

'Skills Passport' for Life Sciences at Edinburgh Napier University: Helping students to help themselves

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ABSTRACT: Developing graduates with the appropriate skills for future employment is an issue that affects every sector of industry. Research within the Life Sciences sector in Scotland has identified a number of areas where improvements could be made in the skills of graduates seeking employment. Academic staff working in partnership with employers and also Academic Support Services have developed and integrated the Skills Passport within a Programme of study to provide a framework to engage students in skills development relevant to the Life Sciences sector. The primary aim of the project was to encourage students to develop their reflective skills and to document their skills and self-development during their Programme of study. Preliminary research by the project team has identified key successes as well as a number of areas for further development.

1 Issues within the Life Sciences industry

The Life Sciences industry is a high tech and innovative sector which is an important part of the UK economy and has been identified as key for economic growth. The Scottish Life Sciences Strategy aims to double the size of the sector in Scotland by 2020 and this will require a highly skilled and motivated workforce (Life Sciences Scotland, 2011). Life Sciences graduates produced by Universities, not just within the UK but from overseas, will form the basis for this future workforce, thus Universities need to equip graduates with the skills required by employers to service the needs of the sector as well as providing an interesting and stimulating course. A recent survey of Life Sciences employers in Scotland revealed problematic skills gaps in graduate recruits applying for a variety of jobs within the industry (Life Sciences Scotland, 2010). It appears that employers are not necessarily facing issues with the qualifications of applicants, but more with their lack of skills and work-related experience. A significant proportion of Life Sciences employers (40%) reported that core skills such as problem-solving, team working, planning and organisation and self-motivation were lacking. Additionally, a positive attitude to work, relevant work experience and knowledge of their chosen career were underdeveloped (Life Sciences Scotland, 2010). Many of these skills can be identified as core or transferable skills that most University courses seek to impart to students over the course of their studies and as such prepare students for the workplace. There is clearly a potential disconnect between the needs of the sector and how appropriately Life Sciences students are being trained within the Further and Higher Education sector that we are seeking to address.

¹ Student and Academic Services consists of a number of services and staff from Academic Skills, Careers and Confident Futures provided support to this project. Confident Futures is an innovative programme within Edinburgh Napier University designed to enable students to take responsibility for their personal and professional development, engage with their programme and relate to their career and future aspirations.

1.1 The Skills Passport Project

As a result, Life Sciences Academic staff at Edinburgh Napier University (ENU) in partnership with staff from Student and Academic Services¹ and supported by two graduate

trainees, have developed the Skills Passport to help students develop key employability skills. We have engaged a range of employers from within the local Life Sciences sector to join an Employer Liaison Panel to help inform the project about the current challenges in the sector and advise on the ongoing work to embed the Skills Passport across our Programmes. Working with employers has been critical in terms of identifying more detail around the skills gaps and how this is tackled from an industry perspective as well as providing support for a number of our careers and employability related activities. The project builds upon research by Parry *et al* (2012) and Speake *et al* (2007) outlining the effectiveness of reflection in enhancing students' practical skills in Bioscience. The value of reflection is already well known to contribute to the learning cycle (Kolb, 1984) and it is a skill that requires practice to develop and aid the transition to deeper learning (McClure, 2005). The Skills Passport aims to provide a mechanism within the current curriculum to support students in development of and reflection upon the skills identified by Life Sciences employers as lacking. Given that students are primarily driven by assessment, they can fail to take time to reflect on their learning and develop their awareness of the advances that they are making in their skills and personal development (Speake *et al*, 2007). At the core of our approach is the Skills Evidence and Evaluation Record (SEER), which facilitates students in understanding the skills required by industry and identifying their personal skills gaps against this framework. The Skills Passport was trialled in Year 1 in Life Sciences in 2013/14 and extended to cover years 1 and 2 in 2014/15 and will span all four years by 2016/17. This supports the university's focus on development of a meaningful Programme approach to learning and development, preparing students for the future workplace. Using resources from across the University, as well as integrating activities within the Programme of study, provides a cohesive and joined up approach to the delivery of the Skills Passport interventions that will promote student engagement. Opportunities to develop the skills are designed into the Programme of study and teaching timetable and delivered in a variety of modes, for example within:

