DEVELOPING SKILLS FOR THE FUTURE

A GLOBAL SURVEY FROM TOTAL CAMPUS, JUNE 2017

Total HR Strategy & Policy
Higher Education & Employer Branding
www.campus.total.com

Contents

Next Steps

- Following the presentation at the GEDC Industry Forum in June 2017 the survey report will be shared with all delegates, and further with GEDC members and the Total Campus audience.
- More detail on results per region, or from different profiles (e.g. based on level of study, subject of study, gender) can be obtained from the researchers (see final page for details).

Executive Summary

The "Skills for the Future" survey was launched in May 2017 on Total Campus, the Group's online and social media platform aimed at students, recent graduates, junior researchers and professors. The objective of the survey was to gain a better understanding of this audience and their peers worldwide. We wanted to explore their ideas about workplace skills and how to develop them, and better understand the expectations and needs of this key pipeline of future talent and influencers in relation to industry involvement in education and skill development activities.

The study comprised a global sample of 2326 respondents surveyed during May and June 2017. It was distributed on Total Campus social media channels, website, newsletter and by partner university organisations. It covered 130 countries and approximately 686 universities.

Key Findings

- There is significant consensus across all profiles (i.e. regions, experience levels and gender) on the skills considered important for success in the labour market: **communication skills, ability to work inside a team and leadership.**

- There is also considerable consensus on the **activities considered useful to develop key skills**, with some differences based on level of experience. Not all respondents enjoy the same level of opportunity to engage in the activities felt most useful, with biggest differences by region.

- The **six activities considered <u>most useful</u> to develop skills all require the involvement of industry**.

- Of the 6 activities considered the most useful, **only 2 are also activities which respondents most often have the opportunity to experience.**

Skills Considered Important for Labour Market Success + Key Findings

- The same three skills are mentioned by most of the respondents as most important for success in the labour market: **communication skills, ability to work inside a team and leadership. These skills are considered most important across regions, experience levels and gender.**

- Leadership was not one of the skills on the proposed list, but was most often spontaneously added in two open questions.

- All the skills listed – inspired mainly by an American Society for Engineering Education (ASEE) report on attributes of a global engineer – are considered important, all scoring 3.6 or more out of 5.

Respondent Profiles

- **Students make up almost two thirds of the respondents** while one quarter are recent graduates and 1 out of 10 are professionals. **More than half are studying / have studied engineering**. A majority (4 out of 5) **have had some form of professional experience**, from 6 months up to more than 5 years.

- **One third of respondents are female** and **almost half come from African countries**.

- The top 5 countries responding were: **Nigeria, Kenya, India, Uganda and Canada**

Activities Considered Useful to Develop Labour Market Skills

- **Overall, Internships are considered to be the most useful activity for skill development**, followed by working on real business or engineering projects at university, networking opportunities with experienced professionals and project work with companies inside the company.

- **Younger respondents (18-24 years old and 25-29 years old) consider internships as <u>the most useful</u>** while the 30 years old, and older age groups consider working on real business or engineering projects as most useful.

- African respondents tend to rate the importance of skills and usefulness of activities more highly than respondents from other regions, while Europeans tend to rate them lower.
- **Respondents with the most experience tend to rate more of the activities as less useful** for developing workplace skills compared to the others. The same can be said of the respondents from Americas.

Opportunity to Experience the Activities

- **The highest number of respondents (64%) had the opportunity to experience internships,** followed closely by **participation in student clubs, teams, societies**. Other activities experienced more often were career presentations done by companies and taking a leadership role in a students' organization.

- Despite being ranked as highly useful by respondents, **respondents had fewer opportunities to experience working on real business or engineering projects at university (rated 4.5/5), and project work with companies (rated 4.4/5)** – 34% and 22% respectively.

