

The Pedagogy of FutureLearn

How our
learners learn

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FutureLearn has been designed to support a pedagogy of social learning. Why did we choose this approach? What does it mean for the way we create our courses and how people learn on the FutureLearn platform?

What is pedagogy?

First, a definition. By 'pedagogy' we mean 'theory and practice of teaching, learning and assessment'.¹ So, pedagogy-informed design means building a learning platform that is guided by an explicit theory of how to teach and how people learn.

Learning is a complex process. The table below shows some ways to understand learning and the academic discipline associated with each process.

Learning is ...	Academic area
Making connections	Neuroscience / Cognitive science
Changing behaviour	Behavioural science
Enhancing skills	Cognitive development
Gaining knowledge	Epistemology
Making sense of the world	Social sciences
Interpreting the world in a new way	Phenomenology
Personal change	Psychoanalysis

Developing a new platform for learning is a bit like building a TV set. You need to understand all the layers (in a TV: how current flows through electronic circuits, how pixels are displayed on screens, the quality of the image, how to select TV programs, how to make sure the viewer has an engaging experience) and how they all fit together into a coherent and productive whole. Similarly, in developing FutureLearn we needed to bring together many different levels of learning: how minds form associations, how we develop new ideas and skills, how people learn through social interactions and networks, how global conversations between learners can provide new insights and perspectives, and how educators can guide learners to personal insight and change.

The science of learning

Fortunately, we now know much more about how people learn and how to teach, than even ten years ago. In 2009, Andrew Meltzoff and colleagues wrote a paper for the leading journal *Science* where they describe how insights from Psychology, Neuroscience, Education and Machine Learning are converging to create "a new science of learning that may transform educational practice"². The paper ends with a call for social learning technology:

A key component is the role of 'the social' in learning. What makes social interaction such a powerful catalyst for learning? Can key elements be embodied in technology to improve learning?

That was a catalyst for the creation of FutureLearn.

It's important to note that not all learners like being social. And it's not necessary to engage in social interaction to learn. But building a learning platform around social learning adds another dimension, so that people can learn from each other, as well as from videos and texts. Here's how one of our learners put it:

I read through the above article and thought "that's interesting" then I read the comments below, particularly the discussion of niches, and suddenly thought a whole lot more...

... it's almost as if the basic course is in 2D but the postings lift it to 3D and really make it come alive.

Comment posted by Karen Carmichael Timson, learner on the Ecosystems course.

FutureLearn pedagogy

Our platform and our courses are based on three fundamental principles of pedagogy:

- **Telling stories:** Storytelling provides a unifying framework for us to build and think about courses.
- **Provoking conversation:** Conversational learning is at the core of how people come together and learn.
- **Celebrating progress:** Each element of a course shows progress, including step completion, peer interaction, timed emails, quizzes and tests with meaningful and formative feedback.

Why these?

