



Think Ahead



**EDTECH: SUPERCHARGING CAREERS IN ACCOUNTANCY**

## About ACCA

**ACCA (the Association of Chartered Certified Accountants) is the global professional body for professional accountants.**

We're a thriving global community of **241,000** members and **542,000** future members based in **178** countries and regions, who work across a wide range of sectors and industries. We uphold the highest professional and ethical values.

We offer everyone everywhere the opportunity to experience a rewarding career in accountancy, finance and management. Our qualifications and learning opportunities develop strategic business leaders, forward-thinking professionals with the financial, business and digital expertise essential for the creation of sustainable organisations and flourishing societies.

Since 1904, being a force for public good has been embedded in **our purpose**. In December 2020, we made commitments to the **UN Sustainable Development Goals** which we are measuring and will report on in our annual integrated report.

We believe that accountancy is a cornerstone profession of society and is vital in helping economies, organisations and individuals to grow and prosper. It does this by creating robust trusted financial and business management, combating corruption, ensuring organisations are managed ethically, driving sustainability, and providing rewarding career opportunities.

And through our cutting-edge research, we lead the profession by answering today's questions and preparing for the future. We're a not-for-profit organisation.

Find out more at: [www.accaglobal.com](http://www.accaglobal.com)

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## About edX

**edX is the education movement for restless learners and a leading global online learning platform from 2U, Inc. (Nasdaq: TWOU).**

Together with the majority of the world's top-ranked universities and industry-leading companies, we bring our community of over **44 million** learners world-class education to support them at every stage of their lives and careers, from free courses to full degrees. And we're not stopping there – we're relentlessly pursuing our vision of a world where every learner can access education to unlock their potential, without the barriers of cost or location.

Learn more at [www.edx.org](http://www.edx.org)



## **EDTECH: SUPERCHARGING CAREERS IN ACCOUNTANCY**

This report explores how the fast evolving use of technology is shaping accountancy education.

# Foreword



**Alan Hatfield**  
executive director, ACCA

Throughout its 115+-year history, ACCA has championed equitable access to education around the world. We firmly believe that this is a necessary underpinning to create sustainable economies for the long term. As we look ahead, we see the role of educational technologies, or edtech, as foundational in continuing to support these principles, particularly as we all seek to play our part in achieving the Sustainable Development Goals (SDGs).

Our report, developed jointly with edX, highlights the ‘anytime–anyplace’ approach to learning that can be made possible by edtech. And how, in fact, flexibility was the most valued edtech attribute in a global survey of over 1,400 learners and educators connected to accountancy.

These findings chime with ACCA’s own experiences as we seek to continue driving equitable access globally. The ACCA-X courses are hosted on edX whose mission of “increasing access to high-quality education for everyone, everywhere” closely aligns with ACCA’s own values, which are demonstrated by ACCA-X helping learners all over the world develop accountancy and business skills. And we remain excited about the possibilities for the future in this fast-evolving space.



**Lee Rubenstein**  
Vice President of  
Partnerships at 2U (edX)

In 2012 edX made its first online course available to learners across the globe, ushering in what the New York Times referred to as the “The Year of the MOOC.” edX has partnered with ACCA since 2015 to deliver online courses and programs for finance and business leaders (<https://www.edx.org/school/acca>). Today the edX platform supports hundreds of thousands of global learners per day, engaged in courses from the majority of the world’s top-ranked universities and industry-leading companies.

Edtech is continually evolving and it is already helping enterprises overcome the challenges posed by “the future of work.” Microcredentials, including digital certificates, badges, boot camps, short courses, and other online and blended credit-bearing learning formats, are increasingly recognized by employers as a means of demonstrating employee qualifications. We are excited to work with organizations like ACCA to help leading enterprises across the globe embrace online learning as a credible and authentic, rigorous and widely accepted modality to help employees acquire new skills, pursue career advancement, and contribute to enterprise agility.

edX is pleased to partner with ACCA on this report to examine the state of edtech and its influence on careers in accountancy and other business roles and functions.

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# Executive summary

In this report, educational technology – or ‘edtech’ – is used as a catch-all term for the different technologies being used for educational purposes, ie in the process of learning, instruction, and assessment.

As such, edtech may range from video conferencing to artificial intelligence (AI)-enabled assessments, adaptive learning pathways, simulations, gamification, digital certification and augmented or virtual realities (AR/VR), including the metaverse.

Edtech has significant potential to support the achievement of learning outcomes at scale, and on a global basis, given the transnational nature of digital sharing of information. Hence it is a part of the solution

to the challenge of realising the Sustainable Development Goals (SDGs); in particular, SDG 4 on quality education, which seeks to ‘ensure inclusive and equitable quality education and promote lifelong learning opportunities for all’.

This report examines the use of edtech in accountancy education. It concludes that it has the potential to supercharge career development, with the following **top tips for learners**.

## Top tips for learners:

### 1. Leverage the potential of edtech to fit around one’s life and circumstances.

- The most valuable quality of edtech, as reported by survey respondents, was flexibility (eg timing, access to experts, ability to access learning from a range of sources in one place), which was highlighted by almost three-quarters of learners.

### 2. Consider the blended option.

- A blended model combines asynchronous (online, on demand) and synchronous (live, whether in-person or online) instruction. Given four options, the highest proportion of those surveyed chose blended learning to describe their current use of edtech; the other three modes were online (live), online (on-demand) and in-person. The use of blended learning ranked favourably across use cases, which included content delivery (38%), individual/group learning activities (39%) and assessments (34%).

### 3. See edtech as an option regardless of stage of life or organisational size.

- Reliance on technology-enabled learning was quite stable across ages between 25 years and 65 years. For example, use of edtech in a blended learning way of delivering content by a teacher (eg course text, videos) was reported by 40% of those under 25 years, 39% for those between 25 and 35, 38% for those in the 36 to 50 age group and 38% in the 51 to 65 age group. The desire to engage with technology-enabled learning is not restricted to younger age groups.
- Comparisons between small and medium sized organisations (under 250 employees) and larger ones (over 250 employees) showed no significant differences in use or desire to use edtech in future to build accountancy-relevant capabilities. Across both, the proportion of respondents using edtech currently to build these capabilities is just over one-third, which jumps to almost two-thirds when asked if they want to use edtech in future to build their capabilities.

**EDTECH HAS SIGNIFICANT POTENTIAL TO SUPPORT THE ACHIEVEMENT OF LEARNING OUTCOMES AT SCALE, AND ON A GLOBAL BASIS, GIVEN THE TRANSNATIONAL NATURE OF DIGITAL SHARING OF INFORMATION.**

## Key trends in edtech:

### **TREND 1: Bite-sized or short-content videos**

More content providers and educators are presenting content in short videos ranging from 5 to 15-minutes long. However, it's worth noting, that in the survey, 91% of learners also reported using digital books for learning, suggesting an opportunity for deeper exploration of this trend in accountancy education.

### **TREND 2: Integrated learning and practice**

With edtech, learning of content and application of learned content, such as the application of accounting software, is more interwoven in instruction rather than being presented in separate sessions of learning.

### **TREND 3: Role of AI and machine learning in learning and assessment**

AI shows promise in informing the design of adaptive learning systems, in remote invigilation, adaptive assessments, and translation of assessment items.

### **TREND 4: Micro-credentials gain traction in professional learning and employment settings**

Many employers value micro-credentials that demonstrate capability. Educators engaged in this study see micro-credentials as an easy and quick way of teaching new topics.

### **TREND 5: Gamification and simulation**

Games are seen as engaging for learners and accounting tasks can be practised with fidelity using simulations. Learning through games/game play (ie gamification) is reported by 82% of respondents.

### **TREND 6: Augmented or virtual reality/Metaverse**

Edtech's role in developing soft skills and the professional capabilities of communication, drive, and insight emerges in discussions on the metaverse. A majority of respondents (72%) had experienced digital simulations/ scenario-based tasks (eg accessing software-based simulations); with augmented/virtual reality (eg immersive experiences in a digital environment) being reported by 53%. The metaverse is still in its infancy, but is envisioned as a possible avenue for training, competitions, global learning communities, and professional networking hubs.



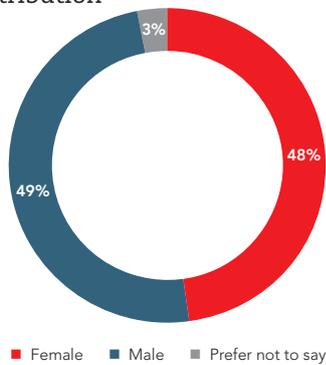
# Methodology

This research adopted a parallel mixed-method study. We implemented a global survey (n = 1411) with sampling to capture the breadth of learner and educator perceptions, with participation from 977 learners and 434 educators (deliver learning content and support students' learning by directly engaging with learners, they may/may not also create content) across 126 countries. Educators provided their input from this perspective, even if they also separately engaged in activities as learners. In addition, 765 members and learners in China responded to a five-question poll, data from which was analysed separately.

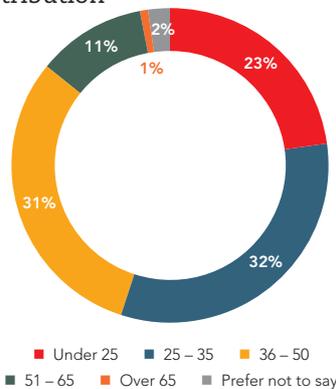
For the qualitative strand, we conducted 25 individual interviews and two sessions at the ACCA Education Global Forum,<sup>2</sup> with participation from global professionals, to increase our understanding of the depth of such perceptions and possible implications. Such qualitative data was collected from persons located in Australia, Canada, India, Ireland, Kazakhstan, Kenya, Nigeria, Pakistan, UK, USA, and Sri Lanka.

Each strand (quantitative and qualitative) was separately analysed. Quantitative data was summarised using descriptive statistics and cross-tabulations, where appropriate. Interviews and focus groups were analysed thematically. Final inferences were derived by looking at combined findings and are presented in this report, organised by the research questions. Participants were segmented by gender (Figure M1), age (Figure M2), and geographical location (Figure M3).