- **African and Middle Eastern respondents had fewer opportunities to experience most of the activities compared to respondents from other regions** with a few exceptions:
  - **African** respondents declared having the opportunity to experience **entrepreneurship programs** the most compared to other regions
  - **Middle Eastern** respondents had the opportunity to experience **MOOCs** in the highest proportion and mentioned **studying abroad** more than respondents from Africa, APAC and Americas.

Introduction

Background and Objectives

Education has a key role in supporting Total's business objectives and long term renewal of the Group via:

- Local capacity building & enhancing in-country value
- Providing access to the best talent for recruitment locally and internationally
- Accessing R&D and technology by creating links and working alongside the best scientists, researchers and programs
- Fostering long-term relationships and networks with the influencers and decision makers of the future in the countries where we operate.

Through our engagement with students, recent graduates, junior researchers and professors we can also promote the Group's ambition to become the responsible energy major and anticipate the expectation of society for cleaner, more innovative energy accessible to all.

To do this we are engaging with students and faculty worldwide to create a dynamic network of future energy experts, innovators and leaders who are active members of relevant organizations and networks, such as the Global Engineering Deans Council (GEDC), and international student engineering organisations BEST and SPEED.

A key tool to reach these publics is Total Campus – the Group's website and social media platform dedicated to students, recent graduates and faculty. The platform has a lively & engaged global audience, interested in the future of energy. Skills for the future, and how those skills can be developed by industry and education working together, are amongst subjects we explore on Total Campus.
The present survey drew on the Total Campus audience to find out more from students and recent graduates from around the world about what skills they think they need to be prepared for the workplace, and how they – and more experienced professionals – think those skills could be best developed.
We wanted to hear from our Total Campus audience on questions such as:

- What skills do people think are needed to be successful in the workplace?
- What exposure have students had with industry, and do they feel this is useful for their skills development?
- What other activities are considered useful for skills development, and who has access to these activities?
- Do the opinions and access vary based on factors such as geography, experience or age?

Methodology

To explore these questions, a short online survey was developed to gather opinions on the skills needed for success in the labour market and the activities necessary to develop the key workplace skills.

- One open-ended question was used to assess respondents' understanding of the skills needed for success in the labour market.
- Respondents were offered a pre-coded list of skills (inspired principally by an American Society for Engineering Education (ASEE*) to rate on a scale from 1 to 5 in terms of importance for success in the labour market. They could add any missing skills and comment on their answers.
- Two further questions focused on activities for the respondents to rate in terms of usefulness for the development of the most important workplace skills, and on their exposure to such activities.
- We asked questions to determine the profile of respondents in terms of their current activity, their level of education and experience, their nationality, gender and age.
- The survey was uploaded to GetFeedback, and the link distributed via multiple channels, including Total Campus social media and website and in emails to GEDC partners, student organisations and other contacts.
- Survey distribution focused on 5 regions: Africa, Americas, APAC, Europe and Middle East.
- All survey questions and related communications were in English.
- ESOMAR standards were followed with regards to data protection policy – respondents were asked for their acceptance before asking for their personal information (name and email address) which was used for the draw of 6 prizes: an incentive for completing the survey.

The total number of responses was 2326, with 2189 of these being complete and 137 incomplete, but with enough relevant information to be included in the data analysis.

63% of the respondents are students and, from the total sample, 60% of respondents had at least 6 months of professional experience. For a full breakdown of respondents, see 'Respondent Profiles' (p. 8-9).

*ASEE is a highly respected US based 100 year old Engineering Education NGO.

Timing and Field Work

The survey was developed in April and May 2017 and was available online from 5 May to 12 June 2017.

- For the questionnaire, see Appendices

Report
Respondent Profile

Number of respondents: 2326

the status Required Attendee and None for info about participation

Age

Which age group are you in?

