Sponge.

Learning science applied to the workplace.

A HANDBOOK FOR LEARNING LEADERS, MANAGERS, AND DESIGN PRACTITIONERS.

Sponge.

Contents.

Enhanced learning, grounded in science.

Thanks to recent developments in neuroimaging, we now know more about the human brain. The learning sciences sit at the intersection of educational theory, behavioural psychology, neuroscience, and today, we can draw upon this diverse set of disciplines and emerging evidence armed with real insight into how we learn.

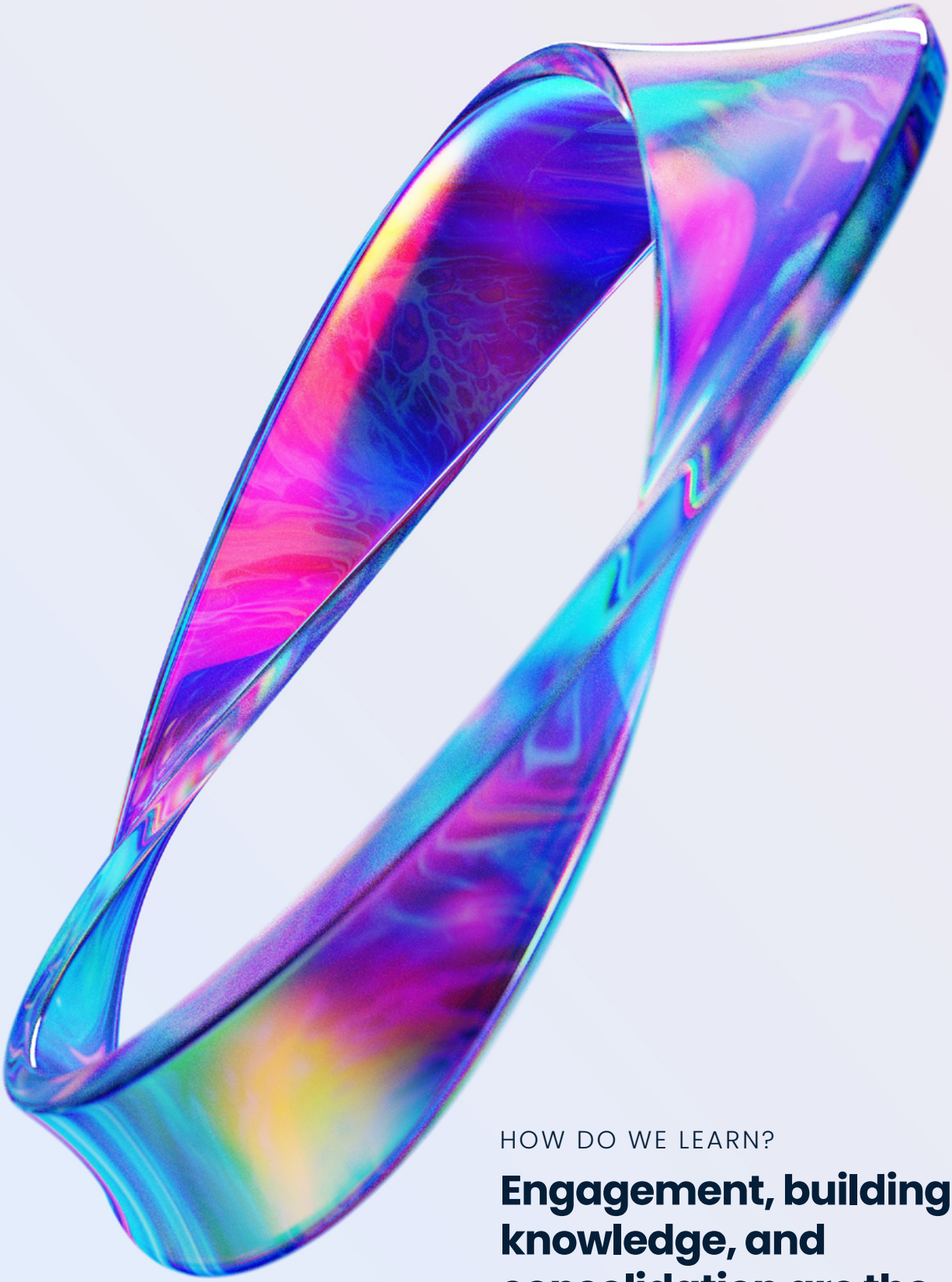
As creators of learning experiences, it's vital to embrace the findings of learning science to ensure our training hits the mark and supports desired behaviours that advance the organisation.

