Going mobile

How to deign great multi-device elearning

kineo

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Introduction

The smartphone is now the world's preferred personal computing device, and it's easy to see why. If you own a smartphone — and the chances are you do — you own a phenomenally powerful tool. You carry in your pocket access to the internet, GPS satellites that pinpoint your exact location, a camera, your diary and thousands of specialist apps. Not to mention a phone.

This pairing of mobile internet and the smartphone means we're always online no matter where we are or what we're doing. And this has led to a revolution in the way we interact with each other and the world around us. The sheer scale of the impact on so many aspects of our lives is all the more astounding when you consider that the iPhone hasn't yet celebrated its 10th birthday.

What's perhaps most surprising, though, is how sophisticated our user behaviour has become in this short time. We seamlessly switch back and forth between devices and applications depending on what we want to do, where we are, the time of day and so on. We used to be worried about users getting lost between two windows on a desktop and content hiding below the fold — now we start

something on our phone in the morning and finish it off on our tablet in the evening. The game has changed.

" WE SEAMLESSLY SWITCH BACK AND FORTH BETWEEN DEVICES AND APPLICATIONS DEPENDING ON WHAT WE WANT TO DO"

Of course, the world of elearning hasn't existed in a vacuum while these seismic changes have been happening all around us. In this guide we'll consider why multi-device content is important, and take look at some design techniques which make it possible for a single version of a

course to work across a range of different devices. We'll share a few guiding principles on designing multidevice content as well as a few techniques that we use when designing in Adapt, our own responsive framework. We'll end by considering what's in store for mobile learning in the future.

Paul Welch
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Kineo - A City & Guilds Group Business

This guide will show how you can continue to meet the needs of your learners in this rapidly changing environment.
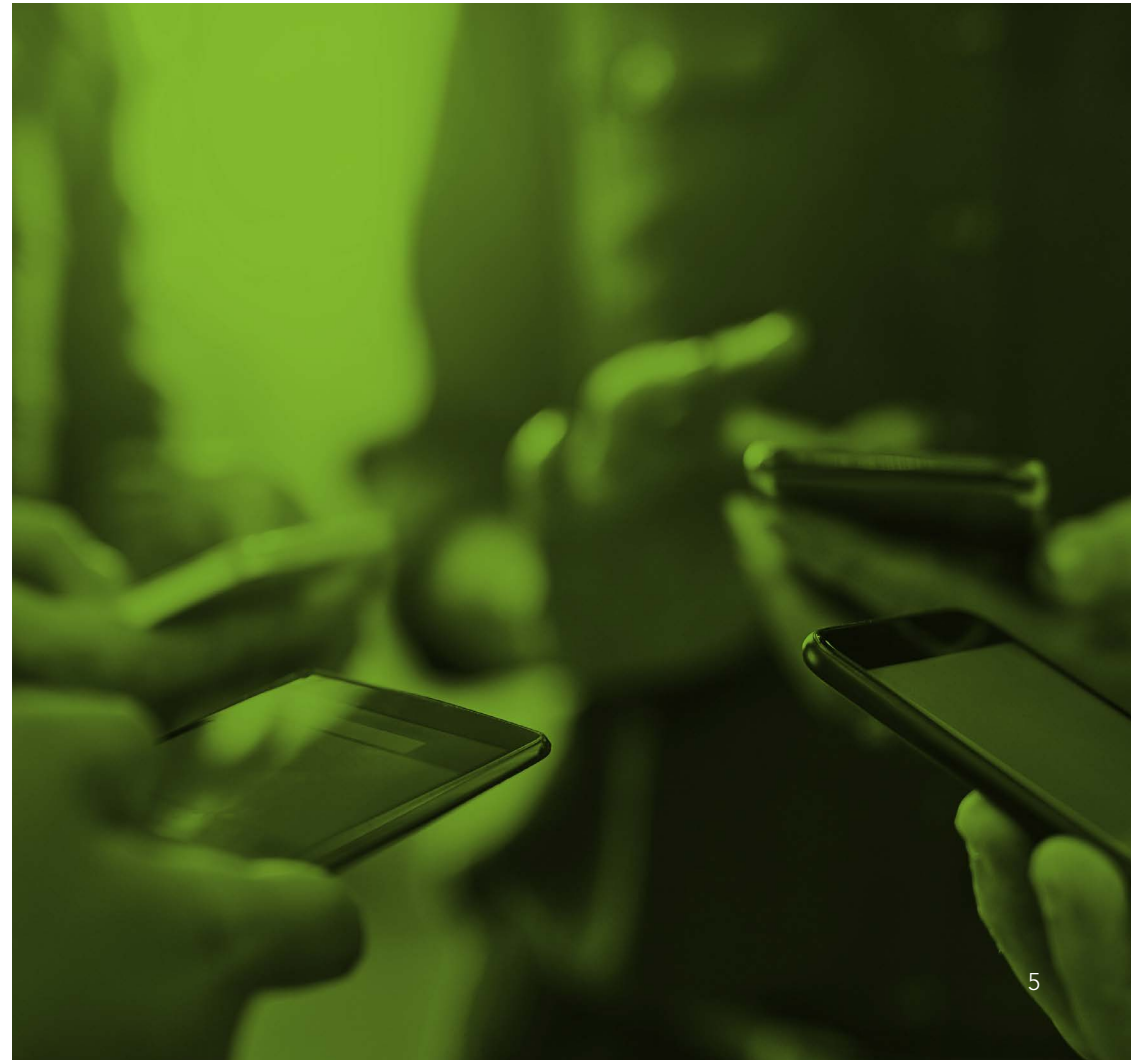
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Going mobile:
How to design great multi-device elearning