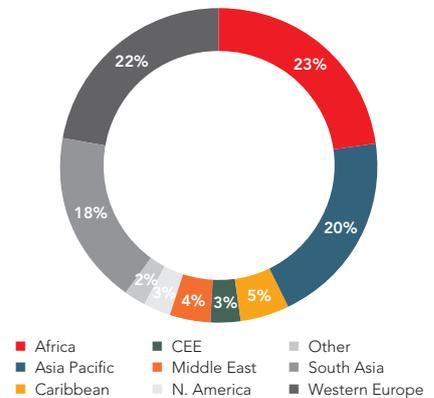
**FIGURE M1:** Participants' gender distribution



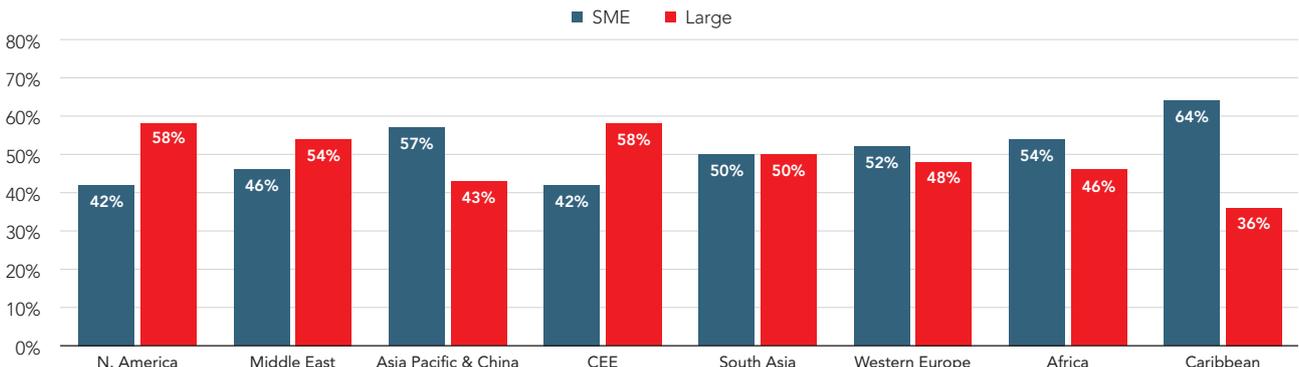
**FIGURE M2:** Participants' age distribution



**FIGURE M3:** Respondents' regions



**FIGURE M4:** Distribution of respondents by region and company size



1 A volunteer group of experts in education

# Introduction

Edtech, as a field and a use for technology, has been around since the 1980s. The Covid-19 pandemic raised the profile of edtech, stimulating a marked surge in its development, adoption and popularity. The field of accountancy has seen parallel shifts in recent years to emphasise the role of technology, which has further promoted the potential of edtech in accountancy education. In this report, we capture findings and insights from a study conducted between March and June 2022 on the role of edtech in the present and future of accountancy education.

**DEFINITION:** In this report, the term education technology or edtech is used as a catch-all for the different ways of using technology for educational purposes, ie, in the processes of learning, instruction, and assessment. As such, edtech may range from video conferencing to digital delivery and consumption of learning material, AI-enabled assessments, adaptive learning pathways, simulations, gamification, digital certification and augmented or virtual realities (AR/VR), including the metaverse.

Our research goal was to gain better understanding of the existing and potential roles of edtech in accountancy education, so that it may be a force supercharging career development.

Additionally included are some reflections that emerged during the interviews: policy-relevant observations for governments seeking to enable edtech to flourish at the economy level.

This report builds on ACCA's report, *Developing the Skills of the Sustainable Business and Finance Professional* (ACCA 2022) and is aligned with the broad direction of travel of its findings. That report takes a more encompassing view (including but going beyond the role of technology) on what high-quality learning and development programmes need to incorporate to develop accountancy learners into the sustainable business and finance professionals that business and society demand them to be.



# 1. Current state of edtech adoption in accountancy education

This section summarises how frequently technology has been used, when and by whom, for learning, instruction, and assessment, particularly given the disruption of Covid-19 pandemic and the evolving role of professional accountants in the modern workforce.

## 1.1 How are learners and educators currently engaging with edtech?

### Device access

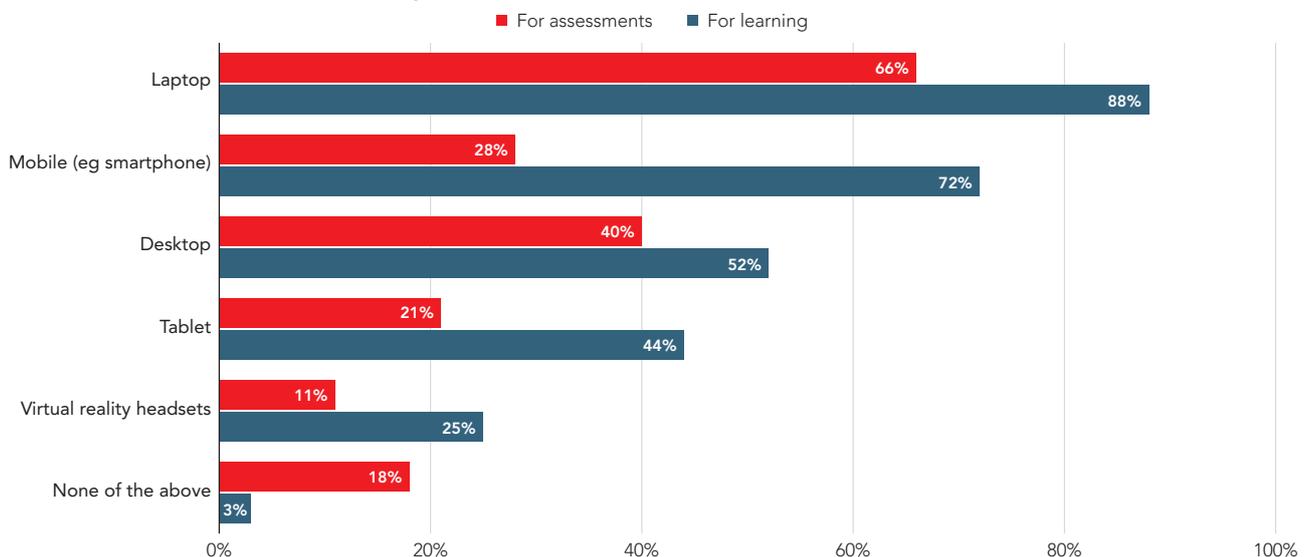
The most frequently cited devices for learning were portable ones (Figure 1.1), including laptops (88%) and mobiles (eg smartphones) at 72%; with tablets cited by 44%; 52% reported the use of desktops. These findings have implications for the visual design and delivery of learning content and assessments. Content developers and assessment providers need to ensure their content can be experienced to similar quality across devices.

Across devices, the reported use of edtech for assessments is less than for learning. This may simply reflect that the propensity to learn may not always be accompanied by a desire to be assessed. Other factors may include complications with validation/regulatory factors and costs – these are discussed in more detail in [ACCA \(2022\)](#). These matters warrant further exploration and consideration as global learning organisations

consider the scale of online assessments and must ask: *whom might we leave behind in the transition to online assessments?* As a related point, thought needs to be given to the global digital divide when rolling out edtech platforms, as well as differences in device use. For example, the use of mobiles (eg smartphones) for learning is cited by 82% of respondents in Africa, but only 54% in Western Europe.

The digital divide, as it pertains to access to high-speed, reliable internet and an updated device, was a theme that emerged in every stakeholder conversation as an active contingent aspect, despite the promises of edtech. The digital divide was a concern across both developing and developed countries, especially in relation to seeking to access remote learners or those who are socially and/or economically poor. We remain cognisant that the digital divide is a systemic concern that needs to be addressed to make edtech a truly ‘*democratiser of learning and opportunities*’, as Sonia Malik, Global Program Director of IBM Skills Build, has stated.

**FIGURE 1.1:** Device use for learning and assessments



### Edtech tools

Most respondents reported currently using edtech always or most of the time to present, watch or listen to course content (67%), to complete learning activities and exercises for development (60%) and to complete qualifying assessments (54%), and respondents engage with it via a variety of tools (Figure 1.2).

### Role of the Covid-19 pandemic in shaping the use of edtech

At least seven interviewed educators and learning partners across India, Ireland, Sri Lanka, and USA used technology as a substitute for the analogue version of their instruction. They envision that tutors will provide instruction via Zoom the same way that they presented instruction in person, with assignments hosted on a learning-management system.

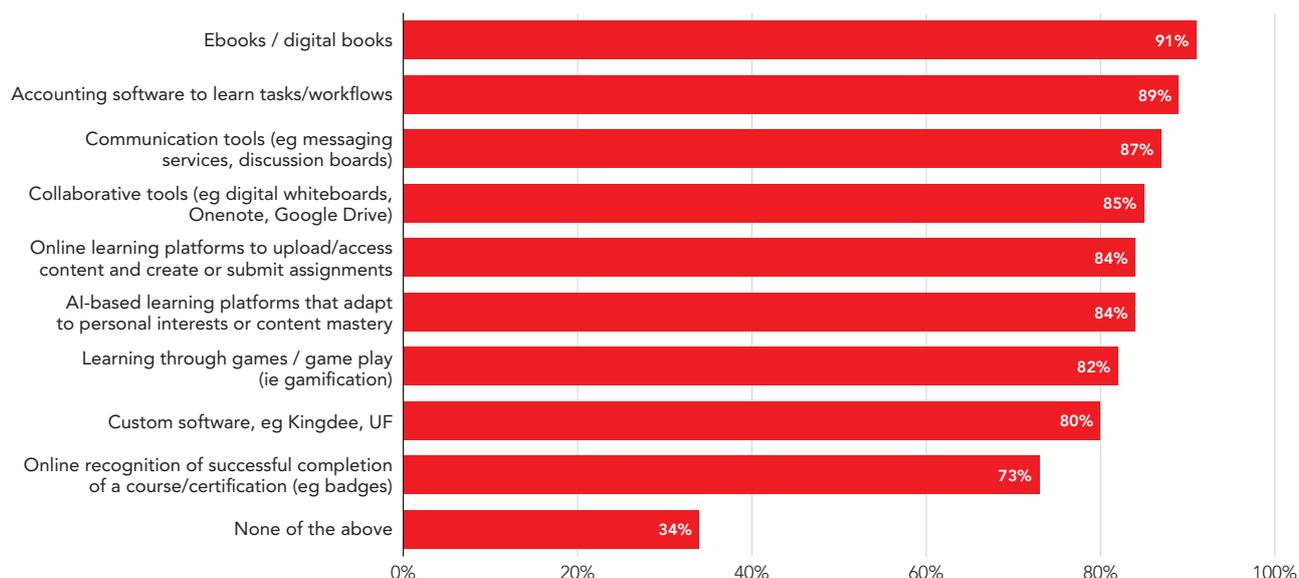
Many university professors also recorded their lectures and posted them online. This meant educators and learners were familiar with using video conferencing software for synchronous lessons (ie lectures), polling (ie questions in class), chatting (ie discussions), etc. Instead of providing quiz sheets, they provided google forms or quizzes within the learning-management system.

