

# FOCUS ON: GRADUATE SKILLS

Students' Views on Graduate Skills

September 2019



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## INTRODUCTION: FOCUSING ON GRADUATE SKILLS

QAA Scotland's [Focus On](#) projects aim to help higher education institutions and students' associations with work in their key priority areas. Topics are chosen based on recommendations and commendations from [Enhancement-led Institutional Reviews \(ELIR\)](#). Focus On ties these outcomes to developmental activities, resources and events with which the whole sector can get involved. These are designed to be timely and practical, and help colleagues make a real difference in a short space of time.

### Focus On: Graduate Skills

With debate on apprenticeships and skills high on the agenda in higher education, the [Focus On: Graduate Skills](#) undertaken in 2018-19 is relevant and timely. This project builds on previous work on this issue in the Scottish sector, including the [Graduates for the 21st Century Enhancement Theme](#). Based on consultation with the Scottish sector, the focus of the project was on exploring the graduate skills through the lenses of equality and diversity, readiness for employment, and global perspective. This is set out in Figure 1.

## Focus On: Graduate Skills

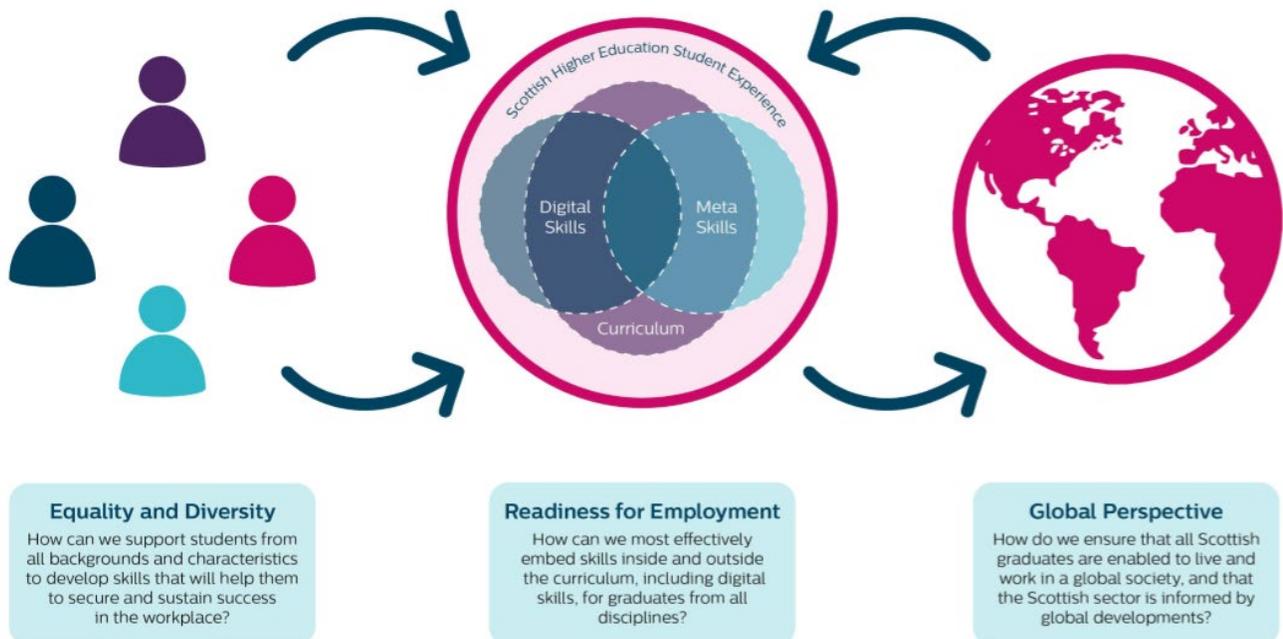


Figure 1: Focus On: Graduate Skills

QAA Scotland commissioned the authors of this report to research the views of current students on their development of graduate skills. The work presented in this report covers the findings of this research, provides an analysis of student views on the skills they are developing through their studies at Scottish higher education institutions (HEIs), highlighting examples of good practice, and offers insight into potential gaps in provision, suggesting areas for development.

### Why consider students' perspectives on Graduate Skills?

Studies on students' perceptions of graduate skills demonstrate that levels of awareness and engagement at undergraduate level are often low (Morris et al, 2013), even when HEIs formalise skill acquisition for students in learning outcomes (Rust and Froud, 2016). Recent findings from Scottish HEIs suggest that some students are unaware of graduate skills and their importance, or that they underestimate the significance of developing and recording extracurricular achievements (HEA & Gradintelligence Survey, 2016; Swingler et al, 2016). This is consistent with previous research suggesting poor use of tools such as the Higher Education Achievements Report (HEAR) to track students' extracurricular achievements (Docherty & Fernandez, 2014; Harris, 2017). Other work has suggested a mismatch between graduate and employers' expectations, with students over-valuing skills such as creativity and leadership but under-valuing the importance of flexibility/adaptability and teamwork, which employers regard highly (Mattis, 2018; QS, 2018).

These findings emphasise the importance of investigating students' perceptions of the graduate skills they are developing in higher education.

An integral element in successfully embedding employability in higher education curricula is understanding and incorporating students' perspectives on the skills they are acquiring through their studies. This is crucial for two reasons. Firstly, it helps identify the areas where higher education institutions might need to focus to develop new approaches and practices that better meet the needs of wider society (Vanhercke et al, 2013). Secondly, graduates' employability is influenced by the way they see themselves as future employees, perceptions likely to be carried through into the labour market and which act as drivers into various career routes (Tomlinson 2007; 2012).

This project considered how HEIs might more effectively embed graduate skills and employability from a student perspective by asking the following questions:

Key themes and questions		
	<b>Effectiveness</b>	<i>How well does higher education equip students with graduate skills, global skills and digital skills from a student perspective? What are the differences in these views across different subject disciplines?</i>
	<b>Academic and extra-curricular activities</b>	<i>What is the perceived contribution of academic and extracurricular activities to development of graduate skills, global skills and digital skills?</i>
	<b>Preparation for the workplace</b>	<i>How do students perceive their higher education experience as a preparation for the graduate workplace?</i>
	<b>Equality and Diversity</b>	<i>Do current students feel that their institution ensures that all students (irrespective of background and different characteristics) can access the full range of skills development opportunities offered in higher education?</i>

Figure 2: Key themes and questions

## Current thinking on graduate skills in higher education

Employability operates on several levels but is often discussed at an individual level: a *student's* graduate skills. At an institutional level, employability is a driver of academic policy and a concept that incentivises resourcing of student services, especially careers services, entrepreneurship activities, and internship/work experience programmes. Employability activities are also embedded by academics into the curriculum and in-course learning experiences (Macfarlane and Roy, 2006). These kinds of initiatives and programmes are becoming more pervasive within HEIs and embedding of employability programmes and related innovations in pedagogic approaches have proliferated across HEIs in recent years (Artess, Hooley & Mellors-Bourne, 2017). Indeed, in the UK, only 30% of employers look for specific degree types when recruiting (Pollard, Hirsh, Williams & Ball, 2015). This reflects a highly flexible job market, which allows graduates from any discipline to apply for a wide range of jobs not directly related to their degree, insofar as they have the required skills (Tomlinson, 2012).

One of the ways that HEIs have responded to this has been to develop graduate skills through Graduate Attributes (GA) frameworks, used to describe the qualities and skills they believe students should develop through their studies at their institution (Bowden, 2000). While there are commonalities across GA frameworks (Artess et al, 2017; Winberg, 2018), graduate *attributes* are differentiated from graduate *skills* in that GAs are defined by individual institutions and can risk narrow definitions, excluding wider graduate skills (Goodwin, 2016). Educational researchers, policy-makers, and industry bodies have been attempting to define a comprehensive range of graduate skills. These definitions tend to include literacies, soft skills and 'character qualities', such as resilience and autonomy, as well as cognitive skills such as critical thinking (Soffel, 2016; Morrison, 2019; Winberg, Bester, Scholtz, Monnapula-Mapesela, Ronald et al, 2018). This project focuses on graduate *skills*, developed out of the employability discourse, and investigates whether students are developing the skills they will need to thrive in the changeable and global graduate labour market (Jones & Killick, 2014).

Students need to develop their own graduate skills, and are equipped to some extent by HEIs to enter the graduate labour market, but, as graduates, will their skills match or mismatch employer needs? This matters greatly to students but aligning graduate skills with the labour market is also central to Scottish Government policy ambitions for developing a skilled and productive workforce with the necessary skills to meet the needs of employers (Scottish Government Enterprise & Skills review, 2016). For example, the alignment of skills provision with the needs of the economy is prioritised in the Scottish Funding Council's Outcome Agreements, where HEIs are asked to respond to the current and future labour market needs of employers and the economy (SFC, 2015). Sector-wide enhancement-led approaches such as the Graduates for the 21<sup>st</sup> Century national Enhancement Theme have identified strategies for enhancing graduate skills and aligning them with the needs of employers, such as developing knowledge exchange, embedding skills within the curriculum, recognising co-curricular activities and engaging with employers (Hounsell, 2011). An example of this is the Graduate Apprenticeship, which partners industry with higher and further education providers (Skills Development Scotland, *Graduate Level Apprenticeships: Work-based learning principles*, 2016). More widely, HEIs in the rest of the UK (as well as some in Scotland) are now evaluated against graduate outcomes with the Teaching Excellence Framework (TEF), which extended recently to employability programmes (Artess, 2019). These Scottish and UK drivers to reduce the skills gap are also a response to the increasing set of skills required by employers and the requirements on graduates to be adaptable in the face of rapid globalisation and technological advancement (Burke and Hannaford-Simpson, 2019). Given these developments, a key aim of this project was to investigate how HEIs can most effectively embed skills inside and outside of the curriculum for graduates of all disciplines.

## Readiness for Employment: Graduate and Digital Skills

The Institute of Student Employers identifies nine distinct employability skills, such as commercial and entrepreneurial acumen, and the Higher Education Academy (HEA) has defined many more (HEA, 2006). Despite differences in such skill ranges, employability is seen as a developmental process enabling students to emerge with a valued (by employers) set of skills and qualities. This Focus On project aims to capture this developmental process by identifying specific graduate skills and asking students how well their higher education experience so far has equipped them with these skills. For the purposes of the project we specified 12 graduate skills, based on recent reviews of the literature (Artes et al, 2017; Osmani, Weerakkody, Hindi, Esmail & Eldabi et al, 2015), synthesis of work from national Enhancement Themes (Hounsell, 2011) and research on student and employer views on the skills gap (Popovic, Lawton, Hill, Eland & Morton, 2010). These skills categories are set out in Figure 3.

Graduate Skill	Definition - Ability to:	Source
<b>Critical thinking</b>	apply a systematic and critical assessment of complex problems and issues and consider issues from a range of perspectives	Artes et al, (2017); Rees et al, (2006); Hounsell, (2011); Osmani (2015); Popovic & Tomas (2009)
<b>Problem solving</b>	investigate problems and practical situations and formulate, evaluate and apply evidence-based solutions and arguments	
<b>Information literacy/Analytical</b>	locate, synthesise and analyse information and data from a variety of sources, with an attention to detail	
<b>Communication</b>	communicate effectively knowledge, understanding and skills to a variety of audiences in a range of settings and using a variety of media	
<b>Curiosity to learn</b>	search broadly for insights and information across a wide range of situations and to challenge assumptions	
<b>Innovative/Creative</b>	examine problems from a fresh perspective and develop innovative solutions	
<b>Collaboration</b>	collaborate, work in teams and groups, and lead where appropriate	
<b>Interpersonal/Networking</b>	listen actively, negotiate effectively, be empathetic, and develop positive connections with others	
<b>Autonomy</b>	think independently, exercise personal judgment, take the initiative and be enterprising	
<b>Self-management</b>	plan and organise my time, prioritise important tasks, work under pressure and to tight deadlines	
<b>Resilience</b>	respond flexibly and adapt my skills and knowledge when dealing with change, unfamiliar or challenging situations	
<b>Reflective/self-awareness</b>	use feedback productively, identify and articulate my skills in a variety of contexts, and set goals for my continuing personal, professional and career development	

Figure 3: Graduate skills categories emerging from literature

Increasing digitalisation has created profound workplace changes, with skills constantly being introduced or made obsolete by automation (Levy & Murnane, 2004; UKCES, 2014). Preparing graduates for a digital workplace has become essential for HEIs, with many listing this among their top priorities (Jisc, 2015), yet only 41% of students feel that their courses adequately prepare them for the digital workplace, and only 69%

thought that digital skills would be important for their career (JISC, 2018). Given these findings, this project, and a companion piece of research conducted by AGCAS as part of Focus On: Graduate Skills, have explored this area. This project investigated students' perspectives on their digital competence and opportunities offered to develop digital skills using eight digital skills based on the JISC (2014) digital literacies framework. These skills are outlined in Figure 4.

