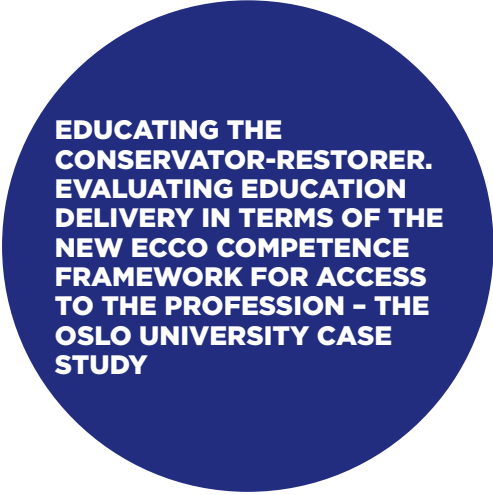


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**EDUCATING THE
CONSERVATOR-RESTORER.
EVALUATING EDUCATION
DELIVERY IN TERMS OF THE
NEW ECCO COMPETENCE
FRAMEWORK FOR ACCESS
TO THE PROFESSION - THE
OSLO UNIVERSITY CASE
STUDY**

Keywords: European Qualification Framework, evaluation, education, skills, knowledge, competence

ABSTRACT

In 2010 the European Confederation of Conservator-Restorers' Organisations (ECCO) published a *framework of competences for access to the profession of conservation-restoration*. The framework purposefully adopted the same language as the European Qualification Framework, which is the mechanism through which the Bologna Process is implemented. This paper presents a case study in which Oslo University, which has undergone the Bologna Process, uses this framework to assess the quality of its programme. The learning outcomes of each module were compared to the areas of competence identified in ECCO's framework. The level of knowledge and skill indicated by the learning outcome were then compared. This mapped the student's intended development throughout the education programme and determined the level of skill and knowledge at Master graduation. The results indicated both the readiness of graduates to enter the profession of conservation-restoration and where improvements in the curriculum are necessary.

RÉSUMÉ

En 2010, la Confédération européenne des organisations de conservateurs-restaurateurs (E.C.C.O.) a publié un *cadre des compétences pour l'accès à la profession de conservateur-restaurateur*. Ce document reprend de dessein le même langage que le Cadre européen des certifications (C.E.C.), qui est l'outil à travers lequel le Processus de Bologne s'applique. Cet article présente une étude de cas dans laquelle l'université d'Oslo, qui a mis en œuvre la réforme de Bologne, s'appuie sur ce document pour évaluer la qualité de son programme. Les acquis de chaque module ont été comparés aux zones de compétence identifiées dans

INTRODUCTION

A profession's need for an education sector that supplies appropriately qualified graduates is unequivocal. Equally so is the need for an education establishment to demonstrate that it meets these requirements. Comparative evaluation of the output potential of an education course versus the input demands of a profession is therefore important. Conservation-restoration is no different. The recently released European Confederation of Conservator-Restorers' Organisations (ECCO) *Framework of competences for access to the profession of conservation-restoration* (ECCO 2010) aids such an evaluation by providing a benchmark against which an assessment can be made. This paper presents a case study in which Oslo University successfully uses this framework as a tool to assess the quality of its programme. By evaluating its learning outcomes against the ECCO framework it has been possible to determine the degree of readiness of its graduates to enter the profession and identify where improvements in programme content and delivery can be made.