- Under 18 years old
- 18-24 years old
- 25-29 years old
- 30 years or older

1%
11%
21%
68%
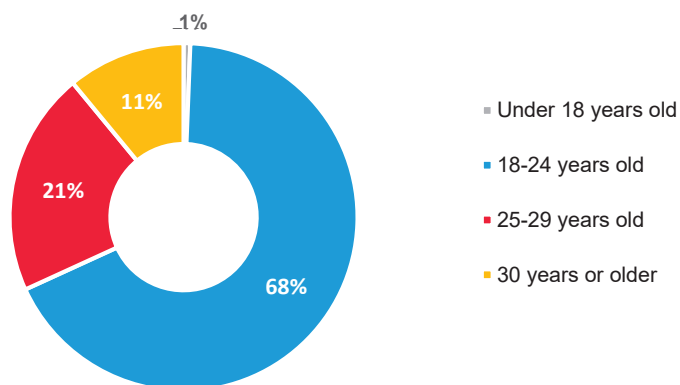
Gender

You identify your gender as

0% 0% 1%
31%
68%

- Male
- Female
- Transgender
- Other
- Do not wish to state
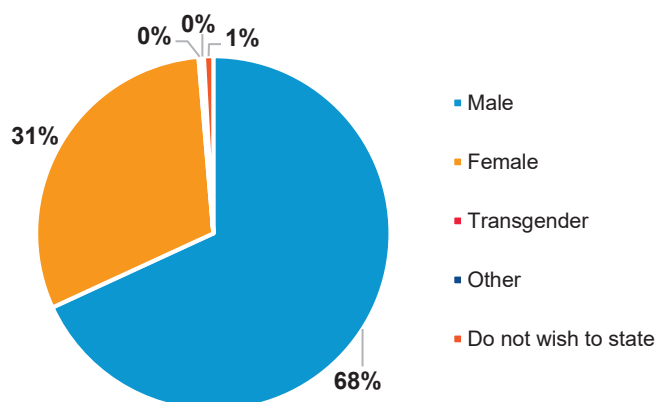
Regions – based on declared natonality

What is your nationality?

Region	Percentage
Africa	43%
Americas	17%
APAC	19%
Europe	18%
Middle east	3%
N/A / Unidentified	0,1%

![TOTAL logo]
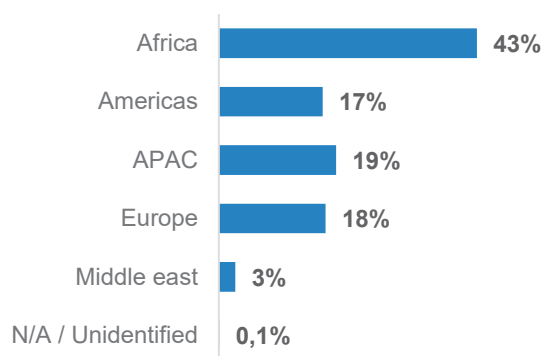
Field of Study or Training

What is/was your field of study or training?

- Engineering / IT — 56%
- Business / Finance / Management — 13%
- Geoscience — 6%
- Natural Sciences — 5%
- Social Sciences — 5%
- Medicine / Health Sciences — 3%
- Arts and Humanities — 3%
- Communication / Marketing — 2%
- Art / Design — 2%
- Other — 4%
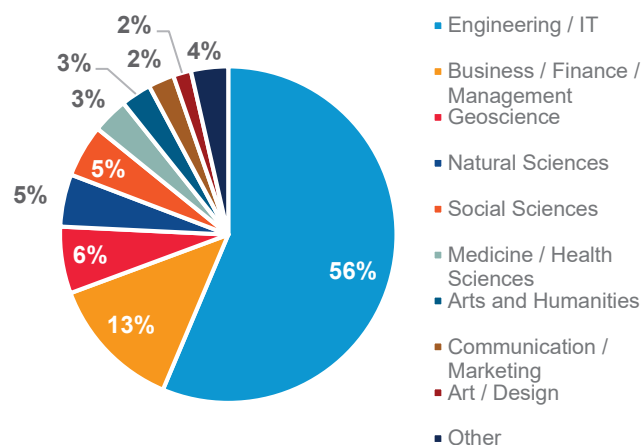
Status

What is your current status?

