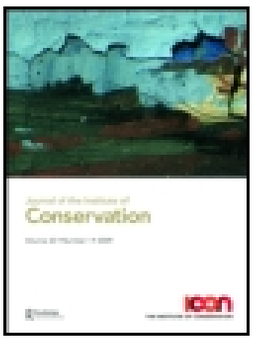

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University teaching in the development of Conservation Professionals

Jane Henderson

Be a teacher for a day be a teacher for a lifetime

A Shared Responsibility

Those who teach the conservation of cultural heritage in Universities experience and share a practical and moral responsibility for the future of both the profession and for cultural heritage. As students often study in one country but work in another this responsibility is universal. What is taught in one nation has an impact in another.

The preservation of cultural heritage is a task of great scale, complexity and is of critical social importance (Fig 1). As conservators of cultural heritage, our professional responsibility to deliver best practice is maintained by learning and practice throughout our careers, by personal study and by participation in formal and informal learning opportunities such as conferences and study visits. As professionals, we share our knowledge and skills with others in a combined attempt to offer the best outcomes for our heritage. This paper considers one part of the process of building an informed profession, university teaching, which prepares its graduates to execute such responsibilities in their journey from novice to expert. 1 This paper will describe how theoretical learning can be embedded within skills development and how the way that students learn can be intimately bound up with professionally defined goals set within wider social values.

There are several modes and traditions of teaching available to those who aspire to a future in conservation and, arguably, professionals could only benefit from mixing their modes of learning over their career to develop the widest possible perspective. Learning in conservation can take several routes, including:

1 programmes based in teaching practical skills and techniques

2 academic/theoretical programmes that connect theory into a practice-based approach

The former skills-led approach to teaching, perhaps best described by the apprenticeship system, allows a novice to work with and learn from a practitioner with finely tuned skills and a bank of experiences and knowledge to draw from. The tutor and tutee often work side-by-side practicing, refining and improving as the student progresses through the programme. The model described in this paper follows the second, the theory-into-practice approach that is more associated with a research-led teaching establishment such as a university.

These common modes of learning also intersect with the contrast commonly assumed between western and eastern techniques for conservation. The western approach is characterized as one of intervening to slow or arrest decay and returning an object to a perceived previous state whilst the eastern tradition is described more in terms of direct restoration with a focus on the preservation of traditional skills and processes. It may be the case that such perceived divisions will be ameliorated over time, especially as the trend towards values-led teaching will encourage the reframing of the relationship of the tangible and intangible. 2 Each of us has our own innate abilities and preferred modes of learning we can develop most effectively by learning in a context that stretches and develops those abilities.

Medical analogies and the expression of value

There are many recognized experts in society, such as doctors, civil engineers or pilots. We trust these people because we know, or can find out, if they deliver good results. One group of experts that are often compared with those in conservation are those in medicine: but how similar are they? Whilst there are similarities in the sense of both groups being composed of dedicated, knowledgeable and skilled individuals who offer diagnosis and treatment, it is valuable to reflect on the differences. When we compare the relationship of medical practitioners with their patients and conservators with cultural heritage it becomes apparent that there are significant differences, which raise questions about how decisions are made and how success is measured. Objects cannot express a preference nor make decisions between options. In medicine, there is always an expression of need or preference voiced by either the patient or a defined representative, with the sense of wellness and good health being the criteria for measuring success. With objects there is always the significant potential to disagree on the definition and measurement of what constitutes a good outcome. For objects an 'expression of need' must be extracted from the tangible manifestation of its material condition combined with the judgments on its cultural value. Consequently, neither framing the need nor beneficial outcome is clear cut. This ambiguity is also compounded by concepts of 'longevity' as arguably society as a whole has very high expectations for the long term survival of cultural heritage, tolerating only small changes per generation and requiring that such heritage remains useable for 100 years or more. 3 So, where there is little doubt that society values cultural heritage, and that value giving is an essential feature of the conservation process, it is helpful to ask how society expresses that value?

How does society express heritage values?

