DEVELOPING ENVIRONMENTAL VOCABULARIES (GAR203)

William Pryn*

Course University: Falmouth University
Course College/School: The Games Academy
Course Department/Program: Game Art BA (Hons)
Course Level: Undergraduate
Course Credits: 20
Course Length: 15 Weeks
Course Medium: Blended/Hybrid
Course Keywords: Game Environment Art, Unreal, Maya, Zbrush, Materials, Lighting, Scene creation

CATALOG DESCRIPTION

Consolidate understanding of creating coherent visual design for games and extend knowledge of how to organise and execute an art-based research project. Build experience of professional methods and practices used in the creation of game art.

This module builds on your work at level four and allows you to research and explore techniques and practices in the creation of environment art for games. With guidance from your tutor, you will identify an area that you want to focus on and build your practical experience of. In response to your research brief proposal, you'll create a portfolio and write an analysis of that work. You are encouraged to experiment and test out different techniques and approaches.

COURSE PURPOSE AND OBJECTIVES

Through the production of a scene in Unreal (Epic Games, n.d.) from concept to final presentation, this module aims to further build confidence and capabilities of our fledgling environment artists as they refine their skills and more deeply engage with the tools in Unreal and the interplay between the different content creation packages. A range of modelling, material and engine workflows are demonstrated on this module, and the artists should begin to identify the workflows and methods that suit them as 3D artists on their own projects while also learning how to manage, contextualise, critically engage with their work and the work of their peers in a professional manner.

The following topics are covered in the module

- Project planning
- Version control
- Blocking out
- Advanced prop workflow
- Building your materials
- Foliage creation
- Advanced materials in Unreal
- Lighting in Unreal
- Post-Processing & Post-FX in Unreal
- Cinematic creation in Unreal
- Optimisation in Unreal

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COURSE CONTEXT

GAR203 is the first specialist environment module in the second year of the Game Art BA(Hons). The incoming students will have chosen to specialise in 3D environment art for games, will have half an academic year of experience in Unreal and an entire academic year of experience with 3D/2D content creation applications under their belts before starting this module. As a result, the module is designed to build on their existing skillset and introduce them to more technical and developed workflows while still aiming to accommodate a broad range of ability and educational need.

There is a broad range of educational need and so the course materials are delivered in accessible formats, videos are transcribed and there are several avenues of support available to support the students on the module.

COURSE PEDAGOGY

In the discipline of Game Art, we are heavily focused on training our students using industry standard tools, applications and development workflows. We teach using a mixture of lectures, demonstration & exercise and frame the work through a professional lens, seeing the work as stepping stones towards the professional world.

In the industry, GAR203 is a typical brief that a CG Artist would encounter and, when working on such a brief there would be frequent internal and client reviews of the work being carried out, with feedback given to be taken onboard which changes the direction of the final delivery which in this case would be the final summative submission of Assignment 1 – the cinematic & beauty renders. The formative assessment/feedback in this case takes the form of three review/feedback submissions spread throughout the module.

Working this way aids the students in making decisions on moving forward and gives them opportunities to revisit past decisions that could have been executed better. There is also a high benefit in this strategy for low achievers and students with learning difficulties (Black & Wiliam, 1998b).

Although not as stringent as a true professional brief as they get to pick their own scene to recreate, this is an introduction for the students in Study Block 1 in the second year of a Game Art BA to begin to grow accustomed to working from a brief, with regular feedback, researching and reflecting on new techniques & feedback they have been given before finally submitting the finished article.

The professional framing of the brief is a distinct advantage to the students and prepares them for working in the Games/CG industries. They are working unconsciously using a light version of Scrum/Agile methodology used in software development by planning their project in advance, attending review meetings where they present their work, receiving feedback and then iteratively adjusting their work in incremental concrete stepping stones toward the Product Goal. Classic Scrum (Schwaber & Sutherland 2020).

The professional tools used maximises the employability of the students and validates the assessment strategy against an industry context. This combined with the free choice of brief holds them in good stead to a path for deep learning towards the end goal of employment after graduation. “Significant learning takes place when the subject matter is perceived by the student as having relevance for his/her own purposes, when the individual has a goal he/she wishes to achieve and sees the material presented to him/her as relevant to the goal, learning takes place with great rapidity” (Rogers, 1969).

The teaching materials are offered in multiple formats (Video, document, transcribed & in-person presentation) and via a digital platform, maximising accessibility and allowing students to study at their own pace, time and place (Race, 2015).

The module has a range of assessment methods and introduces new topics whilst building upon previous learning content. Biggs and Moore (1993) have argued that a range of course characteristics encourage students to take a deep approach. These include a clear structure to the knowledge base of the course, so that the content is integrated and new topics relate to previous knowledge (Bloxham & Boyd 2007).