EDUCATING THE CONSERVATOR-RESTORER

Conservation-restoration can be described as an empirical science devoted to the preventive and remedial treatment of cultural heritage objects (ENCoRE 2001). At a professional level, competence is represented by a blend of theoretical knowledge and practical skills, including the ability to judge ethical and aesthetic issues in a systematic way (Larsen 2008). It is now widely accepted that the minimum level of education required to enter the profession is 'a period of full-time study in conservation-restoration of no less than five years at a university (or at a recognised equivalent level)' (ECCO 2004). This should include theoretical and practical instruction together with a well-structured internship and be followed by the possibility of study at Ph.D. level. Such demands acknowledge the need for an education that delivers a good balance of theoretical knowledge, practical skills and competence, allowing the MA graduate to work 'responsibly in the field of conservation-restoration of cultural heritage' (ECCO 2002,1). For this to be met, an institution must deliver an education programme that is characterised by a diverse teaching curriculum combining science, humanities, practical and academic study. It should include:

- the development of manual skills

le document-cadre de l' E.C.C.O. Les niveaux de connaissances et d'aptitudes déterminés par l'évaluation des acquis ont alors été comparés. Ceci a permis de répertorier les objectifs des étudiants qui suivent cette formation et d'évaluer le niveau de connaissances et de compétences acquis au terme de la maîtrise. Les résultats ont montré à la fois la bonne préparation des diplômés à leur entrée dans la profession de conservateur-restaurateur ainsi que les points sur lesquels le cursus doit être amélioré.

RESUMEN

En 2010 la Confederación Europea de Organizaciones de Conservadores-Restauradores (E.C.C.O. en sus siglas en inglés) publicó un marco de competencias para el acceso a la profesión de conservador-restaurador. El marco adoptó deliberadamente el mismo lenguaje que el Marco Europeo de Capacidades, que es el mecanismo a través del cual se ejecuta el Proceso de Bolonia. Este artículo presenta un estudio de caso en el que la Universidad de Oslo, que ha seguido el Proceso de Bolonia, utilizó este marco para evaluar la calidad de su programa. Los resultados del aprendizaje de cada módulo se compararon con las áreas de competencia identificadas en el marco de la E.C.C.O. Después se compararon el nivel de conocimiento y las habilidades indicadas en los resultados del aprendizaje. Con esto, se mapeó el desarrollo esperado de los estudiantes a través del programa educativo y determinó el nivel de habilidades y conocimientos una vez concluida la Maestría. Los resultados indicaron tanto el nivel de preparación de los estudiantes graduados para entrar en la profesión de conservador-restaurador, como los puntos en donde es necesario mejorar el programa educativo.

- systematic problem solving
- knowledge of material and their properties
- the behaviour of materials under the influence of external factors
- methods of preventing damage
- the treatment of damage and decay
- aesthetics and
- ethics.

Furthermore, the modes of teaching must encompass learning activities that will best foster competences in terms of knowledge, understanding and skills in these areas. It must provide the correct balance of these elements corresponding to the demands and current norms of a particular professional specialism, for example, in the treatment of archaeological metals.

THE BOLOGNA PROCESS

The joint declaration of the European Ministers of Education, often referred to as the Bologna Declaration (EU 1999), has significantly changed the higher education system across Europe. A single educational pattern is now emerging, which consists of: an undergraduate cycle of at least three years leading to a bachelor degree; a graduate cycle of two years leading to a master's degree; and a research-graduate cycle leading to a doctorate degree. Each builds on the level below. One of the principle objectives of the Bologna declaration is to make education programmes and periods of learning more comparable and compatible across Europe thereby enhancing student mobility. This relies on comparable systems of measurement – referred to as the European Credit Transfer system (ECTS) established as part of the European Qualifications Framework for lifelong learning (EQF) (EU 2006), formally adopted by the European Parliament and the Council of Europe on 23 April 2008. A target of 2012 was set for all new qualifications to be calibrated against this framework. This has already been achieved at Oslo University.

Learning outcomes are acknowledged as the primary mechanism through which the EQF can be achieved. Their principle value is the ability to define qualifications in consistent terms, thereby promoting a situation where the validation and comparison of all forms of learning can take place. Recognition of the value of explicitly stating learning outcomes has shifted the academic emphasis of education from what the educator wishes to teach to what the graduate needs to know. Experience within the Oslo University conservation-restoration programme suggests that a learner-centred approach based on a well-defined curriculum suits the delivery of a professional qualification.

