

Engineering and technology skills in the United Arab Emirates



A 2022 survey by the IET

In partnership with:

YouGov

theiet.org/UAESkills

1. Introduction

The Institution of Engineering and Technology (IET) inspires, informs and influences the global engineering and technology community to engineer a better world. Founded in 1871, we are one of the world's oldest professional institutions. We are also one of the largest, with more than 155,000 engineering and technology professionals in 148 countries. In 1921 we were granted a Royal Charter and are proud that our patron for the past 70 years has been Her Majesty Queen Elizabeth II.



We commissioned a survey by international market research and data analytics expert YouGov to gauge the workforce issues faced by engineering and technology organisations in the United Arab Emirates (UAE).

A total of 325 respondents took part in the survey, which was open to engineers or those working at a senior decision-making level within organisations that employ engineers. It explored the current situation, the expected changes to the UAE workforce profile in the short to medium term and how the country's engineering and technology organisations plan to respond. The sample was drawn from YouGov's panel in the UAE and only those working in the engineering and technology sector were allowed to take part.

Fieldwork was carried out online between 13 December 2021 and 5 January 2022. The results are not weighted and therefore are not representative of the population. All findings in the report represent only the views of those engineering professionals and employers who responded to the survey.

Based on the survey findings, we have developed a series of recommendations that will support the development of a steady pipeline of talented engineers in the UAE. This will help to maximise the impact and influence of engineering and technology organisations. In turn, this will help the UAE to achieve its long-term goals.

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2. Today's engineering and technology workforce

What is the current skills profile?

In UAE engineering and technology organisations the proportion of staff who are highly skilled varies according to the size of the workforce. A 'mostly high skilled' staff profile was reported by:

- 76% of large organisations (500 or more employees)
- 65% of medium-sized organisations (50 to 500 employees)
- 44% of micro/small firms (one to 49 employees); 42% of micro/small firms have a mostly intermediate skills profile.

Looking more closely at the nationality of respondents, 75% of Emiratis and 64% of Arab expatriates work for organisations with a mostly high skilled staff profile, while for Asian expatriates it is just 49%. Asian expatriates are more likely to be working in organisations with an intermediate skills profile (41% of Asian expatriates vs 19% of Emiratis and 26% of Arab expatriates).

Are engineering firms expanding?

Despite the difficulties caused by the coronavirus pandemic, nearly half (48%) of UAE engineering and technology organisations grew during 2021, with 21% reporting a large increase in headcount. Only a minority (8%) experienced a large decrease.

1. Skills profile

59% of organisations say their staff are **mostly high skilled**

2. Growth

48% of organisations **increased their headcount** in the last 12 months

What are the key challenges?

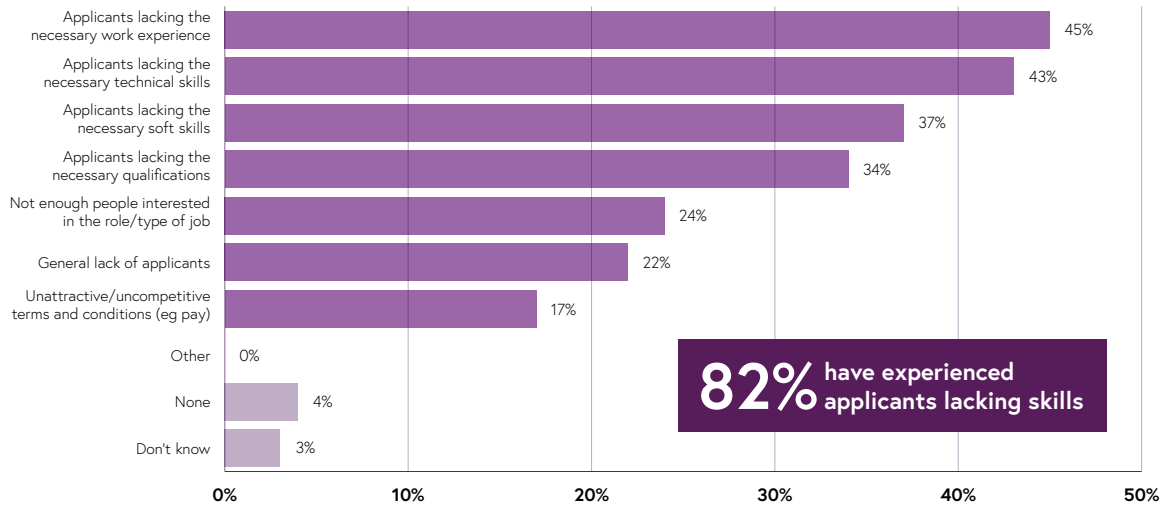
In previous research¹ conducted by YouGov for the IET, 'adapting to workforce changes' was cited as a problem by 40% of UAE engineers and engineering employers who were aware of the UAE government's 2021-2030 roadmap. The COVID-19 pandemic has since created a host of important additional workforce challenges that are now a priority for many organisations.

