[O17] Research Skills Audit Tool: an online resource to map research skills within undergraduate curricula

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Introduction

The first interdisciplinary project of the University of Reading's Centre for Excellence in Teaching and Learning in Applied Undergraduate Research Skills (CETL-AURS)[1] was to 'map' research skills teaching and learning within undergraduate curricula. Here, research skills are defined as a combination of transferable[2] and discipline-specific (cognitive, technical and practical) skills.

Increasingly, employers are demanding that graduates enter the workplace with the necessary skills and knowledge to benefit the organisation with little further training, particularly with regard to transferable skills. These essential and desirable skills include communication (written and oral), IT and team-working. Many academics suggest that the use of transferable skills is intrinsically embedded within curricula to a greater or lesser extent; for example, course work is expected to be submitted before deadlines, oral communication skills are used extensively during in-class presentations and collecting additional information is essential for research projects and exam revision. These few examples are dependant on time-management, IT, communication and information handling skills. However it is often less clear if and where students are taught or have opportunities to further develop their transferable skills.

Several universities have perceived the teaching of transferable skills to be important enough to warrant the creation of compulsory skills modules. For example, Psychology students at London Metropolitan University must attend a discipline-based skills module (Elander, 2003). Examples of Universities offering specific skills modules include Exeter, Middlesex, Dundee and Gloucester. These usually supplement the embedded teaching of skills in other modules. Nevertheless, the use of dedicated modules to teach transferable skills has been questioned. Knight and York (2002) suggested that skills learning is too complex a process to be satisfied by a single module; they argue that embedding the teaching and practice of transferable skills throughout a degree programme allows the student to utilise and develop skills in different situations, which is more effective than using the skill in 'artificial situations'.

By their very nature, discipline-specific skills are embedded across a range of modules. The degree to which these skills are reviewed, in terms of how applicable or appropriate they are, both in terms of the curriculum and to employers, is usually dependant on individual module co-ordinators. Within the sciences, as technology improves and experimentation results in a greater understanding of processes, the type and range of discipline-specific skills being taught is likely to change, which is important because the needs of employers are also likely to change over time. The Higher Education Academy

has recently produced a range of 'Student Employability Profiles'[3], which list the skills that should be gained by students studying particular disciplines. It is anticipated that, in response to these profiles, HEIs will be under increasing pressure to identify where and how discipline-specific skills are being taught and assessed within curricula. Regardless of the method of delivery, there is increasing pressure to identify skills learning opportunities in degree programmes and in individual modules (deVries and Downie, 1999). It has been suggested that when developing a new programme, the skills criteria can be identified at the initial planning stages, therefore modules can be tailored to teach and assess the desired skills (Borthwick, 2002). For existing programmes, however, identification of existing skills teaching and assessment is required to determine whether or not there are any deficits in skills learning opportunities.

The CETL-AURS Research Skills Audit Tool

The research skills audit tool is one of a number of approaches CETL-AURS has adopted to investigate research skills teaching, learning and assessment. Parallel projects include the development of resources for prospective students to describe the importance of research skills within undergraduate curricula, and a series of student questionnaires and linked workshops, which attempt to quantify students' perceptions of research and to provide opportunities for them to reflect on their research skills competencies.

The aim of the CETL-AURS research skills audit tool is to provide a quick, user-friendly resource to identify the range of research skills being taught and assessed within individual modules, as well as providing information on the types of feedback provided to support students' future skills development. Module data can then be combined to provide an overview of research skills teaching, learning and assessment across an entire degree programme. This is important because whilst it is clear that research skills teaching is firmly embedded within curricula at the University of Reading and elsewhere, detailed information regarding where or how these skills are taught and assessed is often lacking; this in turn raises the question of the scope for skills progression within curricula. One key difference between the research skills audit tool and similar studies that have been previously conducted is that here research skills auditing can be used alongside data from the HEA's Student Employability Profiles. This can help facilitate discussions between academic staff and employers in terms of skills expectations and may help to better align curricula with the changing needs of industry.

