire College – South and West's Role

Cheshire College – South and West is the Competition Organising Partner (COP) for 3D Digital Game Art at WorldSkills UK and manage the design and delivery of the competitions, bringing together a partnership of industry employers and educators to ensure the competitions reflect current industry practices and training.

Cheshire College – South & West offers exciting opportunities for learners and Apprentices from across the UK, to access high-quality teaching and learning at our modern Campuses in Crewe, Ellesmere Port and Chester.

We aim to provide learners with the skills, experience and qualifications that will prepare them for their future career or higher-level study. We encourage learners to become confident individuals who will make valuable contributions to businesses and the local economy in their future careers.

3D Digital Game Art

Introduction – Dan McCabe

"Hey, I'm Dan McCabe. I was the competitor in 3D Digital Game Art for WorldSkills UK National and International Competitions. I competed in EuroSkills Gothenburg, and in WorldSkills Abu Dhabi.

I always get asked why I entered WorldSkills UK competitions and why I believe others should as well. The simple answer is, it changed my life, opened countless opportunities, led me to my dream career and not least, met some of the best people I've ever known. No matter how far you progress in the competitions and process you will come out a better person than when you went in and be thankful for every second of the opportunity.

My advice for people thinking of entering is to just to do it, you won't regret it. And to those who have entered and want some words of wisdom, get your head down, work hard and you will get out as much as you put in, embrace this once in a lifetime opportunity."

About 3D Digital Game Art

A 3D Digital Game Artist receives, conceptualises, and interprets the design brief based on their market knowledge and skill sets, and the given scope and limits of the brief. The 3D Digital GameArtist must then work from the concept art to produce a 3D mesh of the asset that employs the skills of good geometry decisions, triangle count, making good decisions in symmetry and silhouette, and modelling a good edgeflow. UV unwrapping must then be undertaken to flatten a3D model into a 2D set of shells that a texture can be painted onto.

The textures are then produced to create materials that may be applied to the 3D model, considering the colours, specularity, and opacity of various parts of a model. Some textures arepainted by hand, some require the use of photographic references and others require a digital process to calculate ambient occlusion and normal maps for shadows and detail.

Careers

Careers associated with 3D Digital Game art vary, some roles related to the skill are in animation,senior developer roles or producer roles. For more information on careers associated with the 3D Digital Game Art competition, please visit this link:

https://www.worldskillsuk.org/careers/how-to-become-an-animator/

Competition Overview

The 3D Digital Game Art national competition is designed to put you in the shoes of a 3D DigitalGame Artist. You would be required to take a designer's brief and, through a combination of conceptualization, creativity, selectivity, technical, and specialist skills, complete the brief to the satisfaction of the client. In the competition, you will be tested on what we call 'core competencies', which are outlined later in the document.

Entry criteria

- This is an individual competition
- There is no limit to the number of entries per organisation
- At the National Qualifiers stage, only the top 4 competitors from each organisation will be allowed to compete
- Competitors should be familiar with the core competencies (these can be found in the in the National Standard of Excellence 'Useful Information' section below) and must be working towards, or recently completed in the last 12 months, a relevant Level 3 qualification if in the England or Northern Ireland, a Level 3 CQFW if in Wales, a Level 6 SCQF qualification if in Scotland.

There are several stages of the national competition:

Registration:

Registrations open 9am Monday 3 March and will close midnight Friday 28 March.

Once you have completed your registration (and accepted all terms and conditions) you will beemailed a link to complete an online test.

Entry Stage:

Entry Brief released on Monday 7 April 2025 (after registration window), competitors have up to Wednesday 30 April, 2025 to submit their work.

When the entry stage online test has been completed, you will be notified to let you know if you have scored

high enough to go through to the National Qualifiers (the semi-final round). You will then be informed when the National Qualifiers will take place. Please note, the qualifiers will be taking place online via zoom this year.

National Qualifiers:
Live Qualifier (via Zoom) will take place on Friday 6 June 2025.

Ensure you're ready to compete in your National Qualifiers by looking at the online training resources, core competencies and marking guidelines below.

This handbook outlines the type of tasks you will be expected to carry out. Ask your lecturer/employer for help in any areas where you feel you could improve and try to gain practicalexperience in all the task areas of the competition.