THE DEVELOPMENT OF CONSERVATION EDUCATION IN OSLO

The conservation studies course offered by Oslo University started in 1997. The programme is therefore relatively new. In 2002 it underwent a major restructuring process as part of a national reorganisation of the education system, resulting from the implementation of the Bologna process. The current programme offered by the University of Oslo follows the European norm with Bachelor and Master's courses constructed on a modular basis. At undergraduate level, the course is open to anyone wishing to work within the cultural heritage sector. This is seen as a strength because it provides non-conservators with a grounding in conservation-restoration that they will bring to bear when collaborating with conservator-restorers. The undergraduate course focuses on preventive conservation, the ethics and philosophy of conservation and the technical and alteration history of cultural objects. It has six 10-point modules per year, each building on the ones that have gone before, each representing a well-defined area of study, described in terms of a curriculum, and a set of learning outcomes (see Hutchings 2009). The latter are expressed in terms of the knowledge, skill and competence gained by a student who has satisfactorily completed the module.

The bachelor course in preventive conservation and collection care is intended for a diverse group of students. It contains individuals studying, for example, archaeology, art history or ethnography in parallel with the conservation and collection care modules. These disciplines provide the basis for the conservation specialism if the student chooses to progress to the master's level, where they study the more interventive aspects of conservation in two separate but parallel lines: paintings and objects. The conservation-restoration curriculum is therefore spread over five years representing a bachelor and master's study programme that both fulfils ENCoRE guidelines and satisfies the financial model imposed by the university. Because each module is expressed in terms of a curriculum and set of learning outcomes, it is possible to identify the contribution that each makes towards meeting the requirements laid down by the ECCO framework.

THE ECCO FRAMEWORK OF COMPETENCES FOR ACCESS TO THE CONSERVATION-RESTORATION PROFESSION

The framework, ratified at the ECCO General Assembly in June 2010, was developed in unison with the implementation of the Bologna declaration. Through the use of concept mapping (Novak and Gowin 1984, Novak 2010) ECCO has described the different qualities required to access the profession of conservation-restoration in generic terms. These are shown in Figure 1 as a decision making process. The central spine represents an analytical progression, following accepted ethical principles, from which the various activities emerge. This evolves through examination and diagnosis, a combination of preventive and interventive actions and post-intervention