Integrating the formative assessment/feedback sessions into the grade weighting and weekly plan gives incentive to the students to engage with the material and gives a multi-faceted approach to assessment and more consistent results. Summative assessment alone does not always give clear insight into the level of understanding and processes a student may undertake during the course of the project, formative assessment allows a more holistic picture to be drawn for the assessors to utilise when assigning a numerical grade to a piece of digital work that has taken weeks to produce (Robinson 2015)

COURSE TEXTS, GAMES, SOFTWARE, AND HARDWARE

Module Texts

The following books are used as reference materials to support the learning/teaching and are available digitally to the students

- Arevalo, K., Tovar, M., & Li, J. (2021). Creating games with Unreal Engine, Substance Painter, and Maya: Models, textures, animation, and blueprint. Taylor & Francis Group.
- Ahearn, L. (2017). 3D game environments: Create professional 3D game worlds. CRC Press.
- Brenlla Ramos, B. (2023). Unreal Engine 5 shaders and effects cookbook: Over 50 recipes to help you create materials and utilize advanced shading techniques. Packt Publishing.
- Sufyan bin Uzayr. (2022). Mastering Unreal Engine: A beginner's guide. CRC Press.
- Visai, G. (2024). Cinematic photoreal environments in Unreal Engine 5: Create captivating worlds and unleash the power of cinematic tools without coding. Packt Publishing.

Module Software

The following required programs are used throughout the module

- Epic Games. (2024). *Unreal Engine 5* (Version 5.4) [Computer software]. https://www.unrealengine.com
- - Game Engine
- Autodesk. (n.d.). Maya [Computer software]. https://www.autodesk.com/products/maya/
- - Modelling & UV Mapping
- Maxon. (n.d.). ZBrush [Computer software]. https://www.maxon.net/en/zbrush
- - Modelling / Sculpting
- Adobe. (n.d.). Substance 3D [Computer software]. https://www.adobe.com/products/substance3d.html
- - Material creation (Designer/ Painter / Sampler)
- PureRef. (n.d.). PureRef (Version 2) [Computer software]. https://www.pureref.com/
- - Concept and reference gathering
- Fork. (n.d.). Fork [Computer software]. https://fork.dev/
- - Version Control

Module Hardware

- Workstation / Gaming PC (RTX-capable graphics card recommended)
- Wacom Tablet

COURSE ASSIGNMENTS

The Brief

Create a cinematic in Unreal of a 3D game environment based on a film / television series of your choice using professional content creation tools and development workflows.

This module builds on your 3D Environment Art skills learned at level one and allows you to research and explore techniques and practices in the creation of art for games. With guidance from your tutor, you will identify a scene to re-create in Unreal, create a portfolio of work comprising a full game-ready environment featuring a high-fidelity prop and maintain a wip forum post to document your journey through that work.

Brief Specifics

- You are encouraged to experiment with the technology, test out different techniques and approaches whilst continuing to develop your observational, 3D modelling, material creation and game-engine authoring skills.
- Your scene ***must*** be based on a scene from a *live-action film or TV series*.
- Your scene must be rendered in Unreal 5.X (Epic Games, n.d.)
- Software to be used in the module – UE5.X (Epic Games, n.d.), Maya (Autodesk, n.d.)
- , Zbrush (Maxon, n.d.), Substance Suite (Adobe, n.d.), Fork (Fork, n.d.)
- The project must utilise version control and be backed up frequently.
- You are to create and update a WIP forum thread documenting your progress
- The cinematic should be between 30 seconds and 1 minute in duration.
- You can use any technology available to you in the game engine and experimentation is to be encouraged.
- Your scene must be designed to be played as an FPS game level but does not need to function as such.
- Attention will be paid to texture sizes, poly counts and topology of your assets to ensure appropriate thought is paid to the performance of your scene.
- You can take artistic license on layout and design as long as they can be justified.
- Your scene must operate at a consistent frame rate (no lower than 30fps) on a GA machine (even though it will not be played).
- Try to demonstrate dynamic elements which are visible in real-time in the level these can be environmental, mechanical or character based.
- You can use existing assets available in the game engine as long as they are an appropriate fit with your level's look and feel.
- Music can be used to accompany the cinematic as long as it helps to convey the mood of the scene.

Hero Asset Prop

As a part of the assignment, you are to design, model, texture and implement a hero-asset prop to feature within your environment.

The prop can take any shape and form you wish and you have full creative control, but it must fit aesthetically within your chosen setting and use the high to low polygone workflow.

Consider something that might be central to your scene that the player will interact closely with.