Telling stories

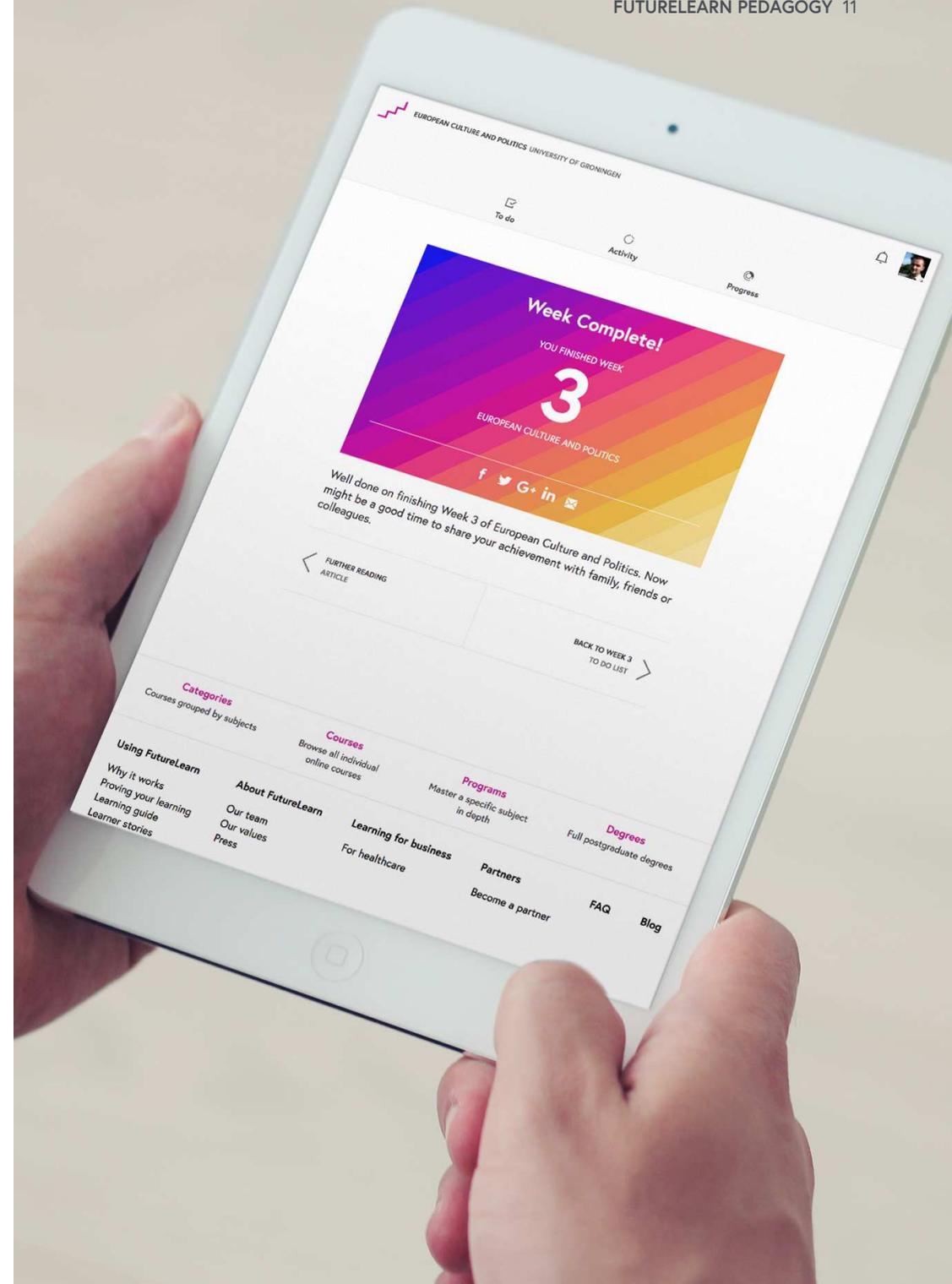
Telling stories to ourselves and others is central to how we come to understand our world. Narratives help us to think, remember and communicate³ by piecing together fragments of knowledge into a coherent flow. 'The story of my life' is how each person makes sense of who they are, and explains that to others. As a method of teaching, storytelling helps to structure learning by showing how the elements of a course fit together into a curriculum, how to run and record science experiments, how to understand the causes of events in history or economics, and how to interpret events that happen at particular times. It offers challenges for learners to find 'what happened next?' or 'what caused that?' For example, the 'Introduction to Forensic Science' course from the University of Strathclyde encouraged learners to work together to solve a murder, by presenting a sequence of events to be solved by forensic techniques such as footprint analysis, structured as a weekly detective story.

Provoking conversation

All human learning involves conversation. We converse with ourselves to reflect on experience. We converse with teachers to understand their expert knowledge. We converse with other learners to try and reach shared understanding. The conversations could be internal, as we make distinctions between concepts (Acid or alkali? Environmentally friendly or unfriendly? Democratic or undemocratic?) and create abstract ideas from instances. The conversations could be with other learners or educators, by sharing understandings, engaging in arguments, and resolving conflicts. Conversation is a fundamental mechanism for learning. To be successful, it needs a shared language and a medium to hold discussions and reach agreements.

Celebrating progress

John Hattie, a researcher in education, has produced a monumental synthesis of more than 800 meta-studies of what makes for successful learning. In his book, *Visible Learning*⁴, Hattie says that education is most effective when the teaching is visible to the student and the learning is visible to the student. Making learning visible, by giving the students ways to see the structure of a course and track their progress through it, is one part of celebrating progress. Another is helping students to set their learning goals and reward them for progressing towards these goals.



