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Published online: 05 Jun 2018.

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Enhancing student employability through urban ecology fieldwork

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ABSTRACT

Students undertook a one-hour urban ecology activity based on the University of Leeds campus. The aims of the session were (1) to help students to link ecological theory to practice and (2) to encourage students to begin to think about and develop an online professional identity. Students were encouraged to tweet throughout the session and were surveyed four weeks after the session to determine if the aims had been met. A majority of students enjoyed the session and saw the links between the theory and practice of ecology. Most students also identified that an online professional identity is important and something that they should be developing. The session highlights that employability and professional development skills can be introduced to students within a subject-specific context early in their degree programme and still highlight the importance of generic transferable skills related to employability.

Introduction

Ensuring that graduates have the skills and experience necessary to build a successful career is an increasingly important focus of Higher Education Institutions (HEIs) because graduate jobs have not grown in relation to increasing global graduate numbers (British Council & Oxford Economics, 2012). In the UK, the introduction of the Teaching Excellence Framework has put a focus on employability, with its emphasis on student outcomes (Department for Business, Innovation & Skills, 2016). HEIs need to ensure that students have a balance of discipline-based knowledge, professional skills and work experience (Harris-Reeves & Mahoney, 2017; Pool & Sewell, 2007) in order to ensure that they are well-placed to compete in the increasingly challenging graduate jobs market.

Often the focus on employability has been in second and subsequent years of undergraduate study (e.g. Crebert, Bates, Bell, Patrick, & Cragnolini, 2004; Gamble, Patrick, & Peach, 2010). However, it is recognised that students need to develop employability-related skills and experience work-related learning as they transition into their degrees and onwards because this can aid retention in degree programmes (Harris-Reeves & Mahoney, 2017). Additionally, an early start to employability-related skills development is incredibly

important for students who wish to take an internship in their first summer break or a year in industry later in their course because they need to be able to demonstrate suitable skills when they apply and must also usually apply early to secure a placement.

In addition, it has been shown that integrating employability skills with discipline-based learning is an important preference of students (O'Leary, 2017). Many HEIs now include generic skill development in their learning outcomes for subject-specific modules and courses. At the University of Leeds, this is done through the Leeds for Life programme and all modules must develop three to five of the 'Leeds for Life' skills in students. The Leeds for Life skills are considered important by both the university and employers for success (University of Leeds, n.d.) and are: communication, team working, leadership, creative problem solving, commercial awareness, flexibility, initiative, planning and organisation, analytical skills, research skills, critical thinking, independent working and time management.

A key consideration for enhancing students' future employability is developing their digital literacy capabilities. Digital literacy is 'the capabilities which fit someone for living, learning, and working in a digital society' (Joint Information Systems Committee [JISC], 2014). Encouraging students to use their mobile devices in teaching sessions is one way to help achieve this (France et al., 2016; Woodcock, Middleton, & Nortcliffe, 2012). Social media enables students to demonstrate their digital literacy skills and showcase their interests and personalities on their social profiles (Ellison, Steinfield, & Lampe, 2007). Freely available social media profiles, such as Twitter accounts, are usually viewable by the general public, including employers. Students should expect prospective employers to use all available information when deciding whom to employ, including online profiles (Lancaster, 2014). Kear, Chetwynd, and Jefferis (2014) found that although computing and IT students knew of the importance of an online profile for employability purposes, few had taken steps to develop their profile. We might expect an even lower level of awareness from students of other non-computer focused disciplines.

In disciplines including biology, Earth science and geography, fieldwork has been shown to enhance employability skills (Maskall & Stokes, 2009). When teaching ecology, fieldwork is a key component of the discipline and is necessary in providing students with the subject-specific skills required by discipline-linked employers. Additionally, fieldwork has been shown to provide wider professional skills, such as team work, time management and flexibility (Andrews, Kneale, Sougnez, Stewart, & Stott, 2003). However, day-long and residential fieldwork can be a barrier for students with caring responsibilities (Smith, 2004) and work commitments (Curtis & Shani, 2002). Campus based field teaching can be a successful way to ensure fieldwork is accessible to all students (Peacock, Mewis, & Rooney, 2018), and could become increasingly relevant given the importance of ensuring work-related learning opportunities are available to all students and widening participation in higher education.