If you're responsible for crafting the most effective learning in your workplace, you may find yourself faced with important questions like:

- How do adults learn?
- What training techniques really work (and which should we leave behind)?
- How can we avoid common pitfalls that hamper learning and short-change the organisation?

We've enlisted the help of leading educational neuroscientist, Paul Howard-Jones to help us answer these questions. Additionally, we've married the science to practical techniques you can apply to your own projects, making this your companion for action.

And in case you'd like to hear more, check out our series **'Learning Science Unpacked'**, covering six podcasts dedicated to the science of learning.



HOW DO WE LEARN?

Engagement, building knowledge, and consolidation are the foundation of learning.

How do we learn?

For learning to occur, that is for new information to become durable, robust and easy to recall later, three brain processes need to occur.

Engagement

The first is engagement, and without it, no new learning will happen. It's now clear that our emotions play a larger role than we may have given credit to in the past. There's an important sub-cortical structure called the 'nucleus accumbens' which we can think of as our desire centre, the more we want something, the more the nucleus accumbens activates. This is relevant to learning because if we perceive an exciting opportunity to learn, it promotes an approach response in the brain, signaling us to move forward.

Desire to learn has an important role in our ability to take on new information. When the nucleus accumbens activates, it triggers the release of dopamine, a neurotransmitter responsible for increasing neuroplasticity, or the ability for neurons to change. This is the holy grail of learning because we need our neurons to create new connections with each other, and dopamine accelerates the rate at which learning occurs.

Building knowledge

The second process is building knowledge. This is when new information is being created in our brain and integrated with what we already know to make it meaningful.

Creating this initial representation occurs in the pre-frontal cortex, and this process uses our working memory. An important feature of building knowledge is that we have limited capacity to hold this initial representation, so anything we can do to remove distractions will greatly serve learners during this phase.

Consolidation

The third process is consolidation, where we're rehearsing and practicing using our new knowledge until it becomes automatic and easier to find and use later.

