

**VOCATIONAL TRAINING FOR CLAY PLASTER IN EUROPE :
A GROWING NETWORK AND PEDAGOGICAL AND ADMINISTRATIVE
TOOLS TO HELP DISSEMINATION OF COMPETENCE AND RECOGNITION
OF LEARNING OUTCOMES**

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Abstract

There is a growing need for training trainers, so as to guarantee the quality not only of the training, but also of the earthbuilding construction activities resulting from it in Europe. Clay plaster courses act as a catalysator, opening the doors for other earth building techniques. The ultimate goal is to introduce earthbuilding techniques into initial vocational qualifications.

The present paper addresses (a) the network of trainers and of training centres, that developed out of successive partnerships during several European projects and (b) the tools elaborated within these projects.

The Leonardo da Vinci EU-project "Clay Plaster", from 2002 to 2005, produced a complete pedagogical tool, available in six languages. These files, available on CD-Rom, have since been used in many different learning contexts across Europe. Since 2006, training courses for trainers bring together twice a year teachers and multiplicators across Europe, thanks to individual grants from the Grundtvig programme.

Since 2005, several smaller projects like "European Earthbuilder" and "Lehmbau Mobil" allowed to deepen the relations between the partners, to transfer the teaching materials into three more East European countries, and to exchange trainers and trainees.

From 2007 to 2009 a follow up project "LearnWithClay" designed ECVET units for learning outcomes in the clay plaster sector. The outcomes of this project are european wide transparent and comparable certificats in earthbuilding, following the recommendations of the « European credit system for vocational education and training » (ECVET). The project designed six units : (1) Preparing clay plaster ; (2) Application of clay plaster ; (3) Surface treatments, maintenance and repair of clay plasters ; (4) Interior design with clay plaster ; (5) Decorative elements with clay plaster ; (6) The clay plaster market.

Each unit can be assessed at different levels, according to the « European Qualification Framework » (EQF). Training centres across Europe are offering selected units on different levels. The six units of level 4 give you a certificate by a German crafts chamber. This qualification is accessible to experienced crafts people across Europe who can provide evidence of appropriate learning outcomes, skills and understanding.

1. INTRODUCTION

Earth as building material is absent from almost all vocational qualifications for craftspeople, architects or engineers in Europe. Nevertheless, the conditions are now rather in favour for a change because of growing demand for healthy buildings and sustainability.

Earth building techniques have become popular during the last 5 years by short, 2 to 5 days clay plaster courses, related more or less closely to the formal continuous vocational training programmes. There is a growing need for training trainers, so as to guarantee the quality not only of the training, but also of the construction activities resulting from it. Clay plaster courses act as a catalysator, opening the doors for other earth building techniques.

The creation of common teaching materials and of a common competence matrix for clay plaster is a first step towards the recognition of earth as a building material and as a learning objective.

2. CONTINUING VOCATIONAL TRAINING IN CLAY PLASTERING AND DESIGN

2.1 Earth construction and clay plaster in Europe

Earth and clay are natural construction materials and have been central to European building techniques for millennia. Clay plasters like earth building, have a long tradition in Europe, the many properties of which include durability and humidity regulation, so creating safe and healthy internal environments (Eckermann *et al.*, 2007).

Clay is readily and often locally available, is low in embodied energy and in carbon footprint, as there is no firing process involved, and provides excellent thermal mass. Clay plasters are therefore becoming the material of choice in zero carbon, healthy, solar passive and energy efficient modern construction design (Schweder, 2008b).

Wall finishing products can usually be sourced locally, ready for testing and mixing to create the optimum construction material or plaster. Additionally, a growing range of ready-to-use products are available on the market where a whole new business sector for the use of low impact earth in building is emerging (Schweder 2009). However, there is a shortage of trained craftspeople to exploit these opportunities because to date there has been very little professional training and no accreditation (Schweder, 2008a).

2.2 The first clay plaster project

The first European project, supported as a pilot project by the European Commission within the lifelong learning programme Leonardo Da Vinci and named “clay plaster”, was initiated by the FAL-e.V. association in 2002 (Herz, 2008). It called upon the expertise of professional clay plaster practitioners across Europe to make this knowledge base readily available to practitioners within construction – from the hands-on self-build market through to mainstream contractors where machine application and silo storage is available.