Learning at massive scale

Telling stories, provoking conversation and celebrating progress give firm foundations for successful online learning. But FutureLearn also needs to work at scale, supporting up to hundreds of thousands of learners on each course.

Some teaching methods, such as piano teaching or sports coaching, only work well for small numbers of students. Others give similar learning experiences whatever the scale. Watching a webcast lecture with 100,000 people is pretty much the same learning experience as watching it in a lecture hall. Teaching by lectures, texts and tests is the basis for most online education.

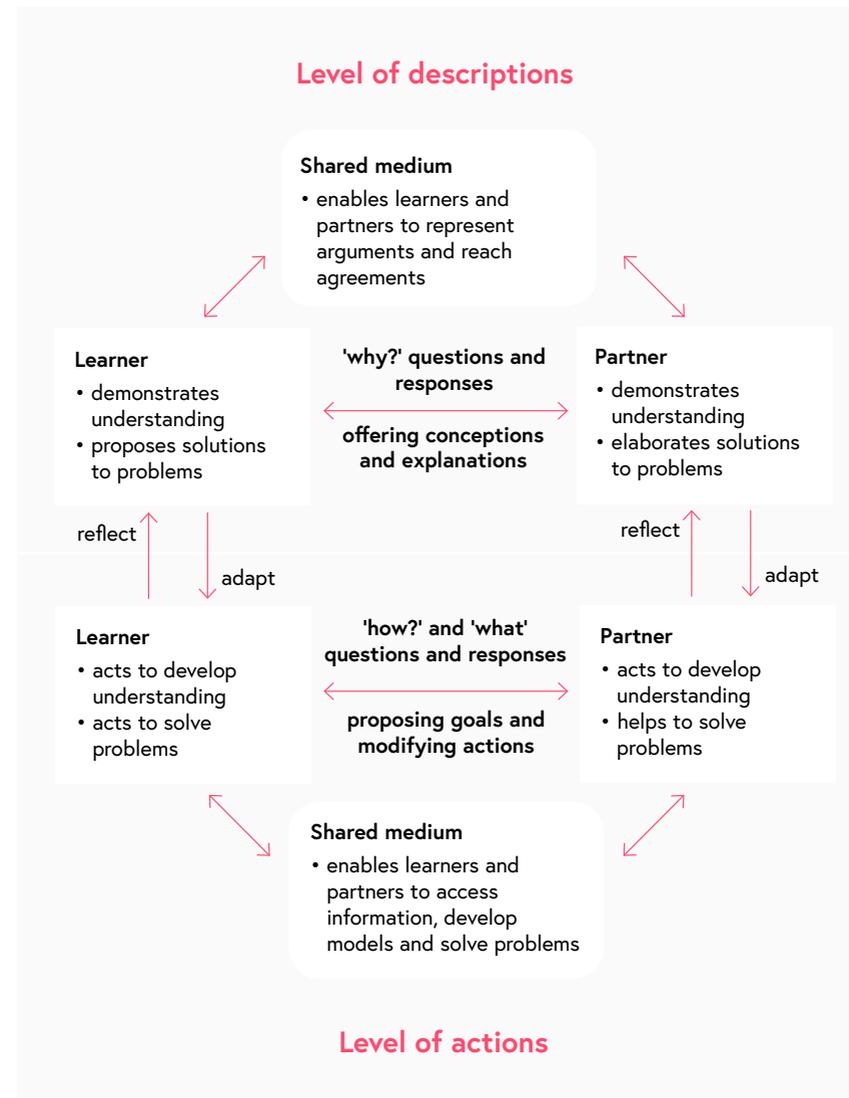
But which teaching methods *get better* the more people take part? The table overleaf shows 16 different methods of teaching and learning. Which of these improve with scale?

The answer is that learning through conversation and construction can both benefit from scale, as people share ideas, compare perspectives and build shared objects. Other learners bring different perspectives, start discussions, and offer critique and argument. But these conversations for learning need to be carefully managed, so they don't wander off topic or respond with abuse. Networked learning may also work well at scale, but it also has to be carefully managed, so the networks don't either become exclusive, or huge and unwieldy.