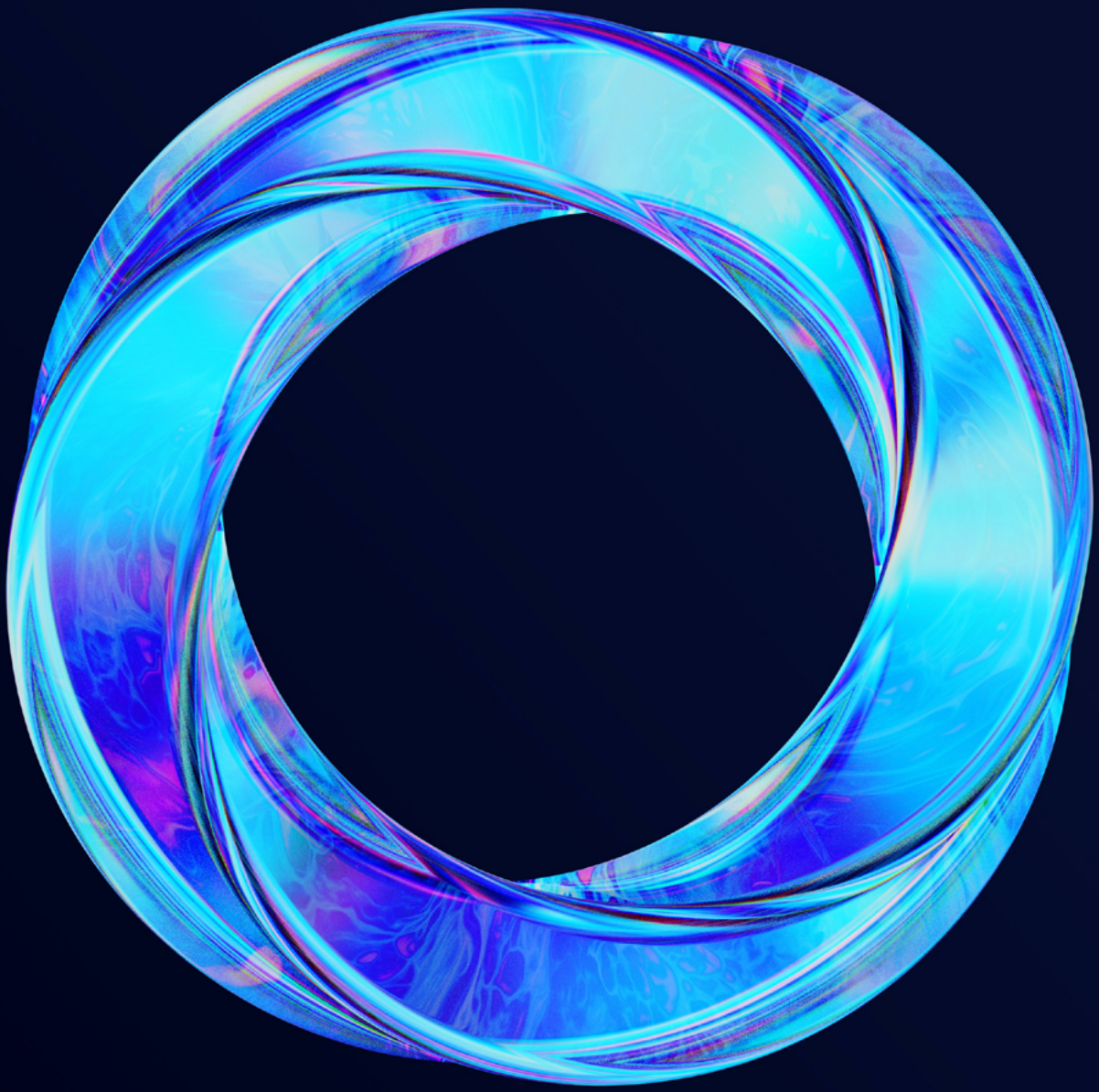
Consolidation strengthens the connection between neurons which leads to faster, more efficient transmission of information.

A shimmering brain

These processes are the foundation of learning, but it's important not to think of them as a three-part pedagogy or theory. In fact, if we were to look at a learning brain, it would appear to be shimmering all over as information is distributed across areas responsible for sound, language, timing and memory.

TECHNIQUES

From stimulating dopamine release via novel experiences to facilitating shared attention to boost oxytocin, here is a rich toolset for the creative application of learning science.



Evidence-based techniques for workplace learning.

Learning science needn't be academic. As we've seen, engaging the brain is an essential part of the process – the gateway to learning.

In a recent poll of over 200 L&D professionals, we found that 53% wanted to improve the engagement of their courses, 18% wanted to boost knowledge building, and 29% were seeking to improve consolidation in an upcoming learning project.[1]

Our aim therefore is simple. To share an array of techniques to select from to amplify the efficacy of your next learning experience.

Enhance engagement.