Social values can be expressed both formally and informally. Formal expressions of value are perhaps more easily recognized and therefore easier to feature explicitly in conservation decisions. If an artefact is listed on a register of significance or protected by legislation, then conservators can easily recognize this as relevant and integrate it into their decision-making. 4 Informal recognition of heritage is hugely socially significant from the sense of outrage and loss expressed when cultural heritage is actively destroyed to the more mundane but nevertheless

influential question of visitor numbers or even a rating on a user-generated content website such as *Trip Advisor*. 5

While a student of conservation might require direction in negotiating how value is expressed to ensure that they seek and present evidence of value in their work, for all those involved in conservation to understand cultural heritage it is important to gain as full an understanding as possible of the way society values objects. The things that are valued can be as diverse as the tangible research evidence uncovered from an archaeological find to the place that a site holds in people's hearts. Conservation tutors thus have a role in reminding students to consider both the more and less obvious features of value. Table 1 sets out a limited selection of indicators of value that make a distinction between formal and informal expressions of value, which may act as a prompt in any data collection phase of a significance assessment prior to devising a conservation treatment plan.

[INSERT TABLE 1]

There are many organizations seeking to codify and translate social values. These can operate on a national or international scale and can offer standards, guidance or benchmarks in practice for the profession or institution.6 Although standards can produce clarity and a point of agreement they are only one component of how a conservator should understand the totality of conservation. Standards have their value but they also have limitations: at best standards raise the quality of practice and at worst they encourage the dogmatic enactment of tasks in a ritualised way. Even with the clarity offered by standards documents, we must teach conservators how and when to apply them.

Students starting in conservation must therefore combine many different types of research before being fully prepared to act. They must examine the object or site and research the materials and manner of its construction, understand decay processes and research the materials and techniques for intervention. However, if they are to properly understand the object and define its conservation goals they must also communicate with a range of stakeholders to understand its value and use. It is only then that they can combine both the technical and value-led understanding of the object or site to form a comprehensive conservation strategy.

Teaching Conservation

Traditional models of learning offer facts and testable relationships and processes. Practical skills can be passed on by instruction and repetition of tasks. This process will furnish students with a core knowledge and a practical ability constrained only by their instructor's experience and own abilities. For simple repetitive tasks this may be sufficient for later independent practice. When faced with complexity, a multitude of possible outcomes and conflicting stakeholder inputs, the student must develop far more robust decision-making skills. Recognizing value as being fundamental to conservation decision making with the associated potential for conflict and shifting perspectives makes many conservation decisions inevitably

complex. This requires abilities beyond subject knowledge and technical problem solving that relies on existing techniques,7 and, instead, requires a sophisticated integration of skill, knowledge and an awareness of context. In universities in the UK and in many other countries the goals of teaching are defined using 'learning outcomes' which are statements of what learners should understand and be able to do. 8 Learning outcomes are not necessarily equally weighted in their impact on grades nor do they define the tasks to be undertaken, instead they seek to define the scope of the challenge for any particular component or, in the UK, module of learning. Each module of the degree programme would represent a range of learning outcomes covering what the student should know, understand and be able to do on completing of that unit of teaching. A student might experience some classes which are theoretically led and others which concentrate on the application of theory in the conservation treatment of objects. What could be expected from such a university approach to conservation education would be that practical skills are taught in combination with the ability to theoretically justify and reflect on that practice. Accordingly, the learning outcomes for a module concentrated on delivering conservation interventions, may well suggest a balance of learning outcomes between knowledge and skills (Table 2).

[INSERT TABLE 2]

This theory-into-practice approach makes no division between the actions of the hand and the brain, instead combining the tasks in a process of continuous learning. An early stage practitioner may have to think about each component of a conservation process in detail. They would be expected to proceed with caution, reflecting as they go about how each tool, technique and material interacts with the problem that they are trying to solve. They should learn to identify what skills, techniques, knowledge and input is required for them to successfully conduct a conservation activity. As confidence grows the student's reflection may encompass wider aspects of practice but ideally will still continuously question and challenge orthodoxy by using evidence, experimentation and experience to confirm or adapt the hands-on processes of conservation.

An overview of all of the learning outcomes from a degree programme would provide any observer a good understanding of the knowledge and abilities a graduate from that course has to offer. The goal of teaching at a university level is therefore far more than offering a student direction in performing tasks, rather, higher education teaching aims to create independent, reflective and skilled new professionals.