Student	63%
Recent graduate	25%
Professional	10%
Apprentice or Intern	2%
Other	0,1%
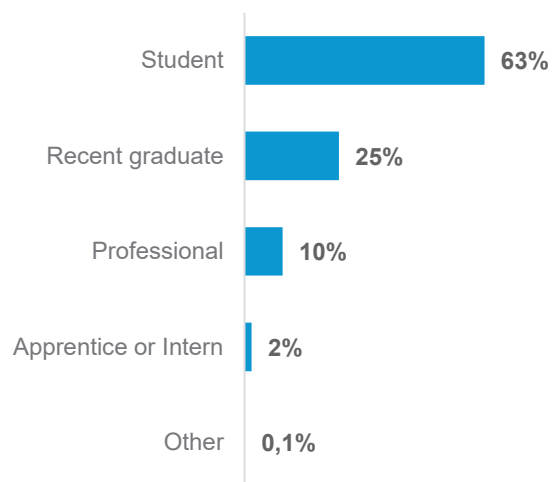
Work Experience

How much, if any, professional work experience do you have?
(Including internships, apprenticeships).

No professional work experience	19%
Less than 6 months	21%
6 months up to 1 year	19%
1 to 2 years	20%
2 to 5 years	11%
5 years or more	11%
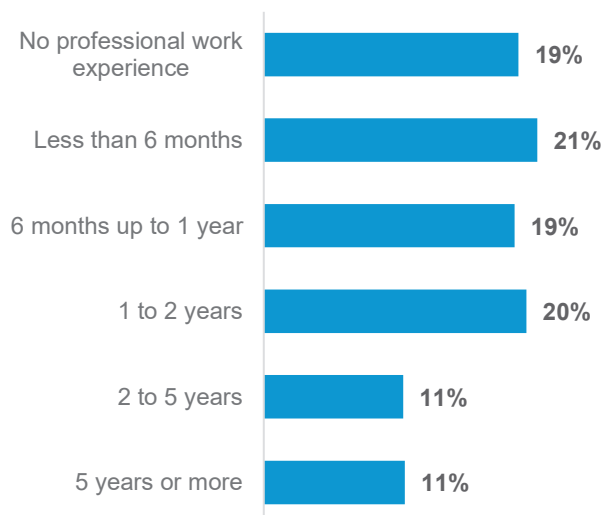
Educational qualification

What is your highest educational qualification?

Bachelors	46%
Masters	20%
Pre bachelors or vocational	16%
No degree	16%
PhD	1%
MBA	1%
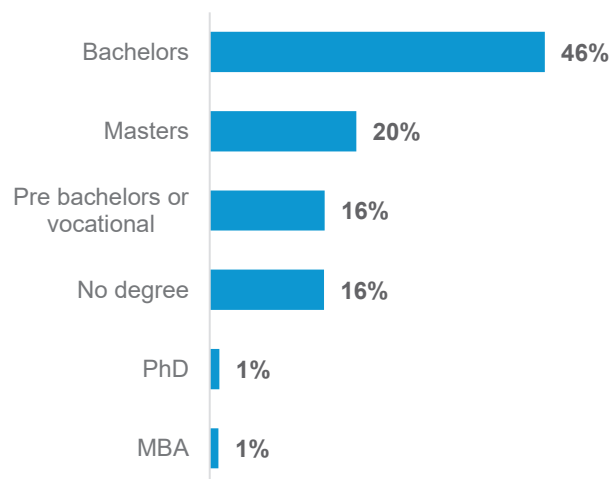
1a. Skills for the Future – Open Response

What are the top three skills you think you will need to be successful in the labour market? (Open-ended question)