- Academic lectures, laboratory sessions and tutorials e.g. laboratory skills taught by Academic staff.
- Interactive workshops integrated into the teaching timetable on topics such as team working, time management, problem solving, goal setting and effective communication are provided by the Confident Futures team.
- Workshops and employer events to help students understand the Life Sciences labour market and to see the connection between documenting reflections on skills development in the SEER and future recruitment processes. These are complemented by workshops on reflective writing, making applications, preparation for interviews and networking both in person and online.
- Academic Skills sessions e.g. critical reading and writing

Self-reflection and action planning for skills development is encouraged in two ways; firstly via reflective segments integrated into assessments across the programmes and secondly via the Personal Development Tutor (PDT) process, whereby a student reviews their personal skills development progress with a member of academic staff using the SEER. Through an ongoing process of reflection, action planning and collation of their written reflections during their time at University, students will be better prepared to succeed in graduate recruitment processes.

2 The Skills Evidence and Evaluation Record (SEER)

2.1 Purpose of the SEER

The SEER is the single, but substantive, piece of documentation supporting the Skills Passport process and is central to a student recording and evidencing their skills development throughout their time at University.

The ENU Employer panel has informed us that applicants for graduate roles are often poor at articulating their skills and attributes through formal recruitment processes. Using the SEER gives students practice in this articulation. The basis of the SEER document is the list of key skills that a specific Programme is designed to develop within students. The SEER is then used by students to:

- Build a knowledge and understanding of the key skills their Programme is designed to develop, and that are valued by employers
- Develop awareness of what competency in each skill comprises
- Undertake self and/or peer assessment of their skill levels against the competency indicators
- Provide evidence to back that assessment
- Action plan to develop further skills

2.2 Format of the SEER

Skills Competency Assessment

Each skill (there are 34 within the Biological Sciences Programme suite) is clearly defined with an associated set of 'Competency Indicators', which have been generated in collaboration between ENU academic and employability staff, technicians and Life Science employers. There is a mixture of academic related, professional and personal skills listed e.g. critical writing, centrifuging, problem solving and time management.

For each skill, the list of associated indicators describes performance related standards against which a student, or their peer, can rate their current skill level. These are banded into Negative, Positive and Exemplary indicators. An example is provided in Appendix [A].

Skills Competency Evidencing

Students record evidenced examples of where they have demonstrated a particular skill to a specific level of competency using STARL, a modified version of the commonly found STAR (Situation, Task, Action, Result) format (Appendix A). The final 'L- Learning' element encourages a reflective and developmental approach, identifying what they learned, what they could have done better, and action planning for improvement.

2.3 Using the SEER effectively

Students are introduced to the SEER document in Trimester 1 of Year 1, using a smaller sub-set of the full list of skills appropriate to the Programme. This sub-set is expanded each term until it finally includes all skills appropriate to the Programme by Year 3 of study. Opportunities to use the document to reflect upon, review, rate and develop their performance are built into the teaching programme and in meetings with PDT's. In addition students are encouraged to personalise their SEER document on an independent basis as their studies progress and their professional career aspirations become clearer, to explore and record opportunities to develop their skills external to the University. Crucially some key assessed module assignments include written reflections against the skills and require demonstration of an understanding of their use and effective situational application at University and beyond.

3 Results

3.1 Pilot evaluation

Following two years of piloting the Skills Passport approach to evaluate the effectiveness and engagement with the documentation and implementation, we have carried out a number of evaluations via online questionnaires and face-to-face Turningpoint voting systems. We now report on the results of these initial investigations.