This is ‘substitution’ – ie where tutors merely convert their in-person format to a format that uses technology. Those who experienced substitution were often discouraged about the benefits of technology. Unfortunately, this was the experience for most learners and educators who had

to transition abruptly and simply experienced the in-person instruction online (ie emergency remote learning), as opposed to an experience that was intentionally designed for and delivered as online learning. Educators using digital technology to substitute for ‘analogue’ methods are quick to revert when there is no compulsion to continue using technology.

Other learning partners we interviewed gave their experiences of the sudden transition: jarring initially, but they were quick to see the sustainable – *and scalable* – upside to adopting edtech: custom learning platforms. Many learning partners provided their educators and learners with a learning-management system, ie a digital workspace for storing, organising, and using relevant learning materials and assessments. Some providers opted to build their own customised digital platform that embedded synchronous video sessions, recordings, additional video and practice content, recordings of live sessions, practice examinations, quizzes with automated scoring, and more. All providers whom we interviewed who had built such a platform envisioned that the return on investment in building a custom learning platform would accrue far beyond the Covid era, if it facilitates their growth. Some providers reported being able to scale their operations significantly in both enrolment and geographically. Others saw the platform as remaining useful as tool for offering online or hybrid tutoring services globally in accessible and equitable ways.

**FIGURE 1.2:** Use of digital tools for learning



Notes: ‘Adaptive learning platforms’ are those that personalise the learning experience using AI, often depending on capability, using just-in-time feedback, learning pathways, and resources. ‘Ebooks’ are digital versions of a textbook; they can be interactive but are not always. ‘Collaboration tools’ allow simultaneous working on a shared workspace. ‘Communication tools’ allow communication with learners or educators, such as messaging services, video conferencing, email, discussion boards, etc. ‘Custom software’ is subject-specific software for practice or engagement in ‘Learning by doing’ activities. LMS are specific platforms that host learning content, exercises, and assessments; may include elements of collaborative and communication tools. A ‘digital badge’ is a digital award that is a validated indicator of accomplishment or skill acquisition

While large learning partners were able to invest in the resources for a learning platform, other partners and providers have innovated in various ways, including micro-video lessons on various accountancy topics, open-source e-textbooks, creating custom exam practice software, etc. Digital content, in particular, has gained traction, with 91% of those engaged with edtech reporting use of eBooks or digital content (see Figure 1.3). This increased traction may have developed for a variety of reasons:

- **improved visual and user design** compared with traditional textbooks
- ability to **integrate interactive activities**, such as note taking or clickable multiple-choice questions with feedback, encouraging more active processing of content
- potential for **integrated gamification** or **simulations**
- ease of updates and crafting **culturally relevant, inclusive content** using local examples and case studies in a dynamically adaptable manner.

Further details on this are available in [ACCA \(2022\)](#).

### 1.2 What are the preferred modalities (online, blended or in person) of learning?

Most educators and learning partners outside academia are bullish about the long-term viability of a blended instructional model. A blended model combines asynchronous (on demand) and synchronous (live) instruction using online and in-person modes.

In this report, we refer to the blended model (also referred to as hybrid) as a learning format wherein learners complete prerequisites independently before attending an in-person synchronous session. In-person-only instruction was the least preferred option (see Figure 1.3). Blended learning was reported as the most popular learning format by learners and educators alike, with educators being the stronger advocates for the blended format.

#### Getting the value from edtech

Edtech has a role to play throughout the learning process, starting from logistical ease, instruction, learning activities, practice, all the way through to assessments. In each of these contexts, a different tool may be appropriate. The relevance and efficacy of edtech depends on context and purpose.

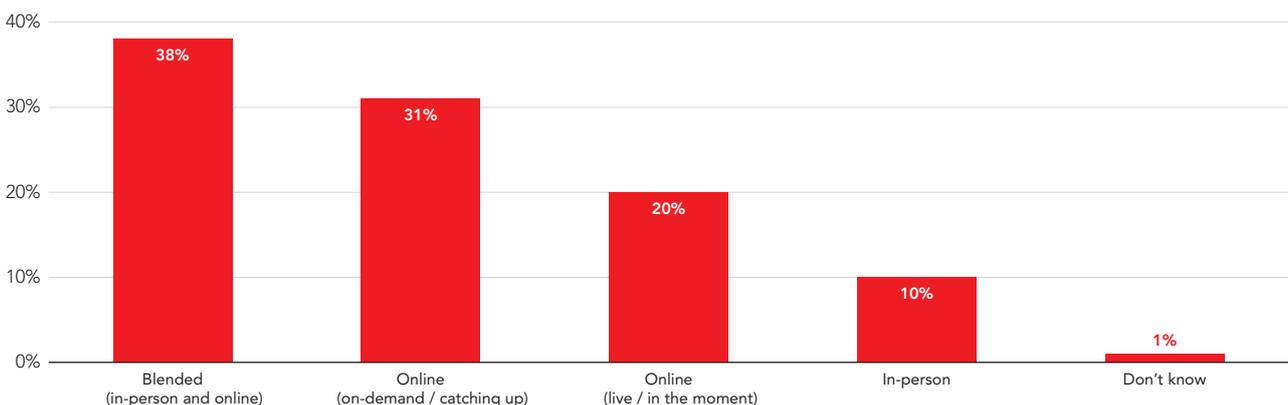
- For novice learners, direct and explicit or “traditional” (ie lecture driven) instruction to establish base content knowledge may be helpful eg via video conferencing tools such as Zoom or Google Meet.
- As the learner gains content mastery, proceed to using more complex technology-enabled applied practice, such as accounting software or practice tax simulations.

Educators perceived the blended format to have two key benefits:

- i. it encourages the **accountability** of learners to come to class prepared
- ii. it pairs the **flexibility** of asynchronous or independent online learning with building **rapport** between tutor and learner through their interaction. This enables peer problem solving, and the potential to clarify misconceptions that live instruction offers whether in-person or synchronously online.

The advocacy of blended learning by educators may also be influenced by their experiences of teaching during Covid-19. Many educators reflected on how pedagogy has had to adapt to leverage the potential of edtech, particularly when considering the foundational technical content and professional capability skills to be developed. In a blended model, they saw the opportunity for edtech

**FIGURE 1.3:** Use of edtech for content delivery by a teacher (eg course text, videos)



to support content expertise as well as experiential learning. Educators celebrated the sessions in which they were able to get their learners to use the software with which they could expect to engage in the workplace and use it to solve problems that arise in current practice.

Lee Rubenstein, vice-president of partnerships at 2U, mentions that *'the future is blended, and learning should be at the time and place they [learners] want to do it'*.

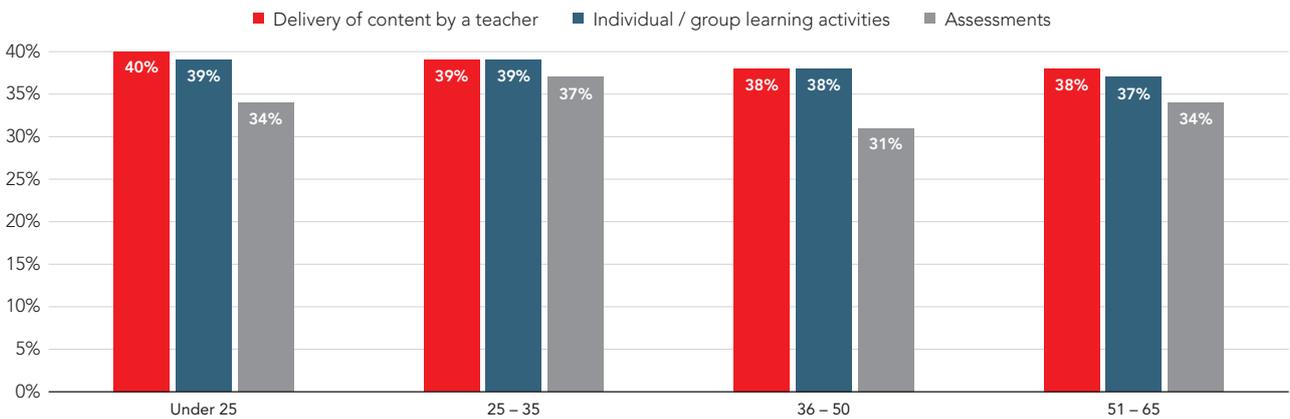
From a learner's perspective, blended learning probably provides an element of accountability, given that 35% of learners mentioned that a possible barrier to greater edtech use is the difficulty of concentrating on course work alongside employment without fixed timing, ie attending asynchronous online courses. This finding from our survey agrees with extant research that suggests a 15% or less completion rate, particularly for those Massively Online Open Courses (Fidalgo-Blanco et al 2016).

Additionally, in some regions (eg South Asia), the blended model was reported as offering value for money or return on investment for tuition fees, primarily owing to the presence of a live instructor – either online or in person. By contrast, 27% of respondents in the Middle East and 23% of respondents in South Asia were the only regions reporting that they prefer in-person settings for individual or group learning activities.

Patterns of course delivery, learning and assessment were quite stable across ages from 25–65 years (Figure 1.4), suggesting that the desire to engage with technology-enabled learning is not restricted to younger age groups. This may also present a reminder to avoid age-related generalisations about the desire to engage with technology (Kirschner and De Bruyckere 2017).