It's probably worth beginning by stating that even if your organisation doesn't offer mobile elearning solutions or provide staff with mobile devices, this is still relevant to you due to something known as BYOD..

There's a growing trend known as Bring Your Own Device (BYOD) where organisations allow or even encourage employees to access company information and systems with personal computing devices. BYOD policies are thought to lead to more productive, satisfied employees as they are working with technology they know, which offers them greater flexibility and may well be more advanced than the devices offered by their employer.

Given the above, it makes a lot of sense to ensure that as much of your content will work on as many of these devices as possible. If something official doesn't work on their device, the employee will probably find the content from somewhere else that does.

"SO, IF YOU'RE GOING TO CREATE MULTI-DEVICE CONTENT, HOW DO YOU GO ABOUT ACHIEVING THIS?"

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Delivering multi-device content

If you want to create multi-device content you'll need to develop one of the following.

Native app

A native app is created for a particular mobile operating system and installed onto the device itself via an app store. Most people with a smartphone will have downloaded a native app from Google Play or Apple's App Store – think Google Maps or Angry Birds.

Native apps can access the device hardware so they can make use of functionality such as the camera, and once installed they don't require an internet connection. However, each mobile platform (e.g. Android, iOS) requires development of a separate app and uses a different programming language, and this makes native apps more expensive and timeconsuming to produce. In addition, once the app is finished it will need to be vetted by the different app stores before you can release your content, and you'll still need to create content for the desktop.

Web app

A web app is coded in everyday web languages (such as HTML5, JavaScript and CSS) meaning a single version of the app will work across all mobile operating systems, which in turn makes them cheaper and quicker to produce than native apps.

Are there any downsides to web apps? Web apps are not installed directly on the device so they do require an internet connection to load content into a browser (however, there's no need for the user to have to head over to an app store). Web apps can't access the device hardware like a native app and you'll still need to create content for the desktop.

A website that follows responsive or adaptive web design principles is similar to a web app. It too is built in HTML5, JavaScript and CSS, a single version will work across different operating systems,

it is not installed onto the device and it requires an internet connection to load content into a browser. However, the key difference is that it can also deliver content to the desktop as well as mobile devices.

When you consider that a website built using these multi-device design principles will also be the most suitable solution to meet accessibility criteria, as well as the easiest to localise and maintain, it's not hard to see why this approach has proved popular with those looking to deliver multi-device content.

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Responsive vs Adaptive web design principles

These are two slightly different approaches to achieving the same goal: Rendering the same piece of content on a range of different devices and screen sizes.

In its simplest terms responsive design can be described as a page built upon a very flexible foundation called a fluid grid, which will wrap, stack or resize content. This allows a page to dynamically change its layout to ensure the content will fit any screen size.

Adaptive design doesn't use a fluid grid, detecting instead the screen size being used at the time and then choosing the layout that will offer the optimal viewing experience from a predetermined selection.