3.2 Key Points

- Most students are aware of the existence of the Skills Passport and associated documents and those who have engaged with it have used it constructively (Fig.1. and Fig.2.)
- Students are more aware of skills they are being asked to develop and of their personal progress against them (Fig.3.).
- Use of competency indicators helps them to self-assess their ability levels (Table 1.).
- The majority of students who have failed to engage with the Skills Passport remain unclear on how the Skills Passport system works and how to effectively engage with the relevant documentation (Fig.4.).
- The level of engagement with the process via PDTs has been disappointing and the current approach requires further development as a priority (Table 1.).

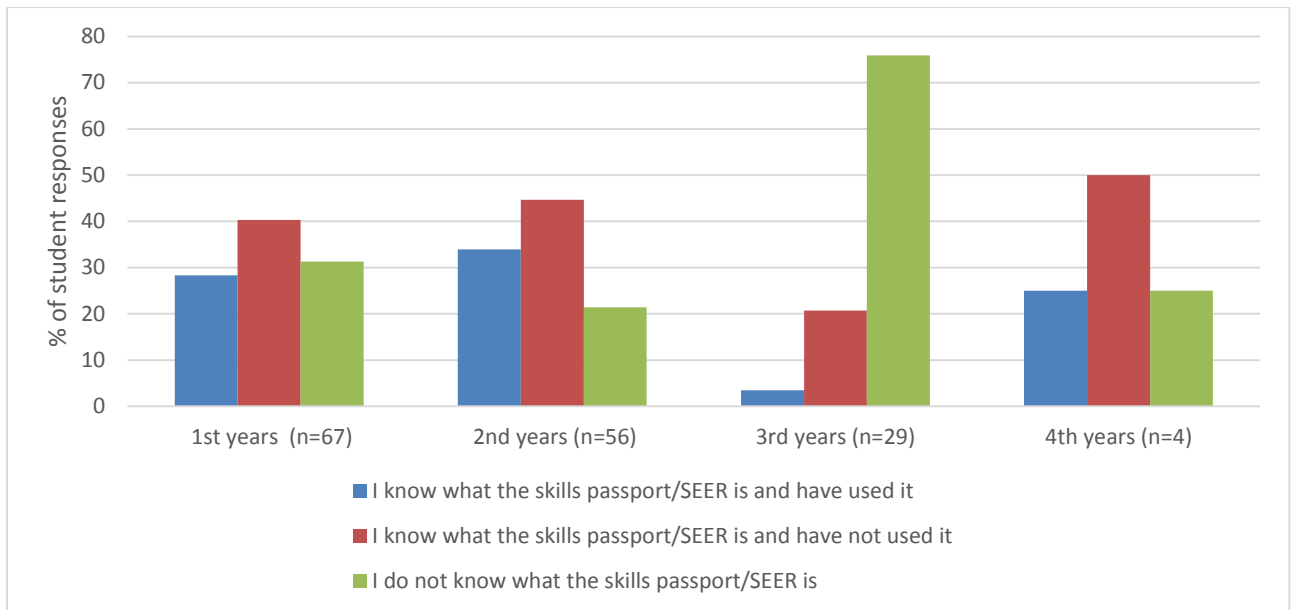


Fig.1. Skills Passport evaluation: Awareness of Skills Passport/SEER

Students in 1st and 2nd years returned a broadly similar awareness of the tool (68-75%), although the majority of these (40-44%) had not used it, despite that knowledge. 3rd and 4th year students in the main show a lack of awareness of the tool, although there are a few who have used it. Numbers of students evaluated are low here, although this is not an unexpected result.