Using technology during fieldwork provides students with an opportunity to develop their digital literacy skills in a real-world environment (Maskall et al., 2007; Welsh, Mauchline, Park, Whalley, & France, 2013), and incorporating technology into field teaching has been shown to enrich field teaching (e.g. France & Wakefield, 2011; Jarvis & Dickie, 2010; Welsh, France, Whalley, & Park, 2012). However, technology must be used carefully and does not always represent a learning gain, even if students feel positively about using it (Thomas & Fellowes, 2017). Numerous studies have shown the positive impact of Twitter in lecture situations (e.g. Andrade, Castro, & Ferreira, 2012; Elavsky, Mislan, & Elavsky, 2011; Fox & Varadarajan, 2011; Tiernan, 2013). Twitter has also been used successfully for encouraging

engagement in the field (France, Whalley, & Mauchline, 2013; Welsh et al., 2015). Lackovic, Kerry, Lowe, and Lowe (2017) and Rinaldo, Tapp, and Laverie (2011) showed that students consider Twitter to be a tool for building their employability and, as such, it provides a familiar tool for students to begin using social media to start building their online professional identity.

Much of the fieldwork undertaken by physical geography students takes place in remote, rural settings, yet as urban centres continue to expand, many more of the jobs available to geography (and other) graduates will be in urban settings, relating to sustainable development. It is important that students have experience of working within an urban setting and the different challenges and considerations involved in this type of environment. Focusing on urban ecology is important academically, and academic research has expanded rapidly in this area since the 1990s (Bacon & Peacock, 2016; McDonnell & MacGregor-Fors, 2016). However, the relevance of urban ecology to students' prospects of employment post-graduation means practical knowledge of this subject is also important for students.

This study focuses on the introduction of a campus-based urban ecology session within a first year ecology-based undergraduate module, with the intention of improving student perceptions of skills and employability within the module, which had previously received low scores in generic module feedback from students. The session was developed to fit with the weekly timetable to enable students with external commitments to participate in the session. Student perceptions of the session were investigated particularly in relation to how the session helped them to expand their understanding of key ecological concepts and general urban ecology and how it helped them to think about their online professional identity. The two primary aims of the session were (1) to help students to link ecological theory to practice and (2) to encourage students to begin to think about and develop an online professional identity. While both are important for future student employability, the first aim relates to specific skills required by ecological industry jobs while the second is far more generic and relates to all industries.

Methods

At the University of Leeds, a 20 credit first year module 'Living Planet' is taken by all first year Physical Geography BSc Undergraduates with approximately 80 students in each cohort. Some students will have previously studied ecology as part of their 'A' level biology, but many have not (for further detail of the module see Bacon & Peacock, 2016). In 2015/2016 a one-hour, campus-based, field session was used to introduce Urban Ecology, link to the theory introduced in previous lectures, and help to develop students' professional skills. Students worked through a worksheet during the session in groups of 4–5. They were self-guided but staff circulated for support. Students were asked to complete a short questionnaire a week after the field session; see Bacon and Peacock (2016) for further details.

In 2016/2017 the one-hour field session was repeated. Before the session staff discussed with students their use of social media and the importance of building an online professional identity. Students were also shown how easy it is to obtain information about individuals online by searching one of the staff members and seeing what results were generated. In the session students were encouraged to tweet their findings, not just to feedback results, but also for them to practice posting comments in a professional setting (using #geog1045 and #urbaneco). We used Twitter due to its ease of use in the field and as a different platform

that those commonly used by students socially. We used a bring your own device (BYOD) policy because 98% of second year physical geography students at the University of Leeds owned a smartphone in 2015. This is higher than found by Welsh and France (2012) where 70% of their students owned a smartphone and may reflect a general increase in smartphone ownership since 2012. Students worked in groups so that those who did not own a device, or did not wish to use their device, were not excluded, and other students were happy to share their devices.

Due to the Easter break the same follow-up questionnaire was given to students to complete four weeks after the 2017 field session. The questionnaire included some additional questions specifically regarding employability.

The University of Leeds uses a generic student satisfaction survey at the end of each module. From 2014 to 2016 this included a question that asked students to rate (from 1 agree strongly to 5 disagree strongly) how 'The skills embedded in this module will help my future career (future development in 2014)'.