**PATTERNS OF COURSE DELIVERY, LEARNING AND ASSESSMENT WERE QUITE STABLE ACROSS AGES FROM 25–65 YEARS, SUGGESTING THAT THE DESIRE TO ENGAGE WITH TECHNOLOGY-ENABLED LEARNING IS NOT RESTRICTED TO YOUNGER AGE GROUPS.**

**FIGURE 1.4:** Preference for blended learning across purposes, by age



**BLENDED LEARNING WAS REPORTED AS THE MOST POPULAR LEARNING FORMAT BY LEARNERS AND EDUCATORS ALIKE, WITH EDUCATORS BEING THE STRONGER ADVOCATES FOR THE BLENDED FORMAT.**

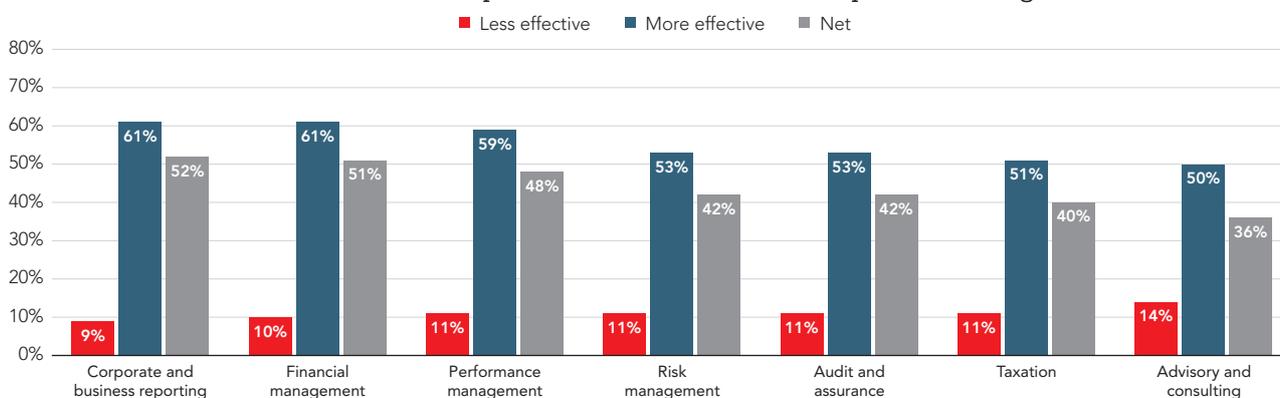


## 2. How is edtech being used for developing the capabilities outlined in ACCA's Career Navigator?

The responding educators and learners believe that, overall, edtech is more effective for learning content expertise than traditional methods (Figure 2.1). While no individual capability stood out as the one most supported by edtech, educators and learners reported using edtech for learning (37%) or for both learning and assessment (34%); but much less so for assessment only (6%) (see Table 2.1).

Within that, educators tended to use edtech for both learning and assessments to a greater extent than learners, which suggests that the question educators should consider is: what might be the learners' perceived barriers to using edtech for assessments? This finding implies that, as large organisations explore using online assessments at scale, it may be helpful to provide opportunities for learners to practise using technology – both for learning and assessment – before making any high-stakes change to edtech-enabled assessment.

**FIGURE 2.1:** Effectiveness of edtech compared with more traditional in-person training



**TABLE 2.1:** Reported use of edtech by educators and learners for professional capability development

	Content expertise	Insight	Drive	Collaboration	Digital
For learning	485	505	528	469	433
	37%	39%	41%	36%	33%
For assessment	83	84	70	88	100
	6%	6%	5%	7%	8%
Both learning and assessment	441	447	421	458	441
	34%	34%	32%	35%	34%
I don't use EdTech for this	210	191	190	216	248
	16%	15%	15%	17%	19%
Don't know	79	71	89	67	76
	6%	5%	7%	5%	6%

### Considerations for an educator about use of edtech

Using accounting software as a case in point, some of the nuances that potentially contribute to the disconnection between learning and applied practice include the following.

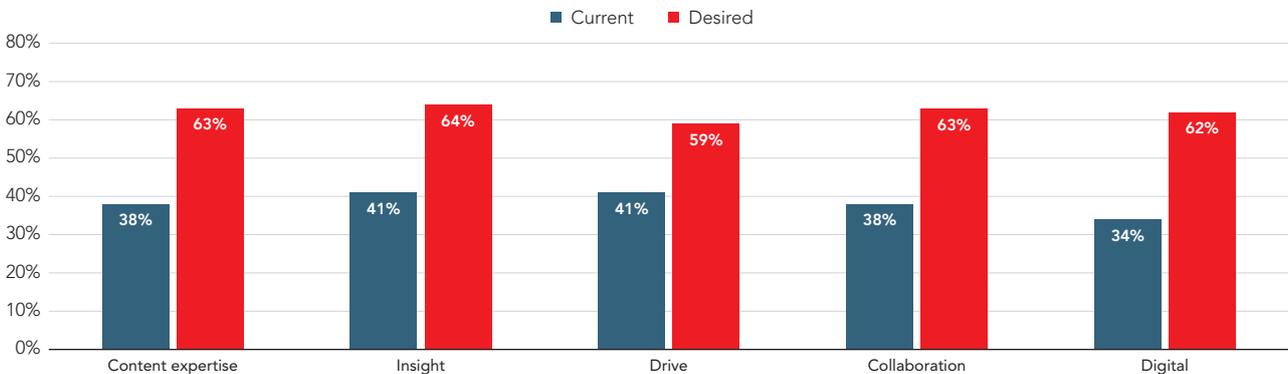
- (i) Often, accounting software is too **expensive** to license and update when there may be only a few hours of instructional time dedicated to using it.
- (ii) Educators often did not **have professional experience** of using the specific software they were to teach.
- (iii) Educators are constantly **balancing the time and resources** available between instructing content fundamentals and encouraging the use of (and learning of) accounting software, especially if it is not explicitly assessed in high-stakes (qualifying) assessments.
- (iv) Many educators saw **software as dynamically changing** and technical know-how as something that could be learned independently and that their time with learners should focus on expertise.
- (v) Occasionally, **legal** considerations over data use and storage featured as a consideration.

### 2.1 Current and expected use of edtech to develop Career Navigator capabilities, by organisational size

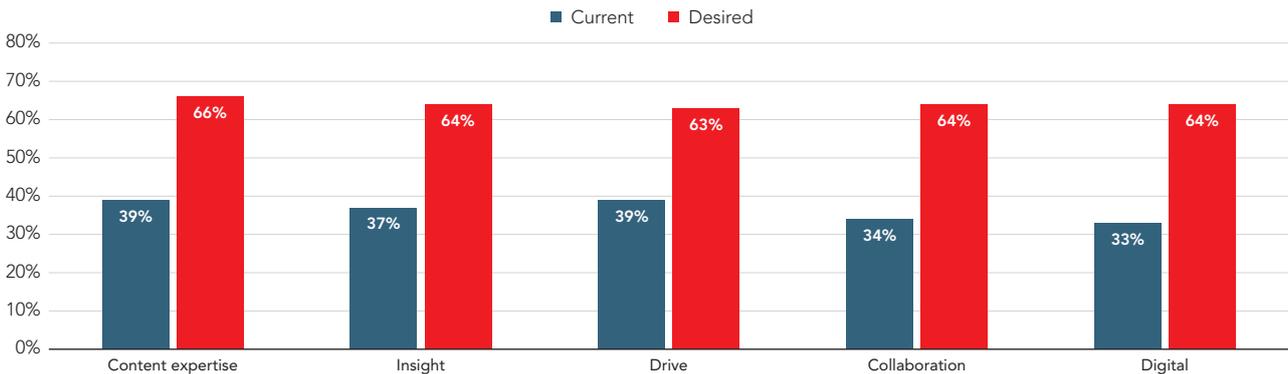
Nearly half of survey respondents who indicated being part of firms with 50 – 250 employees indicated using edtech to develop the capabilities outlined in the [ACCA Career Navigator](#) (ACCA n.d.), particularly those of drive and insight. During interviews, educators explained that learners’ organisational roles may require and/or provide for different levels of practice of these capabilities. They saw edtech as a potential way of bridging the gap between the practice they need and the practice they can access currently.

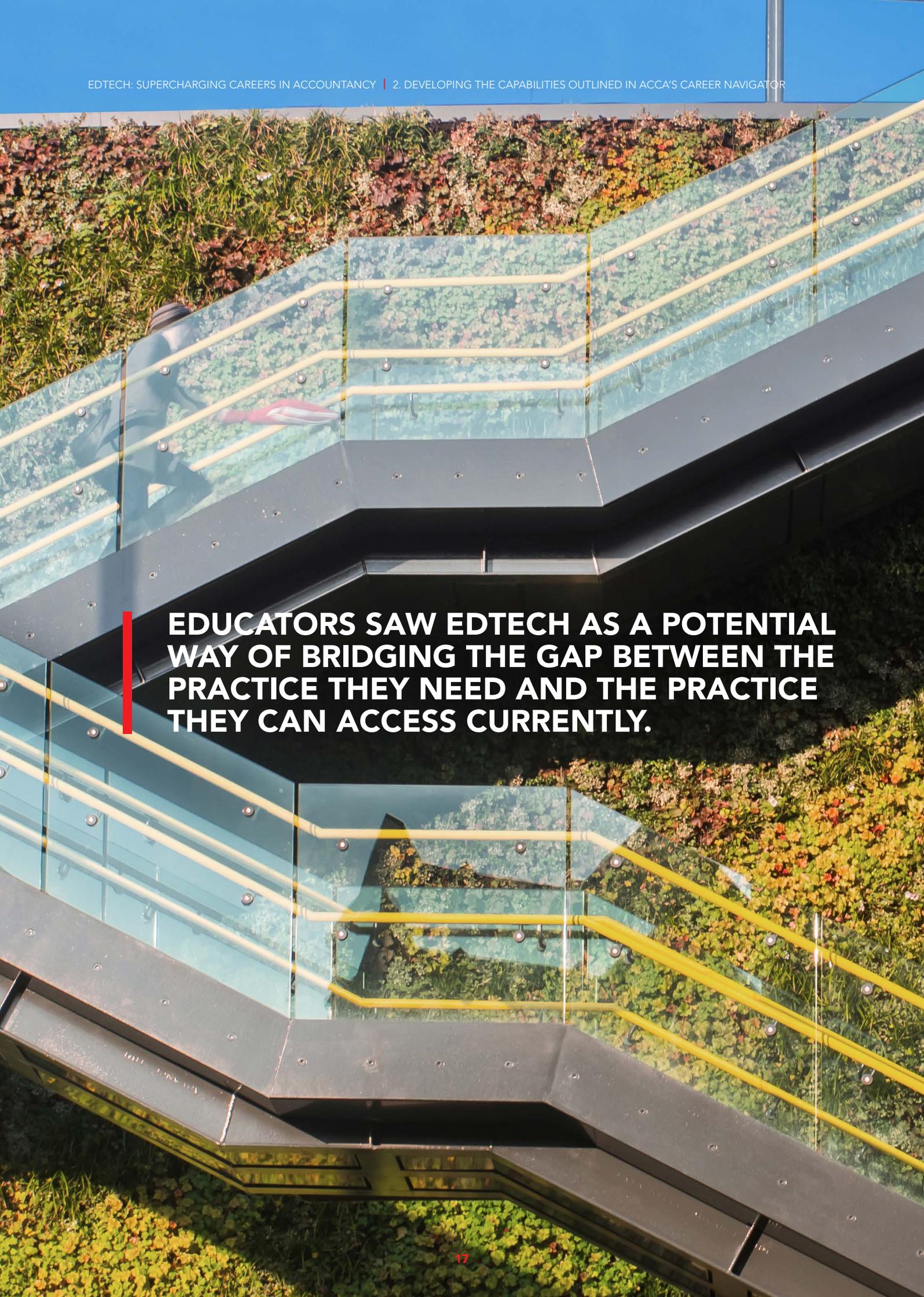
Nonetheless, comparisons between aggregated small and medium-sized enterprises (under 250 employees) versus large firms (over 250 employees) showed no significant differences in pattern of current use or desire to use edtech in future. Across both, the proportion of respondents currently using edtech to build these capabilities is just over one-third, which jumps to almost two-thirds when asked if they desire to use edtech in future to build such capabilities (Figures 2.2 and 2.3).

