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# REFLECTIVE PRACTICE IN CONSERVATION EDUCATION

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## ABSTRACT

Higher education should develop the core blueprint for the critical and reflective thinking that conservation professionals will employ and further develop during the remainder of their career. This paper defines and discusses reflective practice in conservation education using examples drawn from teaching and assessment methods in place at Cardiff University. Feedback reveals the challenges that students face in developing reflective thinking and the difficulty of offering evidence for this. The complex role of tutors in developing reflective thinking is identified. Reflective learning can significantly contribute to developing reflective and critical conservation practitioners.

## RÉSUMÉ

L'enseignement supérieur doit développer les fondements d'une capacité de raisonnement et d'analyse critique que les professionnels de la conservation vont devoir employer et développer tout au long de leur carrière. Cet article définit et débat de l'entraînement à la réflexion dans l'enseignement de la conservation à partir d'exemples tirés du programme et des méthodes d'évaluation mises en place à l'université de Cardiff. Les résultats révèlent les difficultés rencontrées par les étudiants pour acquérir une démarche de raisonnement et montrent que ce phénomène est difficile à prouver. Le rôle complexe des tuteurs dans le développement de la réflexion est attesté. L'apprentissage du raisonnement peut contribuer de manière significative à la formation de praticiens de la conservation dotés de qualités de réflexion et d'analyse critique.

## INTRODUCTION

Schön (1983) introduced the notion of 'reflective practitioner', where reflective practice is placed at the core of professional knowledge and learning, as a response to inherent limitations in the *technical rationality* model (Schön 1983, 30, 37). Undoubtedly, *technical rationality* has contributed to the development of science and reasoning, but it emphasises rigid linear solutions to problems, based solely on the application of scientific theory. Standard textbook methodologies cannot be applied in cases where practice falls outside of standard technical problem solving, as it would evoke confusion and contradiction within practitioners (Schön 1983, 40). Conservation students are prey to these uncertainties, as conservation offers unique problems that must be defined before being solved, yet in many societies education up to the age of 18 rarely focuses on delivering the reflective practice required to do this.

Schön describes both *reflection-in-action* and *reflection-on-action* as being central to professional development where responding to uncertainties is necessary. Reflection-on-action involves thinking back on events whereas reflection-in-action is 'thinking on your feet' (Schön 1983, 61). Practitioners can fall into increasingly spontaneous and automatic responses, which creates the danger of operating with a 'parochial narrowness of vision' unless they adopt new thought processes (Schön 1983, 54, 60). Via reflection and inquiry, a practitioner can expose their tacit understandings, stimulate change in their approach to solving problems and develop new courses of action (Russel 2005). Reflective practice is 'a means by which practitioners can develop a greater self-awareness about the nature and impact of their performance; an awareness that creates opportunities for professional growth and development' (Osterman and Kottkamp 1993, 2). This systematic and rigorous process creates a continuity of learning (Boud and Walker 2002) that should be sought by conservation educators for their pupils.

## REFLECTION IN THEORY OF EDUCATION

Reflection is at the core of the experiential learning model, which offers a holistic integrated perspective on learning by combining experience, perception, cognition and behaviour (Kolb 1984, 21). This encompasses four cyclic steps: concrete experience, reflective observation, abstract conceptualisation and active experimentation, which also form the basis of other learning cycles

**RESUMEN**

La enseñanza superior debería desarrollar el plan de acción central para un razonamiento crítico y reflexivo que los profesionales de la conservación emplearán y continuarán desarrollando durante toda su carrera. Este artículo define y analiza la reflexión activa en la enseñanza de la conservación a partir de ejemplos obtenidos con métodos educativos y de evaluación utilizados en la Universidad de Cardiff. Los comentarios y reacciones revelan los retos a los que se enfrentan los estudiantes para desarrollar un razonamiento reflexivo y la dificultad que existe para ofrecer evidencias de ello. Se identifica el complejo papel de los profesores en el desarrollo de razonamientos reflexivos. El aprendizaje basado en la reflexión puede contribuir significativamente a que los futuros profesionales de la conservación desarrollen una actitud reflexiva y crítica en su trabajo.