Pedagogy	Learners...	Technology-based examples
Assessing	Give or receive constructive feedback	Engaging in online peer review
Browsing	Seek and collate information	Using search engines to find educational materials
Case-based	Investigate individual cases	Investigating medical cases online cases
Collaborative	Construct shared understanding	Creating a shared Google doc
Construction	Create artefacts	Engaging with big construction set, e.g. Minecraft
Conversation	Converse with others	Engaging in online discussion
Cross-context	Learning across different settings	Learning between classroom and home with a tablet
Delivered	Comprehend information	Watching an online video
Embodied	Use their bodies to learn motor skills	Monitoring exercise with a Fitbit activity tracker
Game-based	Engage with game environments	Multiplayer educational game, e.g. Endless Ocean
Inquiry-driven	Investigate authentic situations	Using digital probes to collect and analyse data
Networked	Interact with networks of peers	Educational social networking
Performative	Present for audience	Creating a video blog of learning activities
Problem-solving	Try to solve problems	Working in online teams to solve problems
Reflective	Reflect on information and activities	Reviewing e-portfolios of learning activities
Simulation	Interact with a simulated tool	Learning science in a virtual world

For FutureLearn, we focus on learning as conversation.

Conversation Theory is a grand theory of learning, proposed by the British educational technologist Gordon Pask⁵ and developed further by researchers including Diana Laurillard⁶. It shows how to structure conversations so they support effective learning.



What the picture shows is the conversational structure for the FutureLearn platform. Each set of arrows matches a facility on the platform.

The bottom of the diagram shows learning at the level of actions. Here, learners take part in conversations around a shared medium. This could be a video, an article, or an exercise. They are encouraged by the educator to solve problems related to the learning content and to ask and answer 'how' and 'what' questions to clarify their understanding. These form the flow of comments and replies alongside each step of the course.

The top of the diagram shows conversation at the level of descriptions. This is the 'Discussion' step, where learners are prompted to converse about their understanding of the course so far and to address deeper questions about their knowledge and perspectives.

On the left and right of the diagram are the internal conversations that learners have with themselves while they reflect on quiz and test questions, checking their knowledge and understanding.

The diagram shows some clear implications for the type of learning that FutureLearn encourages:

- Learning is an **active process**. A learner should be helped to develop understanding and solve problems.
- Learning happens when learners **interact with a shared medium**: a video, an article, a quiz, a model or simulation.
- Learners should be given the opportunity to **discuss each element** of their course.
- Learners should be helped to **reflect on their learning**, by demonstrating their understanding and solving problems.
- Learners should be able to have **reflective** ('why?') as well as **procedural** ('how?' and 'what?') conversations.
- Learners' **contributions are valued** – they become teaching materials for other learners to learn from and respond to.

How it works

When we first designed the FutureLearn platform, we weren't sure that the model of learning as conversation would work, especially the idea of linking free-flowing comments and replies to each piece of content. We thought there might be 10 or 20 comments on each step, with some of them being abusive or unhelpful. In fact, FutureLearn steps have attracted hundreds, sometimes thousands, of comments and responses, which have been overwhelmingly positive. That led us to bring in techniques from social media to handle the volume of learner contributions, through methods such as liking, filtering ('most liked'), and following.

Some other decisions we made, based on principles of effective learning include the following.

Why do we have weeks, activities and steps?

- **Weeks** are personally meaningful periods of study: 'Each week I will...' They structure courses in a way that learners and educators understand.
- **Activities** are elements of pedagogy. Each activity should have a defined goal, learning methods, and an outcome. The learning for a course is designed around activities.
- **Steps** are the pedagogic 'Lego bricks' that form an activity. The intention has been to have a limited set of step types that can be put together in different ways to form learning activities.

The figure overleaf shows Week 1 of the course on 'How to create a great FutureLearn course', designed for new educators

Activity	Pedagogy	Steps			
What is good learning?	RECEIVE DISCUSS	1.1 DI DISCUSSION	1.2 VI VIDEO	1.3 AR ARTICLE	1.4 AR ARTICLE
High level course design	RECEIVE REFLECT DISCUSS CREATE	1.5 DI DISCUSSION	1.6 AR ARTICLE	1.7 DI DISCUSSION	1.8 DI DISCUSSION
Diving straight in	RECEIVE PRACTICE DISCUSS REFLECT	1.9 VI VIDEO	1.10 AS ASSIGNMENT	1.11 RV REVIEW	1.12 RE REFLECTION
What have we learnt so far about learning?	RECEIVE INVESTIGATE DISCUSS	1.13 AR ARTICLE	1.14 AR ARTICLE	1.15 VI VIDEO	1.16 DI DISCUSSION

creating courses on the FutureLearn platform. On the right are the steps for each activity. The pattern of steps shows how these blocks build up into activities and weeks (for example, activity two has more discussion than is usual on a FutureLearn course, and activity three gives the educators an opportunity to try out peer review). Each activity covers a set of pedagogies, so there's a progression from receiving information, through discussing, creating, practising, investigating and ending with a reflective discussion.