Digital Skill	Definition - Ability to:	Source
ICT Literacy	select and fully use appropriate digital tools and software	JISC (2014)
Digital Scholarship & Media Literacy	innovate using digital skills (e.g. video, animation, infographics, audio, coding)	
Information Literacy	find, analyse, and use credible digital data sources	
Learning Skills	study and learn effectively in technology-rich environments (e.g., virtual learning environments)	
Communication & Collaboration	collaborate with others in a digital learning environment (e.g. group projects)	
	appropriately/professionally use digital communication (e.g. use of social media)	
Career & Identity Management	develop and project a positive digital identity or identities and manage digital reputation	
	look after personal health, safety, relationships and work-life balance in digital settings	

Figure 4: Digital skills categories based on JISC (2014) Digital Literacies Framework

## Global Skills

Internationalisation is a top priority in higher education today (Barrie, 2012; May & Spalding, 2014), and HEIs have used various strategies to give their curriculum an international focus (European Commission, 2019). Research suggests that the nature of work will become less location specific and the global economy will require graduates to have the life skills to live and work within different cultural contexts (Atkin, Rose, Sharp, Hill, Adams & Sayers, 2015; Hounsell, 2011; UKCES, 2014). Yet evidence on graduate mobility in the UK suggests that many graduates remain within the same geographical area (Alexander, 2019). This project considered how HEIs can ensure that Scottish graduates are able to live and work in a global society, and that the Scottish sector is informed by global developments. The approach was informed by previous research on global competence and awareness (Morais & Ogden, 2011; Sampson, Moltchanova, Robertson, Bridgman, Suszko & Russell, 2018).

Specifically, we addressed six 'Global Skills', encompassing knowledge and awareness of global issues, skills in communicating in multicultural settings, and students' perceived ability to apply these skills and knowledge to the workplace. These are outlined in Figure 5. This report outlines the students' perspective on their global skills development, the challenges they faced and the opportunities offered to them to support them in entering the global workplace.

Global Skill	Definition - Ability to:	Source
Inter-cultural communication	understand different cultures	Morais & Ogden (2011)
	communicate effectively with people from other cultures	
	work in settings in which I interact with people who are different from me	Sampson et al, (2018)
Global Awareness	be aware of global issues (e.g., sustainability), and their place in a globalised economy	Morais & Ogden (2011)
Application of global skills to the workplace	propose solutions that are informed by general knowledge about local or global affairs	Sampson et al, (2018)
	use my skills and values to contribute to the world's problems	

Figure 5: Global skills categories emerging from the literature

### Equality and Diversity

The Equality Act (2010) and the Athena SWAN Charter (Equality Challenge Unit, 2005) require HEIs to implement policies and initiatives to foster inclusivity in education, and HEIs use various strategies to ensure that all students can equally benefit from the development of graduate skills (Bal et al, 2016). These initiatives are also driven by the Scottish Government's vision for equality and opportunity to access work and study opportunities (Scottish Government, 2016).

However, as diversity grows, it becomes more challenging to introduce policies that adequately address the needs of all students, while also bringing all students to the same level of competency acquisition (Voogt et al, 2013). For example, students from different subject disciplines and backgrounds have unequal access to practical work experience and face different challenges in progressing in their chosen careers (Morrison Coulthard, 2016; Scott, 2014). Additionally, findings have pointed out that demographic factors (for example, gender and English-speaking background), intra-institutional factors (for example failure to address digital skills development) and disproportionate development of graduate skills across disciplines can put certain students at a disadvantage (see Fraser & Thomas, 2013; Mohammadyari & Singh, 2015; Pitman et al, 2019).

This investigation of equality of access to skills development opportunities from a student perspective is timely. A key question for this project was: how can we support students from all backgrounds and characteristics to develop skills that will help them to secure and sustain success in the workplace?



# STUDENTS' VIEWS ON GRADUATE SKILLS: SUMMARY OF KEY FINDINGS



## GOOD PRACTICE *Students suggested that...*

## AREAS FOR DEVELOPMENT *But they would appreciate...*



**EFFECTIVENESS**

*How well does higher education equip students with graduate skills, global skills and digital skills from a student perspective? What are the differences in these views across different subject disciplines?*

- 1 Their studies equip them with:
  - key graduate skills, such as self-management and critical thinking
  - inter-cultural communication skills, and the ability to live and work in a global society
  - information communication technology and digital information literacy skills.
- 2 Their studies provide them with opportunities to be recognised for development of graduate skills.
- 3 They understood their responsibility to seek support for skills development.
- 4 There were no significant differences in satisfaction between different disciplines.

- 1 Greater support and more opportunities to:
  - develop their communication and interpersonal skills in professional/workplace settings
  - apply their knowledge and skills to the global workplace and society
  - practise professional communication and create and hone career and identity management in digital settings
  - gain recognition for global or digital skills.
- 2 More attention on developing the infrastructure to support staff and students' development of digital skills.



**ACADEMIC AND EXTRA-CURRICULAR ACTIVITIES**

*What is the perceived contribution of academic and extracurricular activities to development of graduate skills, global skills and digital skills?*

- 5 Academic in-course and student organisation activities were the most helpful for developing graduate skills.
- 6 Professional skills modules were useful for developing transferable skills.
- 7 Academic in-course activities were most helpful for developing global skills.

- 3 Greater recognition that:
  - extracurricular activities are less accessible to students juggling part-time work with study
  - limited provision and financial costs are a barrier to accessing opportunities to develop global skills through activities such as studying abroad.
- 4 Increased provision of careers support in early study (first and second year).
- 5 Improved accessibility to work-related learning.



## PREPARATION FOR THE WORKPLACE

*How do students perceive their higher education experience as a preparation for the graduate workplace?*

- 8 They are developing a broad range of skills relevant to the workplace and are aware of these skills being embedded in their curriculum.
- 9 They were positive about the range of opportunities available to develop their skills and emphasised the importance of pro-actively seeking opportunities.

- 6 More support to evidence these skills in different contexts and to understand how to meet employers' expectations.
- 7 More subject-specific careers guidance and workplace experience.



## EQUALITY & DIVERSITY

*Do current students feel that their institution ensures that all students (irrespective of background and different characteristics) can access the full range of skills development opportunities offered in higher education?*

- 10 The majority of students did not experience barriers to skills development.

- 8 Greater support and access to opportunity for those students who did experience barriers because of age, balancing work and study, language, and mental and physical health.
- 9 Specific digital skills development opportunities for mature students.



## RECOMMENDATIONS

This project aimed to represent students' views on readiness for employment, their ability to live and work in a global society and equality of opportunity for skills development.

This report contributes to the literature on employability and skills development in higher education by providing a current student perspective on graduate skills development in the Scottish sector.

Based on the findings presented in this report, we recommend that Scottish HEIs to take steps to more effectively embed and better support:



Connections to the workplace and informal work experience



Global perspectives through the curriculum



Opportunities to reflect on and recognise graduate, global and digital skills



Career management skills in the curriculum



Flexibility in the range of academic and extracurricular opportunities for disadvantaged students.

These findings suggest that following these recommendations will allow students to more effectively develop:



self-regulation and ownership of their career



their skills in digital networking and innovation



a professional digital presence.



## METHOD

Building on previous research (Bremner 2018; Morrison Coulthard, 2016; Office for Students, 2019; Scott, 2014; Yorke and Knight 2007), this study used a survey and focus groups as part of a mixed methods approach in order to get a deeper understanding of how students perceive graduate skills and which sources they attribute to their skills development (for example, their course, student support services, student-led organisations and so on). This approach gave the project a current and sector-wide perspective on Scottish students' experiences of skills development and employability, allowing the project team to identify examples of good practice and gaps in provision to inform future developments in employability and graduate skills related policy and strategy.

### Research design

The survey and focus groups were designed around the key project questions outlined in Figure 2.<sup>1</sup> A glossary and explanation of the survey questions on graduate, global and digital skills and readiness for employment are included in Appendix 2.1, and an outline of survey questions are included in Appendix 2.2.

For each skill set (graduate, global and digital skills), we generated a list of activities associated with development of these skills and organised them into three categories:

Academic in-course activities	Activities provided by HEI student support services	Activities provided by student-led organisations
e.g., provided by the course(s) related to students' main subject of study, such as presentations, projects, international work/volunteering placements, use of digital tools and data sources.	e.g., careers support/events, study abroad, access to software & technology.	e.g., committee membership, class rep, using social media for campaigns, events/committees related to global issues.

### Survey

Survey questions on preparation for the workplace were based on the employability orientation and general awareness scales from the employability experience questionnaire (Yorke & Knight, 2007), which measures students' beliefs about their curricular experience and its impact on employability (see Appendix 2.1). Quantitative questions required responses using a five-point Likert scale (strongly agree, agree, neutral, disagree, strongly disagree) or a Yes/No response. We also included at least three open questions around each theme to give students the opportunity to respond in their own words and communicate their own experiences. From HEIs across Scotland, 319 students took part in the survey.

<sup>1</sup> The survey and focus group adhered to the British Psychological Society Code of ethics for human research (BPS 2014) and data management procedures were General Data Protection Regulation compliant. The survey was conducted online, and participants were recruited via email and social media with prior consent from their HEI. Focus groups were conducted either in person or online via videoconferencing software (see Appendix 1).

## Focus groups

Focus groups were designed to encourage students to reflect on the development of their own skills; discuss their views on access to opportunities to develop graduate skills; describe challenges faced in accessing resources and support for skills development and provide suggestions on how HEIs could improve support for students. Eight participants took part in the focus groups. Focus group materials are included in Appendix 3.

## Results and analysis

Participants were drawn from 15 of Scotland's 19 HEIs. Participant demographics and a breakdown of responses from each HEI are included in Appendix 1.

Quantitative and qualitative results are presented together and are structured around four sets of key questions. Key findings are indicated by bullet points at the end of each section and summarised at the end of the report.

Preliminary analysis of responses to the quantitative survey questions indicated high reliability for all subsets of survey items.<sup>2</sup> Descriptive and inferential statistics are presented below, with statistical comparisons appropriate for scale (1-5) response data.<sup>3</sup> Open text comments were analysed using a thematic approach (Braun & Clarke, 2013), using the survey questions and the themes of the project as a framework (see Figure 2).

Focus group transcripts were analysed using a thematic analysis and the project themes as a framework. A table of themes and supporting quotes for the focus group analysis is included in Appendix 4.

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<sup>2</sup> **Technical bit 1:** A reliability analysis using Cronbach's alpha was conducted on each subset of survey questions, e.g., graduate skills items as one subset, course activities for graduate skills as another subset, HEI activities for graduate skills etc. Cronbach's alpha was > .85 for all subsets of survey questions, indicating high reliability.

<sup>3</sup> **Technical bit 2:** Non-parametric Friedmans' ANOVA and Wilcoxon Signed Ranks tests were used for within group comparisons and Kruskal-Wallis tests were used for between group comparisons. Significance levels (p values) were adjusted for multiple comparisons using a Bonferroni correction (Field, 2009).



