Tip sheet – Design principles for creating engaging digital content

Ideally, students should have engaging and interactive experiences when learning. CAST defines engagement as 'stimulat[ing] interest and motivation for learning' to create 'purposeful, motivated learners'. The 6th national guideline for improving student outcomes in online learning is 'Engage and support through content and delivery – building an interactive and inclusive learning environment' (Stone 2017). This tip sheet outlines some practical design considerations for creating engaging digital content students can access and use in their learning. They align with the University's Learning and teaching principles.

Tools for creating digital content

Digital content includes video, audio, FLO tools, interactive files and embedded quizzing/polling. What tools can help you develop engaging digital content? The tool selection matrix (FLO Staff Support site) identifies tools available at Flinders for content creation as well as useful features, tips and help resources.

Planning questions

When developing digital content or adapting content already available, the following questions are a good starting point:
- What do you want students to achieve (eg broaden their knowledge base, test their knowledge/understanding)?
- Are the ways students will interact with the content 'constructive, sequential and interlinked' within the topic (Meyers & Nulty 2009)?
- How can you maximise student engagement?

In positioning digital content within your topic, you might also want to consider what tasks your students will need to do to be successful and how you will set out a module for online learning (FLO topic baseline).

Design principles

Why use design principles when creating digital content to engage students? According to Wilkie (2019), these will help to 'optimise learning experiences for students' and support 'rapid upskilling of staff to become content creators'.

Use the following nine principles (in no particular order) as a guide to development and/or checklist for review. The number of design principles your digital content addresses will depend on the capabilities of the tool you choose and the complexity of your design.

1. Is intuitive and easy to use

Learning and teaching principles 1, 4

Key question: Are students able to access, navigate and interact with the content without difficulty so that their attention is on the learning, not the tool?

Students are not necessarily digital natives, so digital content must support the learner to learn rather than be a learning curve to access or use (unless appropriate to the learning context). When designing digital content, planning is critical to making it easier to use (eg mapping the structure). This principle helps reduce cognitive load.

What this might look like:
- 'Right tool for the job' – the tool facilitates the learning
- Instructions are for the activity more than how to use the tool
- Level of comfort easily achieved – the challenge is in the content
- Inclusive of all students (no/low barriers to use)
- Required digital skills are not complex or unique

2. Applies Universal Design for Learning (UDL) principles

Learning and teaching principles 1, 4, 6

Key question: Is the content variable to suit individual students' learning preferences whilst providing opportunities to explore new ways of learning?

'Universal design for learning (UDL) is a framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn' (CAST).

What this might look like:
- Differentiated content and feedback
- Multiple means of engagement, representation, action and expression (UDL) (eg 50 slides converted to a diagram/s with videos and interactive 'click for more information')
- Presentation methods and modality appropriateness – modalities used in real-world applications, multiple modalities (podcast/video/diagram vs text) (eg case studies, technical explanations)
- Application of accessible and inclusive practices
- Students as partners participating in/contributing to content to meet their needs

3. Supports active learning and interactivity

Learning and teaching principles 2, 6

Key question: Can students actively engage with the content and/or each other (as appropriate)?

According to the Good practice guide - Active, engaged and collaborative learning, '[a] key role for teachers is to (co-)create an active, engaging and collaborative learning environment with scaffolding to support the development of and competence and confidence in what, for many students, are new approaches to learning.'

What this might look like:
- Scenarios with immediate feedback (question/response)
- Quizzes within content at regular intervals to check knowledge
- Choice making and outcomes
- Challenges to thinking (eg Socratic questions)
- Options to explore content for more information
- Editable content / opportunities for input
- Opportunities for informal and self-assessment
- Prompts for student curiosity – investigate, explore, discover

4. Considers cognitive load

Learning and teaching principles 1, 4, 6

Key question: Is the content manageable for students at different levels and organised in ways that make sense?

Cognitive load includes sensory, working and long-term memory (selective capacity), as well as intrinsic (task complexity), extraneous (the way it is presented to the learner) and germane load (cognitive effort required to transfer information to long-term memory) (Wilkie 2019).

Chunking and sequencing the work for your students reduces the cognitive load required to make sense of your topic (Tip 4: Consider what tasks your students will need to do to be successful), ensuring attention and information retention.

What this might look like:
- Clear and concise instructions
- Focus – students know the aim and expectations of the activity/content
- Selective inclusion of information – key points, heading hierarchy, 'must know' content
- Content in small focused chunks (eg short videos, presentations of 15 slides or less)
- Mixed media for a varied experience (text, video/audio, images etc)
- Highlights and hotspots to draw attention to key information
- Connections between previous and current learning materials
- Structure and consistency (where appropriate)
- Time flexibility to avoid stress
- Meaningful content, minimal distractions (eg only use images with a purpose; ensure they are an appropriate metaphor or depiction of the point)
- Connections to previous learning and knowledge

5. Enables higher order cognitive processes

Learning and teaching principles 1, 2, 6

Key question: Does the content challenge students in ways that take their learning to the next level?