Academic staff set the scope and challenge of the programme by defining its learning outcomes. These learning outcomes are distinct from the goals set by students in devising their conservation options. Some university courses, including those at Cardiff University, use a learning technique known as 'problem based learning' to deliver practical conservation teaching.9 This form of teaching offers students, working on their own or in groups, real life challenges and a structured environment in which they are guided through a process of discovery to identify solutions to conservation problems. Such student-centred learning relies

on the tutor to steer the student to make their own discoveries interacting with their peers and education resources. The process aims to teach a student how to think rather than what to do. This process can initially make students feel abandoned and, at worst, describe the process as something akin to 'I had to teach myself' but over time, students learn to develop and deploy their conservation knowledge and skills so as to navigate a problem, and, in turn, building confidence and an ability to manage complexity as their experience grows. The tutor's role is not that of an instructor guiding the hand in a task, instead they act as an evaluator, helping a student to identify options and to formulate the most relevant decision-making criteria from a forest of options. The tutor guides a student to seek out and process knowledge rather than offering the student knowledge in order to understand a problem. This form of guidance can be challenging for all students but especially so for those from educational cultures which have offered the instruction-heavy learning modes of 'chalk and talk' in the student's earlier educational career. Self-directed learning encourages students to place knowledge in context, stimulating deep learning which helps both apply and retain the information that the student has sought rather than been given.10

In a problem-based learning context a student would be faced with a conservation challenge and have to identify both the material aspects of the challenge and the value features that relate to the object's significance history and planned future use. This approach integrates both hard science and more subjective evaluative criteria. Students who have limited experience are encouraged to consider all the options and to set aside any habitualised behaviours. Setting goals for the conservation plan and defining the criteria for evaluating any intervention, both made in relation to the material and value aspects of an object, should allow the student to plot a robust conservation outcome for the object. Once treatment outcomes are defined the students must deploy, and if necessary learn, the practical and analytical skills necessary to deliver them. In doing so a student will use their treatment goals to devise decision criteria and then, based on research, guidance and their experience, identify a range of treatment options. These can be evaluated using the decision criteria to identify a core of viable options, which would be further refined by testing, evaluation and the mitigation of weaknesses in the chosen solution. A conservation treatment proposal can then be made and reviewed by staff and, if necessary, the owner. Students are further encouraged to revisit and re-evaluate the criteria for success of their interventions during and on completion of their practice as part of their development into reflective practitioners.

The teaching of practical skills must sit within this framework. Ultimately, anyone entering the discipline must learn how to conduct the core tasks of the subject, whether it is how to manipulate a scalpel, take an X-ray, or blend pigments to touch in a fill. Arguably, the critical feature which distinguishes the theory-into-practice approach is the principle of the definition of goals leading to the development of techniques to deliver on those goals. Conservators who train on objects conservation courses may find themselves working with a diverse range of materials and deploying a wide range of practical skills. In a matter of two or three years of their course they cannot be expected to acquire fluent skills across a wide range of techniques from,

for example, ceramic repair to in-situ consolidation, and including the use of power tools or wood turning. What can be taught is the experience of skills acquisition. Students who define a task and then identify and seek out support to deliver the task will recognize the motivation, challenge and experience of learning new practical skills. Practicing and developing skills in an environment where reflection and feedback encourages evaluation and improvement helps feed ability and harnesses the intrinsic motivation to improve. This practice must be supported by the provision of sufficient laboratory time, access to relevant equipment and proximity to skilled practitioners to demonstrate and guide the learning. Furthermore, most university courses also integrate a placement period within their programmes where students operate in a workplace ideally supported by experienced conservators who share their skills and experience in an altruistic contribution to the development of their profession.

Assessing conservation teaching

A challenge for learning in an academic context rather than in a workshop, is the possible separation of the quality of educational inputs (what is offered to students) from the actual learnt experience. In a craft skills context all of the focus lies in the transference of skills and delivery of outcomes, whereas in an academic context there is a danger of focusing more on the content of the teaching syllabus at the expense of the resulting abilities of the student. Any discussion on the role of university education where the debate on the content of the syllabus is dominant rather than the final competencies of the graduate student would illustrate this point.

When considering what students have learnt by graduation - their competence and capability - research shows that what dictates student performance is what they are assessed on.11 In order to model a successful academic education it is therefore necessary to ensure that the assessment aligns with the goals of the educators, students and most importantly the society that they will serve. In order to examine how well graduates fit the needs of profession and society research has been undertaken by the author to ask what employers, teachers and students want from a conservation education. 12 It is anecdotally common to hear demand for students to spend more time learning about different aspects of the profession, whether business skills, advocacy, craft skills or analysis. Yet a curriculum, however well-crafted, can never create more hours in a week and a student can only make progress in manageable steps to higher levels of attainment. In the author's research, a survey of the conservation community was conducted to examine the profession’s views on learning and assessment. The survey sought to establish where priorities for education lay, and 370 people from 29 countries responded with 303 completed results. The survey compared the responses from the three groups (educators, students and employers) to establish whether, given a defined resource of teaching, the groups would prioritize the same elements. The research found that each group prioritized the six aspects of conservation education: practical skills; reliability; feedback on performance; theoretical understanding; transferable skills; and a good use of resources in an strikingly similar way.