Our latest research findings reveal that lack of diversity is not considered to be a major workforce issue: only 17% of respondents see lack of gender diversity in the workforce as a current problem; and only 13% see lack of ethnic diversity as a current problem. A similar proportion believe lack of diversity will be problematic in three years' time (18% and 14% respectively).

- **Skills shortages** – 54% of organisations are experiencing a skills shortage of some kind: 24% face a shortage among job applicants; 21% among existing staff; 18% among graduate entrants; and 22% among country nationals generally. Overall, respondents do not think this skills shortage will have been addressed by 2024/25
- **Recruitment difficulties** – the vast majority (93%) of engineering employers have experienced some kind of difficulty in recruiting staff for new roles in the past 12 months and most (82%) have experienced inadequate applicants applying for roles (see Figure 1 for details). Large organisations are more likely to be struggling with applicants lacking the necessary technical skills, with a majority (58%) citing this as a difficulty.

¹ Fieldwork was carried out in the UAE between 12 February and 10 March 2021 via an online survey of 210 engineers or those working at a senior decision-making level within organisations that employ engineers.

Figure 1: 2021 recruitment difficulties



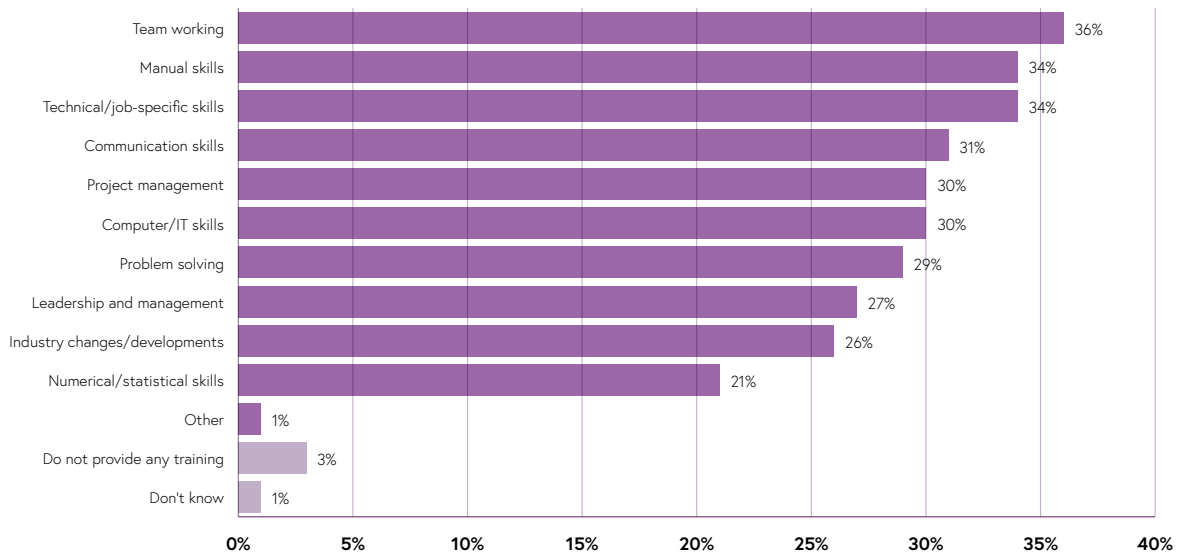
Q: Thinking generally about your recruiting for your organisation... Which, if any, of the following difficulties in recruiting has your organisation experienced in the last 12 months? Base: all (325)

– **Skills gaps** – among those organisations experiencing a skills gap, almost half (48%) report that the greatest skills gaps are in high skilled roles, with slightly fewer (41%) experiencing it in intermediate skilled roles. Only a minority (7%) say that their skills gap is mostly in lower skilled roles. Just over a third (36%) of organisations report gaps in the skills of their apprentices or other trainees.