1. Offer rewards

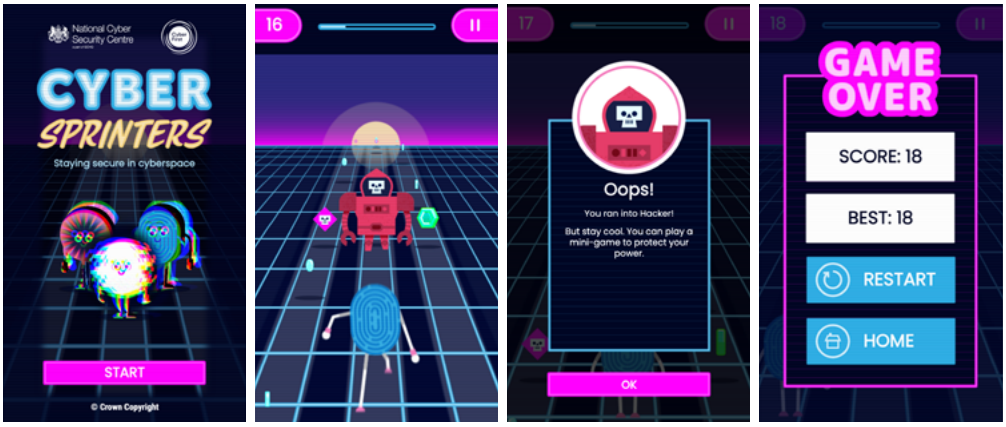
Offering rewards has been shown to promote an approach response towards learning. Rewards can include points, badges, and rankings, as well as praise and recognition. But rewards can also serve a greater cause. In an onboarding programme for Specsavers, learners could donate a virtual coin to a charity which the company matched in cash at the end of each year.

2. Make it fun

It can be tempting to shy away from fun in learning, but we should remember that it can be an important tool in our engagement toolbox.

One reason is that moods bias our perception of outcomes, so if we're in a good mood when learning, we perceive the outcome will be better, whether that's the gratification of new knowledge or the sense of accomplishment we feel from learning.

Mobile games are a good way to introduce fun to learning. In this endless runner game for the National Cyber Security Centre, we helped a young audience recognise cyber dangers in a fun and effective way.



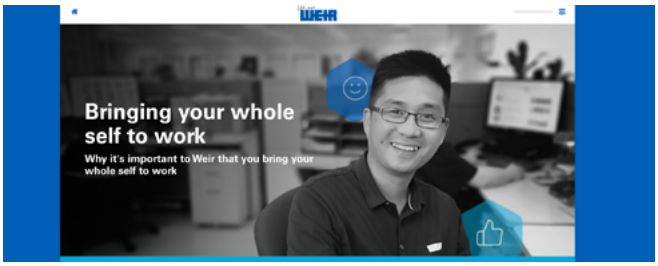
1 Results taken from LT and LPI poll data, n=243, May 2022.

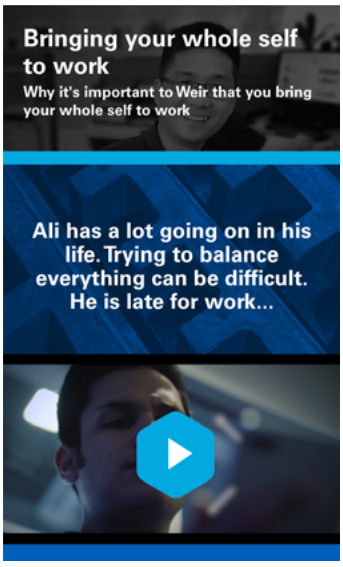
3. Create a connection

Recall our goal to motivate behaviour? Studies show that stories are more effective at influencing behaviour than informational narratives.

This was the finding of researchers looking at climate change messaging and how stories lead to pro-environmental behaviour better than informational narratives. Stories facilitate experiential rather than analytical processing, heightening emotional arousal,[2] and this connection is influential.

Empathy videos can be used to tell impactful, emotive, and realistic stories. We've created short films for **diversity and inclusion and compliance in global workplaces**, as well as taking a fresh spin on health and safety to include mental wellbeing.





4. Provide a challenge

Gamification increases reward system activity, reduces mind wandering, and increases memory and learning. Some of the hallmarks of games – anticipating triumph, exploring, collaborating, collecting, collaborating, and surprise - are all great ways to activate the reward system.

Serious games, including business simulations can be deeply engaging, particularly when teams are vying for resources and balancing decisions against diverse criteria, such as this example for **GSK**.

2 Morris, B., Chrysochou, P., Christensen, J.D., Orquin, J.L., Barraza, J., Zak, P.J. and Mitkidis, P. (2019) **Stories Vs. Facts: Triggering Emotion and Action-taking on Climate Change. Climatic Change** [online].154, pp. 19-36. [Accessed 02 May 2022].