[INSERT Figure 2]

What was striking was that educators, students and the profession share a 'community of practice' in that, when asked to divide the potential learning time, they prioritize the same things 13.

A feature of an ever-increasing marketization of education is the move to seeing education as a product rather than a service. When managers with no special interest in a particular discipline review educational inputs the focus of their attention may be on the more expensive aspects of teaching, such as laboratory-based conservation teaching. Teaching conservation with real life examples that encompass the challenges of both their tangible and intangible aspects requires time, space, equipment support and flexibility. The data from this survey can at least point to the assertion that this form of teaching is valued by employers and is therefore in line with any employability agendas. The resources required for conservation teaching will always be a challenge for its staff to defend. The use of a problem-based, theory-into-practice, learning is one response to this challenge, as 'its emphasis on the development of lifelong learning skills could reduce the pressure on courses to 'cover the ground''. 14 The on-going benefit to the graduate is their learned ability to seek out, test and apply knowledge and skills, which should help them to develop the additional skills required as they establish their place in the profession.

The profession, in supporting conservation teaching, should be aware that in an education-as-business model, adding demands onto teaching will only serve to displace one activity with another. Conservation teachers already face significant challenges defending the resources needed for hands-on work. Thus any external pressure brought to bear by the sector onto universities in support of the case for allocating time to students for developing and applying practical skills, is a vital and affirmative message both for their colleagues in teaching and for the future of the profession.

Hierarchy of Learning

For the purposes of this paper, Bloom's taxonomy of learning has been selected to represent how students learn. 15 There are other models of learning but a discussion of these is beyond the scope of the paper. Bloom's taxonomy is used here because its description of a hierarchy of teaching and learning is widely recognized in the higher education sector in the UK. The hierarchy, based on a foundation of knowledge capture and retention moves up through application, analysis to evaluation and creation, thus offering a series of levels through which learners should progress.

[INSERT Fig 3]

This hierarchy is reflected in the professional accreditation scheme for conservators offered by the UK's Institute of Conservation (Icon), where a scale from novice to expert is used:16

[INSERT Table 3]

Icon's novice to expert scale for accreditation also seeks to define how a professional grows and develops. Comparing the two scales allows the opportunity to compare the common features of developing abilities. Icon's scale deconstructs professional practice into five aspects in which the concepts of 'knowledge' and 'standard of work' comprise only two elements, reinforcing the notion that the scope of conservation lies beyond just aspects of practice and knowledge. Both the concepts of 'autonomy' and 'coping with complexity' used by Icon align with Bloom's analyzing and evaluation skills necessary for decision-making. Furthermore, Icon's 'perception of context' draws attention to the need to connect conservation practice to the society is serves.

These scales show progression through to expert practice is made through a series of distinct levels. Within the Icon model expertise is defined by the ease with which the situation can be appraised and decisions made, whereas novices will first conceive tasks as a series of steps. This indicates that how conservators make decisions is not necessarily uniform but is a feature of expertise as there is no one way to make decisions. It is the ability to select and prioritize decision-making criteria combined with the ability to define good outputs that makes an expert. 17 Experts can recognize patterns and identify exceptions. They are able to identify situations where information is missing and factor this into their decision-making, whereas novices do not know what they do not know. Experts can quickly make a decision and call it 'intuition' or 'know how', whereas if a novice leaps to a decision it is 'guess work' or 'luck'. The expert quickly processes relevant information whilst filtering out the irrelevant whereas novices often try and get experts to hand over such filtered or pre-digested information. Where they are offered such a route, akin to the 'chalk and talk' method, arguably they never learn the process and will never transition into experts.18

Accordingly, to teach conservation students successfully it is not enough to just hand over information, instead it is necessary to challenge students to learn to gather, organize and evaluate data in order to make decisions. By using problem-based learning as a teaching methodology students are offered challenges and expected to both understand and define the materials, composition and decay of the object, but also to participate in the definition of the project. This necessarily requires an engagement with all those who value the object and have a concern with the outcome. Because the student helps set the goals, they are well placed to evaluate the outcomes as set against those goals and learn from the process itself. This evaluation of experience is thus invaluable in the transition from novice to expert.