What are the main staff training topics?

Almost all organisations (95%) offer staff training. As illustrated in Figure 2, the most commonly mentioned training topics are team working (this was cited by 44% of large organisations), manual skills and technical/job-specific skills.

Figure 2: Staff training offered by organisations



Q: What kind of training does your organisation provide? Base: all (325)

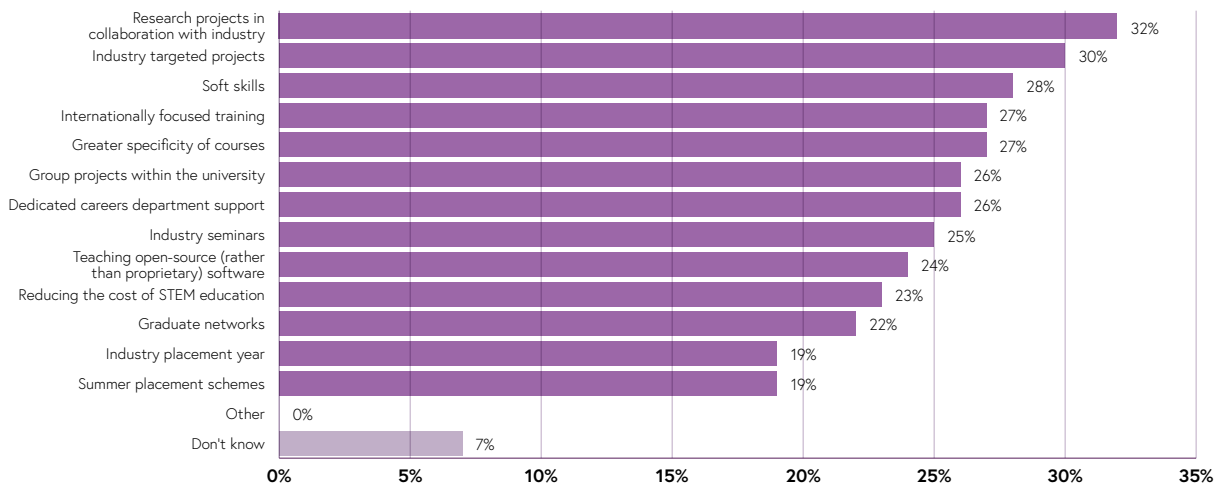
What about graduates and young employees?

Most UAE engineering organisations (79%) employ young people, including graduate entrants and apprentices in entry-level roles. In large organisations this figure rises to 87%. Our previous research showed that over 60% of respondents thought that young people do not have the necessary skills they need for work in the engineering industry. In our skills survey, more than half (52%) say that it takes between one and six months to get young recruits

up to a sufficient standard to work in the industry.

Engineering employers were asked how Science, Technology, Engineering and Maths (STEM) education at a university level could improve in order to provide more 'industry-ready' engineering and technology graduates. The top two answers both referenced greater industry involvement in student research projects (see Figure 3).

Figure 3: Where STEM education at a university level needs to improve to provide qualified engineering and technology candidates for the industry