(Gibbs 1988) and learning styles (Honey and Mumford 1992, Kolb and Kolb 2005). Experiential learning may start with an experience, but it cannot take place without reflection and action (Osterman and Kottkamp 1993, 3) to better understand an experience and link it to other experiences or attitudes. The outcome can be integrated into wider contexts and new situations by active experimentation, which results in the translation of abstract learning into concrete practice, thereby creating knowledge through the transformation of experience (Kolb 1984, 38). Although critiques and variations of this model have emerged (Pickles 2010, Clarke, James and Kelly 1996), it is a generally accepted model within teaching and learning. The role of the tutor in its delivery and development is to encourage reflection, conceptualisation, and ways of testing ideas.

For a future professional conservator it is important that their training in higher education encourages the integration of theory and practice. This offers paths to active learning and a deeper understanding of technical and theoretical knowledge that can be better stimulated by reflection. Cardiff University has utilised this methodology and its resultant synergy for many years in the development of teaching and assessment methods.

## REFLECTIVE PRACTICE IN THE CONSERVATION PROFESSION

### Professionalism, reflection and continuing professional development (CPD)

The Institute of Conservation in the UK (Icon) operates a professional accreditation scheme (PACR). Underpinning it is the notion that a professional should combine technical and critical skills developed within an ethical code of practice and, develop these via CPD (Icon 2010). The vision in this system is far from the technocratic model of professional development based on written exams (Lester 2000). CPD forms the core for maintaining accredited status by promoting learning, development and professionalism among practitioners (Henderson and Dollery 2000). Icon requires professionals to identify areas for further learning, reflect upon what they have learnt and provide a personal plan for future development to fulfil personal aspirations (PDP) (Icon 2010). Accredited members are required to produce regular reviews as evidence of keeping up-to-date in their field and the wider profession. In the current economic climate where employment requirements are likely to change, the development of new skills is significant. CPD can also act as a developmental tool, which aids professionals to respond in fast changing working environments.

### What conservators may reflect upon

In the context of CPD conservators are required to reflect on learning in a reflective log of practice (Icon 2010). Reflection is demanding, self-critical and requires a rationality about self that recognises mistakes and alternative routes, as well as identifying clear success. Whilst this is challenging for an experienced professional, it is particularly daunting for a young student.

The reflection process in conservation practice connects the stages of scientific methodology (problem, inquiry, hypothesis, testing, and implementation) and can be applied at both the macro (overall conservation process) and micro (individual step of conservation process) stages of practice. Every step of the conservation process can become a concrete experience, which in a cyclic mode takes practice forward (Figure 1).