To support the development of the research skills audit tool specialist software called PROFILE (www.profile.ac.uk), developed at the University of the West of England, was used to support the tool's interactivity, data collation and ultimately the wider dissemination of this skills mapping resource.

Overall the research skills audit tool comprises four sections and to make this resource as user-friendly as possible answers to questions generally require no more than a box to be 'ticked', together with an option to provide more detailed information. The audit starts with the user entering details of the module, including its title, module code, credit weighting and the degree programme within which it operates.

The first section of the audit tool (**Figure 1**) investigates the types of transferable and discipline-specific skills being taught and the range of teaching methods being employed to teach these skills. A free text box allows the user to enter as little or as much information about the discipline-specific skills.

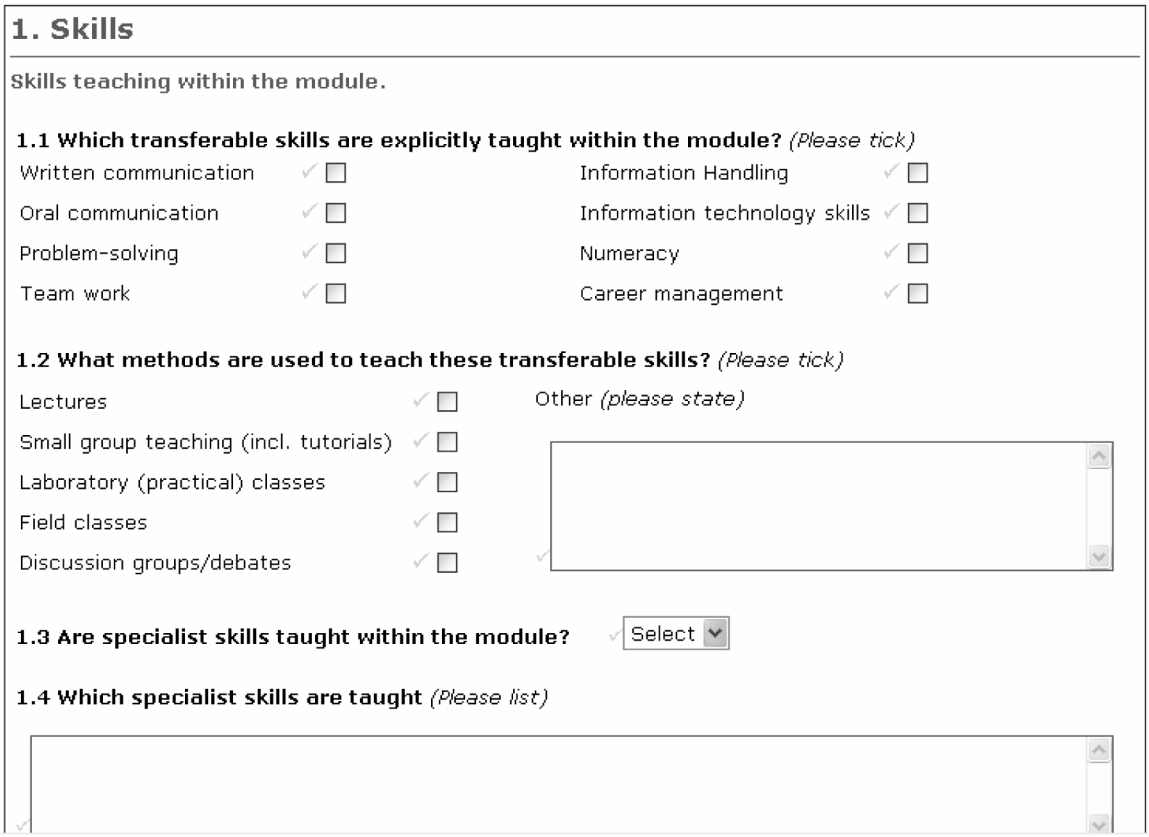

Figure 1: A screen shot of Section 1 of the Research Skills Audit Tool

Section 2 requires information to be entered about the methods of assessment for each of the transferable and discipline-specific skills, and whether or not these assessments are formative (for feedback purposes only), summative (contribute to the module marks) or a combination of the two (**Figure 2**). This section makes use of drop-down boxes to facilitate ease and speed of data entry.