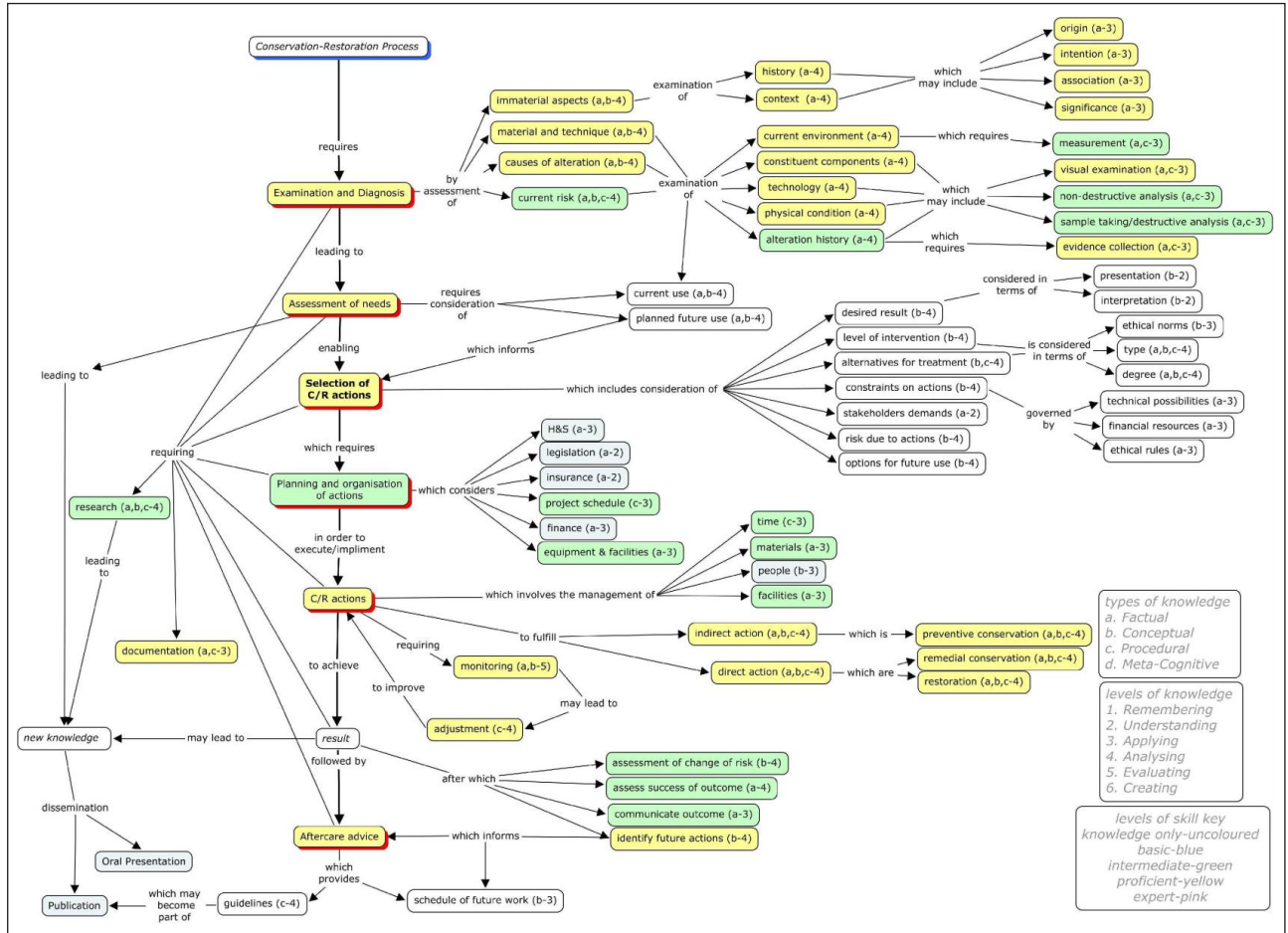


Figure 1
Knowledge and skills framework for someone wishing to enter the profession of conservation-restoration

processes. This firmly identifies conservation-restoration as an integrated part of the management of cultural heritage, informing how it is preserved.

ECCO purposefully adopted a language similar to the EQF, thereby offering an excellent opportunity for a comparative study. Each activity in the framework is analysed in terms of the knowledge, skills and competence required. While ECCO uses similar language there are however a number of substantial differences: the EQF (Kennedy 2007) uses the older taxonomy developed by Bloom and Krathwohl (1956), ECCO adopts the equally well accepted revised taxonomy, by Andersen and Krathwohl (2001, see Table 1). This later taxonomy better reflects the needs of conservation-restoration. ECCO has also chosen not to explicitly define competence as this was interpreted as the combination of knowledge and skill together with experience that allows the professional conservator-restorer to deliver work consistently and responsibly (ECCO 2010). For clarity ECCO also uses Anderson and Krathwohl’s (2001) knowledge dimensions shown in Table 2 below:

Table 1
Andersen and Krathwohl’s revised taxonomy

1	Remembering	Know something exists and where to find it
2	Understanding	Comprehend something in its context and make associations between things

3	Applying	Use knowledge in an appropriate context in order to achieve a desired result in a predictable way
4	Analysing	Apply knowledge in a critical way using a level of awareness that allows one to explain the results
5	Evaluating	Apply knowledge in order to measure a situation in terms of its broader context and in relation to determining future outcomes
6	Creating	A broad width of knowledge and experience which allows one to extend the boundaries of knowledge requiring highly developed foresight and meta-cognitive understanding