## RESULTS 1: EFFECTIVENESS

*How well does higher education equip students with graduate skills, global skills and digital skills from a student perspective?*

### Graduate Skills

Analysis of responses to the 12 graduate skills questions in Figure 3 found that levels of agreement on self-management and critical thinking were significantly higher than levels of agreement on problem solving, communication, collaboration, interpersonal skills and innovative/creative; and levels of agreement on resilience, reflective, curiosity to learn, information literacy and autonomy were significantly higher than levels of agreement on collaboration, interpersonal skills and innovative/creative (see Figure 6).<sup>4</sup>

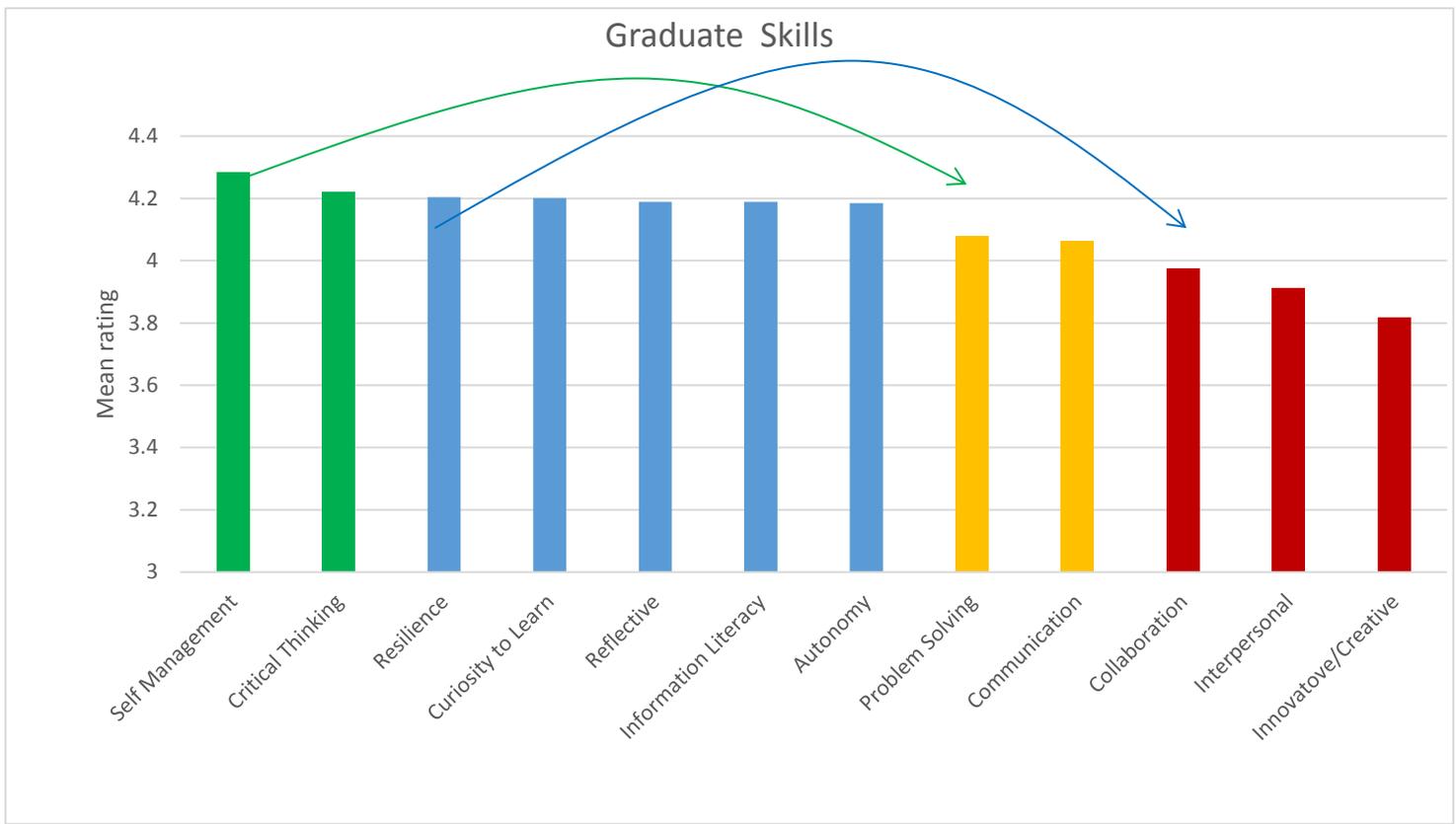


Figure 6: Mean level of agreement (1-5) for the statement, 'my higher education experience so far has equipped me with the following graduate skills', with each skill indicated in the X axis.

### Global Skills

Analysis of responses on the global skills questions (see Appendix 2.1) found that students' level of agreement was highest for 'ability to work in settings in which I interact with people who are different from me', followed by ability to understand different cultures, and communicate effectively with people from different cultures. These

<sup>4</sup> All ratings above 3 indicate a neutral response. Between 4 and 5 indicate agree to strongly agree. Closer to 3 suggests uncertainty, 1-2 indicates disagreement. In Figures 1, 2 & 3 coloured arrows indicate significant differences between groups of skills. Each group of skills is indicated by identically coloured bars (green, blue, yellow, red). There were no significant differences between identically coloured bars.

skills in inter-cultural communication (see Appendix 2.1) were rated higher than abilities to propose solutions informed by knowledge of global affairs and use of skills to contribute to world problems (see Figure 7).

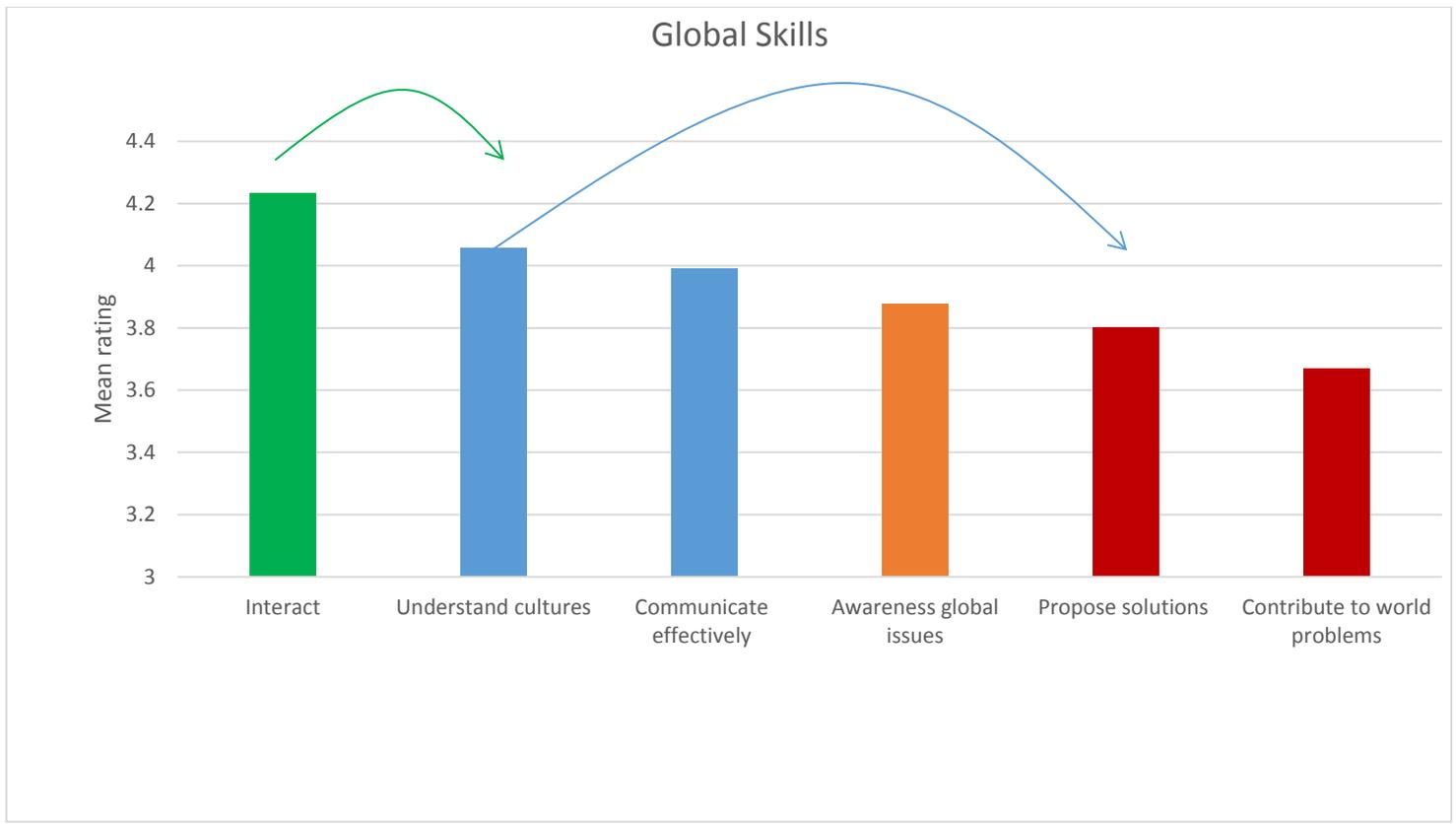


Figure 7: Mean level of agreement (1-5) for the statement, 'my higher education experience so far has equipped me with', with each skill indicated in the X axis.

This research suggests that students are comfortable with their inter-cultural communication skills, but less equipped to apply their knowledge and skills to the global workplace and society. In addition, cost and limited provision of international mobility experiences were perceived as barriers to development of global skills. More attention could be paid to how home students could develop 'internationalism at home' (Lilley et al, 2015), addressing the finding from some research that many Scottish graduates remain in the same geographical location after graduation (Alexander, 2019). This could be achieved, for example, by embedding a global outlook within the curriculum, and taking account of students own international and professional experiences in professional skills training (Artess et al, 2017; Riley, 2012).

### Digital Skills

Analysis of responses to each of the digital skills items (see Appendix 2.1) found that students' level of agreement was highest for items involving use of digital tools and software, and finding and analysing data, followed by collaborating with others in a digital environment, and study/learning in a technology rich environment. Levels of agreement for innovating with technology, development of a digital identity and looking after personal health and digital health/work-life balance were significantly lower than the five other digital skills (see Figure 8).