Experience and expertise

There is a strict correlation between experience, feedback and expertise. 19 A person who simply enacts a task without feedback and reflection may gain a false sense of expertise and confidence and stagnate their practice. In contrast the reflective practitioner takes responsibility for outcomes rather than process - where something goes wrong they examine all of the elements of the treatment and learn from any mistakes made and thereby grow from each experience rather than look to apportion blame elsewhere or fall back on the defence of 'I followed procedure'.

Reflective practice is at the core of the experiential learning models that offer an integrated perspective on learning by combining experience, perception, cognition and behaviour, one way to capture these features is in Kolb's learning cycle20

[INSERT Figure 4]

Experiential learning may start with an experience, but learning cannot take place without reflection, conceptualization and action.21These theories of learning integrate effectively into a problem-based learning model for delivering conservation teaching. Just as experience without reflection leads to a practitioner who can only operate at a technical level, abstract conceptualization without active experimentation and concrete experience can only lead to theoretical knowledge. A conservator cannot learn practical skills from an education based only in lecture theatres and seminar rooms. Without the time and space to learn to manipulate, feel, control, shape and connect materials, such a student's knowledge remains at text book level and unable to effect real conservation solutions. Without the experience of delivering practice, there is no opportunity to reflect on concrete experience.

The role of the tutor in the learning cycle is to encourage reflection, conceptualization, and to suggest ways of testing ideas. When first presented with an object in need of conservation the student is encouraged to take time to explain and evaluate it; consider its composition and construction; evidence of use through time; to log change; and categorize instability. The student must also consider the expression of conservation need from the owner considering the social meaning of the object and how it is, has and will be valued.22 From this information they must create and agree a treatment proposal which may need to be reviewed and reconsidered as more of the object is revealed. This 'active experimentation' phase can see plans change and may lead to further consultation and the revision of goals. As the student starts to deliver successful outcomes, their understanding of the process as a whole develops and this helps in their conceptualization and planning of subsequent interventions. Ideally, their practical skills develop in tandem via experience and reflection. The challenge inherent in the objects given to students is increased in order to feed their intrinsic motivation to learn and grow as professionals.23

Both the Icon scale and Bloom's taxonomy help educators to define appropriate skills development routes for conservators. In the first instance novice conservators gather simple information, which they must process and understand, perhaps understanding solvent groups and their properties or discussing ethics in a heritage context. This knowledge must then be applied and developed; the teaching at Cardiff University is exemplified here to describe this progression: students will begin with simple exercises in solvent cleaning techniques and experimenting with and analysing the relationship of those solvents with a contaminated substrate. Learning the relationship of the solvent to the substrate also involves learning to make and manipulate a cotton bud or poultice and to begin to develop the sensory wisdom that connects solvation, manipulation and a swelling contaminant. Skills are thus developed across a range of techniques such as how to operate and then interpret results from analytical

equipment such as FTIR and X-radiography, whilst learning complementary and essential tasks underpinning the conservation process such as documentation. From this foundation, teachers can then introduce complexity. As soon as these core skills are established, students can begin work on historic and archaeological material. The rationale for this is that if time was spent mending things like broken flowerpots then the practice would be separated from context, thus stripping the value from the technique. Instead, students in Cardiff University are offered authentic but not unique objects such as Roman nails on which to develop their mechanical cleaning skills. The process of manipulating historic and sometimes delicate objects thus helps a student to build their manual dexterity and to develop their fine motor skills in a manner that contributes to their understanding of materials and their properties. Such processes demonstrate how skills augment and develop knowledge, and an ability to engage with complexity is developed through the encounter with a variety of conservation challenges such as the conservation of an artefact that has one substrate material but requires two different cleaning techniques, or an artefact made of two materials that must both be factored into any conservation plan. Such problem-based learning is implemented from the first term at Cardiff University, but is managed by moderating the scope of the challenge. As students grow in confidence they move from simpler challenges where standard reading lists can be supplied and where group work covers each aspect of the process, to challenges where solutions must be individual to the object because of the scale, complexity of materials or condition of the nature of the use that is planned for the object.24

In conclusion, in teaching students you take them on a journey, and every journey has a destination: in this case it is to be a conservator. Behind this simple statement lies yet more decisions. Is a conservator someone who 'undertakes technical examination, preservation, and conservation-restoration of cultural property,' 25 or someone who 'maintains and manages change to a heritage asset in a way that sustains and, where appropriate, enhances its significance'? 26 These definitions have very different implications for teaching practice and at Cardiff University teaching is very much oriented around the latter.