The third section of the audit tool asks for information about the feedback given to students and whether or not it is oral or written and how this relates to the type of assessment (formative, summative or both). The fourth and final section asks the user three 'trigger' questions about the information they provide to students within module description forms. In a similar manner to the Centre for Bioscience's assessment audit tool[4], at the end of the research skills audit there is a text box entitled 'Action Plan', which has been provided to encourage users to reflect on the responses they have entered.

Module co-ordinators are required to 'log in' to the Profile system, which ensures the results of their individual audits remain confidential and can only be accessed by other staff by invitation. The exception to this is the programme director ('Administrator') who has automatic access to the relevant module data within his/her degree programme. Once the module coordinators have completed their audits, the programme director can immediately produce a report of the results directly from within Profile. The resultant data table can then be imported into Excel, allowing for quick and easy data manipulation, analysis and presentation. These data can then be used by the programme director to evaluate skills provision within and between modules across the curriculum.

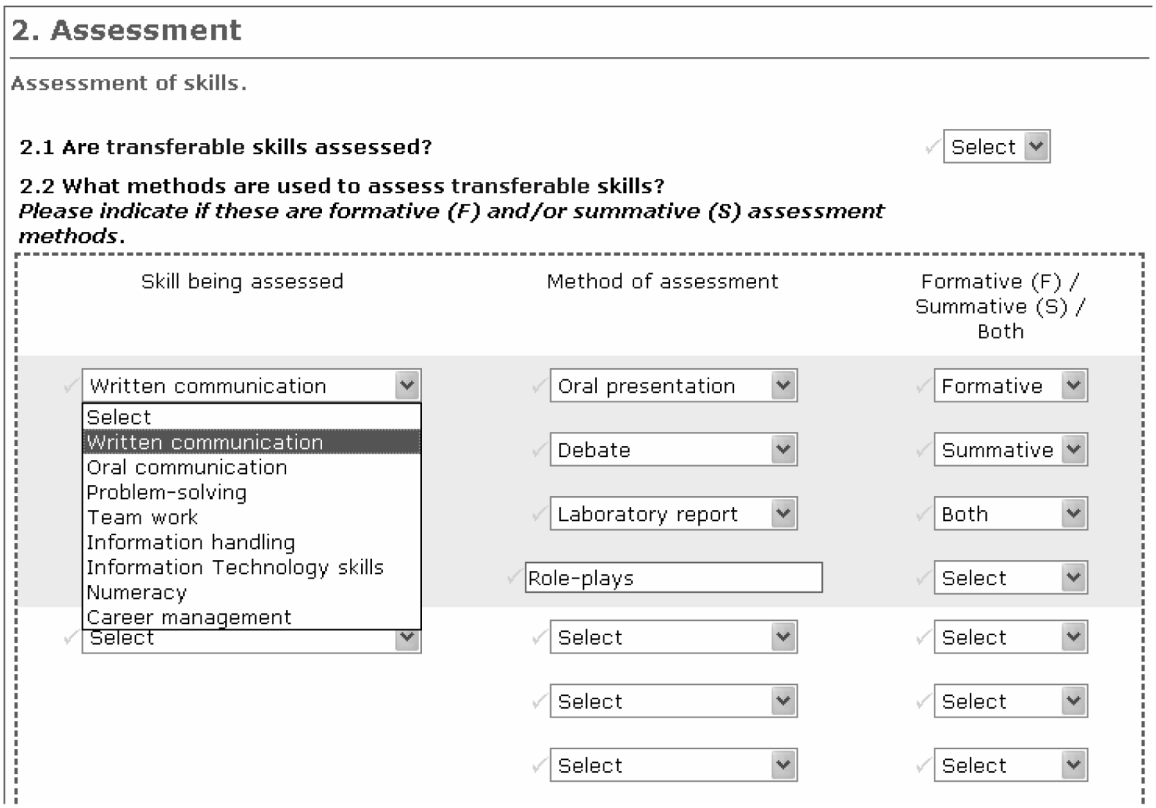

Figure 2: A screen shot of Section 2 of the Research Skills Audit Tool

Implementation of the Research Skills Audit Tool

The research skills audit tool has been completed for the degree programmes BSc Rural Environmental Sciences (RES) and BSc Agricultural Business Management and as a direct result of completing the audit a number of changes are being implemented, both at the module and whole-degree level. In particular, the convenor for the module 'Practical Rural Environmental Science' (BSc RES) noted that although several discipline-specific skills were taught, none were assessed. Formative and summative assessment of these skills has now been included in this module. Across the BSc RES degree programme, the audit tool highlighted the need to ensure progression in the teaching (and assessment) of data analysis and taxonomic skills. The programme director is now encouraging the use of more project work within the core field work module with the aim of further embedding teaching and learning of these skills.

Evaluation of the Research Skills Audit Tool

Module coordinators were asked to comment on the audit tool, with particular emphasis on the appropriateness of the questions, its user-friendliness and its usefulness. Several staff commented on the layout of the forms (smaller screens require the user to scroll horizontally to see the whole form) and in some cases the uncertainty of what actually constituted a 'discipline-specific' skill. On average, module coordinators took 16 minutes to log in and complete a form for a single module. Of the evaluation forms returned, 83% of staff either agreed or strongly agreed that the audit tool was user- friendly; over 80% agreed or strongly agreed that the audit helped them reflect on their teaching and assessment methods and the information provided in the Module Description Forms[5]