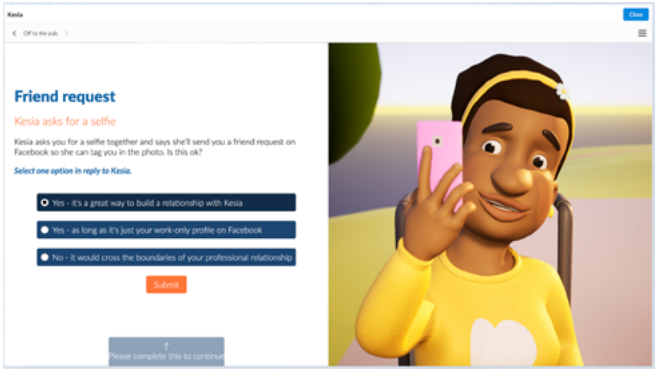
5. Keep it social

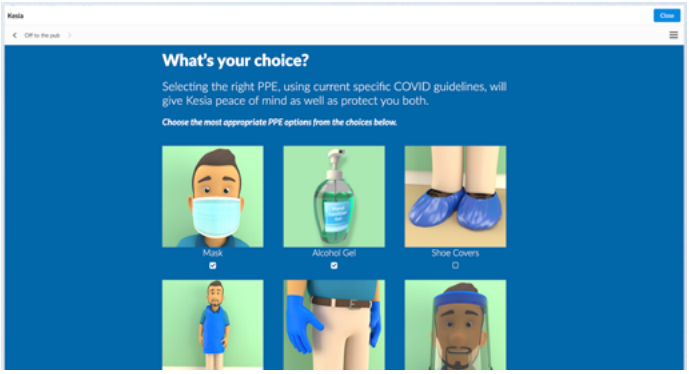
You may have heard it said that social trumps individual when learning. Well, there's some science to that. We are primates with high oxytocin levels, and the significance of this is that we pay a lot of attention to our ingroup. Social interactions like sharing attention and turn taking raise our oxytocin levels and we find this interaction engaging.

Yet many of us are creating elearning and wonder how we can make that a more social experience. One technique is to introduce poll-style questions that show the responses of other people in the organisation. Benchmarking against our peers gives us a sense of our own success and shares the collective knowledge level of the group.

6. Leverage novelty

Novelty stimulates the release of dopamine accelerating the rate at which we learn. Novelty – the quality of the unfamiliar or unusual – can be introduced through creating new experiences or leveraging new technologies. Right now, organisations are exploring the possibilities of virtual learning and dipping a toe into the metaverse. For one client, **Newcross healthcare**, we created a 3D world for learners to experience, which they have taken into a virtual platform, allowing employees to meet, talk, share, and learn in a unique environment.





Build knowledge.

1. Remove distractions

When it comes to building knowledge, eliminating anything that causes unnecessary mental effort will aid learning. That could be removing irrelevant images, nice-to-know information, or audio over text.

But why expose learners to irrelevant information in the first place? Diagnostics enable employees to assess their skills level and receive relevant, streamlined resources and training.

2. Offer variety

Learning scientists advocate providing a variety of ways to learn because it increases concept flexibility.

The brain uses multiple representations to build a consolidated memory of a concept, making it easier to recall and use later.

Successful blended architectures support knowledge building by repeating and re-illustrating the same concept across multiple instructional methods. Coaching, videos, elearning, discussion, podcasts, missions, quizzes, and presentations, might all be used to build up concept knowledge, making it easier to apply to new circumstances in the future.

3. Connect with what's known

When new information is first represented, we need to connect it to existing knowledge to give meaning to new concepts.

In 1975, psychologists working with divers discovered that learning in the environment in which recall is expected to happen improves memory. They asked divers to learn a list of 36 words, with some on the beach and some underwater. When asked to recall the list, it was clear that words learned underwater were best recalled underwater, and those on land were recalled best on land.[3] This is known as environmental-context-dependent memory.

Increasing the realism of the environments in your training can help. Try simulations that mimic manufacturing plants, videos that capture life in HQ, or images that reflect familiar environments.