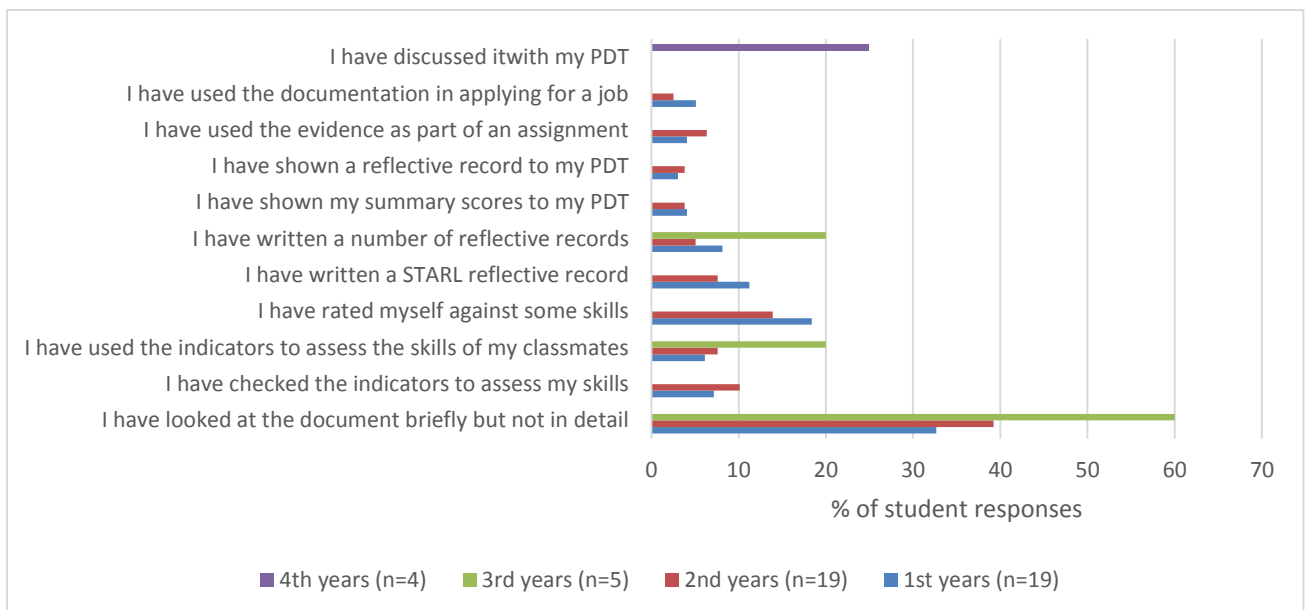


Fig.2. Skills Passport evaluation: How have you used the Skills Passport/SEER?

Most students answering here said “they had looked at it briefly, but not in any detail” (rising from 32% of 1st years to 60% of 3rd years who responded); these differences also reflected the multiple other uses stated by 1st and 2nd year students compared to 3rd years (e.g. “I’ve written a number of reflective records”, “I’ve rated myself against some skills” and “I’ve written a STARL reflective record”).