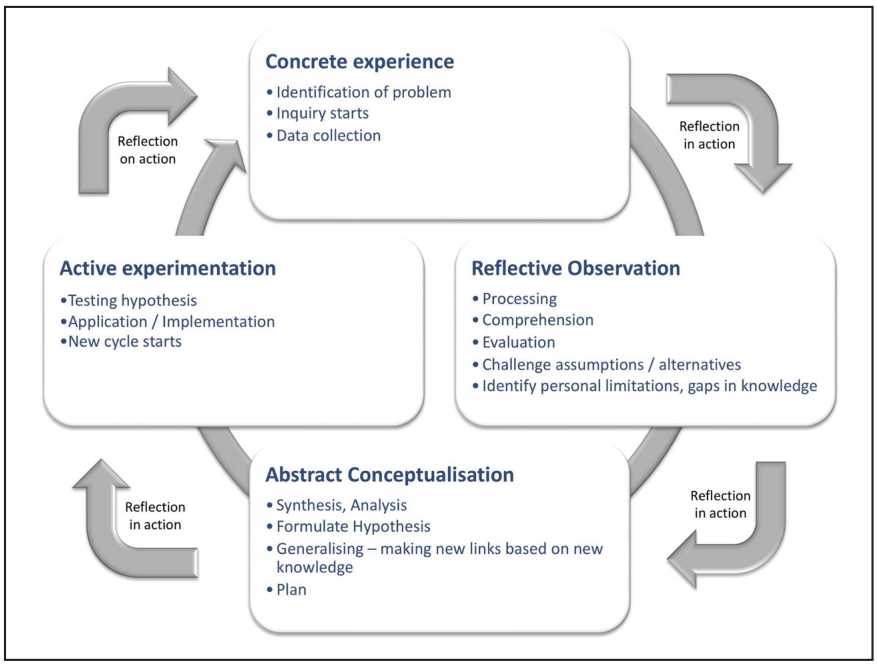


**Figure 1**
Reflective learning cycle and the conservation process (based on Kolb 1976, 1984)

## REFLECTIVE PRACTICE IN CONSERVATION EDUCATION

Experience at Cardiff University reveals that student engagement with reflective practice is primarily influenced by expectation emanating from their previous experience, knowledge, education, age, gender, economic and cultural background. A tutor has the task of identifying and balancing these factors for each individual student if they are to develop successful reflective thought processes. The degree of personal engagement in discussing objects and treatments creates an environment where the choice and emphasis of wording can either lower barriers or create them. Delivering reflective learning is as challenging as developing it.

The 'easy teach' alterative of instructive systems, which build technical knowledge without reflection, will limit development of critical judgment that is essential for successful professional conservation. Icon's research on relationships between accreditation and education showed that 'postgraduate training did not necessarily confer the depth of working knowledge expected of an accredited practitioner' (Lester 2000). To an extent, learning outcomes can direct degrees towards practitioner competence, but education must aim to provide graduates with the ability to think their way through problems independently using reflective thought, rather than to assign a procedure to a problem from an unimaginative knowledge base. In this context

graduates should be assessed and graded by their critical thinking ability at a given time, rather than by counting the number of years they have spent in university education.

## DEVELOPING CRITICAL AND REFLECTIVE PRACTITIONERS – A CASE STUDY

### Conservation laboratory teaching at Cardiff

Conservation of Museum Objects and Archaeology at Cardiff University is a three-year BSc undergraduate course established in 1975. Recently a 2 year MSc Conservation Practice was introduced to accommodate graduates who wish to develop from their first subject into becoming practising conservators. The learning outcomes of these programmes, which combine laboratory practice and theory, derive from our aspirations for what graduates, the sector and employers need from higher education programmes (Watkinson 1994). Practical conservation skills are taught within two large modules (33 percent of assessment) offered in both years of the BSc and MSc schemes taught at Cardiff University. These practical modules involve the allocation of museum objects to students for conservation. The objects allocated represent a variety of conservation problems covering a range of material types and challenges related to the physical or spiritual nature of the object or the owner's requirements. Students are expected to link knowledge obtained from theoretical modules to their practical projects and engage with self-motivated acquisition of information. They are required to base their conservation solutions within an ethical and technical context considering practical issues, such as time, cost, cost/benefit, safety and deadlines. A further degree of complexity is introduced with the use of project management tasks. These require individual students to take responsibility for the investigation, conservation and recording of a large group of items, manage this conservation within their peer group and communicate progress to owners. This contributes to the development of student communication and managerial skills and is overseen by teaching staff.

The technical or intellectual complexity of each conservation project is chosen to meet the different learning levels and expected learning outcomes for each year of study. The levels are also mapped against Icon's novice to expert scale (Icon 2008) and definitions of complexity (Henderson 2009). Student performance is assessed using a set range of performance factors which is recorded on a proforma mark sheet in order to provide uniform assessment and clarity of interpretation (Watkinson and Stevenson 1996).

At the core of this student-centred learning system is the use of three pedagogical tools: dialogue with staff, the project notebook (PNB) and project reports. Processes and challenges facing each tool are discussed below based on staff and student experiences.