WorldSkills UK National Final

The 8 highest scoring competitors from across the National Qualifier heats will be invited to compete at the finals – held in South Wales during the week commencing 24 November 2025.

Ensure you're ready to compete in your WorldSkills UK National Final by looking at the core competencies and marking guidelines below. This outlines the type of competencies you will be expected to carry out. Ask your lecturer/employer for help in any areas where you feel you couldimprove and try to gain practical experience in all the task areas of the competition.

Beyond the National Finals

The 3D Digital Game Art national competitions also form part of the selection process for WorldSkills International Competitions and the 2025 finals will be used to identify UK squad members for the WorldSkills International competition, Japan in 2028.

WorldSkills International training managers will be onsite during the National Finals in 2025, monitoring the performance of those who are age eligible for Japan 2028. Age-eligible competitors who show the highest skills, passion, and drive to compete could be invited to train for the EuroSkills and WorldSkills International Competitions.

Further details of the International Competitions including eligibility criteria can be found on theWorldSkills International website www.worldskills.org.

Core Competencies

Competitors taking part in this competition should be able to

Competence	Entry	Qualifier	UK Final
Idea Creation and Concept Art • digitally paint demonstrating form, line, shading, perspective, proportion, light, and shadows • create customised brushes to produce appropriate effects and make efficient use of time • choose appropriate software to paint the concept art piecesin with maximum production in the swiftest time • review and select each piece of concept art to inform the look of the finished 3D models.	Yes	Yes	Yes
3D Modelling • Select an appropriate piece of 3D modelling software to begin the model. E.g., 3DS Max, Maya or Blender for hard surface modelling, or a sculpting tool like ZBrush for organic sculpts • utilise skills in sculpting, edge modelling, and box modellingto produce the basic form of the model • use tools and modifiers to create further details on the model • constantly review the model from all angles to determine refinements, improvements, and additional detail.	Yes	Yes	Yes

UV Unwrapping • use UV unwrapping tools to project maps on to all the surfaces of the 3D asset • separate the surface into appropriate shells to flatten over the UV space. • organize the shells to make the most of space • group shells with similar colours together • export the UV coordinates to a texture tool or painting software.	Yes	Yes	Yes
Texturing • select an appropriate piece of software to produce textures and materials e.g., PhotoShop and Substance Painter/Designer • paint a variety of physical materials and adapt to the art style set out in the brief • paint or engineer a specular map for controlling shine and glossiness of a surface • paint an opacity map (if required) to handle complex objects or sections of an asset • export a normal map from an appropriate piece of software • render an ambient occlusion map to emphasize shadows.	Yes	Yes	Yes

General Instructions

1. At the start of the competition an allotted time will be allocated for presenting theBrief to competitors. This time is not part of the working time.

2. All materials and equipment must be marked out/used in the most economical method.

3. Competitors will lose marks for any poor naming conventions, not saving work in thecorrect file formats and not submitting all requested work.

4. Minimum marks will not be awarded for dimensional accuracy or technical perfectionwhere instructions have been disobeyed.

Practice Resources

There are some free resources that competitors can start to practice with:

https://3dtotal.com/tutorials/3d
https://www.artstation.com/marketplace/game-dev/tutorials/modeling?section=trending&price_to=0

In addition to this, Competitors are heavily encouraged to complete the WorldSkills UK practicebrief which is available on the WorldSkills UK website. This resource is the most important practice exercise for competitors.

https://www.worldskillsuk.org/competitions/3d-digital-game-art/

Judges' Top Tips

The following eight aspects are neither exhaustive nor prescriptive and not a 'magic' formula tosuccess. However, these are tips based on being involved with competitions for many years and we hope these will help you in future competition participation.

1) **Time Management.** The tasks are all against the clock. So, once you have had your task brief and know how long you have, then quickly plan your workload. Sectionthe aspects of the task into time blocks.

2) **Pressure.** You will be nervous, but you will need to keep nerves under control andnot let the pressure overtake you. Remember however, managed pressure can be good, increasing energy and performance potential.