It's common for aspects of both approaches to be combined within a single solution. For example, a page might be built upon a responsive layout, but then further enhanced by the use of adaptive techniques to change elements of the page as and when more powerful browsers or higher screen resolutions are

detected. This approach is known as a progressive enhancement strategy.

Progressive enhancement lends itself well to a design approach known as mobile first. This approach is about making sure the content and design make sense when viewed on a smaller, less powerful mobile device, before adding the flourishes that are possible with the more powerful desktop browsers and increases in display size.

The alternative to progressive enhancement – graceful degradation – is a more top-down style where you design for the most advanced browser and then remove complexity and scale down the experience for less sophisticated ones. Both approaches are considered good practice but, all things being equal, progressive enhancement is typically considered the superior approach.

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What are multi-device web design principles

Responsive web design and its close cousin adaptive web design are methodologies which ensure that a single version of a website offers an optimised user experience according to the device and screen size being used at the time.

This tailored viewing experience is achieved by:

- providing dynamic layouts which allow for the resizing of on-screen elements to make the most of the space available (fluid grid concept)

- automatically detecting the characteristics of the device being used and applying an appropriate style to all on-screen elements (media queries and CSS)

- ensuring all images can be scaled to suit the device being used at the time

- swapping out content or interactions with more appropriate alternatives for the device being used at the time.

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How do multi-device web design approaches impact elearning

When looking to create multi-device elearning you cannot simply implement what was previously considered best practice and expect it to work in this new multi-device environment. Learning models, course structures, page layouts and methods of navigation all need careful reconsideration.

Not only has the technology evolved, the learner has too. From the moment they wake up to the time they go to sleep they're busy scrolling, swiping, double tapping and switching back and forth between different devices to get stuff done. What's more, they have expectations about the type of content and the style of its presentation depending on what device they're using at the time.

Of course, not everyone is a digital ninja and good design needs to cater for all. But by reflecting the design conventions that are 'out there' on Facebook, YouTube

and LinkedIn you'll be leveraging the user's existing knowledge, which in turn means they can concentrate on the content instead of having to fathom out how to interact with the interface.

Great multi-device elearning needs to embrace the opportunities offered by responsive design and be harmonious with common web design conventions while also following the principles of what makes for an effective learning experience. Failure to achieve this means you risk being perceived as dated or, worse still, irrelevant.

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Three key questions to ask yourself when designing multi-device content

We recommend that the instructional designer asks themselves these three questions before starting work on the design of a multi-device course.

1 Am I clear on whether I'm designing training or information?

Although we're advocating change, not everything is new. A responsive elearning course still follows many classic design principles – we still gain attention, manage cognitive load, present content within a relevant and authentic context, provide opportunities for practice and so on.

What is different is that responsive content can now be accessed at the point of need via a mobile device. The question is, should you be designing learning – i.e. something intended to impart knowledge

that needs to be recalled at a later date – when in fact it would be more helpful for a 'learner' to be provided with some short, punchy performance support information that can be called up on a mobile device 'just in time' and at the point of need?

Perhaps the design calls for a hybrid approach where there's a collection of resources which, when viewed on the desktop, are structured as a course, but when viewed on a mobile precedence is given to immediately useful information.

There's space for all three but you should know which one is a good fit for your audience and their specific needs.

2 Is what I'm creating going to be accessed on a smartphone?

When designing content that you know is going to be accessed on a smartphone, keep in mind that although it's great for short, sharp bursts of online activity* it's less adept at sustained, task-orientated work. 'Less is usually more' is a good mantra to follow when designing for smartphones. This means designing solutions that:

- aren't overly long

- focus on the presentation of key information

- avoid unnecessary or overly complex activities or tasks

- avoid interaction types that don't work well on small touchscreens, such as hot graphics

- employ a mix of media that lends itself to the smartphone: text, clear, unfussy graphics and video (assuming adequate bandwidth)

It's worth noting that many of the courses we've created in Adapt have in fact only targeted the desktop and tablet, and excluded the smartphone. This is due to clients who wanted to introduce the benefits of a contemporary course design while avoiding the compromises that would need to occur if we adopted a truly mobile first design.