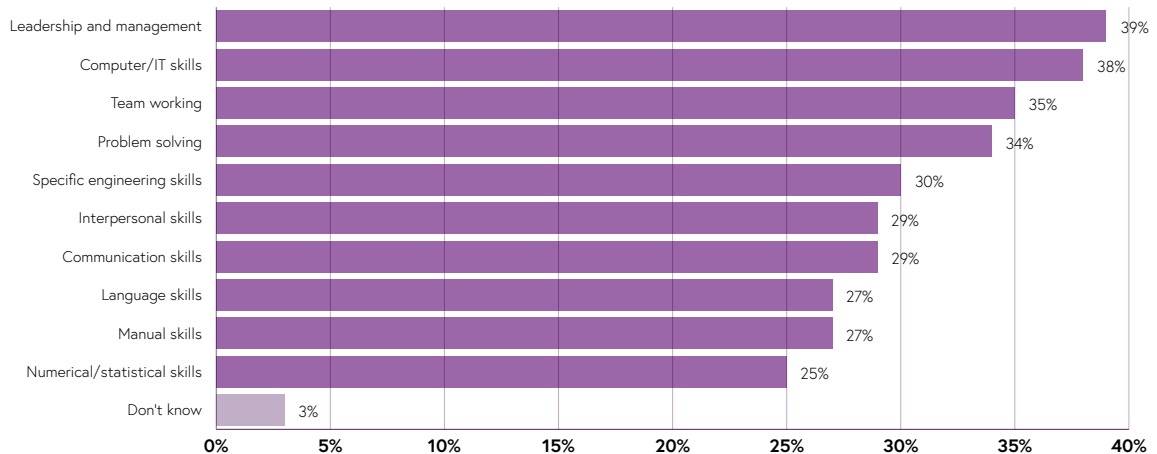


Q: Where, if anywhere, does STEM education at a university level need to improve in order to provide qualified engineering and technology candidates for the industry? Base: all (325)

The workforce is evolving. To make a positive impact in their organisation, graduates must be equipped with the right skills. Engineering employees were asked to consider what these skills might be in the context of

their organisation's challenges over the next five to 10 years. They selected a mix of soft and technical skills (see Figure 4).

Figure 4: Skills needed by graduates to make a positive impact in their organisation over the next five to 10 years