Results

University generic module satisfaction survey

In the University of Leeds satisfaction survey the Living Planet module scored somewhat low on the employability metric in 2014 and 2015 (before the urban ecology session was introduced). In 2014, students gave an average score of 2.1 with some students disagreeing strongly with the statement. In 2015, the rating for this question declined further to 2.4 (though this may also relate to the slight change in wording from future development to future career). In 2016, the year of the first urban ecology intervention, the score rose again to 2.1, this time with no students providing a score of 4 or 5. Unfortunately, in 2017, the university reduced the number of questions in the generic survey from 16 to 10 and removed mention of future career or skills development.

Urban Ecology Session Questionnaire

Engagement

Fifty-one students took part in the 2017 session; 37 returned surveys; 4 declined to take part in the survey; 10 did not come to the next session where the survey was made available. In general, the session was well-received by students with 78% recommending that the activity should be run again next year. Most students found the session enjoyable (40% gave a score of 4 or 5 and 86% gave a score of 3 or higher) and recognised that the session fitted in with the wider course topics (51% gave a score of 4 or 5 and 92% gave a score of 3 or higher).

Table 1 shows a general dip in student satisfaction with the exercise this year compared to 2016. Several students commented that more time might be useful, so we will consider this for next year. However, the majority of students consistently ranked the exercise at 3 or higher, showing that most were generally satisfied with the session.

Online professional identity

This year, we added an overt employability aspect to the session with students asked to consider their online professional identity and to tweet in a professional manner using the

Table 1. Breakdown of student responses to the activity-related post-activity questionnaire.

Question		1	2	3	4	5
1. How useful was the pre-activity information in preparing you for the activity?*	Female	–	33.3%	–	33.3%	33.3%
	Male	–	–	50%	50%	–
	All respondents	–	11%	33%	44%	11%
	Comment re Bacon and Peacock (2016) findings	There is more of a spread in responses here but fewer students responded to this question than in 2016. All students last year responded 4 or 5; overall lower student satisfaction with the preparation material than previously				
*only 8 students looked at this information before the activity; 3 female; 5 male						
2. Rate the usefulness of this activity for developing your understanding of urban ecosystems and ecology	Female	–	17%	41.5%	37.5%	4%
	Male	–	15%	54%	31%	–
	All respondents	–	16%	46%	35%	3%
	Comment re Bacon and Peacock (2016) findings	A general trend towards lower satisfaction than in 2016, where no students rated this question at 2 or lower and more rated it at 4 (59% female; 70% male)				
3. Rate the usefulness of this activity for your understanding of ecological concepts (e.g. ecosystems, relationships between different organisms	Female	4%	13%	46%	29%	8%
	Male	–	23%	54%	23%	–
	All respondents	3%	6%	49%	27%	5%
	Comment re Bacon and Peacock (2016) findings	Overall these results are similar to 2016, but with fewer scores of 5, but a greater proportion answering 3 or 4. There were also no scores of 1 last year.				
4. Rate how well you feel this activity complimented the lecture topics of Living Planet	Female	4%	4%	38%	50%	4%
	Male	–	8%	46%	46%	–
	All respondents	3%	6%	41%	49%	3%
	Comment re Bacon and Peacock (2016) findings	Broadly similar to 2016 but slightly lower scores.				

Notes: Students were asked to respond to the question on a scale of 1 (not at all) to 5 (very much). Reponses are given in percentage. Fifty-one students took part in the activity, 37 completed questionnaires (24 females; 13 males). Percentages are rounded to the nearest 0.5%.

Table 2. Responses to employability-related questions.

Question		No (%)	Yes (%)
5. Have you considered your online professional identity before this session?	Female	46	54
	Male	31	69
	All respondents	46	54
6. Have you considered your online professional identity since this session?	Female	17	83
	Male	15	85
	All respondents	16	84
7. Was this session helpful in terms of considering your online professional identity?*	Female	19	
			81
*Three female students did not answer this question	Male	7	93
	All respondents	15	85

Notes: Responses were No/Yes binary options. Reponses are given in percentage. Fifty-one students took part in the activity, 37 completed questionnaires (24 females; 13 males). Percentages are rounded to the nearest 0.5%.

hashtags #geog1045 and #urbaneco. Students were also asked how the session was helpful to them in considering their online professional identity (Table 2, Figure 1). Table 2 reports the responses for questions 5–7 relating to employability.