## Lab based dialogues with staff

### The process

During laboratory hours, members of staff engage in one-to-one dialogue with individual students about their conservation projects. Their aim is threefold: evaluating student progress and understanding, opening the student's mind to alternative theories, options and thinking, and encouraging students to reflect on their actions and learning. Within this process students are required to provide contextualised evidence for their reasoning, based on literature research, theory and practice, material evidence and testing. Staff facilitate the learning process rather than provide direct instruction of conservation processes; student input and response are central to this dynamic dialogue. Student input shapes the discussion via their previous experiences, understanding, values and interests. Gaps in knowledge are jointly identified and a plan of action is developed. Within this dialogue a student can reflect on their action, thought processes and skills.

Students are also encouraged to test both theory and practice with reference to each other in a variety of conservation contexts. Currently, practical teaching places students of different stages of progression in the same laboratory session offering them an opportunity to observe each other in action, exchange ideas and experiences and to discuss the challenges they face. This *student network* has its place in developing learning, as research shows that learning is most effective when people become personally engaged in the process. Engagement is most likely to take place when there is an active, social and collaborative learning environment (Osterman and Kottkamp 1993, 3), in which students challenge each other's views and approaches in a non-threatening manner encouraging critical thinking and a deeper understanding of ideas.

### The challenges

Confidence in and understanding of the reflective learning process develops over time. Initially students are concerned that staff are withholding 'a golden book of conservation solutions'. Overtime, with experience and through dialogue, students accept their responsibilities when they realise that this is not the case. Another difficulty is that students can perceive the dialogue simply as a form of examination. In part, this is resolved by the presence of graduate students who act as support staff in the laboratories who are not involved in the assessment process but who do encourage reflective learning.

## The project notebook (PNB)

### The process

The project notebook is a reflective portfolio of conservation practice where a student is asked to provide evidence of their thinking by recording their knowledge, decision-making and conservation processes, linkage of theory to context and practice, and offer a critical evaluation of their practice. On completion, it is used as a major summative assessment tool that represents a student's competences, knowledge, skills and attitudes. It provides important

evidence of the student's development and is accessible to an external examiner, who offers quality assurance of teaching and learning.

Students are free to design the format and structure of their PNB in a way they can best express their learning, and demonstrate how they fulfil assessment requirements (Henderson 2009). Tutorial classes and informal feedback support this process. Students are encouraged to develop self-directed questions to critically evaluate the conservation process and their theoretical and tacit knowledge during and after a learning event. In this way, the PNB can become a reflective tool where students make their thinking and technical learning visible. Writing their ongoing experiences in the notebook focuses students in their own active learning experiences, which motivates them to deeper processing and learning (Zubizarreta 2009, xxi). Students have more time during writing to think, reflect and understand key concepts from all of their theoretical modules as well as experience and research, to relate new concepts to existing experiences and to critically evaluate them. The PNB also places some responsibility for assessing learning in the hands of the students because it offers them a place to critically evaluate personal strengths and weaknesses (Zubizarreta 2009, xxiv).

## The challenges

In order to evaluate the effectiveness of PNB as a learning tool and to investigate the development of the reflective learning cycle, students were asked to share their experiences in compiling a PNB and to discuss what they thought about its role and significance. Feedback derived from a mixed cohort of 20 students at different stages of progression, age, gender and background. Results are summarised in 'word clouds' in which the visual significance of each word in the 'cloud' corresponds to the frequency of its use in the student responses (Figure 2).


**Figure 2**
Word clouds showing the relative significance of words due to their frequency of use in student responses (produced using TagCrowd). a) What is the most challenging aspect that you face in relation to your PNB? b) Which aspects of your PNB are particularly useful to you and why?