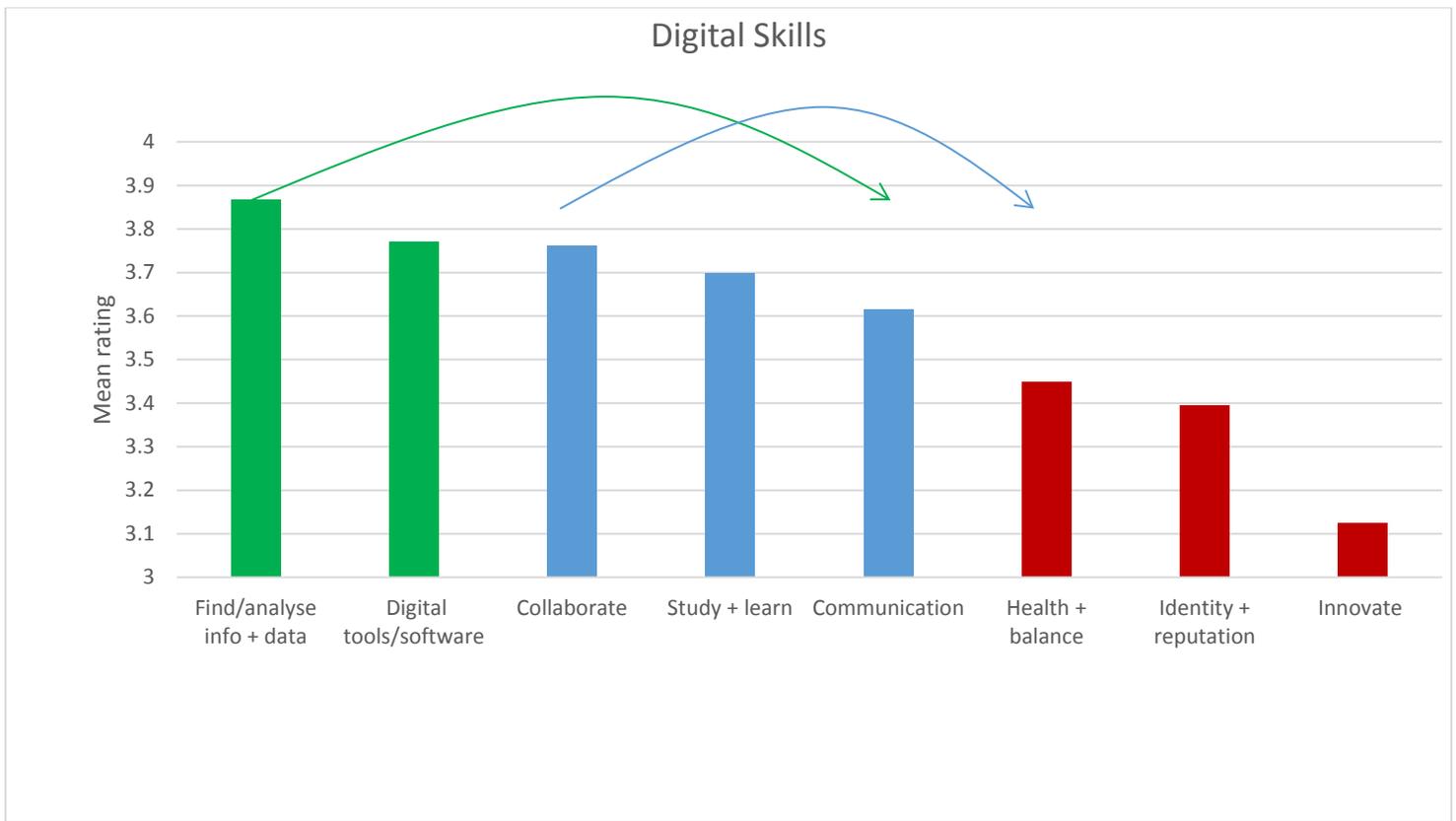


Figure 8: Shows the mean level of agreement (1-5) for the statement 'my higher education experience so far has equipped me with the following digital skills', with each skill indicated in the X axis.

The findings on digital skills echo the recent JISC report in that students recognise the importance of digital skills for learning and employment but are less certain about how their digital skills will prepare them for the workplace (JISC 2018). Guidance for students on how to develop a professional digital presence and digital networking skills would be a valuable addition to skills training and is already present in some employability training (Copsey, 2016; Longridge, Hooley & Staunton, 2011; Posner, 2011).

More critical voices referred to lack of training opportunities, insufficient use of technology and cumbersome and outdated software. The skills many students felt less confident in included using statistical packages, coding and website building, followed by problems using Microsoft suite software, social media and media production tools.



*Using excel and statistical analysis databases; I find difficult to work with technology as I was not brought up alongside technology.*

Some students commented on the digital skills of their lecturers and tutors and how at times they too seemed to need more support in technical and digital skills.



*I think lecturers having better knowledge of the IT systems in uni would help because sometimes we had to miss 15-20min of a lecture because the IT system wasn't working, and the lecturer doesn't know how to fix it...*

In terms of effectiveness, there is room for improvement in provision of opportunities for recognition for graduate, global and digital skills. This is consistent with previous research suggesting poor use of tools to track students' extracurricular achievements (Docherty & Fernandez, 2014; Harris, 2017), and calls for a review of current reward schemes to extend to global and digital skills. Examples are recognising and developing global skills through the home curriculum, developing digital skills through games-based skills, and increasing awareness of opportunities in the early years of study (Barr, 2018; Morris, Cranney, Jeong & Mellish, 2013; Riley, 2012).<sup>5</sup>

## COMPARISONS BETWEEN SKILL SETS

### ***Quantitative Comparisons between Academic Subjects on Skill Sets, Opportunities, Recognition and Readiness for Employment***

Survey participant responses were grouped into one of five academic subject categories according to main subject of study (Arts, Medical, Veterinary & Life Sciences, Science & Engineering, Social Sciences, Other<sup>6</sup>).

Comparisons between these groups on the overall mean responses to the graduate, global and digital skills items found no significant differences between each of the skill sets in the overall means. Comparisons between the five subject categories found no differences in satisfaction with opportunities, recognition for achievements and readiness for employment.

### ***In which skill set do students feel best equipped?***

For each skill set (graduate, global & digital skills), levels of agreement for each of the skills questions (see Appendix 2.1 & 2.2) were averaged to produce an overall mean for each skill set.

Comparison of overall mean levels of agreement between graduate, global and digital skills indicated significantly higher levels of agreement on graduate skills questions than global and digital skills. Comparisons of overall mean levels of agreement on global and digital skills indicated higher levels of agreement on global skills than digital skills (see Figure 4).

### ***How satisfied are students with opportunities to develop graduate, global and digital skills?***

Students indicated their level of agreement with the statement(s) 'I am satisfied with the opportunities provided by my HEI to develop my graduate/global/digital skills'.<sup>7</sup>

Mean levels of student satisfaction were compared between the three skill sets and higher levels of satisfaction were recorded with opportunities to develop graduate and global skills than for digital skills (see Figure 4).

<sup>5</sup> It is worth noting that more than half of the participants in this study were studying in their first or second year.

<sup>6</sup> 'Other' responses included degrees in specific occupations/therapies - see Appendix 1 for a breakdown of categories.

<sup>7</sup> These statements were separate questions each for graduate, global and digital skills - see Appendix 2.2.

### Do students feel they can be recognised for their achievements?

Students were asked to indicate their level of agreement with the statement(s) 'My HEI provides opportunities to be recognised for development of graduate/global/digital skills (for example, a certificate or award).'<sup>8</sup>

Comparison of mean levels of agreement between the three skill sets indicated higher levels of agreement with recognition of graduate skills than global skills and digital skills (see Figure 4).

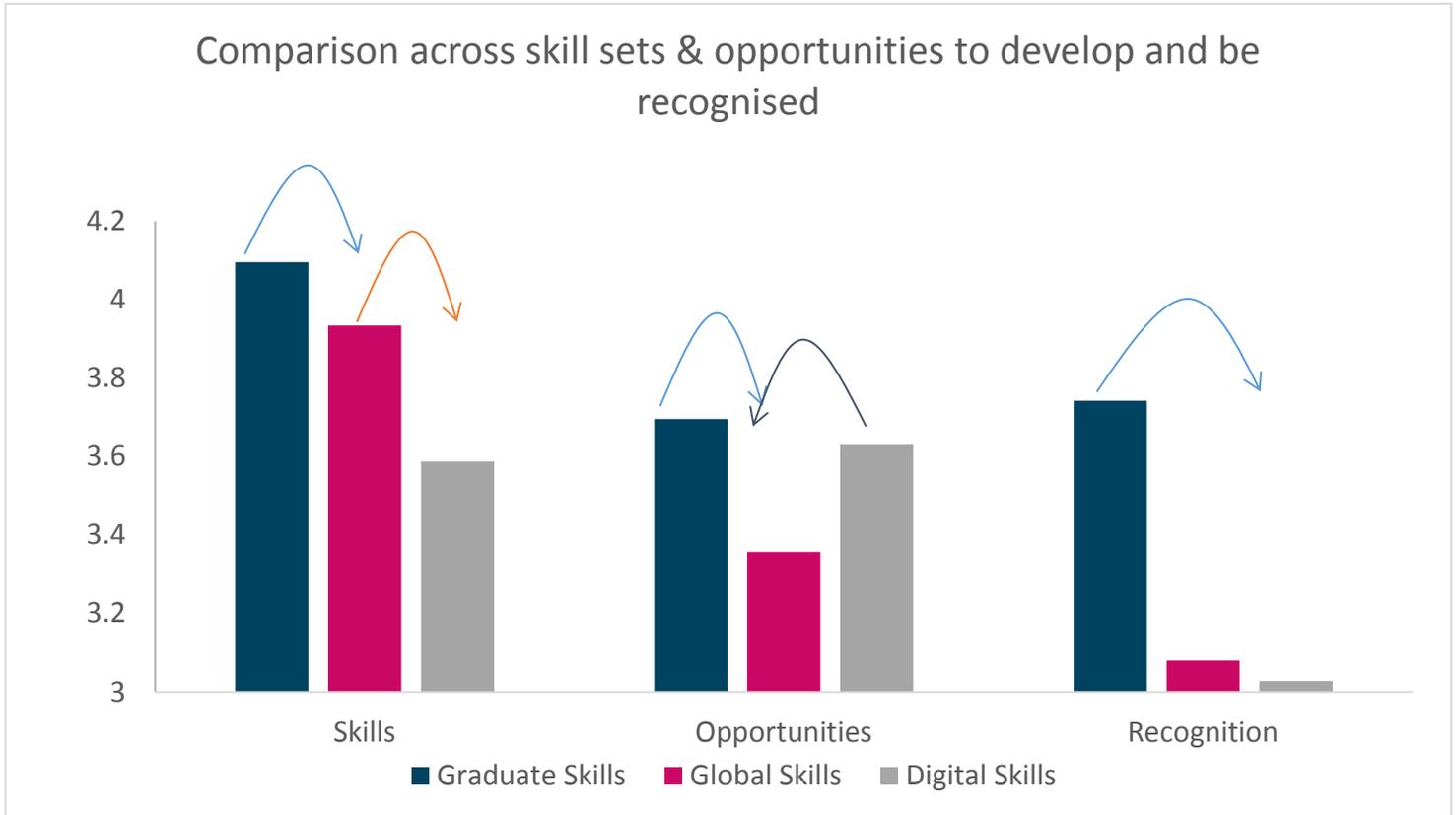


Figure 9: Skills label indicates mean levels of agreement with the statement 'my higher education experience equips me with graduate/global/digital skills'. Opportunities label indicates mean levels of agreement with the statement 'I am satisfied with the opportunities provided by my HEI to develop my graduate/global/digital skills'. Recognition label indicates mean levels of agreement with the statement 'My HEI provides opportunities to be recognised for development of graduate/global/digital skills (e.g. a certificate or award)'. Significant differences are indicated by arrows.<sup>9</sup>

In the open text comments, many students reported how their institutions ensure the development of their graduate skills either via specific courses or extracurricular opportunities.



*...collaboration because there are so many group projects that you are assigned to randomly, so you really have to deal with whatever you are presented with.*

*Critical thinking and problem solving. Examinations, tutorials and practical laboratories were particularly important.*

<sup>8</sup> These statements were separate questions each for graduate, global and digital skills - see Appendix 2.2.

<sup>9</sup> In figure 9 coloured arrows indicate significant differences between the different coloured bars (e.g., blue, orange) within the same label (e.g., skills).

Students were also reflective about their own role, with some identifying how they are, essentially, the most equipped to understand their personal development needs, and seek support to build and develop these skills when needed.



*At the end of the day I guess it's up to the student's own initiative to actually seek out that kind of help and be guided.*

When asked what further activity would benefit them most in developing skills useful in a professional setting, students identified communication and interpersonal skills.



*But with interpersonal skills I mean the ability to communicate in a business setting or corporate setting.*

Students were able to identify specific digital skills and discuss how their institution supported their development. In most cases digital skills development was clearly identified via specialised courses, especially in a subject-related field such as computing science and psychology.



*...from the top of my head I can just remember my digital media course. So, I did a course on digital media and information studies.*

Students agree on the importance of digital skills not only as useful for their current studies but also recognised them as an important skill set for their future employment.



*Its [digital skills] becoming super important in every single aspect, not just employment, but everyday life, basically. So, going forward, I'm not going to stop here.*

In their comments, participants suggested that higher education is in some ways an inherently global or intercultural experience, which is perhaps reflected in the fact that 44% of the students involved in this work came to a Scottish HEI from a nation beyond the UK. The majority of respondents felt positive about being able to live and work in a global market simply because of their belonging to an international cohort or global issues being a focus of their course.



*I study sociology so we kind of have entire modules or lectures based on globalisation. I don't think they can really do anything better than they're doing. I mean we learn so much about globalisation [...] because it's such an important part of sociology*

*So, in the future, if I worked in a different country it shouldn't be so difficult to work with people from other nations. And nowadays due to globalisation I think it is... well you cannot escape it*

Students from a variety of subject disciplines took part in the survey and focus groups, but they did not explicitly mention differing views on graduate skills among the disciplines. Instead, they emphasised the transferable skills they gained in their academic course, although students in first year were less clear on this.