Of the students who participated in the activity, 54% had previously considered their online profiles before the session, and after the session 84% had considered their online professional identity. Of those who had considered it before the session, two reported not thinking about it afterwards, and of those who had not considered it before the session, 13 reported that they had considered it since. Thirty-five students responded to the question 'was this session helpful in terms of considering your online professional profile? (Q.7)' and 29 (85%) responded yes. The students who stated that they had considered their online professional identity where also asked how they intended to develop it further after the session. The 26 students (70%) who answered this question identified considerations about privacy and considerations around making their online professional identity appealing to employers as the main actions that the activity had encouraged them to take. In particular, six students identified LinkedIn as an important site to have a profile on for future employment, five identified some element of privacy as important and nine students identified elements around professionalism on their profiles as important aspects to develop (Figure 1(A)). Students clearly identified that they needed to increase their engagement with their online professional identity and do more to ensure that they are visible to prospective employers in a professional, rather than personal, manner.

Students were then asked, 'Was the session helpful in terms of considering your online professional identity? How?' Table 2 shows the percentage responses for this questions and Figure 1(B) shows a word cloud of the students' responses. Twenty-five students provided answers to the second part of the question, with three stating that they were already aware of how to make and use an online professional identity. Otherwise, students' identified awareness and understanding how to understand and use social media to develop an online professional identity as the most useful elements of the session relating to online professional identity.

Employability. Students were also asked to identify two skills that they had gained in the session that will help with their future employability (Figure 1(C)). Common skills identified by students included teamwork, field skills and a general sense of developing
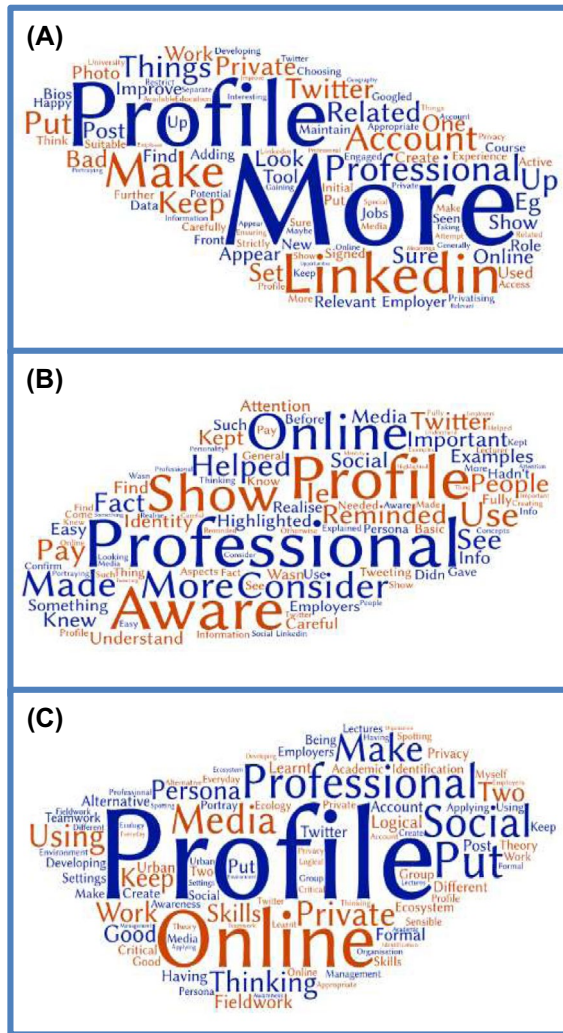
Figure 1. Word clouds of students' responses to questions about the session requiring text input. (A) If you have considered your online professional identity, how do you intend to develop it? (26 responses; 17 female, 9 male); (B) Was this session helpful in terms of considering your online professional identity? (see Table 2) How? (25 responses; 14 female, 11 male); (C) List two skills gained in this session that will help with your future employability (26 responses; 18 female (7 provided 2 responses), 9 male (4 provided 2 responses).

an online professional identity. Students also identified critical thinking, group work and organisation as skills that the session had helped them to develop.

Proportionally, female students (13; 46%) had considered their online professional identity less than males (9; 69%) before the session and three students remained un-engaged with the concept afterwards. Of the students who had not considered their profile since the session, three females and one male had also not considered it before the session. Thirteen students considered their online professional identity after the session who had not considered it before.

Discussion

In 2016/2017, the activity was well received by students, but not as well as the previous year (Bacon & Peacock, 2016). This may have been a cohort effect, but could be due to the insertion of an additional element in the field work (a visit to a roof garden that some students perceived to take too long and will become an optional add-on to the exercise next year), a higher number of respondents or the inclusion of more employability-focused material, though this final point seems unlikely given students positive responses to employability-focused questions.