A good 3D study can be made of ANY object.

Maximum polygon count - No upper limit. Inefficient modelling will be penalised.

Texture resolution - 4096 x 4096 pixels

Deliverables

- 1 x 30-60 second video from UE5.X (Epic Games, n.d.)(.mp4) showcasing your scene
- 8 x High-res Portfolio shots of your completed scene(.png)
- 1 x High-res 'Modular shot' showing your individual scene 3D elements in Unreal (Epic Games, n.d.)(.png)
- 1 x High-res screenshot in Unreal (Epic Games, n.d.) of your tiling materials and trim sheets displayed on 3D geometry planes in Unreal(.png)
- 1 x Modelsheet for your chosen hero asset in your project using the template (High resolution renders- Beauty/AO/Wireframe/UV's) (.png)
- 1 x Hyperlink to your Git repo (.txt)

Work-in-progress forum

On the Learning Space create a single topic/thread that you update to document the development of your project. This should include a weekly blow by blow account of your work in progress.

Be visual! You are Artists! Upload work in progress screenshots, breakdowns of your models, materials and engine-work, lighting iterations. Alongside this, discuss and reflect on the lectures & learning materials used to create your scene and how your project relates in context with the wider games industry.

We advise at least one post per week in your own thread, and we advise you to actively give each other constructive feedback in this assignment.

ARTIFICIAL INTELLIGENCE IN THE COURSE

The biggest change that generative AI has brought about to GAR203 is the use of a WIP forum in place of a reflective blog. In the past, portfolio work would be complimented with the creation of a blog that documented the working process and research that underpins the creative work. This began to become redundant as the course team began to see blogs fully generated using AI that would devalue the learning experience they presented and clouded the task of formative assessment. To combat this, the WIP forum thread was implemented that shows breakdown of the work and functions as a personalised journal and support area, allowing for the staff to have more direct contact and dialogue with the student and more oversight of the processes and development of the project.

We do not encourage the use of AI in our modules but as we are teaching a skill/craft, the feeling towards it within the Game Art community is, on the whole, negative and extremely partisan, there is little need to 'police' it's use. However, when AI tools or stock assets are implemented in a project, there is no process visible in the WIP thread and so it becomes obvious under even light questioning.

Upcoming changes that may come about with 'AI-proofing' the module in mind may come in the form of either in-person or recorded presentations of the student projects to assist judgement made at assessment time, where students are directly accounting for and justifying their decision-making process 'on-the-fly'

COURSE ASSESSMENT

The grade weightings for the module are as follows: -

- 4 x Formative Submissions (10%)
- Present your work periodically for formative feedback to the teaching team and your peers.

- WIP Personal Forum Thread (20%)
- On the Learning Space, students create a single topic/thread that is updated to document the development of their project. This should ideally be a weekly blow by blow account of the work in progress.
- Assignment 1 – Summative submission of Environment Art portfolio(70%)



Figure 1 "Module Timeline Week-by-week"

Note. From *"Module Timeline Week-by-week",* by W. Pryn, 2025, Games Academy, Falmouth University. Copyright William Pryn

The four formative assessments take place in weeks 3, 7 and 10 and 11 (Figure 1 - Weeks marked in green) respectively with the summative submissions being in week 13. The first of these is introduced early in the life of the module as evidence suggests that formative assessment in the early stages of a programme assists retention (Yorke & Longden, 2004) and to bolster this *"students should receive regular, formative evaluations of their work early in their course' (Cook et al. 2005 p.4).* This in turn also has a wider benefit to accessibility as *"Consistent evidence shows formative assessment in programmes will have particular benefits for low attainers and disadvantaged learners (Black & Wiliam, 1998a)"* (Bloxham & Boyd, 2007).