Table 1 – Top skills for succeeding in the labour market (spontaneous)	% mentions
Good /Effective communication skills	**33%**
Ability to work in a team / team player	**17%**
Leadership	**13%**
Creativity	8%
Tech skills / knowledge	7%
Hard working	7%
Problem solving skills	7%
Computer literacy / skills	6%
Analysis / Analytic thinking	5%
Managerial skills	5%
Good time management	5%
Best knowledge / previous experience	4%
Innovation	4%
Interpersonal skill	4%
Flexibility	3%
Critical thinking	3%
Marketing skills	3%
Language skills / Bilingualism	3%
IT Skills	3%
Adaptability	3%

The same three skills: *Good/Effective Communication skills, Ability to work in a team/team player, Leadership* are the same across the main target groups: Students, Professionals and Recent graduates.

The same situation is **common across regions, experience levels and genders** with no changes for the top mentions.

1b. Skills for the Future – Rating a List of Proposed Skills

On a scale of 1 to 5, (where 1 is lowest and 5 highest) how would you rate the following skills in terms of their importance for success in the labour market?

Table 2 – Top skills for succeeding in the labour market (pre-filled list)*	Average score
Communication skills	4.7
Team work	4.7
Showing initiative and demonstrating a willingness to learn	4.6
Self-drive and motivation	4.6
Critical and creative thinking	4.6
Ability to work with people of diverse profiles (Intercultural skills)	4.5
Ability to think both individually and cooperatively	4.5
Integrity	4.5
Self-confidence	4.5
Ability to prioritize efficiently	4.5
Knowing how to use technology/digital tools	4.4
Project management	4.3
Expertise in your subject area	4.3
Understanding of political, social and economic perspectives	4.2
Willingness to take calculated risk	4.1
Possessing an international/global perspective	4.1
Understanding of the stages/phases of product lifecycle	4.1
Knowing multiple languages	3.6

* The list of skills was adapted from the ASEE 'attributes of a global engineer' report

When asked to rate the skills in terms of importance, **communication** and **teamwork** were the skills rated the highest.

African respondents tend to rate all the skills higher compared to respondents from other regions while **Europeans tend to rate them lower**.

Respondents were given the opportunity to add skills they felt were missing and - as for the spontaneous response - **Leadership (5%) came up as the most mentioned skill by the respondents who wanted to add something missing from the list provided to them**. Adaptability and time management came closely after that.

2. Usefulness of Activities for Developing Key Workplace Skills

On a scale of 1 to 5, how useful do you think the following activities are for developing the most important workplace skills?

Table 3 – Usefulness of activities (pre-filled list)	Average score
Internships	4.6
Working on real business or engineering projects at university	4.5
Networking opportunities with experienced professionals	4.4
Project work with companies inside the company	4.4
Apprenticeships	4.3
Workshops with companies	4.3
Entrepreneurship programs	4.2
Undergraduate Research Experience	4.2
Studying abroad	4.2
Taking a leadership role in a students' organization	4.2
Community engaged and volunteering projects	4.1
Tutoring programs	4.0
Participating in student clubs, teams, societies	4.0
Competitions	4.0
Visits to companies' headquarters / sites	3.9
Careers presentations by companies	3.9
Massive open online courses (MOOCs)	3.8
Summer schools	3.7

Internships and **working on real business or engineering projects at universi**ty are the activities considered the most useful by most of the respondents, scoring the highest averages from the list given to them, followed by **networking opportunities with experienced professionals** and **project work with companies inside the company.**

Respondents with the most experience (5 years or more) rated many of the activities slightly lower compared to respondents of other experience levels.

- This may be because they had fewer opportunities to experience these activities, or that the skills learnt were useful at the start of their careers but are no longer – it is not possible to say.

Respondents from Europe rated all the activities slightly lower compared with the respondents from other regions while African respondents rated them higher. Respondents from Americas also had the tendency to rate the usefulness of many activities slightly lower than respondents from other areas.