Designing 'teaching and learning materials [that] require students to use and engage with progressively higher order cognitive processes' is identified by Meyers and Nulty (2009, p. 567) as a way '[t]o maximise the quality of student learning outcomes'.

What this might look like:
- Including progressively challenging content
- Logical order of difficulty (easy to harder)
- Bloom's (or another) taxonomy applied
- Adaptation of the content for the cohort's level of knowledge
- Framework of standards applied
- Scaffolded learning pathways
- Extension learning

6. Incorporates flexibility and personalisation

Learning and teaching principles 1, 4, 6

Key question: Can students relate the content to their experiences and adapt it to suit their needs/abilities?

'Design with the user in mind' is a good approach to flexibility and personalisation. Whilst the content speaks for itself, it must also speak to the individual user. Who is your cohort? How will they engage with the content? How will they personalise it?

What this might look like:
- Usable in the classroom and online (flexible spaces)
- Scaffolding and extension to suit different levels of engagement and ability
- Flexible format (enabling perceptual customisation)
- Non-linear pathways – navigation flexibility
- 'Dip in and out' availabilities
- Learner control/choice
- Triggers and linking
- Choices and consequences – actions within content
- Students as partners participating in/contributing to content to meet their needs

7. Encourages self-regulation and self-efficacy

Learning and teaching principles 1, 4, 6

Key question: Can students evaluate their learning and use the digital content to address any gaps/misunderstandings in and beyond the activity/resource?

Students engaging individually with digital content may be able to monitor their learning and note their knowledge gaps. Being proactive in their learning successes and mistakes will make them more effective learners. You can prompt them to manage their learning through the structure of the content and embedded activities within it.

What this might look like:
- Self and peer assessment
- Opportunities for reflection
- Individualised learning plans linked to content/activities
- Progress mapping
- Looped feedback (teacher/student), conversations (Laurillard 2009)
- Challenges to thinking (eg Socratic questions)
- Students as partners participating in/contributing to content to meet their needs

8. Has authentic (real world) applicability

Learning and teaching principles 1, 2, 3

Key question: Can students relate and re-apply the content to their professional practice/workplace?

Learning and teaching principle 3 states that authentic and experiential learning is reflected and encouraged through:
- authentic assessment relevant to the discipline
- explicit scaffolding for WIL [Work Integrated Learning] and WIL experiences
- providing opportunities to equip our students for their future careers including through the development of Graduate Qualities
- being connected to and reflective of current industry/disciplinary thinking and practice.

What this might look like:
- Meaningful problem-solving scenarios
- Branching scenarios (decision > consequences)
- Simulated situations
- Role play opportunities
- Product/outcomes orientated activities
- Digital skills required can be practically applied
- Engagement through collaboration
- Students as partners participating in/contributing to content to meet their needs

9. Enables sharing, modification, reuse

Learning and teaching principle 1, 6

Key question: Can the content be readily downloaded/manipulated (if appropriate), shared by students and/or teachers, and reused in/adapted to other contexts?

This principle references the 'create, share, reuse, modify' characteristics of H5P or the 5R activities 'retain, reuse, revise, remix and redistribute' that apply to open educational resources (OER). Whilst for copyright

or intellectual property reasons it may not always be possible to apply these attributes, it is a guiding principle that enables sustainability and saves (creation) time.

What this might look like:
- Usable in the classroom and online (flexible spaces)
- Varied formats that are editable
- Clear approach and navigation/manipulation capabilities
- Clear instructions for setup and use (for students and/or teachers)
- Options for redevelopment (by students and teachers)
- Students as partners (co-)creating and/or revising content

Resources and references

Adobe Education Exchange, Basic principles of design, Adobe Spark

CAST, The UDL Guidelines

h5p.org, Examples and downloads

Laurillard, Diana 2009, The Conversational Framework: an approach to evaluating e-assessment patterns in terms of learning theory, SlideShare, May 3

Meyers, Noel M & Nulty, Duncan D 2009, How to use (five) curriculum design principles to align authentic learning environments, assessment, students' approaches to thinking and learning outcomes, *Assessment & Evaluation in Higher Education*, 34, 5, 565-77, DOI:10.1080/02602930802226502

Stone, Cathy 2017, Ten ways to improve online learning for students, blog post, *EduResearch Matters*, November 30

Wilkie, Sonia 2019, Design principles for developing online interactive activities, CAUDIT (Council of Australian University Directors of Information Technology)