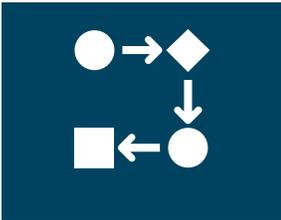


*Psychology course requires developing various skills (communication, critical thinking, self-reflection among others), which are crucial in any work environment.*



## KEY FINDINGS 1: EFFECTIVENESS

- **Graduate skills:** HEIs are equipping students with the majority of graduate skills, and students feel strongest in self-management and critical thinking skills. Students are less comfortable with their communication and interpersonal skills in professional settings and request more advice in communication in the workplace.
- **Ability to live and work in a Global Society:** Students are comfortable with their inter-cultural communication skills but feel less equipped to apply their knowledge and skills to the global workplace and society. The consensus was that global skills are part of life in higher education.
- **Digital Skills:** Students feel equipped with ICT literacy and digital information literacy skills, but are less comfortable with professional communication, career and identity management in digital settings. The consensus is that digital skills are essential for learning and future employment, and students can identify subject-specific courses that provide digital skills.
- Overall, students feel **most equipped** in graduate skills, followed by global skills, and least equipped with digital skills, and indicated there were **more opportunities** to develop their graduate and digital skills than their global skills.
- Students reported that they were aware of **opportunities to be recognised** for development of graduate skills, but uncertain of recognition opportunities for global or digital skills.
- Students emphasised the importance of **personal responsibility** for seeking support for skills development.
- There were no significant differences between the five academic subject categories in responses to the graduate, global, and digital skills items, and in satisfaction with opportunities to develop these skills, recognition for achievements or readiness for employment.
- Students recognise the **broad range of transferable skills** gained in their subject discipline and see these as generic rather than subject specific but are **less aware** of the embedding of skills in **the early stages of their studies (e.g. first and second year)**.
- Students suggested that HEIs could improve by increasing provision of careers support in early stages of study (i.e. first and second year) and by ensuring they have the infrastructure to support staff and students' development of digital skills.



## RESULTS 2: ACADEMIC AND EXTRACURRICULAR ACTIVITIES

*What is the perceived contribution of academic and extracurricular activities to development of graduate, global and digital skills?*

To investigate students' views on specific opportunities to develop their skills, their views on how helpful academic in-course, HEI support and student organisation activities were for their skills development were compared.

For each skill set (graduate, global and digital skills) there were three categories of activities associated with development of these skills: 1) academic in-course activities related to their main subject of study; 2) activities provided by HEI student support services; 3) activities provided by student-led organisations (see Appendix 2.2 for details).

Levels of agreement with the statement '*the following activities provided on my course have been helpful for me in developing my graduate/global/digital skills*' were averaged across individual activities to produce an overall mean for each activity category and each skill set (see Figure 10).<sup>10</sup>

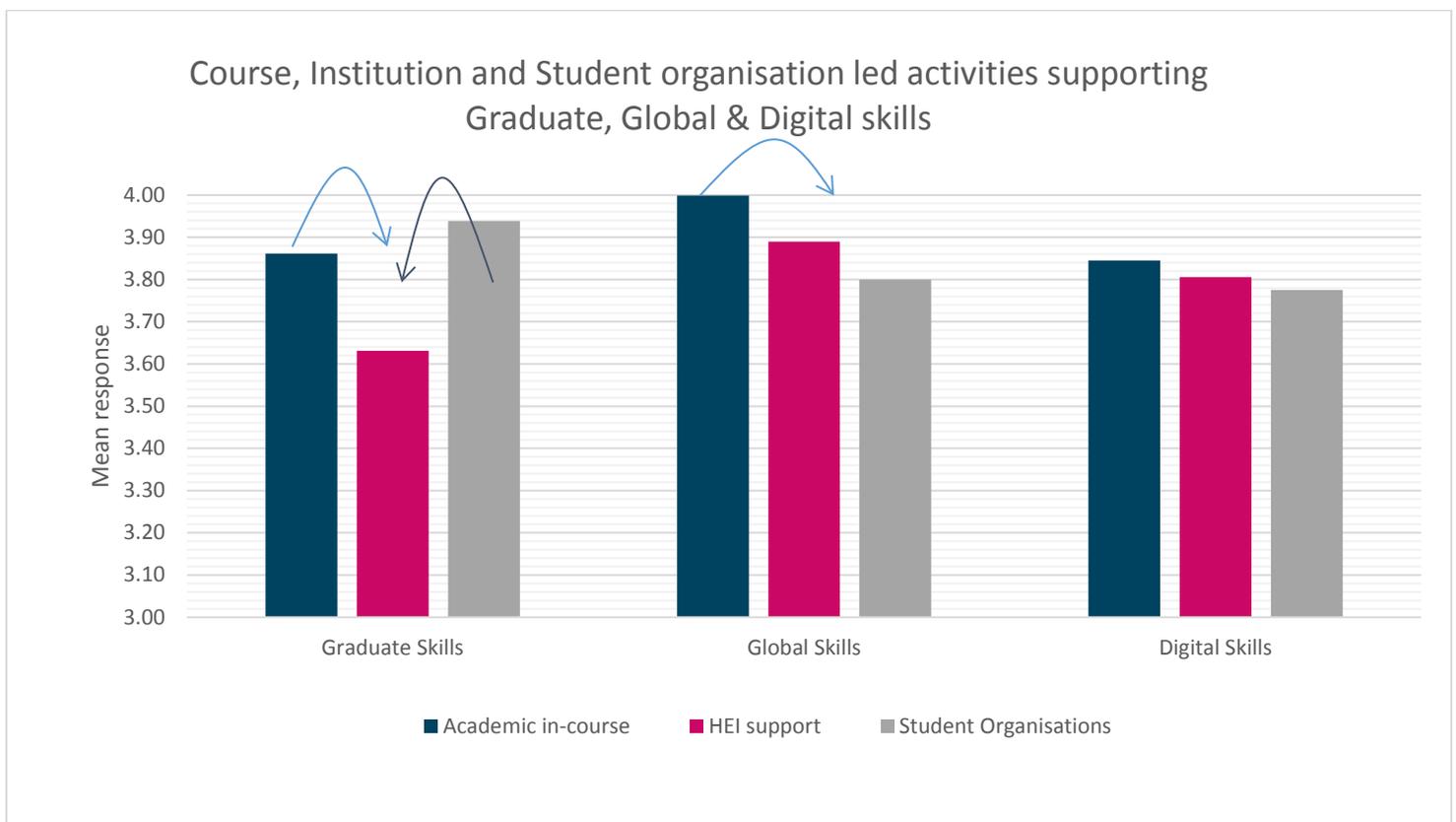


Figure 10: Mean levels of agreement (1-5) with the statement '*the following activities have been helpful for me in developing my graduate/global/digital skills.*' Arrows indicate significant differences.

<sup>10</sup> In the survey students indicated N/A if an individual activity did not apply to them. Calculation of overall means per activity category and skill set ignored N/A responses.

Comparison of overall mean levels of agreement found that for graduate skills overall, academic in-course and student organisation activities were rated as more helpful in developing skills than activities provided by university support services. For developing global skills, academic in-course related activities were rated as more helpful than for HEI support service activity or student organisation-led activities. For digital skills, there were no significant differences between levels of agreement (see Figure 10).

Text comments tended to be positive, with students indicating awareness of opportunities to develop graduate skills through coursework and extracurricular activities. Academic courses and academic-related activities were identified as the main contributors in graduate skills development for the majority of the students. Students could relate particular academic activities such as presentations being useful in developing communications skills, or time management skills being developed through their experiences of having to deal with competing academic demands.



*Academic course and internships with laboratories in summer have prepared me for an academic career...*

*Balancing multiple demanding academic courses has taught me how to manage and plan my time effectively.*

Additionally, some students identified specific courses covering professional skills that supported them in further developing their graduate skills.



*Professional skills curriculum - a graduate training programme offered by the university was extremely helpful. Academic coursework such as seminars and presentations were also helpful in developing skills like teamwork and public speaking.*

*A transferable skills module run by the school of physics for writing and critiquing papers, doing presentations etc.*

Study abroad and exchange opportunities, in addition to internships and voluntary work placements, were some of the additional ways they said they developed skills. Participation in societies and work-related schemes were also key, often boosting the students' confidence in areas such as critical thinking and reflectivity.



*I feel as though my degree programme and all of the extracurricular activities also offered by the uni have provided me with numerous transferable skills, but, mainly, have increased my confidence to a considerable and noticeable degree, preparing me further to go into the world of work.*

Opportunities to study abroad were identified as enhancing global skills as a lot of students strengthened their skills via such initiatives. However, some students felt that these opportunities were restricted and were inaccessible due to the financial cost.



*Not enough spaces to be able to get on to schemes really so most people don't apply or can't afford them.*

Financial circumstances were identified as constraining students' abilities to undertake extracurricular activities to enable their skills development.



*Economic factors. As I had to work part-time to cover my expenses, I was often unable to partake in extracurricular activities or social events which would have provided opportunities for skill development.*

When discussing digital skills most open text responses were relatively positive with many students acknowledging that they are part of their study either in or outside the classroom.



*I'm really not a tech person so considering that I'm now able to research effectively online, find sources, format and cite stuff is quite a big deal - I couldn't speak on behalf of the uni for other subjects though.*

Embedding graduate, global and digital skills within academic in-course activities was most effective in contributing to skills development, with students frequently mentioning opportunities for reflection in professional skills and personal development planning as crucial for articulating their skills and preparing them for the workplace. Reflection and articulation of skills and development of career management skills (for example, reflective writing, portfolios, career planning, opportunity awareness) are essential for navigating a complex and dynamic labour market. Findings suggest that these activities could helpfully be embedded more widely (Artess et al, 2017; Hounsell, 2011; Jackson & Wilton, 2016; Neary, Dodd & Hooley, 2015; Wadkins & Miller, 2011). In addition, embedding learning activities within the subject discipline that develop students' awareness of their personal strengths and limitations can help prepare students for the workplace (Nicol, 2010).



## KEY FINDINGS 2: ACADEMIC AND EXTRACURRICULAR ACTIVITIES

- **Academic in-course and student organisation activities** were perceived as most helpful for developing **graduate skills**.
- **Professional skills** modules were praised for developing **transferable skills**, but extracurricular activities are perceived as less accessible to students juggling part-time work with study.
- **Academic in-course activities** were perceived as most helpful for developing **global skills**; however, the perceived **barriers** to opportunities to develop global skills include **limited provision** and the **financial cost** of study abroad.
- All activities were equally helpful in developing **digital skills**, and students acknowledge these skills **embedded** in their studies and learning.



## RESULTS 3: PREPARATION FOR THE WORKPLACE

*How do students perceive their higher education experience as a preparation for the graduate workplace?*

Overall, students indicated that their HEI is equipping them with the necessary graduate skills across disciplines but are less confident on how to evidence and market these skills to employers and apply them in the workplace. The importance of forming real connections with employers and workplace experience is well established (Artess et al, 2017; Moores & Reddy, 2013; Shadbolt, 2016; Wakeham, 2016).

These experiences include not only formal work placements (which are only available in selected disciplines), but also informal experiences such as part-time, voluntary work and internships, and interacting with employers and alumni (Reibe, Sibson, Roepen & Meakins, 2013). The present findings add weight to the recommendations of Artess et al (2017) for HEIs to make more of informal experiences, and help students articulate the value of these experiences in terms of graduate skills.

Participants were asked to respond to the follow seven readiness for employment statements.

- My course allows me to gain a broad range of skills that mean I feel ready for the workplace.
- My university experience has enhanced the graduate skills that make people effective in employment.
- I know what graduate skills employers expect of graduate-level employees.
- I know the extent to which my current abilities fit the expectations of graduate level employment.
- I know what knowledge and skills I will need for my preferred future career.
- I can provide an employer with evidence of my graduate skills.
- My course and university experience have allowed me to build up a portfolio of evidence of my achievements.