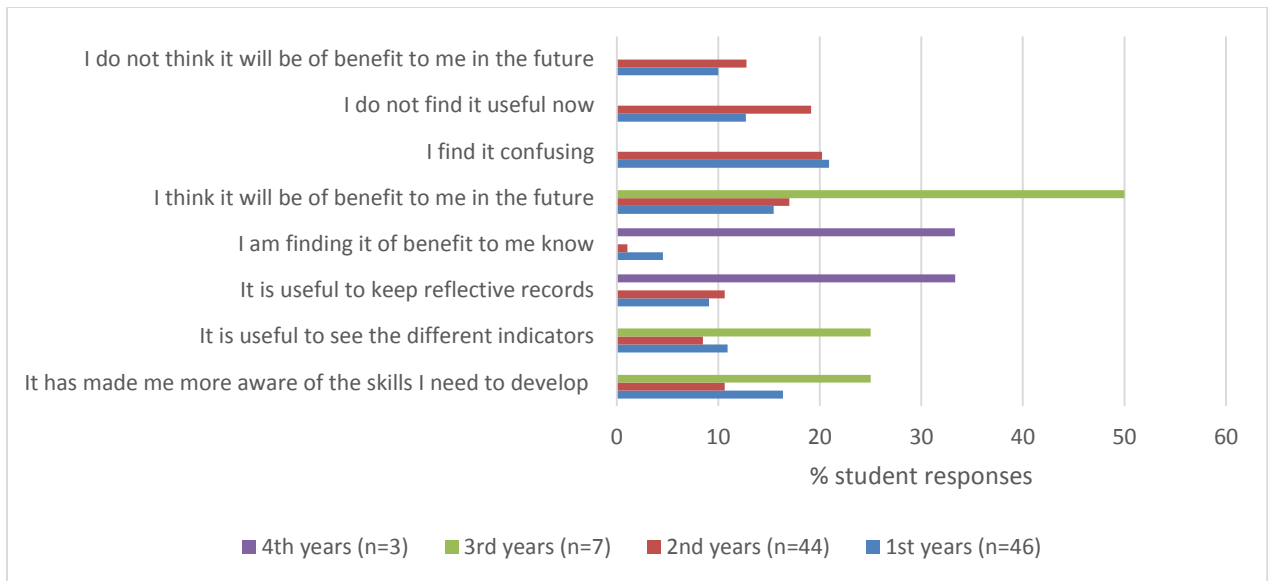


Fig.3. Skills Passport evaluation: What do you think of the Skills Passport/SEER?

Some 1st and 2nd year students are not convinced of the benefit of the tool (20-30% approx. “don’t find it useful now” or “don’t think it will be useful in the future”), whilst a further 20% in each year who have looked at the documentation “find it confusing”. This contrasts with 3rd year students who have used the documentation, and feel “it will be of benefit to me in the future” (50%) although the numbers were small (n=7). Similarly, two of the three 4th year students who had looked at the documentation thought it “of benefit to me now” or that it was “useful to keep reflective records”.

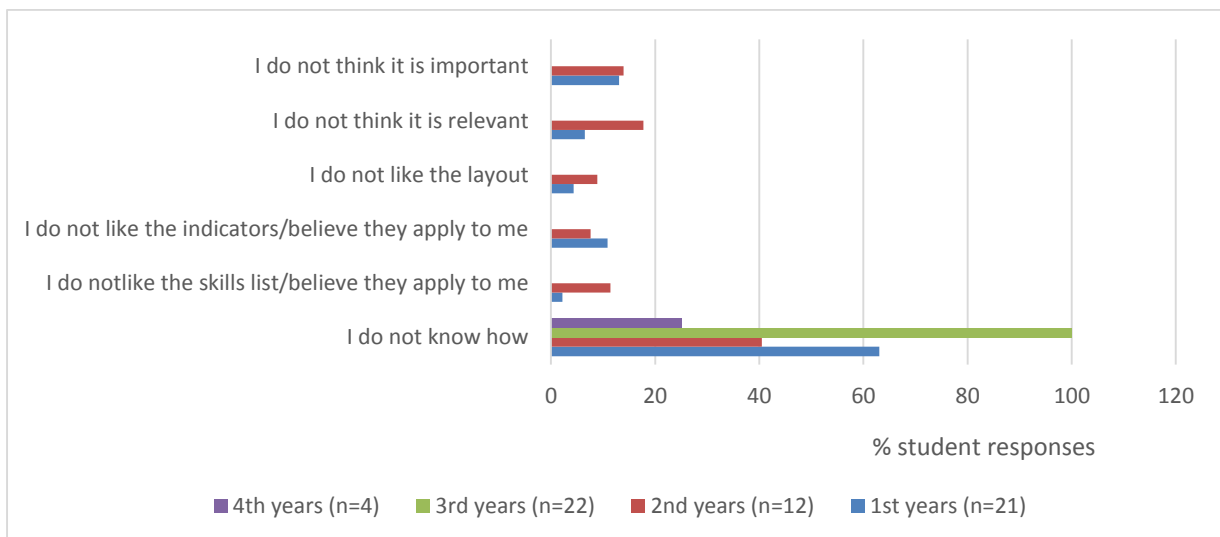


Fig.4. Skills Passport evaluation: Why haven't you used the Skills Passport/SEER?