3a. Exposure / Opportunity to Experience the Activities

Which activities have you had the opportunity to experience?

Table 4 – Experience of activities (given list)	% of mentions
Internships	64%
Participating in student clubs, teams, societies	63%
Visits to companies' headquarters / sites	49%
Careers presentations by companies	48%
Taking a leadership role in a students' organization	48%
Networking opportunities with experienced professionals	45%
Community engaged and volunteering projects	44%
Undergraduate Research Experience	39%
Massive open online courses (MOOCs)	34%
Competitions (Hackathons, team challenges, design competitions etc.)	34%
Working on real business or engineering projects at university	34%
Workshops with companies	34%
Tutoring programs	27%
Studying abroad	25%
Entrepreneurship programs	24%
Project work with companies inside the company	22%
Summer schools	21%
Apprenticeships	17%

Almost two-thirds of respondents had the opportunity to experience **internships** and **participation in student clubs, teams, societies** while almost half had the opportunity to **visit to companies' headquarters / sites,** attend **careers presentations by companies** or take a **leadership role in a students' organization.**

Respondents with no professional experience stated they had fewer occasions to experience all the activities from the given list. They had the opportunity to **participate in student clubs, teams and societies** and **taking a leadership role in a students' organization** the most.

Also, those with more than 5 years of experience mentioned **internships** and **participating in student clubs, teams, societies** a lot less compared with those who have 1 to 4 years of experience, and they mentioned **networking opportunities with experienced professionals** most.

Respondents with 1 to 4 years of experience mentioned **community engaged and volunteering projects** more than all the other groups of respondents, and the global average.

Among respondents from Africa, Middle East and APAC, **internships** have been the activity they had most opportunities to experience, while Europeans mention **careers presentations by companies** and respondents from the Americas mention **participating in student clubs, teams, societies** as the activity they had the opportunity to experience the most.

African and Middle Eastern respondents declared having fewer opportunities to experience most of the activities compared to respondents from other regions with a few exceptions:

- **African** respondents declared having the occasion to experience **entrepreneurship programs** the most compared to other regions
- **Middle Eastern** respondents had the opportunity to experience **MOOCs** in the highest proportion and mentioned **studying abroad** more than respondents from Africa, APAC and Americas.

Male respondents had the opportunity to experience internships the most while female respondents mentioned participating in student clubs, teams, societies as the activity they had the occasion to experience the most. However, the top 5 activities are quite similar across the different genders with some exceptions: female respondents mentioned more networking opportunities with experienced professionals (51% vs. 45% global average) and community engaged and volunteering projects (54% vs. 44% global average)

Table 5 – Exposure / Opportunity to Experience the Activities by Region	Total (n=2326)	Africa (n=955)	Americas (n=384)	APAC (n=434)	Europe (n=395)	Middle East (n=61)
Internships	64%	62%	58%	73%	66%	64%
Participating in student clubs, teams, societies	63%	59%	67%	68%	62%	59%
Visits to companies' headquarters / sites	49%	39%	59%	54%	61%	51%
Careers presentations by companies	48%	37%	56%	52%	69%	37%
Taking a leadership role in a students' organization"	48%	45%	47%	57%	49%	44%
Networking opportunities with experienced professionals	45%	40%	56%	46%	52%	41%
Community engaged and volunteering projects	44%	42%	48%	46%	47%	37%
Undergraduate Research Experience	39%	44%	35%	41%	29%	34%
Massive open online courses (MOOCs)	34%	34%	34%	35%	37%	39%
Competitions (Hackathons, team challenges, design competitions etc.)	34%	27%	41%	46%	34%	27%
Working on real business or engineering projects at university	34%	25%	45%	33%	47%	36%
Workshops with companies	34%	31%	32%	40%	36%	27%
Tutoring programs	27%	29%	31%	29%	18%	22%
Studying abroad	25%	12%	26%	29%	52%	37%
Entrepreneurship programs	24%	32%	16%	23%	14%	12%
Project work with companies inside the company	22%	15%	29%	29%	24%	24%
Summer schools	21%	13%	32%	24%	25%	34%
Apprenticeships	17%	19%	13%	17%	16%	14%