Analysis of levels of agreement with these statements found that recorded levels of agreement were higher for *'my HEI experience has enhanced the graduate skills that make people effective in employment'* and *'my course allows me to gain a broad range of skills'* than for *'I know what knowledge and skills I will need for my career'*, *'I know the extent to which my current abilities fit the expectations of graduate level employment'*, *'my course and HEI experience has allowed me to build up a portfolio of evidence of my achievements'*, and *'I know what graduate skills employers expect of graduate-level employees'* (see Figure 11).

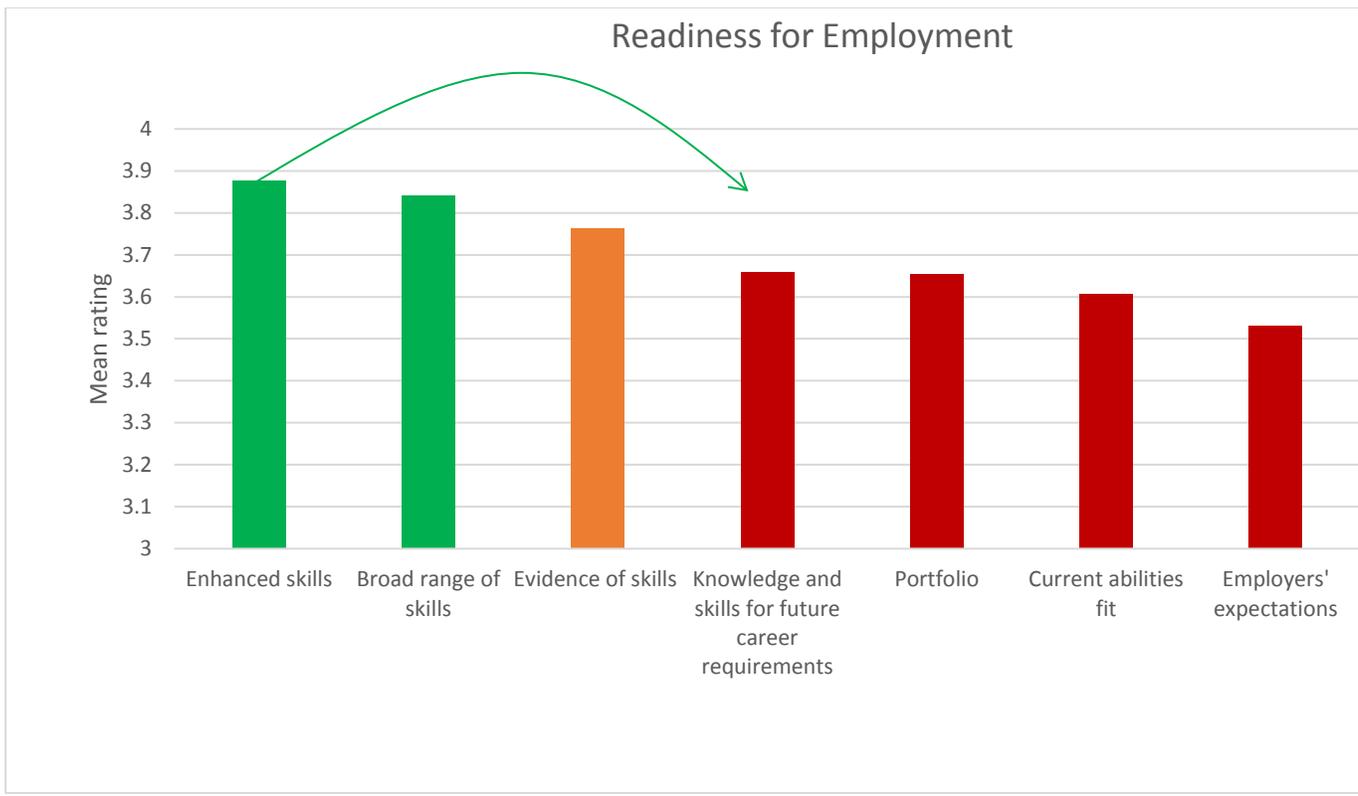


Figure 11: Mean levels of agreement (1-5) with each of the readiness for employment questions (see Appendix 2.1).

Of students' responses to the question: 'are you aware of graduate skills being built into the learning and teaching in your courses', 66% of students indicated they were, and 34% indicated they were not. This was followed by an open text question prompting students to expand on their answers.

The responses to the open text questions on readiness for employment were mixed. Most admitted they feel prepared to an extent since, *so many skills have been built into... life in higher education*. Programming courses were given as a primary example, but many commented on more general academic skills being transferable too. Text and focus group discussions yielded overall positive comment on HEIs' efforts to provide opportunities to develop graduate skills through coursework and extracurricular activities.



*...the deadlines, required research etc... these are aspects of the course that allow one to prove how well they can gather evidence, answer the question to meet the task set, work to time (and manage time), memorise lots of information and express it in arguments coherently etc. that can be directly applied to many jobs from teaching to finance to law.*

*I have been able to dig deep and find skills I never knew I had, this has given me confidence in my own ability and views.*

Reassuringly all students identified a range of resources and support including access to academic staff, such as lecturers and tutors, as well as bespoke professional skills modules and career services.



*I would go to my student services and the careers advice services, which there's plenty of...*

Despite this positivity, some students expressed concerns about being able to anticipate employment demands. They would like their courses to feature more workplace experience, contact with employers, and opportunities to practise their skills, such as presentations.



*I know the skills that look good on paper - but the reality of a real workplace (long overdue hours, difficult customers/clients) cannot be learned on a university campus.*

*The main thing I need for employment is experience in the field, which the university does not really provide or help with.*

*...guest speakers have been crucial to get an insight into seeing the world of work.*

*I would say I am least confident in my presentation skills as this has cost me a few job interviews recently and I feel the university has not done much this year to help that.*

Students in first and second year also expressed concerns about not knowing what opportunities were available.



*Not too prepared, maybe more opportunities thrown at first and second years as in those years everybody is confused as to what is on offer.*

In relation to awareness of graduate skills, students commented that they were aware of the embedding of graduate skills not only in course documentation, but also in their coursework and class activities. Suggestions for increasing awareness of graduate skills included better signposting of activities and students being encouraged to recognise the importance of reflecting on the skills they had gained.



*Graduate attributes are now part of essay writing.*

*Practical laboratories provide a great way to develop skills such as problem solving, critical thinking, collaboration and the use of digital tools.*



*I think departments should signpost when they are teaching specific skills through different tasks.*

*I am not aware of any specific skills being honed, but when I take a 'back seat' I realise how much I have learnt.*

Students also emphasised the importance of personal responsibility in seeking opportunities to develop their graduate skills. There was also a recurrent theme that support and information was there for those who looked for it, and that it was important students are more proactive in seeking out these things.



*I don't think there's much more to be done, it all depends on students' willingness to develop in the field.*

*I think the resources are all out there theoretically. It is maybe just a case of if you go searching?*

*I think the university could do more to engage students in the earlier years of the degree. I hear a lot about 3rd/4th years doing more and gaining skills but very little for 1st/2nd years.*

Previous findings indicate that students who take ownership of their development are more likely to feel confident in their employability and be able face the challenges of their chosen labour market (Gardiner, 2015; Qenani et al, 2014). Autonomy is a key graduate skill (Artess et al, 2017), and developing autonomy through curricular activities requiring students to take leadership roles (for example, mentoring others, group work) could expose students to issues they are likely to face in the workplace (Nicol, 2010).

As this student makes clear, there is a willingness to develop and expand skills in order to make successful transitions to the workplace.



*Teach us skills that we need. Teach us to actually be able to do something. Don't just teach us whatever it is you want to talk about, help us understand the field we are in. Most importantly help us understand the market of the field we are in and what it looks like getting a job in the field. That is why we came to university.*



### KEY FINDINGS 3: PREPARATION FOR THE WORKPLACE

- While students are confident that they are developing a broad range of skills relevant to the workplace, they are less confident about how to evidence these skills, how to meet employers' expectations, and what the realities of the workplace really are.
- While students are aware of graduate skills being embedded in the curriculum, they would like more subject-specific careers guidance and workplace experience.
- Students also emphasised the importance of personal responsibility in seeking opportunities to develop their graduate skills.



## RESULTS 4: EQUALITY AND DIVERSITY

*Do current students feel that their institution ensures that all students (irrespective of background and different characteristics) can access the full range of skills development opportunities offered in higher education?*

Overall, students were positive about the range of opportunities available to them to develop their skills and emphasised the importance of proactively seeking opportunities. Most students were vocal about equality and diversity policy and practice being place at their respective institutions. In general, they were not concerned about groups not having access to opportunities to develop their skills. The average level of agreement with the statement: *'I am satisfied with the equal opportunities to develop graduate skills provided by my institution'* was 4.2 (out of 5), suggesting that most students were satisfied. That does, however, mean that just under 20% of students had experienced some kind of barrier to opportunity at their institution.

Those experiencing barriers frequently mentioned age, balancing work and study and physical health. Concerns about balancing work and study reflect an increase in undergraduates who work part-time or have voluntary work commitments while studying (Gbadamosi, Evans, Richardson & Ridolfo, 2015; UCAS, 2011), and imply that capitalising on the contribution of informal work experiences would be helpful to these students (Artess et al, 2017).

Time and/or health constraints prevented some students from committing to extracurricular activities, suggesting student organisations could increase accessibility, for example by enabling students to contribute flexibly to committees and societies around their work and disabilities. Previous research in this area recommends bringing 'support to where students are' for disadvantaged students, for example by short courses in digital skills and online support (Heagney & Benson, 2017).

Students recognised the efforts that were made at their institution to promote equality and diversity in a wide range of ways.



*The University is full of people from all different cultures, ethnicities, and genders, and all of these aspects are cherished and celebrated, so that anyone can feel welcome.*

Some couched their comments more cautiously, being aware of their privileged position or the fact that their positive experience is not necessarily widely representative.



*I can't speak for everybody's experience because I am a Caucasian British girl, therefore may not share the same experiences as somebody who is an ethnic minority in this country. But I would like to think that the university does not discriminate, of course, and I don't think it does.*

Where barriers were identified, the most common related to protected characteristics such as age, and a range of social and economic factors, such as caring responsibilities and family issues/factors. The main barriers identified in this research were financial, especially for students from lower income backgrounds with part-time working and/or caring responsibilities.



*Many of the opportunities (language classes, society memberships, sports club memberships, etc) offered by the university are locked behind extortionately high tuition or joining fees. These fees can definitely prevent students from joining opportunities to, say, learn a new language, that they otherwise would have liked to participate in.*

A recurring theme in the students' comments was on the age barriers experienced by some, particularly around how current provision may not always cater for or accommodate mature students' needs. This was most apparent in discussions on digital skills acquisition.



*As a mature student and single parent there have been plenty of barriers. To be honest, I think the uni doesn't really care about mature students who struggle with caring responsibilities and having to work and study as well.*

*More specific courses run to teach basics [digital skills] to mature students.*

Language also seemed to cause some difficulties, especially for international students.



*The one and only barrier I have experienced is a linguistic one. The majority of lecturers are Scottish (which is obviously perfectly fine), but they are not aware of how strong their accent is, and when you let them notice, they take offence. Additionally, they assume that everyone in the lecture hall is either Scottish or British and has had such an upbringing and expect everyone to know certain things that only a local would.*

Students also commented on the persistence of bias in higher education.



*There still exist a number of barriers and prejudices located within unconscious biases; these are difficult to mitigate.*

Where suggestions were given for improvements, there were requests for more specific support, mainly with coding and other digital skills, and for specific groups of students, for example, first year students, mature students and students with disabilities to be better supported in developing and recognising their skills.



## KEY FINDINGS 4: EQUALITY AND DIVERSITY

- The majority of students did not experience barriers to skills development. However, around 20% have experienced some kind of barrier, with **age, balancing work and study, language, and mental and physical health** most commonly cited as an issue.
- Students suggested that HEIs could improve by targeting support to specific groups who may experience barriers to skills development (e.g. digital skills training for mature students), and by improving access to work-based learning opportunities.