A complete pedagogical tool was developed jointly by 14 partners from six European countries with each partner country working towards a recognised national qualification. The course materials, include session plans, info sheets, exercise sheets and background texts on more than 500 pages, as well as more than 500 pictures. It is available on CD-ROM in English, Bulgarian, German, French, Greek, and Polish. Translation into Czech, Slovak, and Slovene is planned for 2010 (fig. 1, CD-Rom). The curricula is divided into three modules completing 46 sessions (Herz 2009a). The courses based on this material provide practical and theoretical instruction in clay

plastering types, teach design techniques, and also provide an insight into effective marketing strategies. The learning methods used are interactive, based on site specific activities, and integrate practical, hands-on exercises with theoretical backup.



Fig. 1 - CD-Rom “Clay Plaster”, containing the course materials, exists in 9 languages (credits: www.earthbuilding.eu).

In Germany, the training has been certificated as by the Craft Chamber of Trade in Schwerin. It has been offered since 2005 by the European School for Earth Construction of the FAL e.V, as a 200 hours course “Clay Plastering & Design”, a continuous vocational training aimed at craftspeople from the construction sector, including plasterers, painters and decorators, interior designers, teachers and technicians. This training and the training “Building Expert in Earth Building” (Fachkraft im Lehmnbau), which has been developed by Dachverband Lehm (the german umbrella organisation for earth building) are today’s only officially recognised specific training opportunities for earth builders in Europe (Schröder et al., 2008).

Beside in the official courses, these teaching materials have in the meantime been put to use in a number of European countries in a wide variety of contexts, in formal or informal learning environments, e.g. learning on building sites, in short training courses or in vocational schools et cetera (Didier and Herz, 2008). In these contexts the learning outcomes however are not assessed and trainees have no valid paper to proof their learning achievements and cannot use those in individual carrier planning.

2.2 Working and Networking within Europe

In Germany and France, teachers of earth construction are able to attend courses on the content and methodology of the clay plaster training. After several trainer courses, enhanced by individual Grundtvig grants, a network is born, linking specialists, teachers and multipliers from over 15 european countries, from Finland to Italy, from Ireland to Slovakia (Herz, 2009b).

Additionally, two small Leonardo da Vinci mobility projects allowed us to deepen the relationships between training centres and enlarge the network :

- During the “European Earthbuilder“ project (2004), trainers from Germany, France, Denmark, Bulgaria, Czech Republic and Hungary exchanged their experiences both in pedagogical methods and in technical experiences.
- During the “Lehmnbau mobil“ project (2008), trainees from Germany undergo in three different flows a three-week practical residential course with one of the French partners.

All these flows and exchanges created links between our associations, companies and training centres, going largely beyond the initial partnership. The transfer of knowledge concerning building techniques as well as teaching is very active. As a result, a website

was initiated : www.earthbuilding.eu

3. LEARN WITH CLAY : EUROPEAN WIDE TRANSPARENT AND COMPARABLE CERTIFICATS IN EARTH BUILDING

3.1 An ECVET system in the earth building sector

From 2007 to 2009 a follow up project “LearnWithClay” designed common transparent standards for learning outcomes (Herz and Rowan, 2009). Following the recommendations of the “European credit system for vocational education and training” (ECVET) (European Parliament, 2009), the project designed six units which correlate to the existing qualification “Clay Plastering & Design” as developed within the first european project :

unit 1 - Preparing clay plaster

unit 2 - Application of clay plaster

unit 3 - Surface treatments, maintenance and repair of clay plasters

unit 4 - Interior design with clay plaster

unit 5 - Decorative elements with clay plaster

unit 6 - The clay plaster market

The units, as smallest coherent parts of a qualification, are identified in relation to knowledge, skills and competence (Fig. 2, Unit 4 level 4). Each unit can be assessed at different levels, according to the “European Qualification Framework” (EQF) (European commission, 2008). Therefore, every unit is accomponied by a criteria and indicators for its evaluation at different levels (Fig. 3, Unit 4 level 4 criteria). Training centres across Europe are offering selected units on different levels.