4. Simplify complexity

In 'Manage Memory for Deeper Learning',[4] Patti Shank refers to research which demonstrates that when reading, adults tend to skip things that are unclear without stopping to slow down and understand. The implication of this is that if information is complex or dense, people may simply ignore it.

It's our role to eliminate overly complex information to support comprehension, and this is especially true for novices. What complexity can you eliminate in your organisations?

3 Baddeley, A.D. and Godden, D.R. (1975) Context-dependent Memory in Two Natural Environments: On Land and Underwater. Psychology. 66 (3), pp. 325-331.

4 Shank, P. (2018) Manage Memory For Deeper Learning. 1st ed. Great Britain: Learning Speaks Publications / Amazon.

Support consolidation.

1. Provide practice

Consolidation is extremely important for strengthening neural connections and improving the efficient transmission of information. It's vital that we give people the chance to practice and rehearse what they've learned, because if they begin to apply things incorrectly, this can lead to forming habits that are much harder to break down the line.

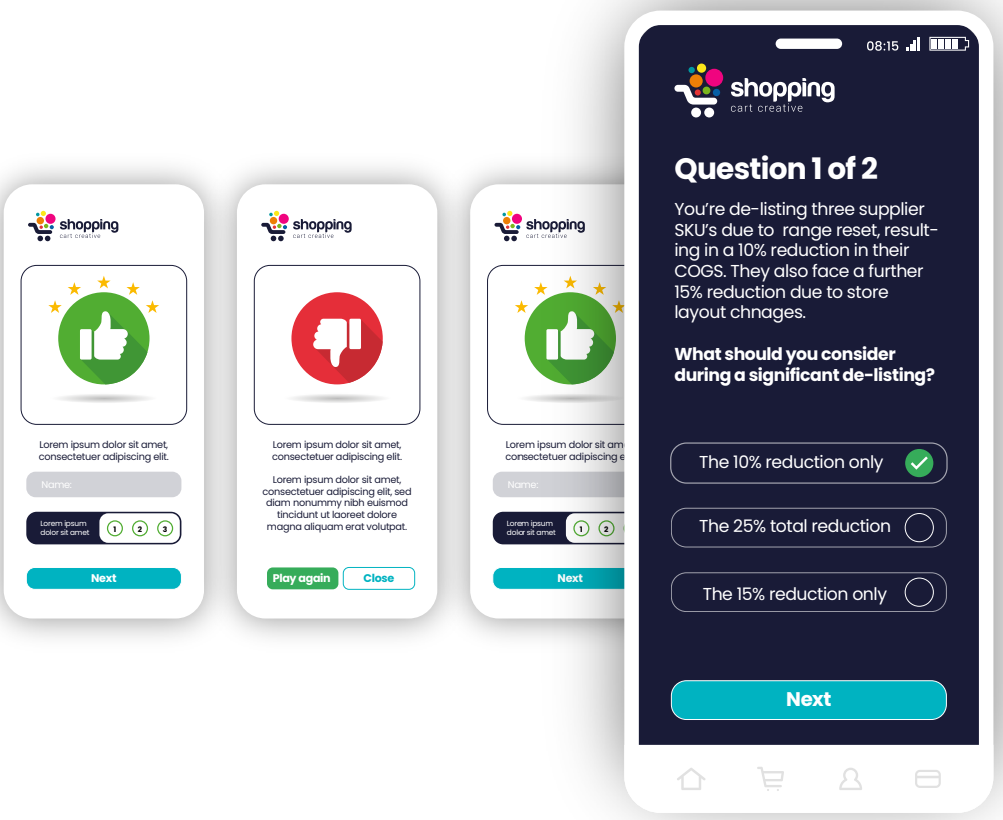
Utilising branched video narratives can be an engaging way to practice. Imagine you're a retailer looking to boost customer loyalty card adoption. Equipping staff with customer interactions enables them to practice key negotiation skills.

2. Structure retrieval

Did you know that remembering information you learnt yesterday involves a slightly different part of the brain than remembering something you learnt today?