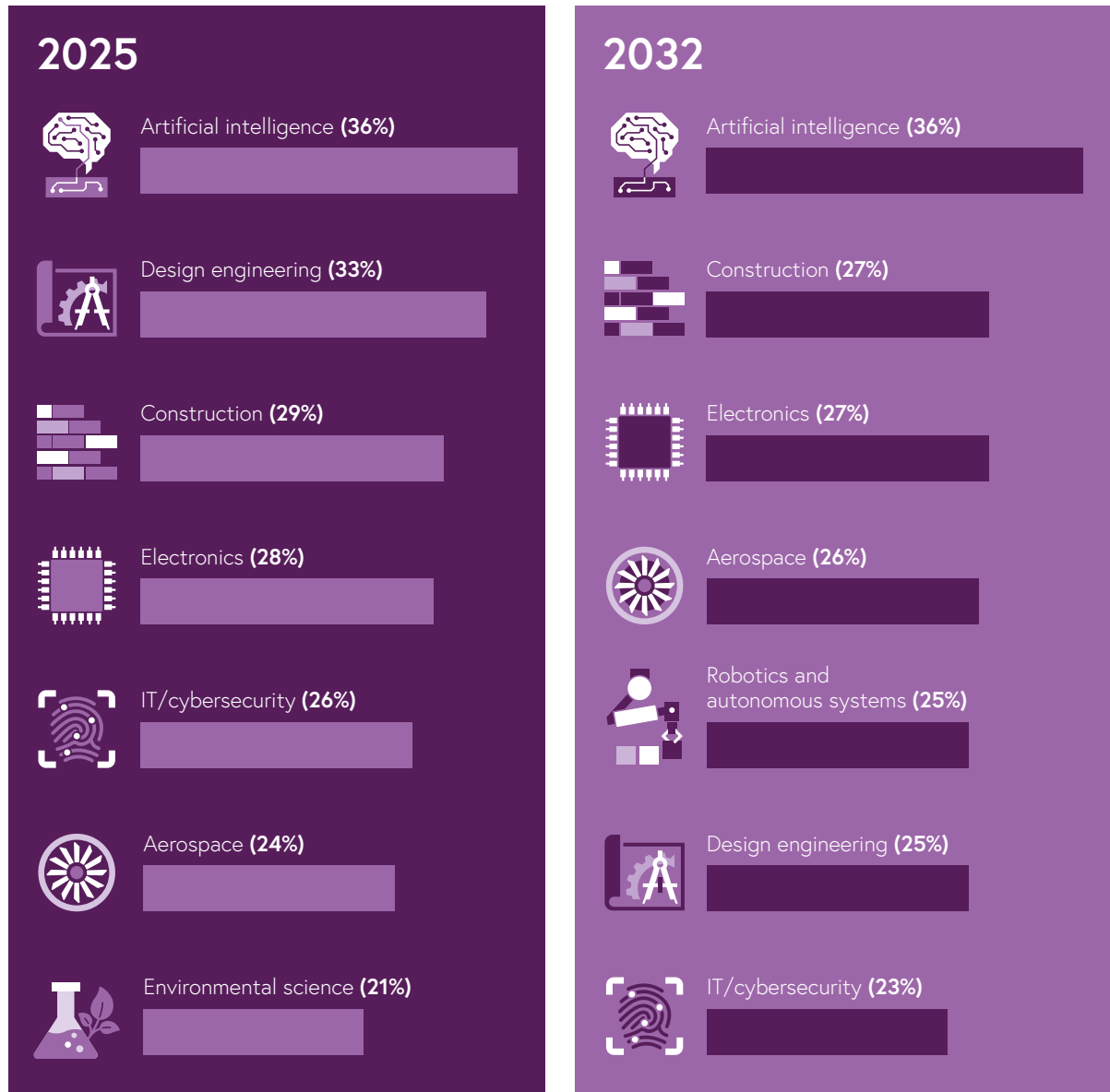


Q: And thinking about the challenges facing your organisation over the next five to 10 years, what skills will new graduates need to make a positive impact? Base: all (325)

3. Looking further ahead

Which industries will become more important?

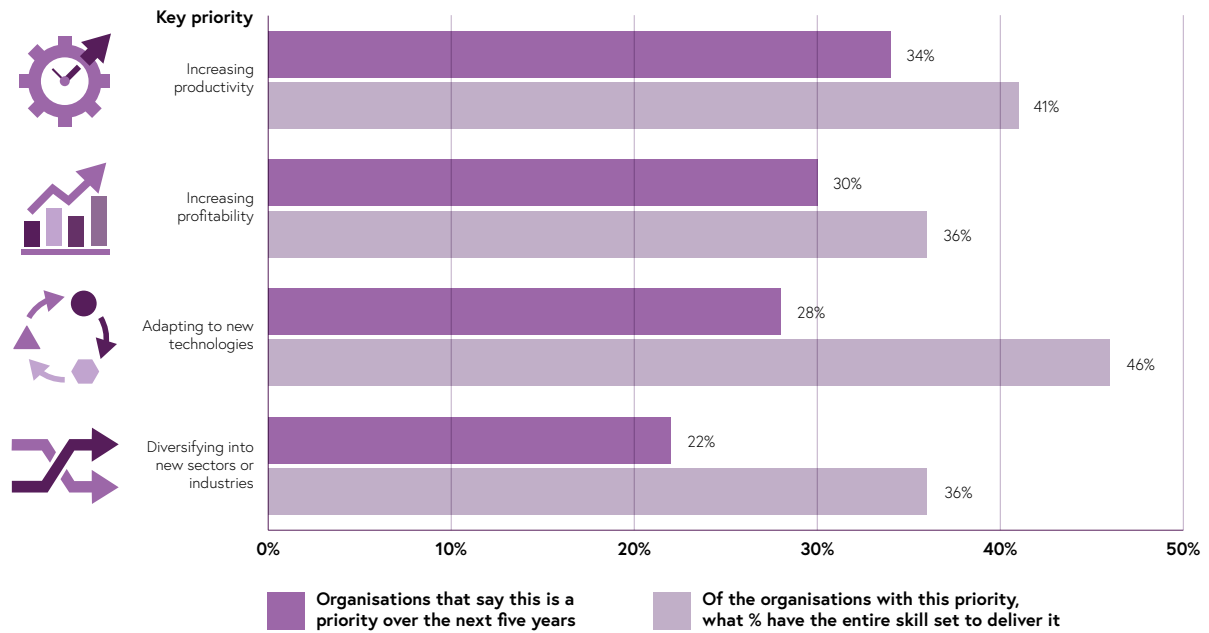
What do engineering employers expect the most important industries to be in the years to come?



Which skills will be needed?

Many employers do not anticipate an improvement in the current skills shortage in three years' time: 25% expect the job applicant shortage to remain a serious issue; while 22% believe graduate skills shortages will still exist. Large organisations are particularly likely (32%) to consider this a larger problem in three years' time. This is a cause for concern.

Engineering organisations recognise that upskilling will be needed to deliver their key priorities over the next five years. However, less than half of organisations surveyed have all the skills they need to deliver their priorities (see illustration below)



Q: Which, if any, of the following are key priorities for your organisation over the next five years?
 Base: all respondents (325) and

Q: To what extent do you think that your organisation currently has the skills required to achieve this?
 Base: those with each priority for the next five years (variable base 57-110).

The survey results indicate a widespread need to upskill staff in problem solving as well as leadership and management.