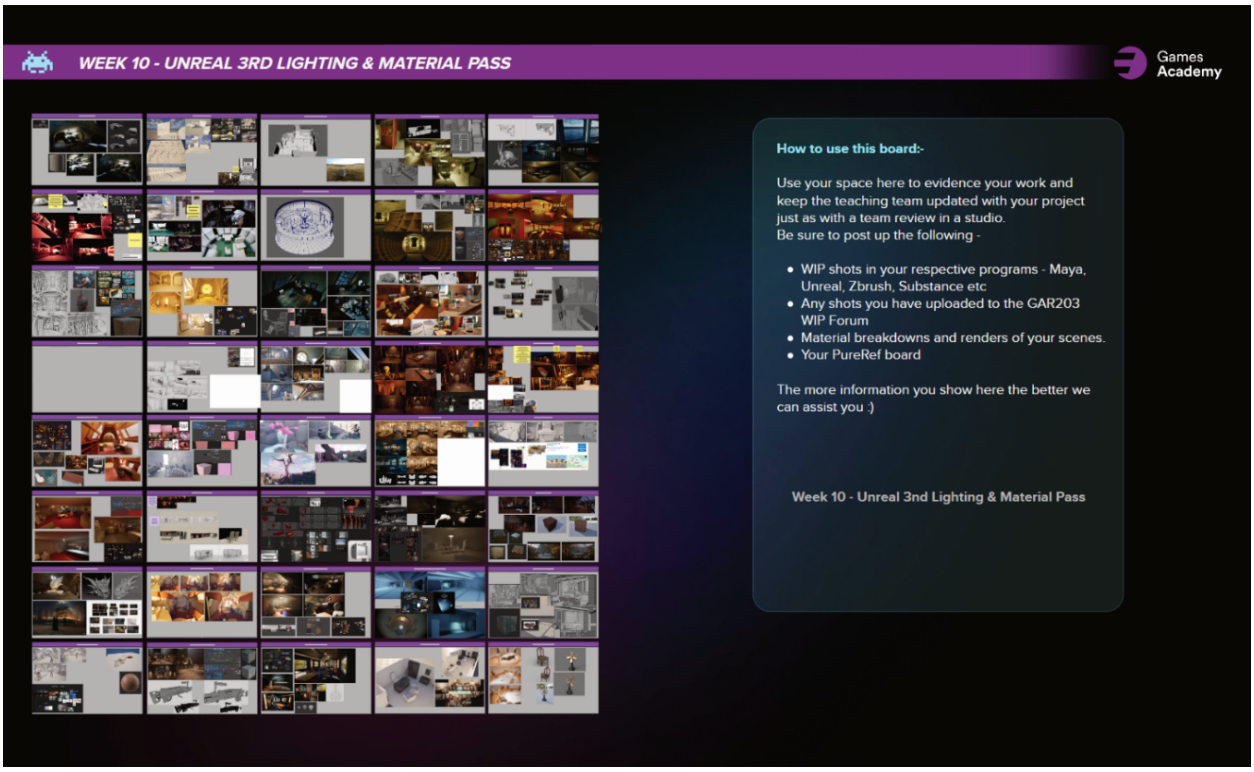


Figure 2 "Formative Submission Mural Example"

Note. From *"Formative Submission Mural Example",* by W. Pryn, 2025, Games Academy, Falmouth University. Copyright William Pryn

"Early assignments are helpful in integrating students into academic life and good study habits (Cook et al., 2005)" (Bloxham & Boyd, 2007). This last point is a vital goal along the path of becoming a Game Artist and a quality that this assessment strategy is designed to foster as currently this module suffers from poor engagement and retention among the students.

The formative feedback sessions are held with one or more of the teaching team and held digitally, whilst the summative marking of the portfolio submission is assessed in two steps with two pairs grading the assessments and then the whole teaching team moderating the results.

To this end, spreadsheets are used to tally marks but a simple visual marking system using the submissions is also utilised in the form of a collaborative Mural board. This allows for the spread of marks to be viewed at a glance with easy collaboration.