Again, the majority of students found the link between the session and broad ecological concepts (e.g. ecosystems, niches etc.) taught in lectures useful, with one student commenting that 'applying theory learnt in lectures to everyday environment' was a skill they had developed. Students perceived that the session had helped their understanding of these concepts, showing that the session achieved aim 1. Similar activities could be developed for more advanced students with clearer links to professional activities, such as environmental impact assessments and habitat surveys to further emphasise the link between the session and future employability skills.

The session was successful in engaging students with social media (Twitter). Using the hashtags at the end of the session to view a summary of student findings was useful and led to good discussion in the class. Similarly, France et al. (2016) also noted that Twitter could lead to good communication between groups. However, Lackovic et al. (2017) found that physiotherapy students did not engage well with Twitter in teaching sessions because the students considered it a career tool and in their first year this was too early to consider their careers. This may represent a difference in the students' attitudes to preparing for the future between the disciplines or the emphasis on employability through the rest of the course in the two different institutions.

Welsh et al. (2015) found that some students felt more connected with other groups in the field when using Twitter; however, none of our students commented on this, possibly because the session was much shorter and based on campus. It was found that more students interacted with staff after the session by using Twitter in other teaching and learning situations and following staff Twitter accounts. Cole, Hibbert, and Kehoe (2013) also found that Twitter was beneficial for staff–student interactions. Students commented that they had not thought of Twitter as something that could be used professionally, 'I didn't know a professional twitter was helpful' and others added that they have since set-up a Twitter account. Others commented that they are now more aware of what they are writing on social media, 'knew people would see twitter after tweeting so was careful' and 'highlighted the fact that social media should be kept professional'.

Despite university training at the beginning of their undergraduate degrees, with a compulsory module on 'Studying in a Digital Age' many students had not previously considered their online professional identity. Studying in a Digital Age introduces students to digital literacy but does not focus on online professional identity and it is clearly necessary for this link to be made explicitly to students.

In terms of developing an online professional identity, the session clearly stimulated the students into thinking about and working on this. The finding that a greater number of male students had thought about this than female students, prior to the session, is interesting and needs further investigation to understand the reasons behind this. Although LinkedIn was

not directly used in the session, several students commented that they had set-up LinkedIn profiles as a result of the session to develop their online professional identity. Several students also commented on being more aware of what they post to social media and the need to keep posting private and/or appropriate for future employers to see: 'make sure that if an employer googled me, I'd be happy with what they find' and 'post more geography-related things'. Other students noted that they had been unaware of 'how important' an online professional identity is.

The staff involved in the exercise found that the session went well and was useful. However, they were surprised at how few students were comfortable using social media and that students had not considered it to be an important professional tool. Students clearly saw social media as a way of finding social media about others, but not as a way of employers finding information about them. This is similar to the finding of Knight and Kaye (2014), who noted that students preferred to passively receive information from Twitter rather than participate in knowledge exchange. They do not see the intersection between social media for social purposes and social media for their developing professional selves. Staff were impressed with the engagement of some students with Twitter and the enthusiasm some students showed for sharing information and ideas in this way.

Our BYOD policy worked well. On campus there was access to the University's Wi-Fi connection, so there were no issues with connectivity or cost of data usage; this may be a greater issue in remote field locations. Although Twitter will save data added when offline until the device regains connectivity, it would lose the immediacy of the comment. The Joint Information Systems Committee (JISC) (2013) argue that, for students to get full benefit from technology and use it creatively, they have to own it. However, during the session students commented verbally that had it been raining heavily they would have been less keen to use their devices, but acknowledged on campus that there are sheltered areas where they could have used them safely, regardless of inclement weather. Welsh et al. (2012) noted that students had similar concerns about damage to mobile devices whether they were institutional devices or their own, and Welsh et al. (2013) offered advice for weather proofing devices in the field.

In conclusion, the session met both of its primary aims by (1) helping students to identify the links between ecological theory presented in lectures and in a familiar 'real world' situation; and (2) assisting students to begin thinking about their online professional identity. Students clearly made the link between social media and potential future employment – both as a means of advertising their skills and enthusiasm and as something that they need to control so that they present a professional appearance to prospective employers. Most students found the session enjoyable and useful and we plan to continue to run the session with its joint focus on ecology and professional skills development in future years.

Acknowledgements

Disclosure statement

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