Central to the ECVET system is the desire to enhance mobility of learners throughout Europe, and to easily fit within the existing qualification framework of each country. Thanks to the ECVET units, competence is clearly documented and comparable, thus making certification transparent (Schweder and Herz, 2009). Enhanced mobility means that if a learner or practioner goes abroad they can come back with a qualification that is recognised within their normal learning context, or training school or qualification system. Such a system is designed to run in parallel to what already happens at graduate level. A barrier to the development of this at the vocational level is that vocational training systems are much more diverse across Europe than are the university systems, so it is more difficult to do vocational training within different european countries than is mobility at graduate level. Additionally, mobility will not be an option if you have to go abroad to learn an entire subject – very few people will go to another country for three years, whereas if a subject is broken down into smaller parts, mobility is more achievable. Thus, the units make the learning process more accessible to more people and facilitate lifelong learning. Real examples of european learning pathways in earthbuilding have been collected to encourage young people to go aboard (LearnWithClay, 2009).

3.2 The LearnWithClay certificats

A certificate for a unit will be delivered after having done a test, with practical assessment and written and oral exam. The chronology by which you get the certificats of one level is not important. The training institutions may give recommendations about a logical sequence, possibilities of combination, desirable prerequisites. Six units of level 4 give you a certificate by the German chamber of craft in Schwerin.

A particularity of the units is that they describe learning outcomes independently to how these learning outcomes have been achieved : it is not important whether they are the result of a formal course or of building site experience for example. Nor is the time important it took a person to achieve a certain level of skill and competence.

This system is the final aim of the earthbuilding ECVET. But today, it is only the beginning of it. The partners have to further develop a strategy for certification of the ECVET units together with the relevant bodies on national levels, to make the

individual assessment of the units possible.

	Application of Clay Plaster	ECVET Unit n° 2
	Qualification: Clay Plastering and Design (Chamber of Crafts, Germany)	Level 4 Credit: 20%
Knowledge		
• Different kinds of surfaces to be plastered • Properties and criteria for assessment of the back ground: roughness; absorption capacity; stability; homogeneity; rigidity • Areas of use for clay plaster; particular considerations for areas of high humidity and for exterior clay plaster • Structural characteristics of the plaster - thickness, function, number of layers and reinforcing mesh • The main methods of bonding layers • Technical details for fixing services and furniture • Technical details for finishing internal and external corners, second fix carpentry, openings and ceiling and floor joints • Finished plaster quality to achieve the required standard for the particular conditions of use • Wind and air tightness of plasters and joints • Surface finishes and how to create them • Suppliers • Preparing the background and applying clay plaster: • Current legislative workplace requirements • Relevant codes of practice and current standards for quality of work and materials • Tools, machinery and equipment • The order of work • Safe and healthy working practices		
Skills		
• Carry out the background preparation • Protect adjoining surfaces • Prepare all fixing points for services and furniture • Apply all shaping preparation for joints, corners, openings • Apply the plaster and produce a flat surface • Produce straight and rounded edges, finish internal and external corners, openings and joints • Apply reinforcing mesh • Apply at appropriate intervals key coat, base and finish coats and achieve the desired finished plaster quality • Design and execute different surface finishes and textures • Select, calculate and source materials • Select and use appropriate tools, machinery and equipment to prepare the background and apply different layers including the final surface finish • Organise the building site Comply with current legislation, official guidance and workplace safety requirements at all times		
Competence		
• Assess the characteristics of the background and make an appropriate choice of bonding layer and an appropriate choice of plaster structure (the mix, number of layers, thickness of layers, reinforcements) • Plan and organise all the steps involved from preparation of the background through to the finish for usual and predictable building sites • Control the quality of the work throughout preparation, application and the finish • Supervise and co-ordinate the plastering process from preparation through to the finish • Input into decision making process for the plaster work including choice of final finish • Advise on plaster structure, application and finish		

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Fig. 2 - Unit 2, Application of clay plaster. Knowledge, skills and competence according to the level 4 of the EQF (credits: www.earthbuilding.eu).