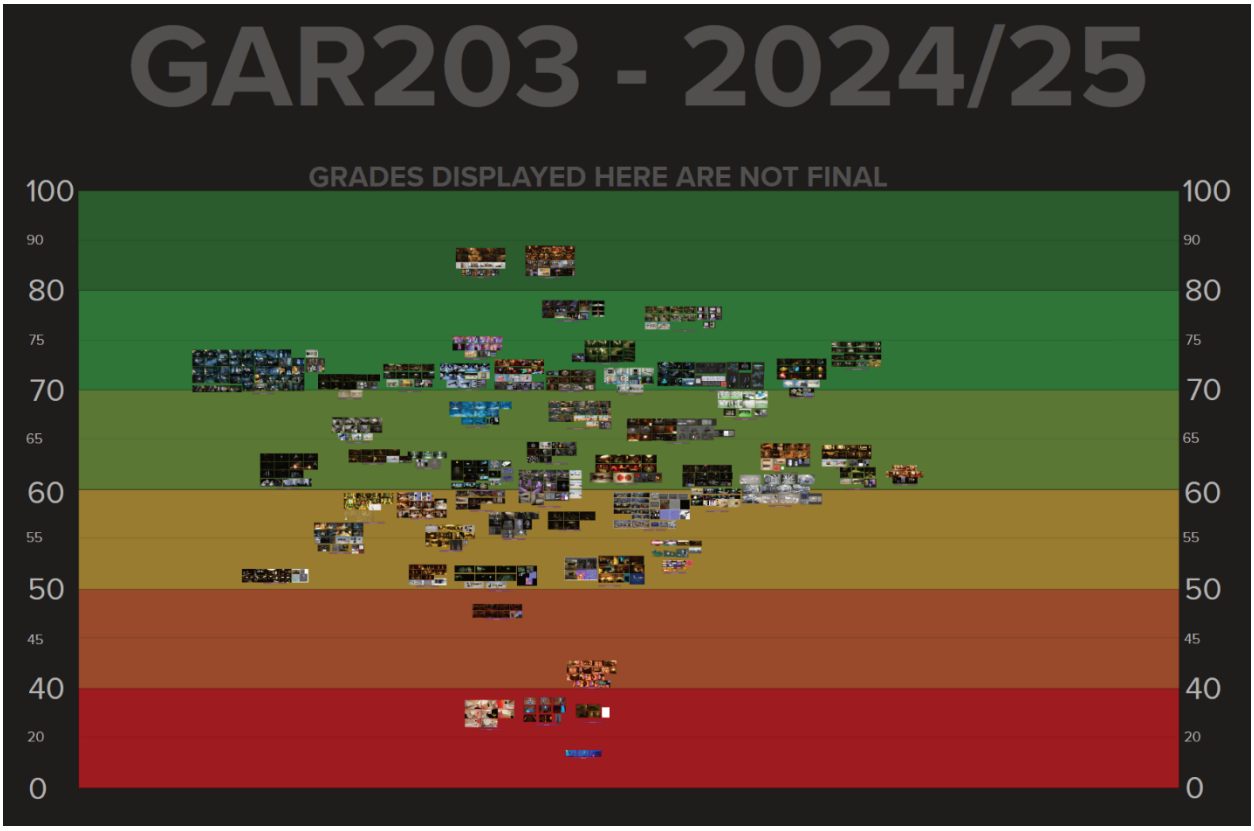


Figure 3 "Visual Marking Mural"

Note. From "*Visual Marking Mural*", by W. Pryn, 2025, Games Academy, Falmouth University. Copyright William Pryn

Feedback is provided to the students in the form of formative feedback during the in-person sessions and in connection to the three scheduled formative submissions.

Feedback on the summative submission is delivered in a digital viva, held on Microsoft Teams recorded, transcribed and available to be viewed again in the future for reflection and further study (Race, 2015).

Extra formative and group feedback is made available via the use of an online image forum on the Learning Space where students can, in a safe environment, post updates on their work, give each other feedback and socialise, thus contributing to the student's sense of belonging on the course and give a positive contributions to their own non-academic personal (social and well-being) goals. (*Volet & Mansfield, 2006).*

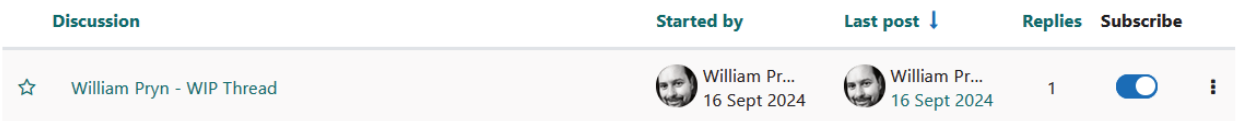


Figure 4 "WIP Forum_01"

Note. From WIP Forum 01, by W. Pryn, 2025, Games Academy, Falmouth University. Copyright William Pryn

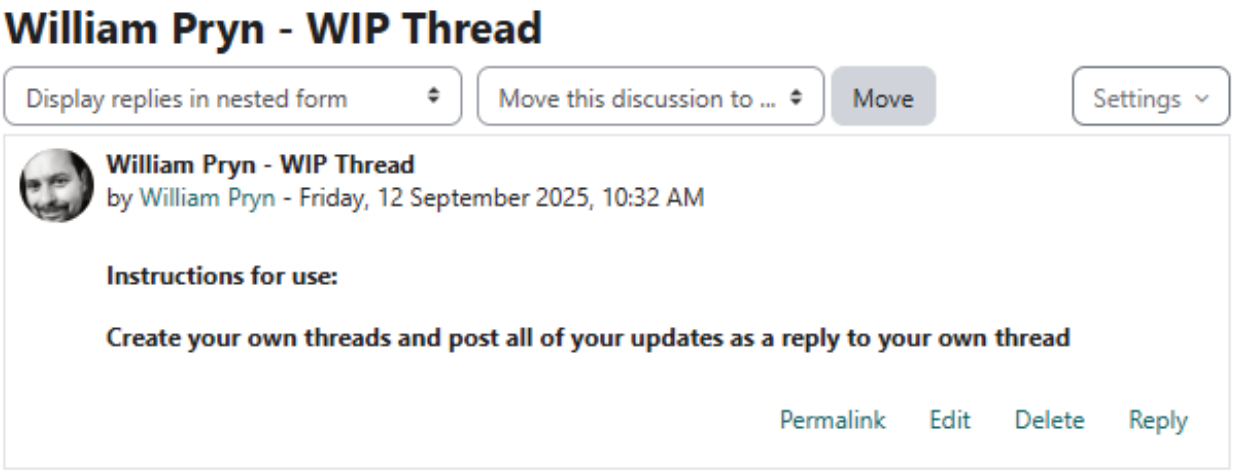


Figure 5 "WIP Forum Thread"