3b. Usefulness of Activities and Exposure to Activities

The table below shows the average response to questions: On a scale of 1 to 5, how useful do you think the following activities are for developing the most important workplace skills? And: Which activities have you had the opportunity to experience? The table is organized by the average usefulness (high to low) with in green, the activities with highest exposure, i.e. that respondents had the most opportunity to experience these activities.

Table 6 – Usefulness / Exposure to Activities (given list)	Usefulness of Activities	Exposure to Activities
Internships	4.6	64%
Working on real business or engineering projects at university	4.5	34%
Networking opportunities with experienced professionals	4.4	45%
Project work with companies inside the company	4.4	22%
Apprenticeships	4.3	17%
Workshops with companies	4.3	34%
Entrepreneurship programs	4.2	24%
Undergraduate Research Experience	4.2	39%
Studying abroad	4.2	25%
Taking a leadership role in a students' organization	4.2	48%
Community engaged and volunteering projects	4.1	44%
Tutoring programs	4.0	27%
Participating in student clubs, teams, societies	4.0	63%
Competitions	4.0	34%
Visits to companies' headquarters / sites	3.9	49%
Careers presentations by companies	3.9	48%
Massive open online courses (MOOCs)	3.8	34%
Summer schools	3.7	21%

There are differences between the level of exposure to the different activities and the way they were rated:

While internships and networking opportunities are both in the top 6 'most useful' activities and are activities respondents had the opportunity to experience, the same is not the case for the other 'most useful' activities.

- **Working on real business or engineering projects at university** is the second rated in terms of usefulness while being only 9th when it comes to having the opportunity for this experience
- **Project work with companies inside the company** is only 16th when it comes to opportunities to experience it although third by usefulness
- **Apprenticeships**, 5th activity by usefulness, came last when it comes to having the opportunity to have this experience

Appendix

SURVEY QUESTIONNAIRE

Thank you for taking part in our short survey. We want to hear what you have to say about the skills and education you need to be ready for your careers of the future! The survey should take no longer than 10 minutes to complete and all respondents will be entered into a draw for one of six great prizes > a GoPro HERO5 camera and 5 other spot prizes.

A FEW QUESTIONS ABOUT YOURSELF

Q1. What is your current status?
Please select only one option.

- ○ Student
- ○ Apprentice or Intern
- ○ Recent graduate
- ○ Faculty member / professor or researcher at higher education institution
- ○ Other professional (graduated 2 or more years ago)
- ○ None of the above. Please specify …………………………….....

Q2. What is/was your field of study or training?
Please select only one option.

- ○ Arts and Humanities
- ○ Business / Finance / Management
- ○ Communication / Marketing
- ○ Art / Design
- ○ Engineering / Information Technology
- ○ Geoscience
- ○ Medicine / Health Sciences
- ○ Law
- ○ Natural Sciences
- ○ Mathematics
- ○ Social Sciences
- ○ Other, Please specify ………………………………....

Q3. What is your highest educational qualification?
Please select only one option.

- ○ Pre bachelors or vocational
- ○ Bachelors
- ○ Masters
- ○ MBA
- ○ PhD
- ○ Have not yet completed or do not intend to complete a degree / qualification

Q3b. How much, if any, *professional* work experience do you have? (Including internships, apprenticeships)
Please select only one option.