In teaching the conservation of cultural heritage students are offered knowledge and encouraged to develop skills that enable them to share values with both the profession and the wider society. It is the translation of this relationship into conservation decision making that is at the heart of students progressing into the profession. Any strategy for conservation must ask what and who we do conservation for? The answer can be as varied as: the collection of data; use; aesthetics; participation; fun or even awe. For whatever reason conservation is undertaken, the teaching of cultural heritage conservation must aim to build an active, engaged and reflective professional community, starting with the newest members, for now and for the future.

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24 Some of the challenge also lies in the availability or otherwise of relevant literature - the conservation of wet wood, for example, requires considerable knowledge and the use of many techniques.

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26 Quoted from the UK Government's Department for Communities and Local Government *National Planning Policy Framework* https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf (accessed July 13th, 2016).

Abstract

The teaching of students entering conservation is a foundation of the development of a profession of people who are sufficiently dedicated, knowledgeable and skilled to take the

necessary actions to protect cultural heritage. This paper considers the way that society expresses value of cultural heritage and how that need is expressed and communicated to University students via the profession and their teachers. It will look at some approaches to teaching and assessment within UK Universities considering the learning outcomes for students and how educators strive to ensure that their graduates are fit for the profession which they will enter. The paper will consider the need for developing expertise and the connection between professionals at the start of their career with those that have achieved excellence via years of informed practice. The critical and challenging role of identifying and acting on valid feedback to conservation outcomes will be discussed with a view to creating a discipline of reflective practitioners.

L'enseignement universitaire dans le développement des professionnels de la conservation

L'enseignement des étudiants qui entrent dans la conservation est fondamental pour le développement d'une profession constituée de personnes qui sont suffisamment dévouées, expérimentées et compétentes pour prendre les mesures nécessaires à la protection du patrimoine culturel. Cet article examine la façon dont la société reconnait la valeur du patrimoine culturel et la façon dont ce besoin est exprimé et communiqué aux étudiants de l'Université par l'intermédiaire des professionnels et des enseignants. Il se penchera sur certaines approches de l'enseignement et de l'évaluation au sein des universités du Royaume-Uni, compte tenu des résultats d'apprentissage pour les étudiants, et sur les efforts des professeurs pour que leurs diplômés soient aptes à la profession qu'ils vont exercer. Le document se penche sur la nécessité de développer une expertise et sur la relation entre les professionnels au début de leur carrière et ceux qui ont atteint l'excellence par des années de pratique éclairée. Le rôle déterminant et difficile d'identification et d'action sur la base d'un significatif retour de résultats en matière de conservation sera examiné en vue de créer une discipline de praticiens réfléchis.

La función de la enseñanza universitaria en el desarrollo de profesionales en conservación

La enseñanza a los estudiantes que entran en conservación es la base del desarrollo de gente profesional que esté lo suficientemente dedicada y con los necesarios conocimientos teóricos y prácticos para poder tomar las medidas necesarias para proteger el patrimonio cultural. En este artículo se considera cómo se expresa el valor del patrimonio cultural socialmente y cómo se transmite esto en la enseñanza universitaria a través de profesores y de contacto con la profesión . Se examinarán algunos de los

distintos enfoques y evaluaciones que se llevan a cabo en las universidades del Reino Unido, teniendo en cuenta los niveles de aprendizaje de los estudiantes y también cómo los educadores se esfuerzan por asegurar que los graduados estén capacitados para desempeñar la profesión en la que entran. En el artículo se tendrán en cuenta la necesidad de desarrollar especialidades y de establecer conexiones entre profesionales que están al inicio de su carrera y los que ya han alcanzado excelencia a través de años de práctica. Con el fin de establecer una disciplina con profesionales que reflexionen, se discutirá la función difícil y crítica de identificar y actuar sobre los comentarios válidos de los resultados.