Note. From WIP Forum Thread, by W. Pryn, 2025, Games Academy, Falmouth University. Copyright William Pryn

EXPANDED COURSE OUTLINE

Table 1 below outlines weekly topics, activities, and assignments.

Week	Topic	Class Topics/Activities	Assignments
1	Project Planning	Lecture – Module Intro & Project Planning Activities - Introduction to the brief. (Mural) - Classroom support.	Gather reference and break down scene into 2d/3D elements. Create an asset list for the project. Create personal WIP forum post
2	Block out	Lecture – Blocking Out Activities – Scale & Unit Set-up, Blocking out. (Mural) - Classroom support.	Block out the scene in 3D & Unreal Set up version control repository. Solo work - Modelling & Texturing the scene Update personal forum WIP post
3	Observation & Texturing	Lecture - Observation Activities – Planning Textures & Materials (Mural) - Classroom support.	Break down scene and make asset list for materials and 3d elements. Solo work - Modelling & Texturing the scene Update personal forum WIP post GATEWAY 1 – Submit WIP shots of work to the Week 3 Mural Board.
4	Architecture in Games	Lecture – Architecture in Games Workshop Activities – Booleans Modelling in Maya & Zbrush (Mural) - Classroom support.	Solo work - Modelling & Texturing the scene Update personal forum WIP post
5	Materials	Lecture – Materials in Unreal Workshop Activities – Master Material setup in Unreal (Mural) - Classroom support.	Solo work - Modelling & Texturing the scene Update personal forum WIP post
6	Reading Week	No sessions – Students use the week to catch up and further plan their projects.	Solo work - Modelling & Texturing the scene Update personal forum WIP post
7	Materials Advanced	Lecture – Materials in Unreal	GATEWAY 2 – Submit WIP shots of work to the Week 7 Mural Board.

Week	Topic	Class Topics/Activities	Assignments
		Workshop Activities - Material Blending in Unreal (Mural) - Classroom support.	Solo work - Modelling & Texturing the scene Update personal forum WIP post
8	Lighting	Lecture – Lighting in Games Workshop Activities – PBL Lighting Exterior & Interior in Unreal (Mural) - Classroom support.	Solo work - Modelling & Texturing & Lighting the scene Update personal forum WIP post
9	Foliage	Lecture – Foliage in Games Workshop Activities – Foliage Creation in Unreal (Mural) - Classroom support.	Solo work - Modelling & Texturing & Lighting the scene Update personal forum WIP post
10	Post-Processing	Lecture – Post-Processing in Unreal Workshop Activities – Creating a LUT in Unreal (Mural) - Classroom support.	GATEWAY 3 – Submit WIP shots of work to the Week 10 Mural Board. Solo work - Modelling & Texturing & Lighting the scene Update personal forum WIP post
11	Cinematics	Lecture – Cinematics in Unreal Workshop Activities – Mural Cameras and Cinematic creation in Unreal (Mural) - Classroom support.	PEER REVIEW - Attend peer review timetabled session Solo work - Modelling & Texturing & Lighting the scene Update personal forum WIP post
12	Optimisation	Lecture: Optimisation in Games Workshop Activities: Support session in lead up to final week. - Classroom support.	Solo work - Modelling & Texturing & Lighting the scene Update personal forum WIP post
13	No session	FINAL SUBMISSION	FINAL SUBMISSION – End of the week for summative assignment.
14	Vivas	Viva	Attend viva for feedback

Week	Topic	Class Topics/Activities	Assignments
15	Vivas	Viva	Attend viva for feedback

Table 1 Weekly Activities

COURSE BEST PRACTICES

The biggest piece of advice I would give to anyone wishing to replicate this module or to move it solely online is to be sure to create enough auxiliary learning materials in the form of relevant tutorials for the module for students to be able to pick and choose from in order to use them in their projects and for the staff to know the tools and content inside and out. Demonstrations of workflows and techniques are key as they build and fortify confidence in the teaching staff and ensure that the module is adequately supported. With the majority of the work done by the students being done outside of the classroom, there is a strong need for support either in the WIP forums or on the dedicated Teams channel but with the foundation of solid learning materials and support, the path is clear for them to become capable independent learners and 3D artists.