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## APPENDIX 1: PARTICIPANT DEMOGRAPHIC DATA

### Participant Demographic Data from Survey

#### Age of participants

Age Group	Number of Participants	%
18-24	214	67.1
25-34	50	15.7
35-49	34	10.7
50+	13	4.1
No response	8	2.5

#### Gender of participants

Gender	Number of Participants	%
Female	213	67.2
Male	94	29.7
Other	4	1.3
Prefer not to say	6	1.9

#### Nationality of Participants

Nationality	Number of Participants	%
UK	163	51.1
EU	83	26.0
International	57	17.9
Stateless	1	0.3
No response	15	4.7

#### Participants' Current Education Level

Education Level	Number of Participants	%
Undergraduate	251	78.9
PGT (conversion)	11	3.5
PGT (other)	56	17.6

#### Subject of study

Subject	Number of Participants	%
Arts & Humanities	67	21.0
Medical Veterinary and Life Sciences	47	14.7
Science and Engineering	105	32.9
Social Sciences	86	27.0
Other <sup>12</sup>	14	4.4

#### Participants' Current Year of Study

Year of Study	Number of Participants	%
1	118	37.1
2	60	18.9
3	53	16.7
4	72	22.6
5	15	4.7

#### Participating HEIs in Scotland & number of respondents from each institution<sup>11</sup>

HEI	Number of Participants	%
Abertay University	12	3.8
Edinburgh Napier University	5	1.6
Glasgow Caledonian University	1	0.3
Queen Margaret University	15	4.7
Royal Conservatoire of Scotland	1	0.3
Glasgow School of Art	1	0.3
University of Aberdeen	87	27.4
University of Dundee	12	3.8
University of Edinburgh	2	0.6
University of Glasgow	23	7.2
University of St Andrews	117	36.8
University of Stirling	6	1.9
University of Strathclyde	6	1.9
University of the Highlands and Islands	20	6.3
University of the West of Scotland	10	3.1

#### Participant Demographic Data from Focus Groups

Method and Participants	
FG1	Online. Two participants, one from University of Aberdeen and the other from University of the Highlands and Islands, one of whom was international.
FG 2	Online. Two participants, one from University of Glasgow and the other from University of Aberdeen, one of whom was international.
FG 3	Face-to-face. Three participants, all from the University of Glasgow, all international.
FG 4	Online. Two participants, both from Queen Margaret University, one of whom was international.

<sup>11</sup> The following HEIs had no respondents: Heriot-Watt University; OU in Scotland; Robert Gordon University; Scotland's Rural College.

<sup>12</sup> Other responses included: mindfulness, international relations, art psychology, play therapy.



## APPENDIX 2.1: GLOSSARY OF GRADUATE GLOBAL & DIGITAL SKILLS & READINESS FOR EMPLOYMENT SURVEY QUESTIONS

### Graduate Skills

Graduate Skill	Definition – Ability to	Source
Critical thinking	apply a systematic and critical assessment of complex problems and issues and consider issues from a range of perspectives	Artes et al, (2017); Rees et al, (2006); Hounsell, (2011); Osmani (2015); Popovic & Tomas (2009)
Problem solving	investigate problems and practical situations and formulate, evaluate and apply evidence-based solutions and arguments	
Information literacy/Analytical	locate, synthesise and analyse information and data from a variety of sources, with an attention to detail	
Communication	communicate effectively knowledge, understanding and skills to a variety of audiences in a range of settings and using a variety of media	
Curiosity to learn	search broadly for insights and information across a wide range of situations and to challenge assumptions	
Innovative/creative	examine problems from a fresh perspective and develop innovative solutions	
Collaboration	collaborate, work in teams and groups, and lead where appropriate	
Interpersonal/networking	listen actively, negotiate effectively, be empathetic, and develop positive connections with others	
Autonomy	think independently, exercise personal judgment, take the initiative and be enterprising	
Self-management	plan and organise my time, prioritise important tasks, work under pressure and to tight deadlines	
Resilience	respond flexibly and adapt my skills and knowledge when dealing with change, unfamiliar or challenging situations	
Reflective/self-awareness	use feedback productively, identify and articulate my skills in a variety of contexts, and set goals for my continuing personal, professional and career development	

### Global Skills

Global Skill	Definition – Ability to:	Source
Inter-cultural communication	understand different cultures	Morais & Ogden (2011)
	communicate effectively with people from other cultures	
	work in settings in which I interact with people who are different from me	Sampson et al, (2018)

Global Awareness	be aware of global issues (e.g., sustainability), and their place in a globalised economy	Morais & Ogden (2011)
Application of global skills to the workplace	propose solutions that are informed by general knowledge about local or global affairs	
		ability to use my skills and values to contribute to the world's problems

### Digital Skills

Digital Skill	Definition – Ability to:	Source
ICT Literacy	select and fully use appropriate digital tools and software	JISC (2014)
Digital Scholarship & Media Literacy	to innovate using digital skills (e.g., video, animation, infographics, audio, coding)	
Information Literacy	find, analyse, and use credible digital data sources	
Learning Skills	study and learn effectively in technology-rich environments (e.g., virtual learning environments)	
Communication & Collaboration	collaborate with others in a digital learning environment (e.g. group projects)	
	appropriately/professionally use digital communication (e.g. use of social media)	
Career & Identity Management	develop and project a positive digital identity or identities and to manage digital reputation	
	look after personal health, safety, relationships and work-life balance in digital settings	

### Readiness for Employment

Readiness for Employment	Definition	Source
General Awareness	My course allows me to gain a broad range of skills that mean I feel ready for the workplace	Based on NSS (2019) Optional Qs on Employability & Skills
Employment orientation	My university experience has enhanced the graduate skills that make people effective in employment	Yorke & Knight (2007)
	I know what graduate skills employers expect of graduate-level employees	
General Awareness	I know the extent to which my current abilities fit the expectations of graduate-level employment	
Employment orientation	I know what knowledge and skills I will need for my preferred future career	
	I can provide an employer with evidence of my graduate skills	
	My course and university experience have allowed me to build up a portfolio of evidence of my achievements	



## APPENDIX 2.2: OUTLINE OF SURVEY QUESTIONS

### DEMOGRAPHICS

Participants were asked to report their age, gender, nationality, ethnicity, education level, current HEI, main subject area and year of study.

### EFFECTIVENESS: GRADUATE, GLOBAL & DIGITAL SKILLS

*Graduate skills are the transferable skills which all students should have the opportunity to develop as part of their experience at university.*

*Global skills are a combination of skills and awareness which equip graduates to engage and work in a globalised society.*

*Digital skills, include using, evaluating and communicating with digital information and technologies. The questions in this section will ask how you feel your degree course, the wider university and student organisations have contributed to the development of your graduate/global/digital skills so far.*

- My university experience so far has equipped me with the following graduate skills... Each of the 12 graduate skills/6 global skills/8 digital skills and appropriate definitions were listed, and students indicated their level of agreement with each statement (1= strongly disagree, 2 = strongly agree, 3 = neutral, 4 = agree, 5 = strongly agree).

*Academic in-Course Activities in your main degree subject. If you are a joint honours student, the questions refer to both of your joint degree subjects.*

*Listed below are activities that may be included in your course. Indicate how helpful you think these activities have been in developing your graduate skills by indicating your level of agreement on the scale. If you haven't experienced the activity or if it has not been included in your course so far select Not Applicable (N/A).*

- The following activities provided on my course have been helpful for me in developing my graduate/global/digital skills.

Graduate Skills	Global Skills	Digital Skills
Oral Presentations	International work/volunteering placements	Virtual learning/teaching tools and platforms (e.g. Moodle)
Written coursework (e.g. essays, reports)	Group work with people from different cultures	Group projects
Written examinations	Course content related to global issues	Assignments requiring use of digital tools and software (e.g. coding exercises, video assignments)
Dissertation/Final year project	Assessment related to global issues (e.g. oral presentation, examination)	Subject-specific teaching of digital tools and software (e.g. programming languages, video editing software)
Group work	Internationally focused course material	Use of digital data sources (e.g. journal article databases)
Project work	Subject-specific activities with a global focus (e.g. international alumni events)	Use of social media

Practical laboratories	Other (please state)	Virtual networks and forums
Tutorials		Other (please state)
Peer review/peer assessment		
Work placements		
Subject-specific employability activities (e.g. alumni events, careers talks)		
Personal Development Planning (e.g. reflective logs)		
Other (please state)		

Activities provided by University Student Support Services. *The following questions refer to the wider university environment and the support services and facilities that the university provides to all students.*

Listed below are activities that may be included in your university experience. Indicate how helpful you think these activities have been in developing your graduate skills by indicating your level of agreement on the scale. If you haven't experienced the activity or if it has not been included in your university experience so far select Not Applicable (N/A).

- The following activities provided by my university have been helpful for me in developing my graduate/global/digital skills.

Graduate Skills	Global Skills	Digital Skills
Careers appointments (one-to-one)	Study/work abroad opportunities (e.g. Erasmus)	Access to up-to-date digital tools and software
Careers events/workshops	International events/workshops	Extracurricular digital skills classes (e.g. programming classes)
Internships	Events related to global issues (e.g. talks, seminars)	IT support
Appointment with a study adviser	Awards for international engagement	Reliable access to the internet
Workshops to support study skills/writing/numeracy	Learning a language	Access to state-of-the-art technology
IT courses	Collaboration with international institutions	Other (please state)
Student enterprise	Research related to global issues	
Alumni network	International centres (e.g. Confucius Centre)	
Study/work abroad	Other (please state)	
Student ambassador		
Other (please state)		

Activities provided by student-led organisations. *The following questions refer to organisations that are run by and for students at your university (e.g. Student Union, NUS, SRC, Clubs and Societies).*

Listed below are activities that may be included in your experience of student organisations. Indicate how helpful you think these activities have been in developing your graduate skills by indicating your level of agreement on the scale. If you haven't experienced the activity or if it is not applicable to your experience of student organisations select Not Applicable (N/A).

- The following activities provided by student organisations have been helpful for me in developing my graduate/global/digital skills

Graduate Skills	Global Skills	Digital Skills
Committee membership	Volunteering abroad	Use of social media for communication, marketing and campaigning purposes

Volunteering	Organisation of events about global issues	Design of digital artefacts (e.g. videos, infographics, posters)
Organisation of events	Collaboration with organisations/institutions from abroad	Digital tools and software workshops
Marketing/Events promotion	Serving as an international student representative	Collaboration in a digital environment
Collaboration with external organisations	Committee membership of globally focused organisations	Organisation of events/conferences
Fundraising	Other (please state)	Other (please state)
Being a class representative		
Working abroad		
Contribution to media (e.g. article, radio)		
Other (please state)		

Additional closed questions each applied separately to graduate/global/digital **skills** (scale 1-5)

- I am satisfied with the opportunities to develop my graduate/global/digital skills provided by my university.
- My university provides opportunities to be recognised for development of graduate/global/digital skills (e.g. a certificate or award).

Additional closed questions: specific to skill sets

- My university experience has ensured that I can develop appropriate digital skills.
- The virtual learning environment offered at my university was fit for purpose.

Open questions (applied separately to graduate/global/digital skills)

- Explain which activities have been most important to you in developing your graduate/global/digital skills at university so far. Indicate the source of these opportunities (i.e., academic course, university services, student organisations, external activities such as part time work etc.).
- Indicate any particular graduate/global/digital skills that you feel least confident in or you lack experience in.
- What type(s) of support for development of students' graduate/global/digital skills could be improved? Suggest how this support could be improved.

Additional open question

- Please explain how your experience in higher education has/has not equipped you to live and work in a global society.