First developed by Kineo in 2012, and then established in 2013 as an open source project by us and a few other like-minded companies, Adapt is a free and easy-to-use elearning authoring tool that creates fully responsive, multi-device, HTML5 elearning content using the award-winning developer framework.

3 How can I make scrolling work for me?

A fully responsive course will, in some form or another, feature scrolling. This is an unavoidable reality of creating a single course that will work on a range of different devices with vastly different screen sizes. However, this is no bad thing.

Scrolling page layouts are in fact becoming the norm online, driven by the fact that more and more online activity is now taking place on tablets and smartphones. The single swipe of a finger to move up or down a page feels easy and intuitive to us now. The selection of a button, on the other hand, is something that will trigger a far more a specific and defined outcome, such as moving to another page or completing an action (the Buy Now button on eBay or Likes on Facebook, for example).

*Much of the work that led to City & Guilds Kineo developing Adapt and initiating the subsequent open source project was based on Google research that revealed how users seamlessly switch between devices to get stuff done and the specific behaviours displayed when using different devices.

Each feels different to the learner, with an oftquoted explanation being 'clicking is a choice, like jumping; scrolling is inevitable, like falling.' A great responsive course will blend the best of scrolling with the more traditional, click-based way of interacting with online content.

"CLICKING IS A CHOICE, LIKE JUMPING; SCROLLING IS INEVITABLE, LIKE FALLING"

7

10 tips for designing great multi-device content in adapt

1 Use scrolling to make navigation more meaningful

Use scrolling to make navigation more meaningful Use the space available on a longer scrolling page to cluster related content together. Not only does this eliminate any unnecessary clicks, it also helps the learner make sense of the structure and the relationships between content areas. Navigation becomes meaningful, rather than a by-product of the template sizes available to the instructional designer.

2 Control the flow of the scroll to manage the user experiance

A single free-flowing page will work if you want to deliver a short, punchy tutorial that addresses a single, simple learning objective.
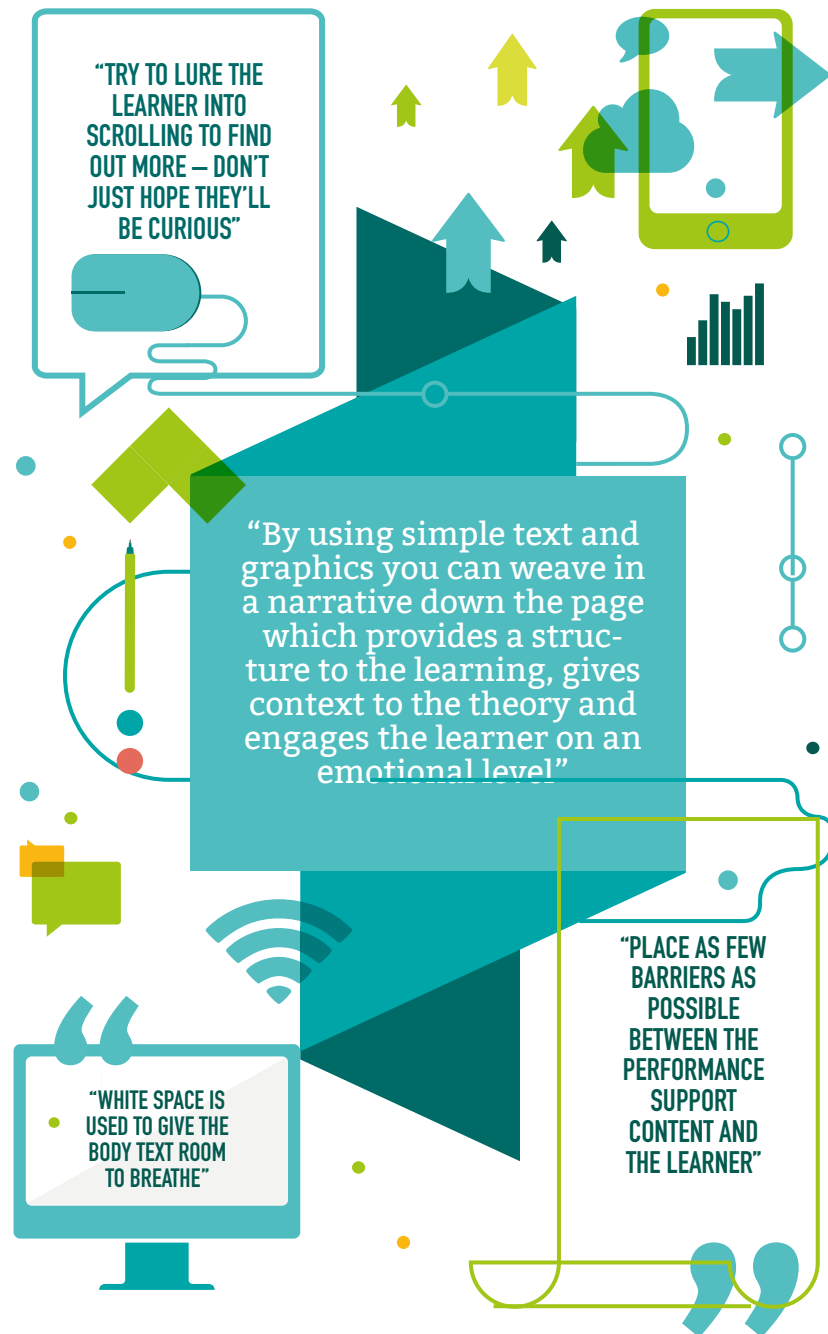
However, for a compliance course this might not be appropriate. Instead, you might want to manage how content is revealed by releasing it in bite-sized chunks, or perhaps even by adding questions which must be answered to unlock the next chunk.