Why are FutureLearn steps designed to be about 20 minutes?

For over 100 years, educational researchers have known that it's better to present new knowledge in short chunks, rather than crammed into a single session. Recent research in neuroscience has now shown the detail of how we produce long-term memories. In brief, the evidence⁷ suggests that each period of learning stimulates connections between brain cells. But it takes time for

these chemical bonds in the brain to strengthen. Trying to learn too much in one session may not give the brain time to embed the knowledge in long-term memory. A session of 20 minutes, followed by a break of around 10 minutes, then another session of 20 minutes, and so on, is an effective way to learn.

Why do we ask our learners big questions?

There has been much recent interest in 'flipped classrooms', where students study at home by watching a video, then have a group classroom session to discuss and explore the topic in more depth. This method works because both sessions can involve active learning. When watching the video, the student is encouraged to pause the presentation, reflect and take notes. In the classroom, the teacher can get the students to be active in discussing the topic and solving problems.

But research has also investigated 'flipping the flipped classroom'⁸ so that the students first take part in a free exploration of the topic, *then* watch a video presentation. They found that students learned more from this 'explore first' approach, perhaps because their early explorations were deeper and not constrained by the video presentation.

In FutureLearn, we try something similar by asking 'big questions' (such as 'does money make you happy?' or 'what separates us from apes?') to prompt wide-ranging discussion before getting into the detail of the course. This is complemented by questions linked to each step or activity, prompting learners to discuss the topic in more depth.

The Future of Learning

The FutureLearn platform and our courses have been carefully designed to support active and social learning. The platform is continually being developed as the education sector evolves to meet the changing demands of learners. Universities now face the challenge of adapting to the digital transformation and, as such, are looking at new models to cater for the changing profile of today's students. Online platforms like FutureLearn can collaborate with institutions to address these challenges, in order to enhance models and create new ones, whether it's courses to cater for the advancing professional looking to gain long-term expertise and evidence of their professional development; online degrees that enable learners to access content from world-class universities alongside their working lives; or courses for learners who are looking for engaging and enriching content to nourish their love of learning.

The aim, and challenge, is to make sure these developments meet the needs of these learners worldwide and represent the best in how to teach and learn online.

Endnotes

- 1 Sharples, M., McAndrew, P., Weller, M., Ferguson, R., FitzGerald, E., Hirst, T., Mor, Y., Gaved, M. and Whitelock, D. (2012). *Innovating pedagogy 2012: Open University innovation report 1*. Milton Keynes: The Open University.
- 2 A.N. Meltzoff, P. K. Kuhl, J. Movellan, & T. J. Sejnowski (2009) Foundations for a New Science of Learning, *Science*, 325 (5938), 284.
- 3 Plowman, L., et al. (1999). Designing multimedia for learning: Narrative guidance and narrative construction. In *Proceedings of the SIGCHI conference on Human Factors in Computing Systems* (pp. 310-317). ACM.
- 4 Hattie, J. (2008). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. Routledge.
- 5 Pask, G. (1976). *Conversation theory: Applications in education and epistemology*. Amsterdam and New York: Elsevier.
- 6 Laurillard, D. (2002). *Rethinking university teaching (2nd Edition)*. London: Routledge Falmer.
- 7 Kelley, P., & Whatson, T. (2013). Making long-term memories in minutes: a spaced learning pattern from memory research in education. *Frontiers in Human Neuroscience*, 7, 589. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3782739/>
- 8 Schneider, B., & Blikstein, P. (2016). Flipping the flipped classroom: A study of the effectiveness of video lectures versus constructivist exploration using tangible user interfaces. *IEEE Transactions on Learning Technologies*, 9(1), 5-17.

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