Table 2

Andersen and Krathwohl's knowledge dimensions

A	Factual	Of or relating to a piece of information presented as having objective reality
B	Conceptual	Of or relating to, or consisting of abstract or generic ideas generalized from particular instances
C	Procedural	Of or relating to a particular way of accomplishing something or of acting
D	Meta-cognitive	Transcending (more comprehensive than) conscious intellectual activity – typically exhibited by an experienced practitioner

All courses at Oslo University have been described in terms of learning outcomes following the guidelines given by Kennedy (2007) therefore Bloom's taxonomy has been used. The two taxonomies are similar, except that Bloom describes the two highest levels of knowledge as: Level 5 – synthesis and Level 6 – evaluation, whereas Anderson and Krathwohl's describe these levels as in Table 1, above. This suggests that Anderson and Krathwohl's scale extends beyond Bloom's. Due to these differences a decision was taken to re-evaluate the learning outcomes for each module in terms of the scale used by ECCO.

ECCO defined skill as the proficiency, facility, or dexterity that is acquired or developed through training or experience (ECCO 2010). The level of skill required to carry out each activity in the framework (Figure 1) was evaluated using a four step hierarchy shown in Table 3, below:

Table 3

The ECCO hierarchy of skill

1	Basic	The ability to carry out only basic tasks in a complex conservation-restoration process. Unlikely to possess an in-depth knowledge of any subject area required to carry out the task unsupervised. May not be aware of many of the ethical rules that apply and operate well within the boundaries that are laid down by the profession
2	Intermediate	A higher level of skill both in terms of breadth and depth. Expected to possess basic skills across the whole field of expertise, able to place different concepts within that field, and be knowledgeable about the rules. Able to carry out basic conservation tasks unsupervised and work within a team on complex conservation problems
3	Proficient	Possessing adequate skill to carry out conservation processes autonomously and understands the spirit of the rules that govern that field. Capable of carrying out conservation-restoration tasks and processes to a level that is acceptable within the profession, but may not work as effectively as someone with many years of experience and may not possess adequate skill to carry out the most difficult tasks
4	Expert	A comprehensive ability to carry out tasks and undertake processes within their field of expertise. Able to also carry out tasks and undertake processes proficiently in associated fields and apply knowledge and understanding of processes in new and innovative ways. Able to adapt and create new methods within the field of conservation-restoration

In applying the taxonomy and fields of knowledge, together with the hierarchy of skill, at the appropriate level, equivalent to EQF level 7 (EU 2010), ECCO has provided a map that represents the requirements for a person entering the profession (see Figure 1). As graduates at master's level are able to move directly from education into professional employment without having to undergo an additional period of training, the output of a conservation-restoration educational programme represents an entry point into the profession. It is therefore logical that the two should correspond.

THE COMPARISON

The conservation studies programme at Oslo University, had already specified learning outcomes for all of its taught modules (Hutchings 2009). Using the taxonomies employed by ECCO, the eight to ten learning outcomes possessed by each module were re-evaluated. Their contribution was then identified within the framework, thereby building up a picture of the area of competence that each module enhanced. The development of students throughout the course could then be plotted by adding the contribution that each module made in the sequence that it was taught. This constructed a picture of progress, which focused on collection care and preventive conservation aspects of the framework through the bachelor course and then on to remedial conservation in the master's course. The type and level of knowledge and skill on graduating from the master's could then be compared to the access requirements defined by ECCO.

CHALLENGES ENCOUNTERED

The evaluation process was not without its challenges. Comparison between the learning outcomes of each module and the ECCO framework was complicated by the degree to which each learning outcome contributed to more than one sector of the framework. It was therefore decided to consider the learning outcomes of each module as a whole. While the level and type of knowledge was fairly easy to judge, an equivalent assessment of skill was more difficult. This was due to the lack of a well-developed and tested taxonomy. Bloom's original research does not include this domain as the researchers claimed lack of experience in teaching skills (Kennedy 2007). Subsequently other authors have suggested taxonomies for skill (for example: Dave 1970, Simpson 1972); however these remain underdeveloped. ECCO's skill taxonomy (see Table 3) appears to be based on performance related to the ability to carry out conservation-restoration duties within a professional setting. While this scale is yet to be proven, it at least offers a taxonomy that is tailored to this profession.