3 Lure the learner down the page

Content below the fold is fine, but you must still immediately gain the learner's attention and instil a desire to scroll down to find out more. Well-designed scrolling pages will be a means to an end, as the learner explores the page with one item below the fold leading on to the next until the learner journey is complete.

Try to lure the learner into scrolling to find out more – don't just hope they'll be curious.

"TRY TO LURE THE LEARNER INTO SCROLLING TO FIND OUT MORE – DON'T JUST HOPE THEY'LL BE CURIOUS"

"By using simple text and graphics you can weave in a narrative down the page which provides a structure to the learning, gives context to the theory and engages the learner on an emotional level"

"PLACE AS FEW BARRIERS AS POSSIBLE BETWEEN THE PERFORMANCE SUPPORT CONTENT AND THE LEARNER"

"WHITE SPACE IS USED TO GIVE THE BODY TEXT ROOM TO BREATHE"

4 Signpost the scroll

So you've got the learner's attention – great. But there'd be nothing worse than if they then left your learning because they didn't realise there was lots more to see. Avoid this by:

- straddling the fold – a certain combination of screen resolution and art direction can make it appear as if the first block on a page doesn't have anything below it. This is called a false bottom. Avoid these by checking your proposed art direction against the most common device resolutions

- providing text instructions that tell the learner to scroll

- reinforcing scrolling instruction with visual elements to provide a steer and look, and including 'select to scroll' functionality on any scroll icons

- providing a warning message should the learner attempt to navigate away from a page that's incomplete.

5 Tell a story

Scrolling pages are fantastic at telling a story. By using simple text and graphics you can weave in a narrative down the page which provides a structure to the learning, gives context to the theory and engages the learner on an emotional level. Stories created in this way are not

only an appealing learner experience – they're also cost-effective to produce and behave well across the range of browsers and devices that Adapt supports.

6 Use the space availible and give your content room to breathe

Scrolling pages provide more flexibility in how content is arranged, allowing for different layouts, lengths and densities. Pages can be structured so that white space is used to give the body text room to breathe. Imagery can add interest and meaning in a way that's far harder to achieve when it's relegated to being just a picture in a box.

7 Don't make your pages too dense

Keep an eye on how much content and interactivity is going on within a single page. Too much interactivity can muddle the message and swamp the learner with information and choices. Try to strike the right balance between simplicity of design and the need to achieve engagement, both of which aid comprehension.

Interactivity should be used at the points in the page where it makes most sense. It should provide richness and increase engagement and understanding, rather than simply being used as a device to cram content onto a fixed screen layout.

8 Avoid overly long pages

Scrolling's great but sometimes you can have too much of a good thing. Consider breaking up particularly long, complex pages into a few shorter pages that are grouped together with a submenu.