Problem solving
 is one of the **top three skills missing** for 12 of the 17 priority areas

Leadership and management skills
 are lacking for six of the priority areas



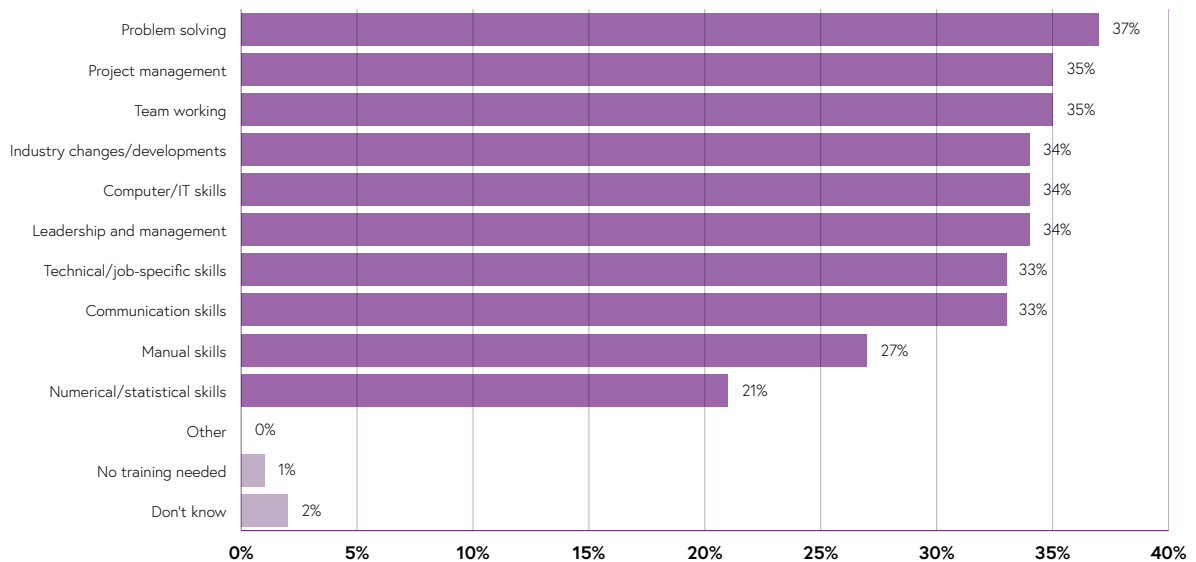
What type of training will be needed?

Almost all (97%) of respondents say their organisation will need to implement training in some areas to deliver its priorities for the next five years.

As shown in Figure 5, the training needs most frequently mentioned by employers focus on the acquisition of day-to-day management skills, including problem solving, project management and team working. The more applied skills areas – technical/job-specific, manual and numerical/statistical – are mentioned less frequently.

The size of the organisation appears to have a big influence on training needs. For example, computer/IT skills are the top training need in medium-sized organisations (42%), but the fourth across the whole sample. And while communication skills are identified as the top training need in large organisations (45%), they are in eighth place overall.

Figure 5: Skills that organisations will need to meet their priorities in next five years



Q: What training will your organisation need to implement in order to reach its priorities over the next five years? *Base: all (325)*

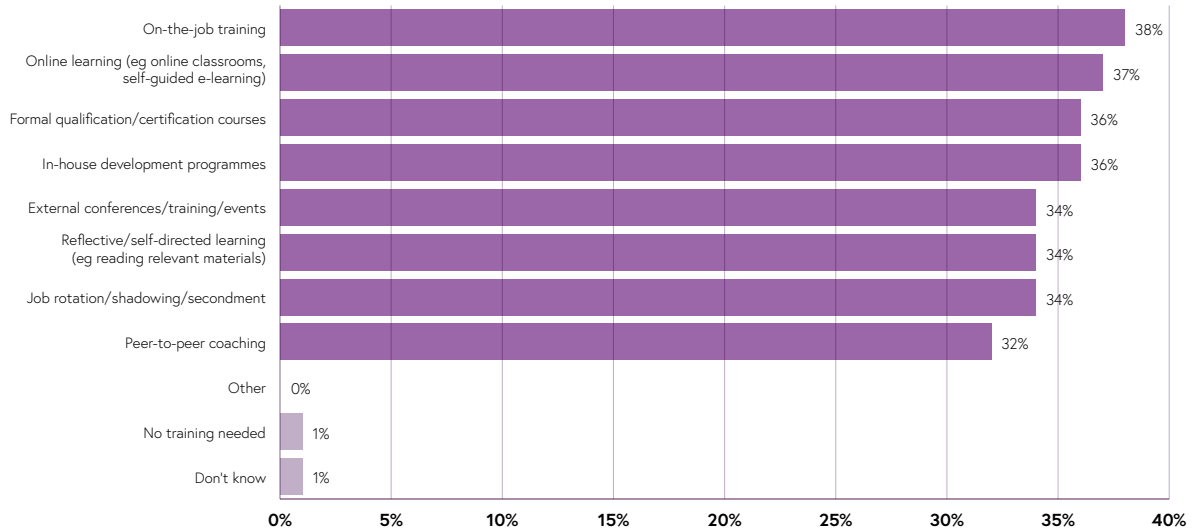
How will the training be delivered?