    How to handle nerves:
    - listen to the Judge's brief and ask questions – what sort of questions depends on you, i.e., repeating an aspect of their brief; gives you a chance to understand more
    - importantly, understand at what point your allotted time actually starts, i.e. normally after the Judge's brief
    - read your competitors' brief; everything you need to know for the task is in thatbrief. Allow yourself 2 to 3 minutes to read it. Read it at least twice as your firstreading will be too fast
    - take a deep breath and start the task. You are against the clock and so you willneed to work with focus.
    - task going wrong? Take a moment, think. If necessary, quickly re-read that part ofthe instructions and then refocus. You may need to move on from that particular aspect of the task.

3) **Remember, everything you do within the task is marked** andworth points; so, focus on gathering points as much as you can:

- leave some time to put tools away at the end (that is worth points)
- clean up the working area (again, worth points).

4) Move onto the next part of the task, if you are very stuck on a particular aspect. You may have to accept you may or may not get points for that section and ask the Judge for assistance to move to the next part of the competition. Remember, there are other points to be earned throughout the competition.

5) Think outside of the task.

- give your 3D assets a history/back story
- give your asset something that will help it stand out and showcase your creativity
- think of your asset silhouette.

6) Practice before the competition at working under pressure and with someone watching you; perhaps your college lecturer. Get them to be super critical on your work quality, methods of work and approach.

7) Selecting the right tools for the assets you are creating will give you a great advantage in the competition.

8) Sleep. Get plenty of sleep the night before. If offered, take advantage of accommodation for the night before the competition. Resist the temptation to consume alcohol the night before and have a good breakfast on the day of the competition; these actions will assist in preparing your mind and body.

Insight into the competition:

Task Breakdown

Time will be allocated for familiarisation prior to the competition which will allow the competitor to ask any remaining questions regarding the supporting artwork provided. Internet use is not allowed at the qualifier and final stages of the competition.

The competition brief introduced to the competitor who will be given time to create a game ready 3D asset based of the guidance and supporting documentation only.

After the competitors' allocated time is over the work will be marked to specified criteria created by three independent judges from the games industry.

Extra Advice

"UV layout / unwrapping – Planning ahead with an unwrap approach in mind"

"Don't let the topology define your art"

"Don't model with Turbo smooth turned on - only use after core form

is correct."

Marking Criteria

The two tables below show an outline of to how marks may be distributed for tasks.

Objective Scoring

Aspect ID	Description	Max Marks
A1	Concept Art supplied	2
B1	Model is within triangle budget	5
C1	Demonstration of a UV unwrap	5
D1	Textures & materials applied are correct	5
D2	Representation of materials is accurate	10
E1	Model is visible and textured In Sketchfab	5
E2	All requested features present (i.e., props)	5
E3	Beauty Render Submitted	5

Subjective Scoring

Aspect ID	Description	Max Mark
A2	Final Digital Painting is appropriate and useful	4
A3	Good use of colour - perspective, proportion, and shading	4
B2	Triangle distribution & Topology	10
B3	Asset silhouette	10
B4	Mesh tidiness	10
C2	Smooth and even UV shell	5
C3	Use of UV Space – mirrored or repeated UVs.	15

Technical Guidance

Marks are allocated for 'game readiness' of the 3D asset that you create. The expectation is that you follow a pipeline and workflow that would be reflective of the current gaming industry.
Marks will focus on areas such as topology, UV layout, material management, and texturing of assets

The competition modules will be designed to stretch competitor abilities and will be challenging within the time constraints. Competitors must focus on producing 3D assets to a game ready state.

Health & Safety

During the competition as in any work or educational facility you have a duty to protect yourself and those around you.

As an Organising Partner, Cheshire College – South & West has a responsibility to protect you and keep you informed about health & safety procedures and practices including;

• making the competition area safe and without risks to health
• provide adequate welfare facilities
• give instruction, information, supervision, and where applicable training.

As a competitor you have a legal duty to:

• take reasonable care for your own health & safety and that of others who may be affected by what you do or do not do
• cooperate with the organising partner and/or their appointed delivery team on health and safety matters
• correctly use work/competition items provided, in accordance with instructions and/or training given
• not interfere with or misuse anything provided for your health, safety, or welfare.

Conclusion

Remember, the competition will be difficult but achievable. There will be a lot of 'self-pressure'.
You need to learn how to control this and focus on the task in hand.

Once a task is complete, you cannot change the outcome good or bad, start the next task afreshand with positivity.

Drink plenty of water throughout the competition, staying hydrated will help with yourconcentration, focus, and will reduce stress and headaches.

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