**FIGURE 2.2:** Reported use of edtech for learning, by professional capability development (SME respondents)



**FIGURE 2.3:** Reported use of edtech for learning, by professional capability development (larger organisations)





**EDUCATORS SAW EDTECH AS A POTENTIAL WAY OF BRIDGING THE GAP BETWEEN THE PRACTICE THEY NEED AND THE PRACTICE THEY CAN ACCESS CURRENTLY.**

### 3. What do **educators** and **learners perceive** as some **benefits of edtech**, and where do they see the **most value** for **future improvement** in edtech?

In interviews, stakeholders mentioned several key benefits of edtech, such as:

- **flexibility** for the learner as to location, time, and pace of learning, which allows for more diverse candidate pools for accountancy careers
- **scalability** of instructional offering; learning providers now had a global audience using edtech when previously in-person instruction restricted to their geographical region
- creating opportunities for **personalised learning** based on prior knowledge, career interests, expertise, and employer recommendations; see more detail in [ACCA \(2022\)](#)
- facilitating an easier, quicker, and more **cost-effective** entry point to new topics
- accessibility for **languages, with instant translation** and technology-enabled assistive features to support disabilities
- increased **access** to content and to high-quality educators
- **faster** turnaround of feedback, with automated grading
- better visual and user-friendly design, when done well, facilitating better **engagement**; can make content more engaging via games, rewards, etc.
- presenting **current** and **innovative** accountancy content.

In the survey, educators and learners were aligned in their frequency of rating (ranking) the most and least valuable aspects of edtech. The rankings of most other benefits were not aligned, highlighting the potential differences in value placed on edtech by learners and educators, which may serve as a barrier to more widespread use.

See Table 3.1 for a full list of rankings.

The most valuable proposition of edtech for both educators and learners alike was **flexibility** in learning, aligning with the finding that blended learning is the most preferred format. Flexibility could be in timing, access to experts, or access to a range of sources from a single place. Despite this, flexibility was also seen as an area that needed improvement. In interviews, educators complained that the resources they can use are often restricted for several reasons, such as:

- data and privacy regulations governing what and where data can be stored
- cost of creating high-quality content
- outdated or otherwise irrelevant content
- infrastructure needs around implementing high technology solutions
- digital divide ie access to reliable internet connections and high-quality devices.

In some instances, educators were sceptical that learners were truly engaging with the shared content before coming to class, undermining the relevance of flexibility for learners. At the same time, many more educators recognised that the flexibility afforded by edtech provides an opportunity for diverse individuals to become a part of the profession whose engagement might ordinarily be restricted by time or location.

Educators and learners gave similar rankings to modular learning (eg short, on-demand courses for a particular skill/subject) and openness to change, innovation and new topics, indicating aligned perceptions of benefit in these areas.

**TABLE 3.1:** Frequency and ranking of benefits and areas of improvement for edtech

EDUCATOR		Ranking	POSSIBLE BENEFIT	Ranking	LEARNER	
POTENTIAL VALUE	CAN IMPROVE				POTENTIAL VALUE	CAN IMPROVE
62%	44%	1	Flexibility in learning (eg timing, ability to access learning from a range of sources in one place)	1	74%	40%
43%	39%	5	Value for money in accessing learning	2	57%	36%
48%	34%	2	Personalised / customised learning journey (eg differentiation of content based on learning or interest)	3	51%	32%
43%	32%	5	Dynamic or real-world experiences within learning	6	44%	33%
44%	35%	4	Ability to apply learning at work (eg realistic scenarios requiring complex decision making)	5	45%	35%
38%	37%	7	Enjoyment of learning process	8	40%	30%
47%	34%	3	Variety of learning activities	4	47%	33%
39%	32%	6	Modular learning (eg short, on-demand courses for a particular skill /subject)	6	44%	32%
37%	34%	8	Exams/assessments (eg via a larger number of practice questions)	9	39%	28%
38%	30%	7	Tracking learning progress for insights (eg more granular view of areas of strength and weakness)	10	33%	27%
35%	30%	9	Facilitating learners' ability to think critically about the topic	11	30%	28%
38%	37%	7	Openness to change, innovation, and new topics	7	42%	33%
9%	10%	10	Access to experts	12	10%	12%

**EDUCATORS AND LEARNERS GAVE SIMILAR RANKINGS TO MODULAR LEARNING AND OPENNESS TO CHANGE, INNOVATION AND NEW TOPICS, INDICATING ALIGNED PERCEPTIONS OF BENEFIT IN THESE AREAS.**

**THE MOST VALUABLE PROPOSITION OF EDTECH FOR BOTH EDUCATORS AND LEARNERS ALIKE WAS FLEXIBILITY IN LEARNING, ALIGNING WITH THE FINDING THAT BLENDED LEARNING IS THE MOST PREFERRED FORMAT.**

## 4. What are some **key trends** to **monitor** or **consider**?

The value of edtech is dependent on how and why the technology is used. In this section we outline the six key trends we observed in conversations with our educators and ecosystem partners. More detail in areas related to this section is also available in [ACCA \(2022\)](#).

### **Trend 1:**

#### **Bite-sized or short-content videos**

Interviews with educators and content providers revealed that a large variety of content is available for learning in various formats, with 'bite-sized' video content being a top trend. For example, [Innovate Finance offers MasterClasses](#) on new topics in fintech, including concepts and potential careers. In Australia, [Tax Nuggets Academy](#) offer learners working in SMEs a less intimidating approach to learning about tax via videos that are led by working professionals. They use illustrations, comics, superheroes, and other engaging and entertaining instructional elements.

Even at University level, educators realised that their lectures may need to be redesigned to obtain greater engagement from learners. Note, these educators and content providers assume that *learners* prefer to consume information in video format rather than textbook and long-form text. The current research study found that 91% of learners reported using digital textbooks for learning, presenting a case for organisations to conduct additional rigorous study to understand learner preferences better before investing in dynamic content, which can be more time consuming and expensive to create (potentially increasing cost of content).

### **Trend 2:**

#### **Integrated learning and practice**

Learning content and building applied skills should happen simultaneously rather than sequentially. For instance, using online learning software such as [Accountingpod](#), an educator could develop a learner's content knowledge by using videos or case studies while building their capability in (cloud) accounting and data analysis platforms such as Xero, Figured, Spotlight reporting, Power BI, Excel and Tableau. Another example is [Zell education](#), an online accounting curriculum with case studies, projects, field experiences and job placements to balance learning and practice. Courses on edX adopt and apply active learning focused on a learn, apply, feedback, and reflect learning cycle to encourage improved learning.<sup>2</sup> Many university partners also include an internship component offering opportunities to practise professional communication and collaboration skills – many of which have had to be done virtually during the Covid pandemic.

### **Trend 3:**

#### **Role of artificial intelligence and machine learning in learning and assessment**

The most significant technological advancement in edtech, further catalysed by Covid-19, has been the intentional implementation of artificial intelligence (AI) and machine learning in the delivery of instruction and assessments. This trend shows signs of strong growth.

For example, [Surgent Software](#) is an accounting exam preparation software application designed to provide an adaptive personalised learning system that identifies learners' strengths and weaknesses and builds a custom study plan for each one, with regular progress tracking. It also adapts learners' practice questions to their content level, making them increasingly difficult as learners' knowledge increases. While truly adaptive instructional systems are still relatively rare, many learning systems have algorithms that can build learning pathways based on learner performance and that provide instant personalised feedback.

Notable applications of AI in assessment have been in the execution of remote invigilation, translation, and the design of adaptive assessments. For instance, [Invigulus](#) has been working on developing technology that uses pixels for remote invigilation to minimise bias and inaccurate threat detection. [Questionmark's](#) translation tool, 'Instant Translate', built along with SAP, translates questions and other text into different languages to suit each learner's preference, instantly, aiding accessibility, diversity and inclusion efforts.

Adaptive assessments leverage AI to assess large content areas relatively quickly, results of which allow learners to identify areas of strength and improvement as well as direct them to meaningful learning pathways. Nevertheless, it is always pertinent to recognise that delivering these interventions successfully, at scale, requires immense amounts of data collection, storage and analysis, which has raised, and will probably continue to raise, concerns about privacy, security, bias and inclusion.

<sup>2</sup> <<https://business.edx.org/blog/why-corporate-learning-strategies-need-to-include-active-learning>>

**Trend 4:****Micro-credentials gain traction in professional learning and employment settings**

The educators, learning providers and employers we interviewed are optimistic about micro-credentials, especially as avenues of upskilling and learning new targeted content. An SME employer remarked that given the small size of their team – there is only one trained accountant – a micro-credential could equip another staff member on the team to support the accountant without a large investment in training.

Some educators remarked that the use case for micro-credentials is an indication of a new specialisation; other educators merely saw micro-credentials as an easy starting point for learning about the latest topics without significant time and cost investment. For instance, ACCA has a professional certificate in FinTech for Finance and Business Leaders hosted on edX which may serve any of these purposes: upskill employees in SME, indication of specialization, or serving as a starting point to learn more about fintech.

As Lee Rubenstein (edX) points out, learners seeking a certification of some sort are generally the ones who are looking for a new job or a promotion, or simply need to demonstrate skills to keep an old job. edX has a 150-point pedagogical checklist with which creators need to comply to be listed. Such micro-courses are often accompanied by an online invigilated exam at the end, along with pre- and post-course skill assessments to help learners towards their professional goals.

IBM Open Badge is an experienced player in the digital certification market, well known among employers, with an extremely well-defined credential framework that is multi-level (certifying the acquisition of knowledge and applied skills with deep proficiency). Sonia Malik, a strong advocate of digital badges, urges that *'it is possible to provide the same kind of targeted job-aligned relevant content that really helps [an] individual get a job at a fraction of the cost of a degree, faster'*. She argues that digital badges may become a vehicle for social mobility by providing learners with opportunities without their having to incur debt.

'We are not saying there is no value to [a] college degree. We are promoting that [a] college degree does not need to be the [only] entry point to someone's career. An individual should not [have to] choose between college or career – it should be both.'