Students understand the PNB as the place where they document their thought process and treatments, and where they demonstrate their background research for evaluation purposes. Individuals see the PNB as 'the opportunity to think through the steps of treatments', or the means 'to organise ideas, research and thoughts', 'to develop treatment rationale', 'to justify work', 'to find and choose evidence', or to provide 'evidence of independent research' and 'communicate methodology'. 19 out of 20 students agreed that the PNB has helped them reflect on their own practices or learning. When asked to describe *how* they reflected, the majority offered comments that can be described as reflection-on-action on macro and micro aspects of the conservation process. Student comments include: 'I can look back at previous objects and see where I could have done things differently', 'Helps [develop] rationale in research and allows us to look back on our treatment writing up and to reflect'. Students reflect and 'stop to think more thoroughly about various possibilities rather than rushing into something because it was recommended somewhere'. This indicates that reflection-in-action also takes place during the conservation process. The responses show how the students' progress beyond concrete experience into reflective observation, conceptualisation and beyond.

The challenges that the students identified during the process include: the development of a structure; keeping notes legible and aesthetically pleasant; evaluating how much information is required; balancing research versus practical and knowing when to stop researching for balancing workload for PNB production. Difficulties include the process of research, summarising information, organising thoughts, developing arguments, or 'keeping the information relevant' (Figure 2a). To quote a student: '[I find challenging] Recording my thoughts and decision processes in a manner which the outsider could follow; my thoughts are logical to me but may not be to an outsider reader'. This indicates that students are reflecting on transferable skills such as communicating thought processes in writing, organising thoughts and developing arguments, in addition to more technical conservation skills.

When students were asked which aspects of their PNB are particularly useful to them and why, the majority focused on benefits obtained by the research process, links to theory into practice, decision making and developing of thought processes. 'Summarising research in own words and relating to own artefacts reinforces learning'; '[the] decision making process, it makes me look more into available options'; '[the] research section and then working out a treatment from that research'. The frequency of the word *research* used in student responses shows that research is central to student learning (Figure 2b). A few students felt that format and structure that they had adopted for their PNB were particularly useful. [I found useful] 'Listing my options and the object's problems, I work well when I make lists!' 'Creating tables with materials and their properties […] helps think systematically and rationally about what you are doing'; 'Images on documenting thought process as this shows tutors how much work was done and how we came to decisions'. By developing the PNB format themselves, rather than being presented with

a prescriptive structure, students reflect on their own learning style and its practice.

### The project report

*The project report* is an innovative type of formal assessment whereby a student is asked to prepare reports on a topic, context and audience, which they define by themselves. The goals of the report and its perceived audience need to be explicitly stated by the student as these set the parameters against which the assessment is evaluated. Examples of work produced include the preparation of a leaflet, report, guidelines, poster, video or audio material for the general public, curators, fellow students or peer conservators. The students are expected to develop their report from an aspect of their practice that has stimulated questions and ideas and which they have felt further research and reflections would be useful. This encourages students to engage in reflective learning of a micro aspect of the conservation process, which promotes an overview of conservation related practices and develops creativity, mental flexibility and audience directed writing supported by technical skills. For the student, the project report's greatest challenge is its lack of instruction, which contrasts strongly with assessments like essays.

## CONCLUSIONS

Higher education is crucial for developing critical reflective conservation practitioners. The experience of staff and student feedback reveals that students value independent acquisition of knowledge and reflection-in-action which they place at the centre of their learning experience. The use of dialogue, the project notebook and project reports are important pedagogical tools where theory, practice and self-evaluation are linked to develop critical reflective learning in students. Tutors have a complex role to play, which is part educational and part pastoral in supporting student development in this area. This student-centred model is flexible to accommodate student expectation; ultimately it offers the opportunity for a responsible student to gain the most from their educational experience. Reflective learning develops transferable skills that are valued in professional accreditation and which prepare students for a competitive market. The quality of a graduate can be measured by their ability to reflect and learn from inquiry and practice rather than from either the number of years they have spent within the walls of a university or the range of tasks they can perform following direction. Ultimately, a reflective mind can learn to carry out tasks, but a static mind defined by procedure cannot adjust to reflective problem solving and its accompanying development.

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