What's too long? With Adapt, a single 'chunk' of content per page would be a good steer, as opposed to an entire topic (unless perhaps it's quite a short topic). As a guideline we say that more than 10 blocks and you might be getting a bit on the long side. Of course, this isn't a 'golden rule' and it should be taken on a case-by-case basis. It's also very much dependent on the density of the page (see point 7 above).

9 Read all about it

We've always felt that we have a lot to learn from journalism. Here are a few tips for making your courses newsworthy:

- gain attention with a headline. It can be a thought-provoking play on words or a simple, clear statement of fact but whatever you do don't waste the page title by using something meaningless

- use personal stories to make content resonate emotionally with the reader

- use well-written, economical copy to convey a high volume of information with the fewest words possible

- employ simple, elegant layouts that are ably supported by a few meaningful visuals to further enhance the appeal of a story.

TRY TO STRIKE THE RIGHT BALANCE BETWEEN SIMPLICITY OF DESIGN AND THE NEED TO ACHIEVE ENGAGEMENT

"Not only does this eliminate any unnecessary clicks, it also helps the learner make sense of the structure and the relationships between content areas"

A SMARTPHONE IS THE MOST LIKELY DEVICE USED TO ACCESS PERFORMANCE SUPPORT MATERIALS

10 Performance support demands to be different

If you're intending to create performance support information then you need to approach it very differently than when creating a standard course. Here are a few things to consider:

- a smartphone is the most likely device used to access performance support materials

- create a single, short page. If creating multiple pages use a simple menu structure and design

- keep these pages very short and stick to the presentation of the facts. Only include examples and context if absolutely necessary (additional case studies, examples and knowledge checks can always be accessed on a more appropriate device at a later date).

- place as few barriers as possible between the performance support content and the learner. Unless it's sensitive information, consider placing it on a website that can be bookmarked and accessed in a single click.

8

What next for multi-device?

The last decade has seen a mobile revolution – who knows where it will end? At what point will smartphone screen size stop increasing?

Perhaps eventually we'll all be using a single, powerful, do-it-all mobile device. Maybe the rapidly increasing number of connected devices will mean that 'the internet of things' renders the concept of personal devices irrelevant, and we'll all be able to access content from wherever we are – be that the bus stop, an interactive desk or the kitchen table.

More likely, though, the focus will be less on hardware and more on data, specifically learner data. At present the most common method for capturing learner data is by creating content that adheres to the SCORM 1.2 specification. However, for this data to be captured courses have to be launched from within the confines of a Learning Management System (LMS) and a constant internet

connection is a must. All of which adds up to offering a pretty poor experience to those who would benefit from multi-device elearning the most – the frequent flyer, the engineer out in the field, the travelling sales executive, the commuter.

The good news is that SCORM has an heir apparent which addresses these limitations. The Tin Can API (also known as xAPI or Experience API) can be used to track activities from a host of technologies, not just content launched in a browser from within the confines of an LMS. What's more, Tin Can only requires an occasional internet connection, meaning learner data can be stored on the device and synced at a later date. Tin Can is a game changer for multi-device.

In fact, it's a game changer for elearning in general. It can provide the quality and quantity of data that allow application of analytic techniques to provide us with more information and context about an individual's performance, improving when and how learner support is made available to users and revealing trends that can tell us what is and isn't working. It makes it possible to deliver adaptive learning experiences that respond to changes in a learner's performance. Performance within a learning game can now influence what further elearning is recommended, which in turn influences what performance support aids are subsequently made available.

We think another exciting decade of change lies ahead of us.

The development of both SCORM and the less commonly used AICC standards meant that communication between course content and the LMS could be made consistent, regardless of who developed what. Course content created by Company A could exchange learner data seamlessly with an LMS created by Company B. Everyone was happy. However, these venerable standards are beginning to show their age. The newer Tin Can specification allows us to capture more data, from a greater range of sources, and then do more with it once we have it.

Discover how we're shaping the future of learning

Everything we do at Kineo stems from a simple idea – if we design a better learning experience, together we'll get better results.

Kineo helps the world's leading businesses improve performance through learning and technology. We're proud of our reputation for being flexible and innovative, and of our award-winning work with clients across the world.

Whatever your business challenge, we will partner with you every step of the way to find the learning solution that fits best – and delivers results. So, how can we help you?

WE'RE SHAPING THE FUTURE OF LEARNING

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