大学教育在保存修复专业发展中的地位

将学生引领进保存修复专业是使他们日后成为充分地、敬业地、具备渊博知识技术地来采取必要措施保护文化遗产的专家的基础。本文探讨了社会表达文化遗产价值的方式，以及这种需求是如何通过行业和教师向大学生进行表述与沟通的。作者通过了解学生的学习成果以及教师如何力保毕业生能够胜任他们未来的职业的方式，来研究英国大学的教学与评估方法。本文还将探讨发展专业知识的需求以及初学者与经验丰富的专业人士

之间的联系。作者将以创建反思型从业者行为准则的视角来探讨能够有效识别保存修复成果的能力所扮演的角色。

Die Entwicklung von Bestandserhaltungsfachkräften durch die Universitätslehre

Das Unterrichten von Studenten, die in das Berufsfeld der Bestandserhaltung eintreten, ist die Grundlage der Entwicklung eine Gruppe von Fachkräften, die durch ihre Fähigkeiten, ihr Fachwissen und durch ihren Einsatz in der Position sind, die nötigen Entscheidungen zu treffen, die zum Schutz von Kulturgut notwendig sind. Dieser Artikel untersucht die Art, wie unsere Gesellschaft den Wert von Kulturgut ausdrückt, und wie diese Notwendigkeit durch den Berufsstand und ihre Lehrer ausgedrückt und an die Studenten der Universitäten kommuniziert wird. Verschiedene Lehr- und Evaluierungsansätze an den Universitäten im Vereinigten Königreich werden im Lichte der Lernergebnisse der Studenten analysiert, ebenso wie Pädagogen es sicherstellen, dass ihre Abgänger für den gewählten Beruf fit sind. Dieser Artikel untersucht die Notwendigkeit, Expertise zu entwickeln und ein Netzwerk zwischen Fachkräften

am Anfang ihrer Karriere und denjenigen, die über Jahre informierter Praxis Exzellenz entwickeln konnten zu bilden. Darüber hinaus diskutiert der Artikel die kritische und herausfordernde Rolle, sinnvolles Feedback zu Restaurierungsergebnissen zu erkennen und danach zu handeln, um so reflektive Fachkräfte zu entwickeln.

Biography

Jane Henderson, BSc, MSc, PACR, FIIC, is Senior Lecturer on Cardiff University's BSc in Conservation and MSc's in Collection Care and in Conservation Practice. Jane serves as a trustee on the Welsh Federation of Museum and Art Galleries, The Collections Trust and The Cynon Valley Museum Trust. Jane is currently serving on the editorial panel of the Journal of the Institute for Conservation and the ICOM –CC preventive conservation working group. Jane has published on issues related to: conservation decision making; influence for collections care; sustainable conservation practice; teaching and assessing conservation.

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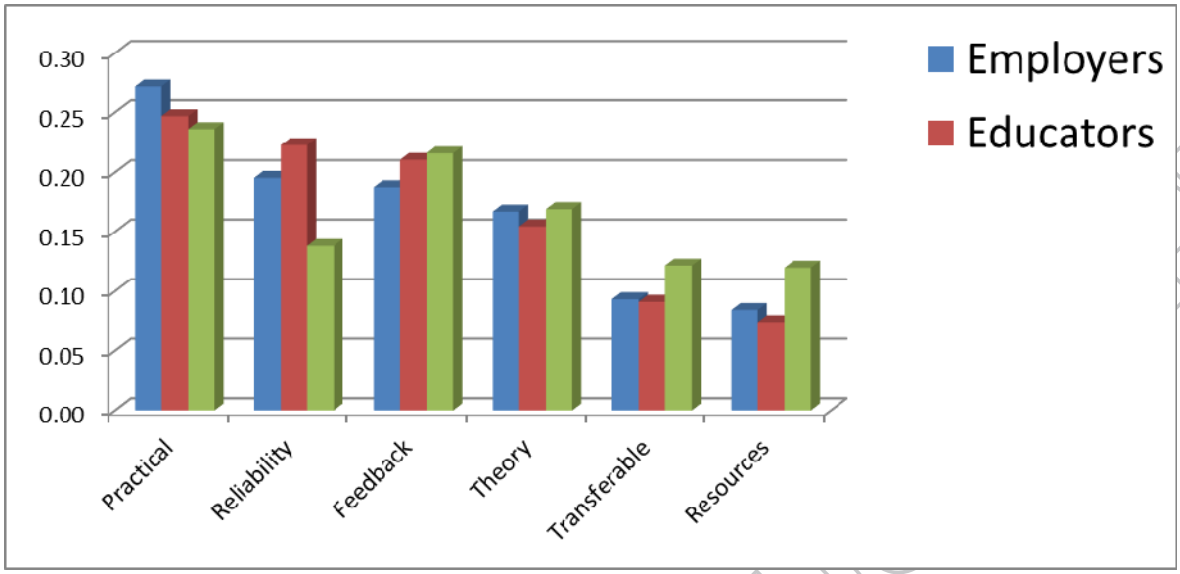