- ○ No professional work experience
- ○ Less than 6 months

○ 6 months up to 1 year

○ 1 to 2 years

○ 2 to 5 years

○ 5 to 7 years

○ 7 to 9 years

○ 10 years or more

SKILLS FOR THE FUTURE

Q4. What are the top three skills you think you will need to be successful in the labour market?
Open-ended question

Q5. On a scale of 1 to 5, how would you rate the following skills in terms of their importance for success in the labour market?
1 – Not at all important; 2 – Not very important; 3 – Neither important nor not important; 4 – Somewhat important; 5 – Very important;
Rotate options

NB – The list of skills mainly comes from the ASEE 'attributes of a global engineer' report	1	2	3	4	5
Expertise in your subject area					
Knowing multiple languages					
Integrity					
Knowing how to use technology/digital tools					
Understanding of the stages/phases of product lifecycle					
Project management (supervising, planning, scheduling, budgeting etc.)					
Communication skills					
Self-drive and motivation					
Critical and creative thinking					
Ability to think both individually and cooperatively					
Self-confidence					
Showing initiative and demonstrating a willingness to learn					
Team work					
Understanding of political, social and economic perspectives					
Possessing an international/global perspective					
Willingness to take calculated risk					
Ability to prioritize efficiently					
Ability to work with people of diverse profiles (Intercultural skills)					

Please add any skill you feel is missing from the list or any comment on your responses

Q6. On a scale of 1 to 5, how useful do you think the following activities are for developing the most important workplace skills?
1 – Not at all useful; 2 – Not very useful; 3 – Neither useful nor not useful; 4 – Somewhat useful; 5 – Very useful;
Rotate options

	1	2	3	4	5
Participating in student clubs, teams, societies					
Apprenticeships					
Careers presentations by companies					
Community engaged and volunteering projects					
Competitions (Hackathons, team challenges, design competitions etc.)					
Entrepreneurship programs					
Studying abroad					
Internships					
Massive open online courses (MOOCs)					
Networking opportunities with experienced professionals					
Project work with companies inside the company					
Visits to companies' headquarters / sites					
Summer schools					
Taking a leadership role in a students' organization					
Tutoring programs					
Working on real business or engineering projects at university					
Workshops with companies					
Undergraduate Research Experience					

Q7. Which activities have you had the opportunity to experience?
Multiple choice

Participating in student clubs, teams, societies
Apprenticeships
Careers presentations by companies
Community engaged and volunteering projects
Competitions (Hackathons, team challenges, design competitions etc.)
Entrepreneurship programs
Studying abroad
Internships
Massive open online courses (MOOCs)
Networking opportunities with experienced professionals

Project work with companies inside the company
Visits to companies' headquarters / sites
Summer schools
Taking a leadership role in a students' organization
Tutoring programs
Working on real business or engineering projects at university
Workshops with companies
Undergraduate Research Experience
Other, please specify...

Please comment on your responses:

RESPONDENTS PROFILE

Q8. What is your nationality?

Q9. Which age group are you in?
One option only

- ○ Under 18 years old
- ○ 18-24 years old
- ○ 25-29 years old
- ○ 30 years or older

Q10. You identify your gender as
One option only

- ○ Male
- ○ Female
- ○ Transgender
- ○ Other
- ○ Do not wish to state

Q11. What is the name of your current university if you are still studying, or if you have graduated already, the university you most recently graduated from?

If you wish to enter the draw for a GoPro HERO5 camera and 5 other spot prizes, please leave us your name and email address in the fields below:

First name | Last name | Email address

Thank you for completing the survey!
We assure you that your answers are confidential and will be used as a whole in order to better know Total Campus community and to understand how education / industry can better contribute to shaping future employees.

CONTACT DETAILS

If you are looking for detailed tables or further data please contact either Sinziana Nastase from Petrus Communications, the research lead for the survey, or Mickael Scherrer from Total, responsible for this initiative.

Sinziana Nastase
Head of Research
Petrus Communications
sinziana@petruscommunications.com

Mickael Scherrer
University Relations Project Manager
Total SA
mickael.scherrer@total.com