	Application of Clay Plaster Criteria for the Evaluation of Skills	ECVET Unit n° 2 Level 4
Criteria	Indicators	
Suitability of the plaster	• The surface is sound (hard, not dusty or sandy, resistant to damage) for the particular conditions of use • The surface has no cracks • The plaster adheres firmly to the background • The layers are well bonded	
Quality of the surface	• The surface flatness is according to the specifications • The surface is homogenous • The finish accords with the specifications	
Quality of detailing	• The joints are neat where plaster meets a different material. A straight and neat separation line is executed at junctions with flexible building elements. • The corners are straight and their degree of curvature conforms to the specifications • Pipes and conduit are properly fixed within the plaster leaving no visible trace	
Plaster Structure	• The mix and thickness of the different plaster layers conform to the specifications • The drying time between the different layers is sufficient • The reinforcing mesh is entirely embedded in the plaster layer	
Preparations	• The adjoining surfaces are protected • If necessary the background has been cleaned; moistened and keyed • If a background key has been applied, it has been applied correctly	
Ensure that standards of work and materials comply with relevant codes of practice and to current standards.		
www.earthbuilding.eu		

Fig. 3 - Unit 2, Application of clay plaster. Criteria for the evaluation of skills according to the level 4 of the EQF (credits: www.earthbuilding.eu).

3.3 A memorandum of understanding within the LearnWithClay partnership

The LearnWithClay Partnership came to an agreement, in the form of a Memorandum of Understanding, to adopt this system of evaluation and of certificates. Each training center that signed the memorandum recognizes the certificates delivered by the other partners. The partners agreed on the methods for assessing and documenting the learning outcomes. All the important papers necessary for the mobility (contacts, agreements on assurance and documents to run an exchange) as well as the detailed description of the units (knowledge, skills and competence on different levels, criteria and indicators for assessment, evaluation sheets, blank certificates) are assembled in a manual (72 pages, to be published in English, French, German and Bulgarian, and to be downloaded from www.earthbuilding.eu).

The LearnWithClay partnership started with ten members from four countries. They agreed on a test period of two years, after which they will assess the good functioning of the ECVET. New partners will be welcome, as long as they accept the contract conditions of the memorandum.

4. CONCLUSION

“LearnWithClay” is seen as a contribution towards the creation of a European training environment for promoting mobility and lifelong learning. The ECVET System worked out offers a system of units of learning outcomes, which can be related to all types of courses and target groups. The training materials are already being widely used within the Earth Building sector in Europe and are starting to enter the vocational training system. However there is still a long way to go for earth being accepted as a building material amongst others within the official curricula. The design of a common European competence matrix for clay plaster is only a first step towards the recognition of earth as a building material and as a learning objective.

An opportunity for the elaboration of qualification units is the fact that new training programmes are being created today, to respond to the urgent question of sustainable building. There is no need for an entirely new diploma concerning earth building only, but as a matter of fact, modules concerning different earth building techniques are part of many of the new training offers. Thus, a standard on clay plaster learning outcomes, developed by a European group of experts can be easily integrated into new national or European certifications.

This project recognises the value both of the older apprenticeship systems and the European tradition of craft journeymen and women, whilst linking these with the requirements of the modern world.

With ECVET and EQF the European Union has created instruments which represent professional qualifications in Europe in a comparative and transparent manner, and so simplify international mobility and life-long learning opportunities for learners and practitioners across Europe. This is an opportunity to

- Make it possible for young people across Europe to learn earth construction techniques with our European partners.
- Make it possible for building specialists to learn and gain professional qualifications through practical training on earth construction sites at home and abroad.
- Create opportunities for those interested in clay work on any level to get training and qualifications through practical experience in workshops and through on-site work at home and abroad.
- Improve the professional opportunities for migrant workers in the earth construction sector across Europe.
- Create a European wide certification and Training system implemented and recognised by each country.
- Promote a European-wide exchange of skills and networking in clay construction.

The members of the LearnWithClay partnership are looking forward to an extension of their circle to southern Europe and a translation of the training material and the units

into Italian, Spanish and Portuguese, the latter allowing the system to cross the Atlantic Ocean where partners of the earthbuilding network are already waiting.

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