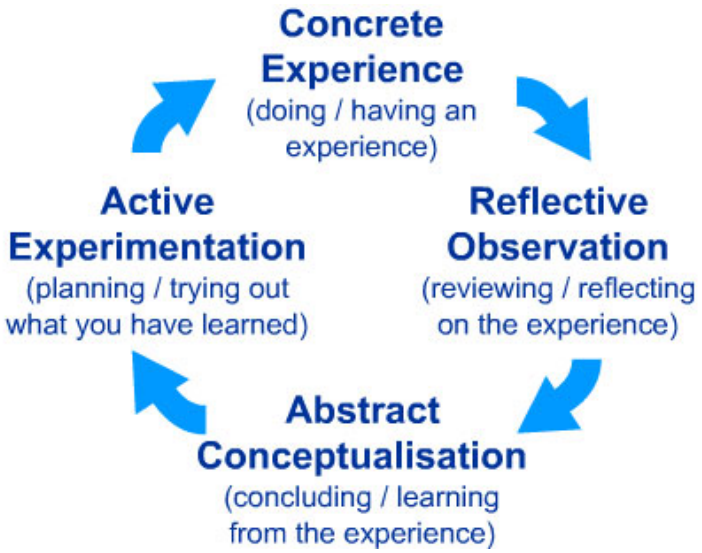

Formal values	Informal values
Recognition schemes such as world heritage site	Outrage at loss
Government legislation	Visitor numbers
Listings / recognition	Visitor reviews
Standards	Distance travelled to visit
Statements of principles as guidelines for conservation	Emotional connections
Professional codes of conduct	Social media presence
Budget allocated	Willingness to pay
Prioritisation within a formal emergency preparedness plan	Decision to rescue, protect or transfer items of personal value in times of crisis
Acquisitions by an institution	Decision to retain by an individual

At the end of the module the average student should be able to:
• understand the ethical basis of the conservation profession and the responsibilities of the conservation professional to cultural heritage and to wider society.
• understand the wider contexts in which conservation is carried out, the implications of context for practice, and the implications of treatments and methods within specific contexts.
• understand the practical and theoretical principles of conservation and demonstrate an in-depth understanding of this in practice via the projects carried out.
• carry out and refine laboratory testing and assessment of techniques and materials.
• research, formulate and evaluate complex conservation options showing an holistic awareness of conservation.
• use critical thinking, analysis and synthesis in approaching complex conservation problems and using this evidence develop appropriate or innovative practical solutions.
• implement treatment-based, preventive or conservation management measures using a broad range of equipment found in a conservation laboratory routinely achieving fully acceptable standards.
• maintain records of conservation measures to professional standards.
• take full responsibility for the care of cultural heritage within their influence.
• communicate recommendations and advice effectively and authoritatively.
• demonstrate the ability to reflect on and learn from their own practice.
• manage complex conservation projects and organise their work schedule to meet agreed deadlines.
• describe, implement and conform with general health and safety regulations.

	Knowledge	Standard of work	Autonomy	Coping with complexity	Perception of context
1. Novice	Minimal, or 'textbook' knowledge without connecting it to practice	Unlikely to be satisfactory unless closely supervised	Needs close supervision or instruction	Little or no conception of dealing with complexity	Tends to see actions in isolation
2. Beginner	Working knowledge of key aspects of practice	Straightforward tasks likely to be completed to an acceptable standard	Able to achieve some steps using own judgement, but supervision needed for overall task	Appreciates complex situations but only able to achieve partial resolution	Sees actions as a series of steps
3. Competent	Good working and background knowledge of area of practice	Fit for purpose, though may lack refinement	Able to achieve most tasks using own judgement	Copes with complex situations through deliberate analysis and planning	Sees actions at least partly in terms of longer-term goals
4. Proficient	Depth of understanding of discipline and area of practice	Fully acceptable standard achieved routinely	Able to take full responsibility for own work (and that of others where applicable)	Deals with complex situations holistically, decision-making more confident	Sees overall 'picture' and how individual actions fit within it

5. Expert	Authoritative knowledge of discipline **and deep tacit understanding across area of practice**	**Excellence achieved with relative ease**	Able to take responsibility for going beyond existing standards and creating own interpretations	Holistic grasp of complex situations, **moves between intuitive and analytical approaches with ease**	Sees overall 'picture' and alternative approaches; vision of what may be possible