**Sonia Malik, IBM**

**Trend 5:****Gamification and simulation**

Games may also be used to engage learners, develop skills such as teamwork, leadership and networking, and build global competition between universities, eg **ICARUS**, a business simulation competition hosted by UCL School of Management.

A majority (72%) of survey respondents had used digital simulations or scenario-based tasks: for practice and learning tasks (42%), for tests, exams, and other assessments that result in certification (34%), and for 'learning by doing' / applying real-world problems (30%).

For simulations, a common use-case scenario was using mock accounting software to practise. **Surgent Interactive** has recently launched two courses (one in tax and one in audit) that use gamified, interactive simulations to encourage learners to apply their knowledge in real-world scenarios. In the tax course, learners are tasked with interviewing various taxpayers and adjusting their tax returns on the basis of their answers and the learner's knowledge of tax laws. In each game, learners score points for the quality of their interview and the accuracy of the adjustments they make. In the auditing course, learners encounter real-world situations that require their knowledge of inventory procedures, professional scepticism and accurately making ethical decisions for audit companies. In each game, points are scored by asking relevant questions, identifying errors, and explaining proper follow-up procedures for the situations.

In other examples, UK-based **Unicorn Simulations** tailor detailed simulation games to learning experiences in corporate and public courses across the business, insurance, and financial services industries. **The RMIT Trading Facility (RTF)**, Australia, receives live data from Thomson Reuters. The courses and programmes run in the RTF use this market data in real-time trading simulations and technical workshops for multi-asset portfolio and risk analysis, hedging, and money market and foreign exchange instruments trading, of all of which are conducted at actual market rates. The facility replicates a large bank or corporate treasury centre, with capacity to seat up to 60 participants at 20 dealers' desks. Each desk is equipped with a Thomson Reuters terminal as well as a specialised keyboard.

### Trend 6:

#### Augmented or virtual reality (and ‘metaverse’)

About half (53%) of survey respondents had used augmented/virtual reality (eg immersive experiences in a digital environment). This included use for practice and learning tasks (30%), for tests, exams, and other assessments that result in certification (26%), and for ‘learning by doing’ / addressing real-world problems (23%).

One China-based educator has implemented high-definition teaching audio and video, as well as wearable devices such as VR/AR, to create an ‘immersive’ teaching experience, so that learners can understand abstract concepts in a more engaging and understandable way. The technology can bring real business scenarios into the learning journey, at any time, at any place, and from all angles.

Interviews with stakeholders showed that they envisioned the metaverse as a virtual space facilitating experiential learning and professional capability development at scale to:

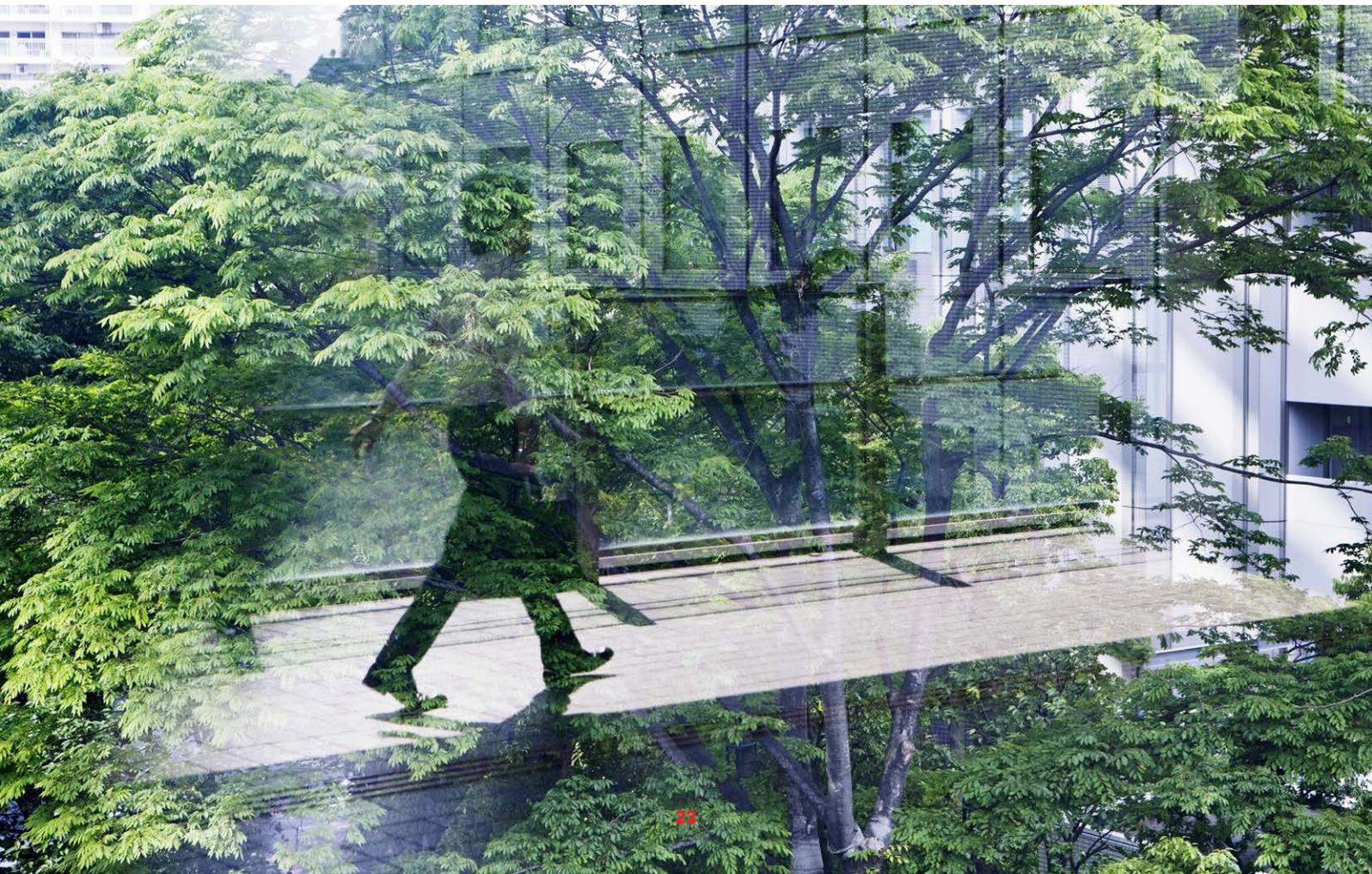
- develop and practise the **critical capabilities** necessary for professional success, such as collaboration, drive, and insight; example scenarios that could be practised in the metaverse more realistically than a 2D simulation, pending additional technological advancements and innovations, are (i) the negotiation of a merger or

acquisitions deal, (ii) communicating audit results to the business owner, or (iii) navigating the complexities of new financial currencies and options (eg crypto)

- deliver unique industry-leading speeches and **virtual events**, facilitating global networking and communication
- facilitate virtual training at **scale and to a consistent standard**
- enable virtual **competitions** that are global
- facilitate global learning groups where **learners from across the globe can come together** to network and learn collaboratively.

While most are ideating or building their metaverse, one relatively more developed example is Accenture (see Accenture 2022a), which has built a corporate metaverse, complete with in-office replicas and innovation hubs that the company has used to host client meetings and onboard over 150,000 employees over the year (Accenture 2022b).

This may be just the beginning. While encouraging, many enthusiasts are still wary of the costs associated with the software and hardware, especially if one chooses to use wearable devices as well, raising concerns about equity and access.



## 5. What **barriers exist** to more **widespread use** of **edtech** in the future?

Samyak Chakraborty (X Billion Lives) succinctly summarised the catalysing nature of Covid-19 with the statement:

‘Demonetisation is to Fintech as Covid-19 is to Edtech’.  
**Samyak Chakraborty, X Billion Lives**

Yet, there are several elements that need to remain in place and barriers to be overcome for widespread adoption. In interviews, a few key barriers were highlighted:

- the **digital divide** in access to reliable high-speed internet, power, and quiet learning spaces
- potential inhibiting **cost** for newer technologies such as augmented/virtual realities/ metaverse, and establishing technical infrastructure, especially for advanced technology
- perception of educators that ‘career navigator’ skills of **collaboration** (engagement, communication, inclusion, and influence) are not as well supported with technology
- potential data **privacy** issues when collecting data to personalise courses
- growing mistrust that edtech has emphasised technology more than education, making it **more flashy than educational**
- **resistance to change/slow adoption** of newer technology as a culmination of other concerns.

According to interviewed stakeholders, the successful use of edtech has a few critical elements.

- **Educators’ buy-in** and practice is critical. Related to this, there seems to be a shift in understanding the role of the modern accountant and the training they require. As part of this shift, many educators preferred to focus their time on content expertise development, verifying and auditing the technology’s processes and outputs, eg to verify that the automated accounting software is being used correctly and is delivering appropriate outputs, rather than teaching the mechanics of the technology itself.

- **Regulatory** aspects are becoming even more important, for example on oversight of training models such as apprenticeships.
- Appropriate and contextual **messaging** of the value proposition is a concern. While the survey data suggests that there is some support for using edtech, it also suggests that learners and educators expect to derive different benefits from it, leading to poor messaging.
- There must be **trust** between educator and learners for there to be meaningful engagement, where the learner believes the educator is using the technology with clear intentions of supporting their learning goals in specific ways.