Given the long term importance of training, how will it be delivered?

As shown in Figure 6, on-the-job training is mentioned the most by respondents, closely followed by online

learning, formal qualifications/certification courses and in-house development programmes. There is, however, no stand-out training type; the eight forms of training are within six percentage points of each other, showing that they are generally all considered to be useful.

Figure 6: Type of training needed to deliver the organisation's priorities in the next five years



Q: What type of training will your organisation need to implement in order to reach its priorities over the next five years? Base: all whose company need to implement training to meet skills gap (314)

Who should deliver the training?

Most respondents (66%) expect that their organisation will use professional training bodies like the IET to help bridge the current skills gaps. Among Emirati respondents this figure rises to 78%.

Half of respondents (50%) think their organisation will use internal training programmes and 44% expect training to be commissioned from the UAE Government (among Emirati respondents the figure rises to 60%). Just 24% of respondents expect their organisation to commission training from universities and other educational organisations – perhaps suggesting that the skills perceived as most necessary in modern business, such as effective day-to-day management, are more often gained outside traditional academic environments.

Engineering and technology organisations complete most of their training online. Nearly half of respondents (49%) say that 75 to 100% of their training is done online.

66% of respondents expect that their organisation will invest in training delivered by professional training bodies

83% of respondents say that at least 50% of training is delivered online in their organisation

4. IET recommendations

As a global institution we regularly provide evidence-based, impartial advice to governments and policy makers. Based on the findings of our report and our wider experience, we have highlighted six action areas for industry, government and other stakeholders to consider.

In the workplace

1. Gaining the right skills

Investing in employees will increase profitability. Employers should make sure their engineers and technicians develop a broad mix of skills that includes technical and life skills. They should look at creating a framework that supports continuing professional development (CPD) – because employees should never stop learning. Apprenticeships can provide a structured and highly effective way to improve the skills and experience of the workforce.

2. Encouraging diversity in the workplace

The UAE has a truly diverse population. Harnessing this diversity can provide a long-term solution to skills shortages while also supporting productivity and profitability. It's great to see the crucial role that female Emiratis are playing within the engineering sector. Engineering employers should continue to champion multiple areas of diversity in their workforce because this provides a variety of perspectives and skill sets.

3. Professional standards

Employers should encourage the continual achievement of professional standards within their workforce. They should use globally recognised frameworks to assess the professionalism of their engineers and technicians. This can help increase skills and competence levels while also reinforcing the vital importance of ethical behaviour.

"Investing in employees will increase profitability".

Education system

4. Supporting employable graduates

Industry requirements can change rapidly, so involving industry in shaping higher education can be very beneficial. We recommend aligning courses to future industry needs and running research projects in collaboration with industry, to give students valuable real-world exposure. Employers should engage with educators to help shape the skills pipeline for their industry. Encouraging employees to act as mentors and STEM ambassadors can be a great way to inspire the next generation.

5. Quality assessment

Benchmarking the quality of a higher education programme can be a useful way to assess its worth. An internationally recognised quality assessment can help a programme stay at the forefront of international educational developments; improve the student learning experience; and enhance graduate attributes to better meet the needs of industry. Higher education institutions should consider attaining global quality benchmarks.

6. Experiential learning

Early years education is an important building block for a future workforce. Hands-on, experiential learning is essential when teaching science, technology, engineering and mathematics (STEM). It encourages creativity, imagination and problem-solving skills, all of which help young people apply knowledge to the world around them. Although much has already been achieved in this area, the UAE education system should continue to evolve experiential learning of STEM subjects. This will ensure these subjects remain relevant to the ever-changing engineering landscape.

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E6D22001/Education/0522