This is important because it means that rehearsing what you've only just learnt is less effective at consolidation than rehearsing it tomorrow. This is where structured retrieval comes in, by forcing people to go into their long-term memory and pull out the relevant information.

Techniques for structuring retrieval can include using apps and emails to trigger recall. We've done this successfully for **supermarkets** by sending 10 weekly emails to learners containing a question to encourage knowledge retrieval.



3. Facilitate discussion

Discussion is particularly effective because it's easier to avoid your brain fixating on a limited set of ideas when you are discussing them with others. It raises oxytocin (it's engaging), it's more creative, and it keeps the subject front of mind.

Managers have an important role to play in learning transfer and one of the ways to support this is using what we call 'conversation starters'. These enable team leaders to facilitate discussion around focused talking points in team meetings, to prompt deeper reflection on particular behaviours and performance goals.

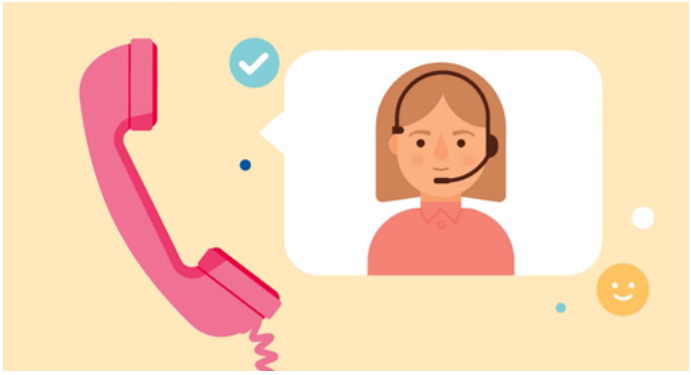
4. Personalise feedback

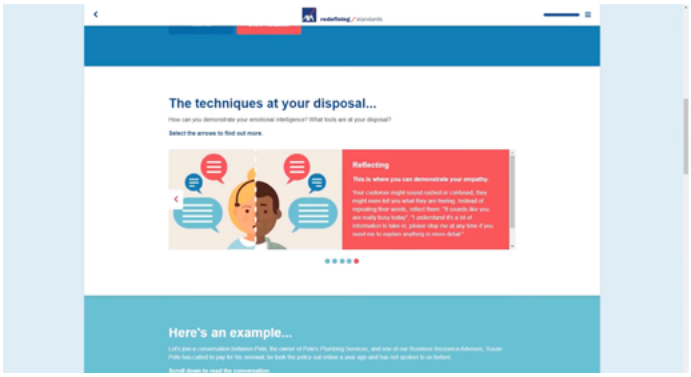
We've previously outlined that when information is freshly learned it's incredibly susceptible to being forgotten or applied incorrectly, so feedback from an experienced manager or peer is extremely helpful at supporting accurate practice.

We've seen this technique work with award-winning success for a customer contact centre at Axa.

We delivered a week-long blended course which included a daily meeting. In small groups, customer advisors could highlight any difficulties they experienced and get individual course-correction from their managers.

This had **incredible results for Axa**, raising positive customer feedback by over 113%, and significantly reducing complaints.





Sponge.

Do you want to enhance workplace learning based on the science?

We're here to help! Contact our learning consultants today, or check out our podcast mini-series '**Learning Science Unpacked**' with Educational Neuroscientist Paul Howard-Jones. We'd love to help embed best practice and support the goals of your organisation.

hello@spongelearning.com
+44 (0)330 390 3920

spongelearning.com

spongelearning

@sponge_learning

London
2 Angel Square, 3rd Floor, London, EC1V 1NY, UK

Berlin
Hardenbergstraße 32, 10623 Berlin, DE
Tel: +49 (0)308 419 140

Brussels
Pegasuslaan 5, 1831 Machelen, Belgium, BE

Edinburgh
112 Commercial St, Leith, Edinburgh, EH6 6NF, UK

Bristol
1 Temple Back, Redcliffe, Bristol, BS1 6FL, UK

Plymouth
Plymouth Science Park, 9 Research Way, Plymouth,
PL6 8BT, UK