(MDF), and that they would implement changes to their MDF as a direct result of completing the audit tool. In addition, several module coordinators indicated that the audit had led to them review the methods of assessment they were using and had raised questions regarding a lack of formative assessment within their modules. We therefore believe that the research skills audit tool has been a success both in terms of its ability to quickly generate detailed skills information within and across modules but also in terms of its use as a resource to support staff to reflect on the research skills teaching and assessment within their modules.

Conclusion

The research skills audit tool has been well received by both module coordinators and degree programme directors. On an individual module basis, the audit has provided a systematic method for staff to reflect upon their teaching and assessment of research skills. We have developed a resource that is quick and easy to use and which can provide quantitative data for both modular and programme-level skills review. One of the main advantages of the audit tool is that data can be easily collated and used for a range of purposes, including preparing for Periodic Reviews, development of new modules, revising existing modules, student focus groups and skills discussions with graduate employers. For further information please contact Dr Gillian Fraser g.a.fraser@rdg.ac.uk.

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References

[1] CETL-AURS is a Higher Education Funding Council for England Centre of Excellence in Teaching and Learning in Applied Undergraduate Research Skills.

[2] At the University of Reading transferable skills encompass communication, problem-solving, IT, numeracy, team-working, interpersonal and learning skills.

[3] HEA Student Employability Profiles **http://www.heacademy.ac.uk/profiles.htm**

[4] Centre for Bioscience Assessment audit tool is available at **http://www.heacademy.ac.uk/800.htm**

[5] At Reading each module has a detailed module description form (MDF), which provides staff and students with details of the module learning outcomes, assessment methods and other relevant information.

Borthwick, F. (2002) *Skills Plus: Audit of the undergraduate higher national programmes in the construction group at Liverpool John Moores University*. Available at: **http://www.cebe.heacademy.ac.uk/learning/casestudies/case_pdf/Borthwickf.pdf#search=%22skills%2C%20curriculum%2C%20audit%2C%20undergraduate%22** (accessed 13 September 2006).

Elander, J. (2003) A discipline-based undergraduate skills module. *Psychology Learning and Teaching*, **3** (1), 48-55.

Knight, P. and Yorke, M. (2000) Skills Plus: Tuning the undergraduate curriculum. Available at **http://www.heacademy.ac.uk/documents/paper1.rtf** (accessed 13 September 2006).

deVries, P. and Downie, N. (1999) Ensuring skills' breadth across the curriculum: a case study and a method. UltiBase Articles, available at **http://ultibase.rmit.edu.au/Articles/dec99/deVries2.htm** (accessed 2 April 2007).