For the students answering the previous question that they did not know about the Skills Passport/SEER or knew about it and had not used it, the main reason for not engaging with the document was that they “did not know how” (40% of 1st years, 60% of 2nd years and 100% of 3rd years). Other negative statements made by the 1st and 2nd year cohorts included “I do not think it is important” and “I do not think it is relevant”.

Total students (n=136)	
It is useful to see the skills I am developing throughout my degree	76%
I think the Indicator sheets have helped me to self-assess	76%
It is useful to see the Indicator sheets	59%
I have written a reflective record based on my skills	48%
I have used my written evidence as part of an assignment.	38%
I have discussed my skills with my PDTs	8.8%
I have not discussed skills with my PDTs	48%
I do not think it will benefit me in the future.	5%

Table 1: Feedback from 1st year students on Skills assessment element of their first practical module

These are based on modular feedback from a cohort of 136 first year students at the end of their first trimester via an online questionnaire. The Practical Biology 1 module is their first laboratory module and covers a broad range of topics. A large part of assessment (30%) is based on skills assessment, an element of which is self-assessment.

3.3 Open-ended comments from the evaluations series

A number of students provided more feedback on the Skills Passport and SEER by writing additional comments regarding the documentation, usefulness and potential improvements. A selection of these comments are included below.

“Its hidden away and not integrated into programme of study”

“I have heard about Skills Passport, but am confused about how to use it and I don’t know where to find it”

“I think it would benefit me if I knew where to find it”

“It seems like a good idea, but it doesn’t seem concrete enough to be used/I didn’t know how to use it”

“Show students how to use it”

“I don’t find it applicable to myself in any way whatsoever – I even find it insulting to say that my literacy skills are not advanced....in a way it is reinforcing a stereotype. To improve: get rid of it”

4 Conclusions and Recommendations

- A Skills Passport approach has been designed and integrated into a Programme of study in years 1 and 2, with plans to expand into years 3 and 4. This has been implemented within a Biological Sciences Programme, and subsequently into Year 1 of a Sports and Exercise Science Programme.

- Successful engagement of the student body requires supported and structured interventions at regular intervals within the Programme, in a manner that provides both ease of access and use.
- Students, who do use the resources like seeing their skills development, find the indicators helpful and think keeping reflective records is important or useful. Many of those also see the benefit now and in the future. Students in 3rd year have the benefit of careers workshops focussing on the labour market in their area, including the idea of possessing skills and being able to prove them in recruitment processes. This may mean that their outlook is more positive and they therefore appreciate that keeping reflective records is of benefit now, and in the future. Since the success of the Skills Passport approach depends on this, we will need to rethink our timing of these interventions, in order to increase the proportion of students thinking this way.
- A successful journey of planned skills development requires not only integrated structured support within the Programme, but also continuing involvement and commitment from the wider body of School Academic staff. The active engagement of PDT's with the Skills Passport process and the progress of their allocated students is critical to success. Without this wider staff engagement the circle of reflection and reinforcement is not happening as we anticipated. The development of appropriate and supportive training interventions to enhance the engagement of academic staff, and assist them in supporting students, is currently being investigated.
- Although on paper the Skills Passport is integrated into the Programme (we think, but the majority of students don't); and students are taught how to use it (we know, but they don't remember); and key resources are available on Moodle (we put them there, they don't access it) it needs to be more visible and accessible to all. There is potential to make the resources associated with the Skills Passport process more accessible by putting them on-line, perhaps using Mahara, an e-portfolio tool. This could also allow students to personalise and customise the documentation they use to reflect and action plan for skills development, and potentially facilitate sharing with academic staff and potential employers.