## EQUALITY AND DIVERSITY

*The following questions refer to equality and diversity. Specifically, equal opportunity for all students to develop graduate skills, global skills, and digital skills. The questions in this section will ask how you feel your degree course, the wider university, and student organisations provide equal opportunity to develop students' graduate skills, global skills and digital skills.*

- We're interested in how students from all backgrounds and characteristics can develop skills that will help them to secure and sustain their success in the workplace. During your time as a student, have there been any barriers preventing you from taking advantage of opportunities to develop skills that you believe you need? (This could relate to: age; disability; gender reassignment; marriage/civil

partnership; pregnancy/maternity; race; religion/belief; sex; care experience; caring responsibilities; or other economic, social, or personal factors.)

Indicate YES/NO

- If yes, what were the barriers?
- If you have experienced any barriers (see question above), how has the University supported you in accessing opportunities to develop the skills you need for the workplace? For example, teaching and learning resources, support for mental/physical health, support from student representatives, initiatives to raise awareness.
- I am satisfied with the equal opportunities to develop (1-5).

Do you think all students (irrespective of background and different characteristics) are able to access the full range of skills development opportunities offered in higher education?

Select YES/NO

Please comment on answer to the above question

'What could be/have been improved to help you or other students take advantage of opportunities provided?'

### **PREPARATION FOR EMPLOYMENT**

- *Please indicate your level of agreement with the following statements (see Readiness for Employment Glossary Appendix 2.1)*
- Please explain how your university experience has prepared you for employment, or if you feel that it has not prepared you for employment, explain why not.
- Are you aware of graduate skills being built into the learning and teaching on your course/programme?

YES/NO

- Please comment on your answer to the previous question.



## APPENDIX 3: FOCUS GROUP REFLECTION ACTIVITY & FOCUS GROUP SCHEDULE

### FOCUS GROUP REFLECTION ACTIVITY

#### Activity 1 (working individually, 5 mins)

University life offers up opportunities to try new things wherever you go: lectures, labs, the library, the sports field, the theatre and the unions: it's almost impossible not to get involved.

But thousands of students graduate from your Higher Education Institution each year, so what will make YOUR time here unique? What will you have to show for your time here other than some great memories?

If someone were to ask you what you did at university, you'd probably name the subjects you study. But you're actually learning to do all sorts of other things as well. For example:

- Writing essays develops critical thinking and research skills
- Posters and presentations are great practice in public speaking and communicating your ideas
- Playing for a sports team improves your ability to communicate and work within a team
- Running a club or society requires leadership and motivation
- Working part-time in the service sector develops confidence in working with others.

With a little thought, you can see that almost everything you can do at university is designed to help you develop useful skills, qualities and abilities – elements of yourself that you might never have discovered had you not come to your Higher Education Institution. We refer to these collectively as our *graduate skills*, and they are listed in the table below.

***Please take some time to complete these activities. We will come back to them and discuss them as a group.***

Where have you had the opportunity to develop graduate skills? Pick **two graduate skills** you feel are important and write down in the table below explaining how you developed these in your time at university. Think about your courses, any assessments *and* your experiences outside of university (jobs, hobbies, volunteering).

Graduate Skill	Example where you have demonstrated this skill
<b>Critical thinking:</b> Ability to apply a systematic and critical assessment of complex problems and issues and consider issues from a range of perspectives	
<b>Problem solving:</b> Ability to investigate problems and practical situations and formulate, evaluate and apply evidence-based solutions and arguments	
<b>Information literacy/Analytical:</b> Ability to locate, synthesise and analyse information and data from a variety of sources, with an attention to detail	
<b>Communication:</b> Ability to communicate effectively knowledge, understanding and skills to a variety of audiences in a range of settings and using a variety of media	
<b>Curiosity to learn:</b> Ability to search broadly for insights and information across a wide range of situations and to challenge assumptions	
<b>Innovative/creative:</b> Ability to examine problems from a fresh perspective and develop innovative solutions	
<b>Collaboration:</b> Ability to collaborate, work in teams and groups, and lead where appropriate	
<b>Autonomy:</b> Ability to think independently, exercise personal judgment, take the initiative and be enterprising	
<b>Interpersonal/networking:</b> Ability to listen actively, negotiate effectively, be empathetic, and develop positive connections with others	
<b>Resilience:</b> Ability to respond flexibly and adapt my skills and knowledge when dealing with change, unfamiliar or challenging situations	
<b>Reflective/self-awareness:</b> Ability to use feedback productively, identify and articulate my skills in a variety of contexts, and set goals for my continuing personal, professional and career development	
<b>Self-management:</b> Ability to plan and organise my time, prioritise important tasks, work under pressure and to tight deadlines	

**ACTIVITY 2 (5 mins).** Write down **two graduate skills that you don't have much experience or confidence in** that you would like to work on. Briefly explain why it is important to you (e.g., for future career, personal development etc).

**ACTIVITY 3 (10-15 mins).** Using a piece of paper and pens draw a **diagram or mind map** (the layout is up to you) of:

- 1 The graduate skills that you would like to work on
- 2 What you are planning to do to develop your chosen graduate skills further. Think about the assessments/activities you are doing this year (e.g. presentations, projects), *and* your experiences outside of university (jobs, hobbies, volunteering). Note down **two action points**.
- 3 Think about this question: What support/resources do you need to carry out these actions? For example, careers service, student services, tutors, peers. Include your thoughts on your diagram/mind map.
- 4 Think about this question: What challenges you might face in accessing these resources/support? What challenges you might face in developing your chosen skills (e.g. personal, academic, workload). Include these points on the diagram/mind map.

#### Focus Group Schedule

- Facilitator introduces themselves
- Go over information and consent forms and any questions on these
- Briefly cover ground rules and confidentiality
- Ask everyone to introduce themselves, what year/level they are in and what subject they are studying. (5-10 mins)

*In the first part of the focus group you will engage in a reflection task and then work in pairs/threes to map out a plan for developing a chosen graduate skill (see activities doc-approximately 25 mins). Then we will discuss the results of the activities in more detail and ask how the university can support students generally in the development of their graduate attributes.*

#### Group questions (prompts to be added once schedule is finalised). Approximately 25-30 mins

*We have just discussed specific graduate skills that you would like to develop. In recent years digital literacy has become an important graduate skill, becoming increasingly important in the job market. Digital literacy goes beyond ICT technical skills, such as using a computer and software. For example, being able to find, manage and evaluate digital information and data, communicating, collaborating and being creative using digital technology.*

- Can you tell me about how digital skills are featured in your chosen graduate skills? Or if they don't feature, why not?
- How important is digital literacy for your chosen career and future plans?
- Can you tell me about how the university supports students in their development of digital skills?
- What could the university do to help prepare students for the digital workplace?

*Another important graduate skill is global citizenship, the ability to live and work effectively in a global society. For example, being aware of global issues and communicating and working effectively with people from different cultures. Global citizenship is becoming increasingly important in the graduate job market.*

- Can you tell me about how global citizenship features in your chosen graduate skills? Or if it doesn't feature, why not?
- How important is global citizenship for your chosen career and future plans?
- Can you tell me about how the university supports students in their development of global citizenship?
- What could the university do to help increase students' global awareness and develop global citizenship?

*In the activities, we asked you to outline the support and resources you would seek out to help you develop your chosen skills and to discuss the challenges you might face in developing your chosen graduate skills.*

- Can you describe how you will seek support and who you might approach for help?
- What challenges you might face in accessing resources and support?
- Can you tell me more about specific challenges that you anticipate? (e.g. personal, academic, workload)?
- What could the university do to support you in developing your chosen skills?

*More widely, the university's equality and diversity policy aims to promote and implement equality of opportunity and value and respect perspectives and contributions of all students in learning, teaching and support services. This means that the university will not discriminate on the basis of age, disability (including mental health), sex, sexual orientation, race, religion, belief, marriage/civil partnership, pregnancy and maternity.*

- What kinds of challenges do you think students in these groups might face in the development of their graduate skills at university?
- Which other groups of students (not included in the above groups) might face challenges in developing their graduate skills at university? For example, students living at home and commuting to university, students who are parents?
- What challenges might students in these groups face in the graduate job market?
- Can you tell me about any examples?
- What could the university do to support students in these groups in development of their graduate skills?

Is there anything else anyone would like to add before we close the discussion? Does anyone have any questions?

*A reminder that the discussion has been audio recorded and will be transcribed. Your name and any identifying places/organisations will be removed from the transcript. Can I check that everyone is still comfortable with consenting to their contributions being used in the transcript? (Ask everyone to respond verbally for the record)*

*Thank you all for your time, you have been really very helpful.*



## APPENDIX 4: TABLE OF THEMES AND QUOTES FROM THE FOCUS GROUP ANALYSIS

Themes/ subthemes		Quotes
<b>Resources and obstacles to develop Graduate Skills, Digital Skills and Global Skills</b>		<i>...because there are so many group projects that you are assigned to randomly, so you really have to deal with whatever you are presented with. So, after being part of many different group dynamics, I guess you really become able to do work with different groups [about collaboration, FG3, 41-42]</i>
		<i>for Psychology it has been really useful learning R through my course. This also motivated me to take an online Python course, because now I have the confidence to know what goes on in many other programming languages based on what I've been taught about R. it's a very transferrable skill [FG3, 84-86]</i>
		<i>I know that there's a careers counsellor, so I'd probably go there. I did talk to someone in the Careers Fair, and it was good because they showed me a website where I can find different jobs [FG2, 199-200]</i>
		<i>I know myself, where my needs are, which is to develop research methods and to just keep developing my IT skills. Those are probably my two main ones [FG1,158-7]</i>
		<i>So maybe more systematic knowledge or workshops focusing on skills that would be required later, maybe that would be the solution [FG4, 304-5]</i>
<b>Experiences and Perceptions of Graduate Skills, Digital Skills and Global Skills</b>	Graduate Skills	<i>I thought communication, and also problem-solving are the most important to me, and are the top 2 that I am working on through extra-curricular activities, like volunteering at university [FG1, 67-9]</i>
		<i>I'd personally say critical thinking, because we've had quite a few assignments this year that really focused on developing your own critical view on things. So I'd say that that's the strongest skill at the moment [FG2, 71-4]</i>
	Digital Skills	<i>I think that's an essential skill, knowing what keywords to actually look for because sometimes even my changing the keywords you will get articles that are super relevant and I wouldn't have found otherwise [FG3,60-62]</i>
		<i>I feel that everything nowadays revolves around being able to be proficient digitally [FG2, 56]</i>
		<i>But to be honest I don't feel like digital skills are the most important. I know we are living in a 'digital world' but for me, it's not as important as communication because you still need to communicate with people even through ((laughs)) means like internet so. Still important. To know how to communicate [FG1, 130-132]</i>
	Global Skills	<i>I think nowadays everyone is connected, whether you're on the other side of the world or here, and being able to connect and interact with people not just from your own culture is really important [FG2,102-4]</i>
		<i>And our university is very multicultural. We have so many societies of different origins [FG1, 275]</i>

		<i>You know, all that stuff is something to worry about later, when I actually can. So yeah, I don't really think about global skills much [FG3, 144-5]</i>
<b>Is skill development accessible to all?</b>	Equality and Diversity in culture	<i>I would say not in this time and age, because I mean, we are a quite developed university and focus on equality quite a lot. So, I would say – they definitely have struggles, all minority or oppressed groups have, but if they do, the concerns are usually well attained and always looked at [FG1- 487-490]</i>
		<i>it would be good to have some sort of feedback session or going up to a student and saying look I know you have kids is there anything we could be doing better to support you or something like that just offering the support at least [FG4, 506-10].</i>
		<i>...I mean, as far as access to university resources is concerned, I'd say that it seems quite equal. Like I feel like I have the same reach as all of my colleagues and peer [FG3, 330-32]</i>
	University resources	<i>[talking about interactive lectures and software] but I would have liked to see much more of that at my uni but my uni is quite small, so I suppose it's difficult to get enough funding [FG4, 107-9]</i>
		<i>I think universities in general are under the control of (pause) the government. I mean, university can try and use as much as they want but if they don't have funding from Scottish government their hands are pretty much tied [FG1, 458-61]</i>
		<i>So, um, I think the university is providing all the sources, the resources, that they can possibly do, given their current circumstances, and financial situation et cetera [FG1, 604-5]</i>

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