From Figure 1, the ECCO assessment of skill required to enter the profession does not exceed Level 3 – Proficient, which indicates that an education programme is not expected to provide a master's graduate with an expert level of skill. This makes sense considering the high degree of skill required to undertake complex conservation-restoration tasks at a professional level. It also makes the assessment easier as only the lower three levels of skill needed to be considered. The development of skills within an education

programme follows an obvious progression; modules that are early in the bachelor degree can only be expected to develop basic or intermediate skill. As students progress into the third year of their undergraduate degree and throughout the master's degree their level of skill in a particular area develops through practice. They begin to become proficient in the skills that have been acquired earlier, as well as gaining new skills at a lower level. On graduation from the master's course they are expected to possess a proficient level of skill in key conservation-restoration areas, with gradually lower levels of skill as the subject matter moves away from their specialism.

THE RESULTS

While this picture of progress through the education programme is too complex to be presented here, a summary of findings can be given. The assessment demonstrated that knowledge and skills are developed in a logical manner. It suggested that graduates at master's level meet or exceed the level of knowledge required for nearly all sectors of the framework. Areas of knowledge that are lacking were limited and include the giving of guidance and control of finance, both of which relate to conservation-restoration in practice. The level of skill represented by the learning outcomes of each module was harder to judge and the assessment of a master's graduate was less positive. The general consensus was that graduates from the master's course could only be described as having intermediate skill in many of the areas of the framework. Graduates possessed a proficient level of skill only where it had developed through repeated practice during their taught courses, dissertation project and practice placement.

In examining the development of knowledge and skill throughout the bachelor and master's course, it became evident that the knowledge gained at bachelor level and in the earlier part of the master's course is mostly factual and conceptual. Procedural knowledge expands significantly during the latter half of the master's course, where a large proportion of teaching is laboratory/studio based, during the dissertation project when students are focusing on practical research and conservation treatment and during the practice placement. This highlights the close link between procedural knowledge and skill. It is connected to the leap in cognitive development from being able to use knowledge in an appropriate context (Table 1, Level 3) to being able to apply knowledge in order to measure a situation in terms of its broader context and future outcomes (Level 5). Such a leap represented a steep learning curve that was felt to occur too late in the course, confirming an earlier observation that students struggle to make the transition between being told what to do and making their own decisions during their master education. It reflects a criticism that is often made of conservation-restoration education within a university system, where too much emphasis is placed on theoretical knowledge and insufficient time and importance is given to practical application. Furthermore, it reflects a degree of incompatibility between what can be described as the educational norm dictated by the "Bologna approach" and the need

to develop skill in order to enter the conservation-restoration profession. As with other professions, the development of skill and knowledge in the period directly following a university education programme will remain critical for career development.

CONCLUSIONS

The framework for access to the profession of conservation-restoration, developed by ECCO, represents a significant step towards a definition of a set of competences that are both diverse and dynamic. This case study demonstrates one of its potential applications and the strength of having a well-defined professional template for defining the conservator-restorer. It represents the first instance where a detailed description of professional competence has been used to measure the appropriateness of an education programme in the field. The benefits to education programmes are tangible; measurement enables quality control and systematic improvement. In this case these have been immediate, allowing the identification of areas where improvements in the delivery and planning can be made.

While this comparison has been useful, areas that require further development have also been identified, for example, the taxonomy of skill. Although skill is currently measured through the assessment of practical work and portfolio, there is a need to develop and test education and evaluating methods further, especially within the university system. This represents further research which the department of conservation studies is actively pursuing. The case study also identifies the need for the ECCO framework to undergo a period of heuristic development where the results of different applications are used to improve the model.

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