5 References

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APPENDIX A – SEER EXAMPLE EXTRACT

Ability to translate research findings

Negative	Positive	Exemplary
<ul style="list-style-type: none"> • Finds it difficult to gather information on a research topic. • Needs help understanding the key facts and findings of a research study. • Has difficulty summarising key facts and findings of a research study. • Is often inaccurate in their conclusions and may misunderstand research findings. • Unable to see the relevance of one set of research findings to an allied area of research. 	<ul style="list-style-type: none"> • Gathers and understands information on a research topic. • Takes time to pull out key findings in a research study. • Makes an effort to compare and contrast findings in order to come to conclusions. • Summarises research findings with some clarity and accuracy. • Can sometimes see where these findings might also apply to other areas of research. 	<ul style="list-style-type: none"> • Rapidly gathers and understands information on a research topic. • Easily focuses in on the key facts and findings. • Compares and contrasts differing research findings to come to useful conclusions. • Summarises research findings in a clear and concise manner which accurately conveys the key findings. • Takes findings from one area of research and extrapolates these into other areas.

Scoring your evidence

0 (Poor)	No evidence. Some evidence of Negative indicators. No evidence of Positive or Exemplary indicators.
1 (Basic)	Some evidence of Negative indicators. Some evidence of Positive indicators. No evidence of Exemplary indicators.
2 (Good)	Strong evidence of Positive indicators. Some evidence of Exemplary indicators. Little or no evidence of Negative indicators.
3 (Excellent)	Strong evidence of both Positive and Exemplary indicators. No evidence of Negative indicators.

Evidence for ability to translate research findings:

(remember the STARL format – Situation, Task, Action, Result, Learning)

Example competency questions to assess competence in translating research findings:

- Describe a situation where you were required to translate research findings. How did you go about this task?
- Give an example of a time when you were looking at a particular research topic and had to come to some conclusions about the main areas of progress.

Appendix B: Skills Passport/SEER Pilot Evaluation Questions

Please indicate your sex

1. Female
2. Male

Please indicate your age range from the options given below.

1. Under 17
2. 17-19
3. 20-25
4. 26-35
5. 36-45
6. Over 45

Please indicate your year of study from the options given below.

1. 1st year
2. 2nd year
3. 3rd year
4. 4th year
5. Post-graduate
6. Staff
7. Other

Please indicate your programme of study

1. Animal Biology
2. Biological Sciences
3. Biomedical Science
4. Environmental Biology
5. Forensic Biology
6. Marine and Freshwater Biology
7. Microbiology and Biotechnology
8. Not applicable

Awareness of the Skills Passport and SEER

1. I know what the Skills Passport/SEER is and have used it.
2. I know what the Skills Passport/SEER is and haven't used it.
3. I do not know what the Skills Passport/SEER is.

If you haven't used it, why have you not used it?

1. I do not know how
2. I do not like the Skills list/I don't believe they apply to me.
3. I do not like the Indicators/I don't believe they apply to me.
4. I do not like the layout
5. I do not think it is relevant
6. I do not think it is important

How have you used the Skills Passport/SEER?

1. I have looked at the document briefly but not in detail
2. I have checked the indicators to assess my skills
3. I have checked the indicators to assess the skills of my classmates
4. I have rated myself against some skills
5. I have written a reflective (STARL) record
6. I have written a number of reflective records
7. I have shown my summary scores to my PDT
8. I have shown a reflective record to my PDT
9. I have used the evidence I've written as part of an assignment
10. I have used the documentation in applying for a job

What do you think of the Skills Passport/SEER?

1. It has made me more aware of the skills I need to develop through my degree
2. It is useful to see different indicators
3. It is useful to keep reflective records
4. I am finding it of benefit to me now
5. I think it will be of benefit to me in the future
6. I find it confusing
7. I do not find it useful now
8. I do not think it will be of benefit to me in the future