Educators and learners agreed on the top 6 out of 12 barriers to greater use of edtech (the percentage of respondents who chose the indicated barrier is presented in brackets):

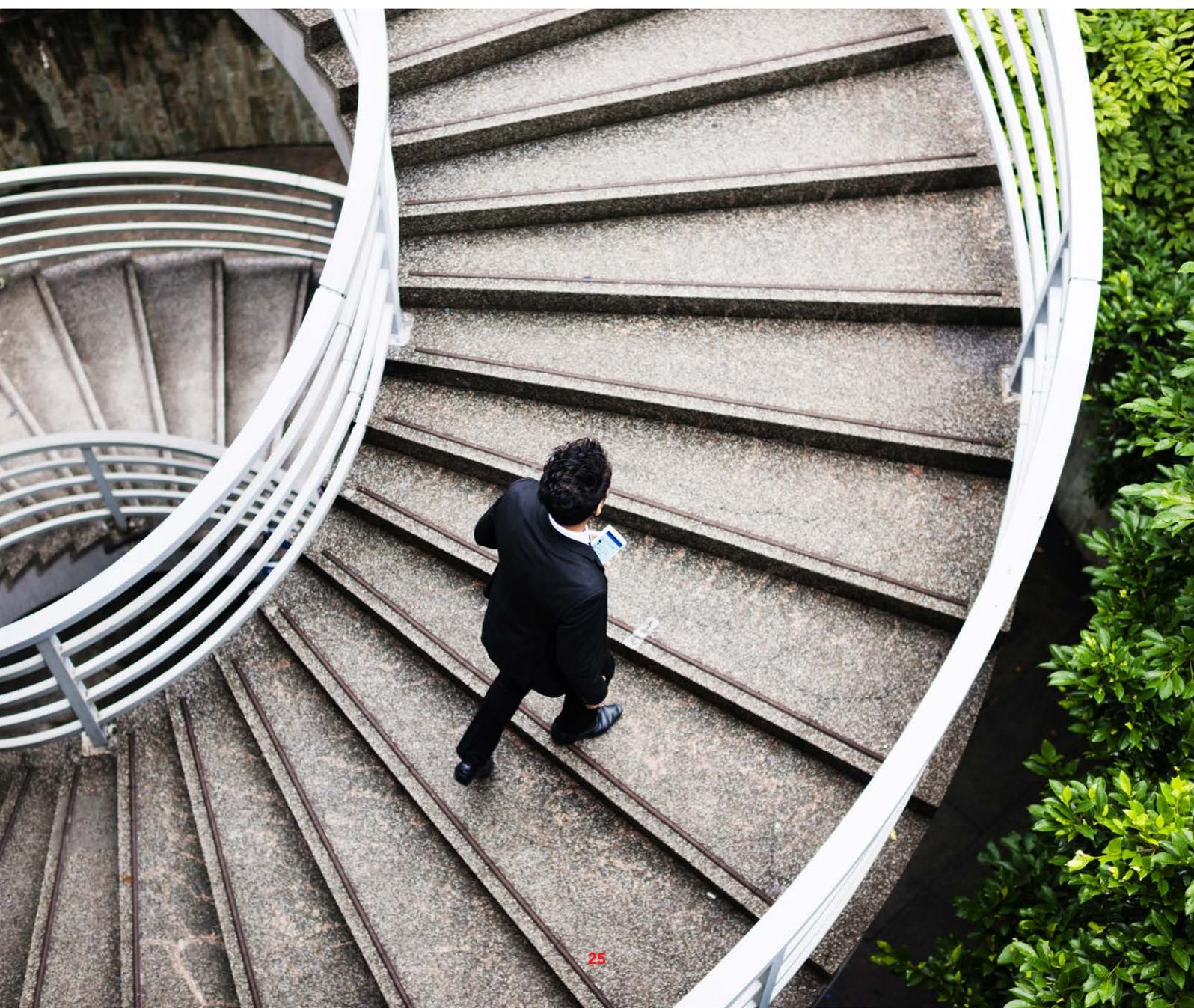
- cost of software, eg course content (46%)
- poor internet connectivity (33%)
- cost of course (29%)
- cost of hardware, eg laptops (27%)
- lack of nationally / government accredited learning programmes (24%)
- difficulty of concentrating if doing alongside work, if learning has no fixed timing (22%).

See also Table A2 in the Appendix.

Nonetheless, there were differences in the ranking of these barriers between educators and learners (see Table 5.1). For instance, educators saw the cost of software and the actual course content to be the greatest barriers to greater use of edtech, while learners reported the cost of courses – not their content – as their most significant barrier. While it is possible that learners pay learning providers and educators a larger sum for an all-inclusive course (ie course and content) and do not notice the additional cost of software, there are other instances of mismatch as well. Educators saw the cost of hardware as a greater barrier than difficulty in concentrating on learning alongside work, while learners reported the reverse.

**TABLE 5.1:** Ranking of top barriers to greater use of edtech

BARRIERS TO GREATER USE OF EDTECH	RANKING	
	EDUCATOR	LEARNER
Cost of software, eg course content	1	3
Poor internet connectivity	3	2
Cost of courses (ie of learning experience as a whole)	2	1
Cost of hardware, eg laptops	4	5
Lack of nationally / government-accredited learning programmes	6	6
Difficulty of concentrating if doing alongside work, without fixed times for learning	5	4



## 6. Policy-relevant observations for governments seeking to increase engagement with edtech

In conversations with learners and educators, a few observations were made that are relevant to policymakers.

### Observation #1:

**Invest in infrastructure development ensuring all households, learning institutions and offices have stable high-speed internet**

This is to help with the digital divide and was raised in interviews with stakeholders from India, Kenya, Sri Lanka, and the USA. For instance, Kerala, a state in India has invested GBP 162.4m in its Kerala Fibre Optic Network (KFON) Project to provide internet to every household in the state, offering internet for free to 2,000,000 households below the poverty line (KFON n.d.).

### Observation #2:

**Create competitive pathways for employment for qualified accountancy professionals within the government and public sector**

It may be possible for governments to fund micro-credentials to upskill staff; edX, for example, is in talks with multiple countries that are considering making it compulsory for all their graduates to complete at least one edX bootcamp, so they are work ready.

### Observation #3:

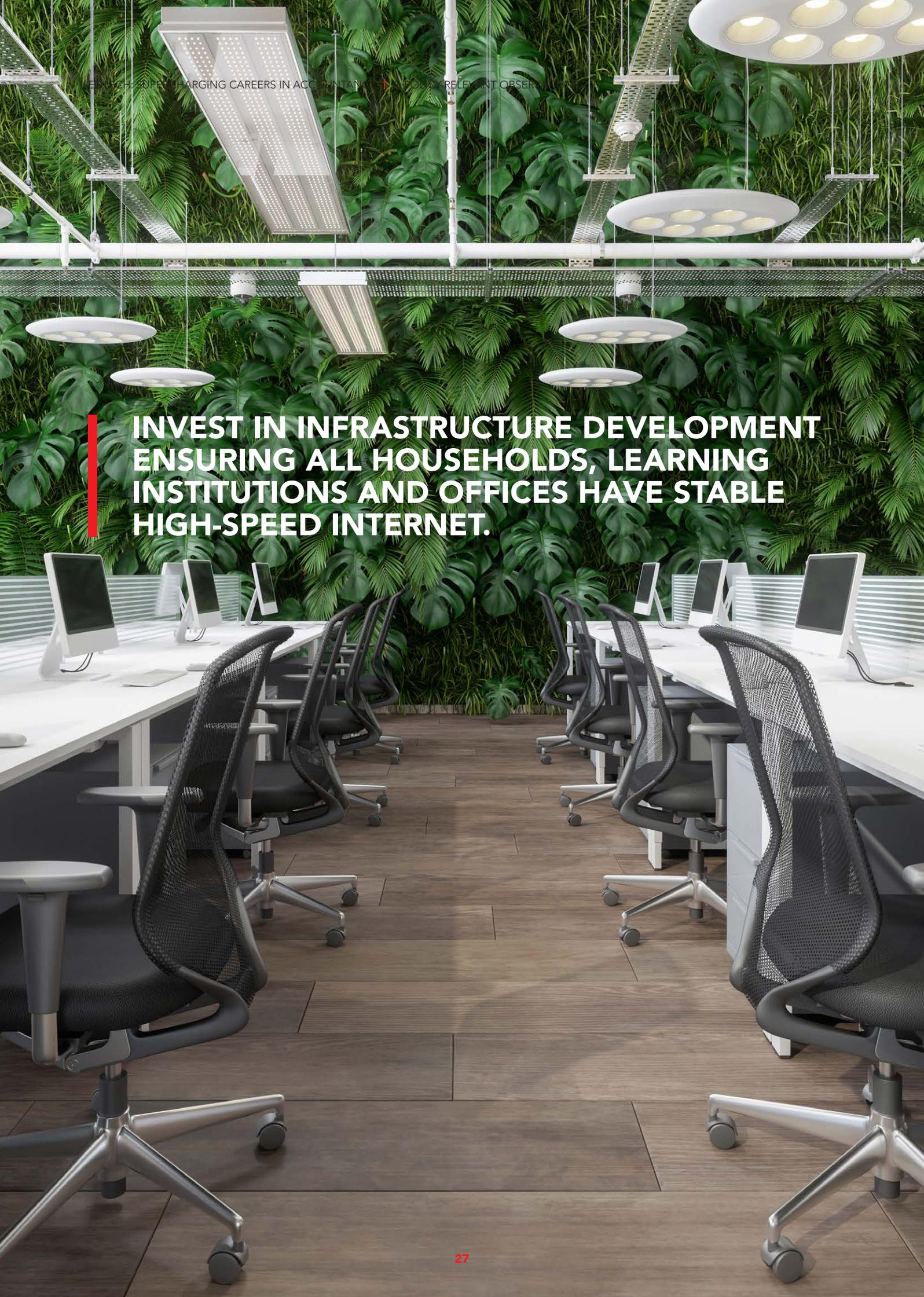
**Consider school-to-career pipelines and introduce key professional concepts and experiences in high-school or undergraduate studies**

Many educators remarked on the need for effective communication of the innovation opportunities in an accountancy career. Some suggested starting earlier, at high school, when students are first introduced to professional options, including accountancy, to introduce more cutting-edge concepts such as fintech, and the use of accounting applications alongside the foundational knowledge, so that more students may be interested in pursuing accountancy as a profession.

### Observation #4:

**Strategically implement communication campaigns that establish edtech as a tool for effective and engaging learning, rather than only for emergency, remote learning**

Learners may have raised expectations about edtech which educators may need to satisfy, beyond the substitution-based edtech which has now started to fade in novelty. Also, in areas where the internet may be unstable or unreliable, it will take a concerted effort to build momentum towards widespread use of edtech if/when a majority of instruction returns to in-person.