Over the years my colleague Michael Boylan (also a contributor to this book) stopped producing video demonstration content as we saw very little engagement with the tutorials we made. We developed the use of live Mural boards to create tutorials as, after student consultation, were found to be more popular and we saw a significant upswing in engagement self-directed learning across the whole learning group. (Fig. 5)

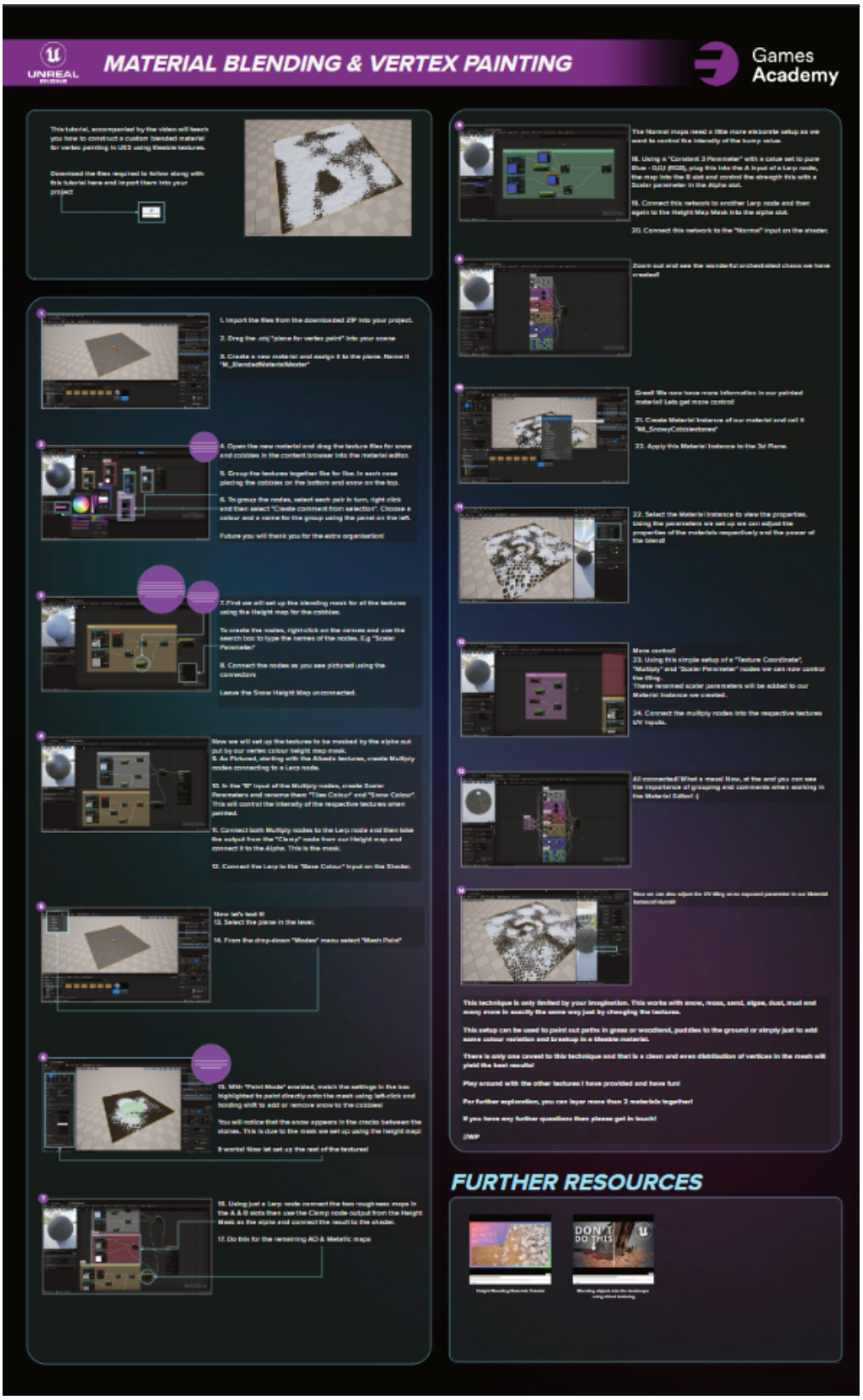


Figure 6 "Mural Tutorial Example: Vertex Painting"

Note. From Mural tutorial example: Vertex painting, by W. Pryn, 2025, Games Academy, Falmouth University. Copyright by William Pryn

Mural boards for the learning content are optimal as we can update them as the technology shifts, bypassing the problem of outdated versions, with a 'single source of truth' that is true for new and subsequent cohorts. The downside of this is of course that there is a certain amount of 'maintenance' that needs to be done each year in order to keep the content current with workflows and technology shifts.