**INVEST IN INFRASTRUCTURE DEVELOPMENT ENSURING ALL HOUSEHOLDS, LEARNING INSTITUTIONS AND OFFICES HAVE STABLE HIGH-SPEED INTERNET.**

# Acknowledgements

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**A.J. Kreimer**, Professor, Temple University, US

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**James Cumming**, Director of Programmes, BPP University, UK

**James McFie**, Senior Lecturer, Strathmore University Business School, Kenya

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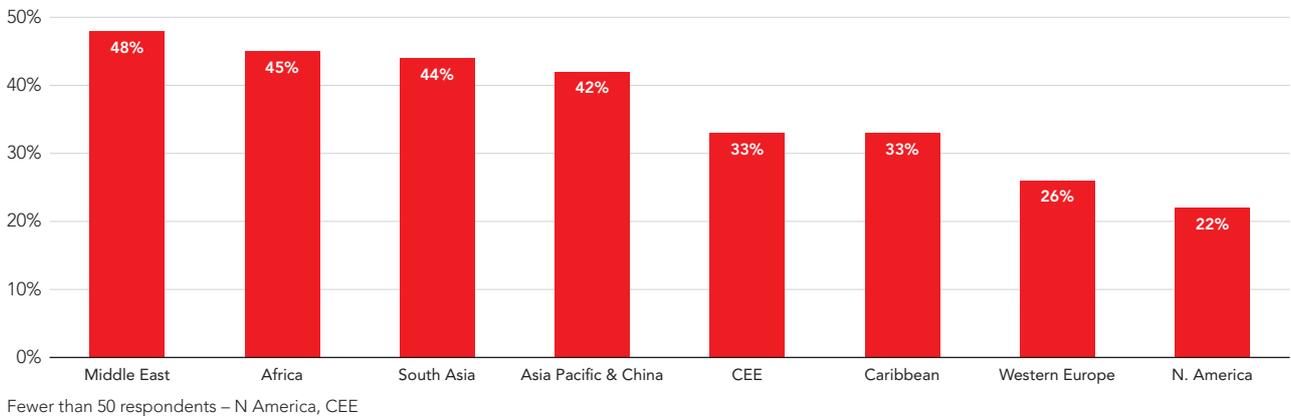
# Appendix

**TABLE A1:** Devices used in different regions

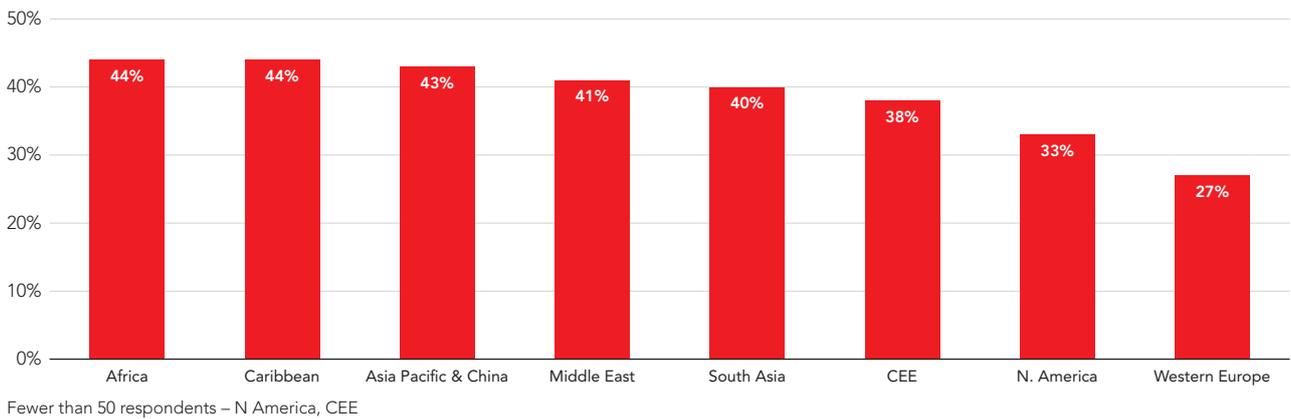
REGION	North America		Middle East		Asia Pacific & China		Central & Eastern Europe		South Asia		Western Europe		Africa		Caribbean		Central & South America	
	For Learning	For Assessments	For Learning	For Assessments	For Learning	For Assessments	For Learning	For Assessments	For Learning	For Assessments	For Learning	For Assessments	For Learning	For Assessments	For Learning	For Assessments	For Learning	For Assessments
Laptop	32	26	48	40	235	155	43	32	195	161	241	169	278	221	58	45	14	13
	89%	72%	86%	71%	88%	58%	96%	71%	87%	72%	86%	60%	89%	71%	92%	71%	88%	81%
Mobile (eg smartphone)	22	15	37	26	197	111	32	16	177	80	151	104	255	139	47	24	13	8
	61%	42%	66%	46%	74%	42%	71%	36%	79%	36%	54%	37%	82%	45%	75%	38%	81%	50%
Desktop	22	5	30	20	170	88	17	15	109	77	126	35	160	107	36	15	9	2
	61%	14%	54%	36%	64%	33%	38%	33%	49%	35%	45%	13%	51%	34%	57%	24%	56%	13%
Tablet	16	7	23	16	141	77	12	7	90	42	110	46	139	61	32	17	7	2
	44%	19%	41%	29%	53%	29%	27%	16%	40%	19%	39%	16%	45%	20%	51%	27%	44%	13%
Virtual reality headsets	7	0	12	3	93	56	5	5	60	26	39	18	90	26	18	4	5	2
	19%	0	21%	5%	35%	21%	11%	11%	27%	12%	14%	6%	29%	8%	29%	6%	31%	13%
None of the above	1	7	3	12	11	60	1	7	5	33	14	62	7	38	2	11	0	0
	3%	19%	5%	21%	4%	22%	2%	16%	2%	15%	5%	22%	2%	12%	3%	17%	0	0

Cells shaded grey had fewer than 50 responses

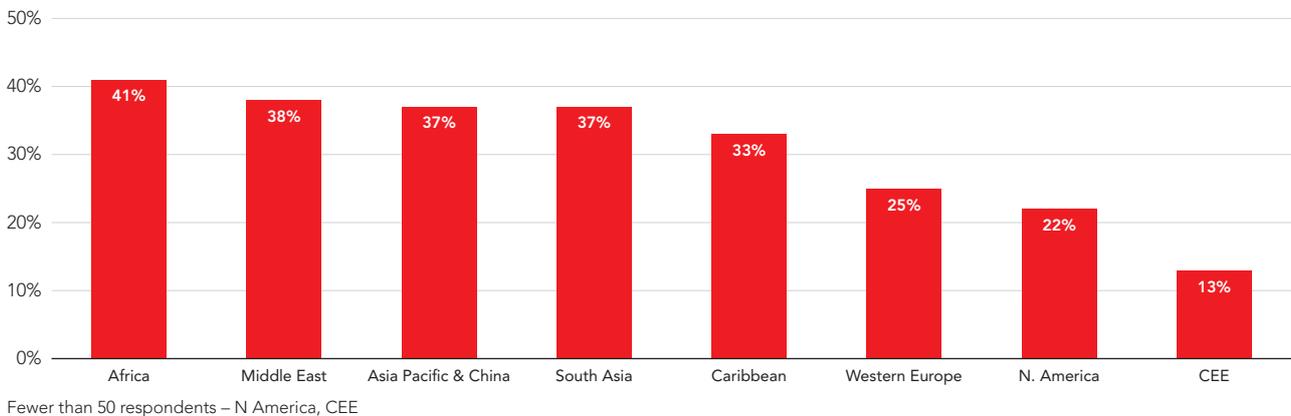
**FIGURE A1:** Preference for blended learning format for delivery of content, by geographical region



**FIGURE A2:** Preference for blended learning format for learning activities, eg practice questions, by geographical region



**FIGURE A3:** Preference for blended learning format for assessment, by geographical region



**TABLE A2:** Perception of barriers to greater use of EdTech (Global)

	TOTAL	TYPE OF RESPONDENT	
		EDUCATOR	LEARNER
BASE	2176	434	977
Cost of software, eg course content	1010	191	379
	46%	44%	39%
Poor internet connectivity	722	180	382
	33%	41%	39%
Cost of courses	639	188	451
	29%	43%	46%
Cost of hardware, eg laptops	579	143	260
	27%	33%	27%
Lack of nationally / government accredited learning programmes	515	110	212
	24%	25%	22%
Difficulty of concentrating if doing alongside work, without fixed timing	471	132	339
	22%	30%	35%
Lack of relevant courses	443	82	156
	20%	19%	16%
Lack of sufficient computer skills	413	105	141
	19%	24%	14%
I just prefer a traditional face-to-face approach	362	60	140
	17%	14%	14%
Can't simulate real-life experiences accurately enough	338	107	231
	16%	25%	24%
Compliance with digital and data regulations	332	80	119
	15%	18%	12%
Less effective for what I need to learn or teach	256	41	80
	12%	9%	8%
I don't trust technology for learning or assessment	56	21	24
	3%	5%	2%
Other, please specify	49	10	29
	2%	2%	3%
None of the above	130	34	96
	6%	8%	10%

**TABLE A3:** Perception of barriers to greater use of edtech (China)

BARRIERS	RESPONSE COUNT	%
Compliance with digital and data regulations	131	6%
Cost of hardware, eg laptops	176	9%
Cost of software	332	16%
I just prefer a traditional face-to-face approach	162	8%
Lack of nationally / government-accredited learning programmes	189	9%
Lack of relevant courses	205	10%
Lack of sufficient computer skills	163	8%
Less effective for what I need to learn or teach	135	7%
Poor internet connectivity	160	8%

**TABLE A4:** Reported use of tools for learning, assessments, or both (China)

	FOR LEARNING	FOR ASSESSMENTS	FOR LEARNING AND ASSESSMENT
Adaptive learning platforms that adjust content as you learn	284	92	115
	37%	12%	15%
E-books/digital books	359	82	195
	47%	11%	25%
Collaborative tools (eg digital whiteboards, OneNote, Google Drive)	333	101	144
	44%	13%	19%
Communication tools (eg messaging services, discussion boards)	345	107	178
	45%	14%	23%
Custom (eg accounting) software	298	94	67
	39%	12%	9%
Learning portals/content management systems to upload/access content and create or submit assignments	424	65	129
	55%	8%	17%
Digital badges for recognition/certification	239	162	64
	31%	21%	8%

**TABLE A5:** China responses on what edtech is valued for and what could improve

	I VALUE EDTECH FOR		I THINK EDTECH CAN BE BETTER AT	
Ability for learner to think critically about the topic	491	9%	127	7%
Openness to change, innovation, and new topics	510	9%	106	6%
Ability to apply learning at work (eg realistic scenarios requiring complex decision making)	560	10%	118	7%
Dynamic or real-world experiences within learning	506	9%	140	8%
Tracking learning progress for insights (eg more granular view of areas of strength and weakness)	475	8%	139	8%
Value for money in accessing learning	421	7%	149	9%
Exams / assessments (eg via larger number of practice questions)	505	9%	102	6%
Enjoyment of learning process	475	8%	122	7%
Personalised / customised learning journey (eg differentiation of content based on learning or interest)	454	8%	110	6%
Variety of learning activities	531	9%	111	7%
Engagement with content	30	1%	84	5%
Flexibility in learning (eg timing)	128	2%	197	12%
Modular learning	539	10%	192	11%
<b>TOTAL</b>	<b>5625</b>	<b>100%</b>	<b>1697</b>	<b>100%</b>

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