Past submission example from GAR203:



Figure 7 "GAR203 - The Spiderwick Chronicles"

Note. From *"GAR203 - The Spiderwick Chronicles"* by J. Ferrari, 2025, ArtStation. Copyright by Jack Ferrari. Reprinted with author permission.



Figure 8 "GAR203 - The Spiderwick Chronicles"

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Figure 9 "GAR203 - The Spiderwick Chronicles"

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Figure 10 "GAR203 - The Spiderwick Chronicles"

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FUTURE COURSE PLANS

Further development and expansion of the repository of tutorials is key on the agenda. The knowledge in connection to the methods and techniques in carrying out the brief is constantly in flux due to changing technologies, workflows and industry movements, To this end, despite being hotly contentious in the student body, long-term, I anticipate the incorporation of more procedural and AI content creation workflows moving forward as the tools become more in-demand by studios and thus more relevant to game art education. I see this as a natural shift that does not require extra training outside of the academic staff's existing commitment to research and skilling-up, indeed AI is already being slowly integrated into the programs we use. However, student perception will be very important in the speed and level of adoption due to the controversial stigma surrounding AI in the creative community. Poor student perception could affect module evaluations and NSS scores, resulting in institutional pressure to reduce AI tools instruction.

How would AI change what we teach? As the direct creation of assets is taken from the hands of the artists, the human task would change to that of an Art Director, where a deeper, broader knowledge of artistic historical and cultural work would be more relevant to support the creation of visually consistent, coherent digital worlds.

AI STATEMENT

No AI tools have been used in the preparation of this chapter.

REFERENCES

Astin, A. W. (1993). *What matters in college? Four critical years revisited*. Jossey-Bass.

Biggs, J. B., & Moore, P. J. (1993). The process of learning (3rd ed.). Prentice Hall.

Black, P., & Wiliam, D. (2009). Developing the theory of formative assessment. *Educational Assessment, Evaluation and Accountability, 21*(1), 5–31. https://doi.org/10.1007/s11092-008-9068-5

Bloxham, S., & Boyd, P. (2007). *Developing effective assessment in higher education: A practical guide*. Open University Press.

Cook, A., Rushton, B. S., McCormick, S. M., & Southall, D. W. (2005). *Guidelines for the management of student transition*. University of Ulster. http://www.ulster.ac.uk/star/resources/star_guidelines.pdf

Ferrari, J. (2025). "*GAR203 - The Spiderwick Chronicles*" [Digital images] Figures 7,8,9,10. Artstation. https://www.artstation.com/artwork/gRObBP

Knight, P. T., & Yorke, M. (2003). *Assessment, learning and employability*. Open University Press.

Pryn, W. (2025). *"Formative Submission Mural Example"* [Digital image]. Games Academy, Falmouth University.

Pryn, W. (2025). "*Module Timeline Week-by-week*" [Digital image]. Games Academy, Falmouth University.

Pryn, W. (2025). "*Mural tutorial example: Vertex painting*" [Digital image]. Games Academy, Falmouth University.

Pryn, W. (2025). *"Visual Marking Mural"* [Digital image]. Games Academy, Falmouth University.

Pryn, W. (2025). *"WIP Forum 01"* [Digital image]. Games Academy, Falmouth University.

Pryn, W. (2025). *"WIP Forum Thread"* [Digital image]. Games Academy, Falmouth University.

Race, P. (2015). *The lecturer's toolkit: A practical guide to assessment, learning and teaching* (4th ed.). Routledge.

Robinson, K. (2016, October 14). *EDUCATE!* [Video]. Vail Symposium. https://vailsymposium.org/th_events/educate/

Robinson, K., & Aronica, L. (2015). *Creative schools: The grassroots revolution that's transforming education*. Viking.

Rogers, C. R. (1969). *Freedom to learn: A view of what education might become*. Charles E. Merrill.

Schwaber, K & Sutherland, J. *(2020) The 2020 Scrum Guide https://scrumguides.org/scrum-guide.html#increment*

Volet, S. E., & Mansfield, C. (2006). Group work at university: Significance of personal goals in the regulation strategies of students with positive and negative appraisals. *Higher Education Research & Development, 25*(4), 341–356. https://doi.org/10.1080/07294360600947324

Yorke, M., & Longden, B. (2004). *Retention and student success in higher education*. Society for Research into Higher Education & Open University Press.