COMBINING DIFFERENT TECHNOLOGIES IN A FUNERARY ARCHAEOLOGY CONTENT AND LANGUAGE INTEGRATED LEARNING (CLIL) COURSE

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Abstract

The aim of this paper is to describe a project in which Italian undergraduate students at the Palaeopathology Division of Pisa University will attend a two-year Content and Language Integrated Learning (CLIL) course combining the study of funerary archaeology with English as vehicular language. At the presence of a subject and language teacher working together, the trainees will use different types of technology including devices such as electronic blackboards and Word applications with user-friendly interfaces (Excel, Powerpoint, etc.), audio tapes, DVDs, and videos taken from important satellite television programmes (BBC, Discovery Channel, National Geographic, etc.). The activities will range from reading parts of funerary archaeology texts scanned and put onto the computer, to gap-filling exercises by listening to a recording, matching words with their definitions, putting jumbled phrases in sentence order, etc. A number of resources will be prepared by the learners, for example a bilingual glossary of archaeology terms with definitions extracted from authentic texts, as well as an English grammar with examples-in-context of basic grammar items, to be exploited by the students of future courses. While performing the different tasks, the learners will be involved in learning funerary archaeology content, improving their language skills, and understanding how to use different technological tools. In the summer period at the end of the first year, more sophisticated technology will support the students during the explorations at an archelogical site in the small village of Benabbio in northern Tuscany. In particular, the excavations of 14th century bodies on the one hand, and of corpses of people who were victims of the 1855 cholera epidemic on the other, will be carried out using surveying tools that can contribute to the understanding of the underground features. Such tools include georadars which help the archaeologists collect information about the location of past human cultures in a particular area; geographic information system (GIS), the science that allows to view, interpret, and visualize data concerning maps, globes, reports, and charts; aerial photography, by which it is possible to detect traces of buried structures that are not visible at ground level. Finally, some of the bodies will be submitted to computerized axial tomography (CAT) for a more thorough investigation that can reveal and clarify certain types of information that would have been impossible to obtain in the past. Understanding of the different technologies used for geographic inquiry and treatment of the bodies will also be part of the content course in funerary archaeology held by the subject teacher. The students will be able to experiment the tools, express their ideas, share experiences, and speak about their work with British peers from the United Kingdom, who are spending the summer period at Benabbio on exchange courses, and graduating in funerary archaeology in their country. The final exam will consist of a dissertation written in English in which
the students will describe particular tasks in which they have been involved, as well as an oral Powerpoint presentation illustrating a particular phase of the excavation activities. Technology-supported tools have become increasingly available in educational contexts, allowing trainees to learn from practical experiences, to be engaged in authentic tasks and to build up their self confidence for communication in real life situations.

Funerary archaeology, content and language integrated learning (CLIL), language teaching, computer technology, field archaeology

1 INTRODUCTION

Technology promoting language development has become increasingly important for foreign language teaching and learning, in particular different techniques have been devised and implemented to meet the needs of the teachers and students alike. Teachers are provided with effective teaching software tools supporting them during the lessons, while students can improve their learning skills in a constructive and interactive way. In this paper we describe how software and electronic tools used in the classroom for content and language teaching can be combined with field archaeology equipment, exploited on an excavation site.

A two-year University course in funerary archaeology using a Content and Language Integrated Learning (CLIL) approach will be conducted at the Division of Palaeopathology at Pisa University. CLIL methodology is referred to a variety of learning environments in which a vehicular foreign language - in our case English - is used to teach a subject matter different from a second language. This approach, according to which learners perform better if they are properly motivated and appropriately taught, represents a change in teaching methodology, promoting language acquisition and content learning through a variety of activity types.

The content course will help students develop an understanding of the basic concepts of funerary archaeology which uses physical remains to investigate the past and learn about past human behaviours, offering experiential, constructive, and collaborative learning. Funerary archaeology is a branch of archaeology aimed at achieving information about the rites and beliefs of past populations, through the study of death, ancient burials and human skeletal remains, body disposal, etc. The course will focus on skeleton anthropology (the recovery of human remains from burial to anthropological laboratory), bone diagenesis (the modifications taking place in the skeletal remains), taphonomic anthropology (primary, secondary, collective, etc. burials). The description of different technologies used for field archaeology and laboratory studies will also be part of the content course that the subject teacher will hold in funerary archaeology. The trainees will be introduced to the principles of field survey and will be able to put those principles in practice using modern technological equipment. The content course will introduce to the discipline along with research and practical training offering a sound familiarity with the latest fieldwork techniques and methodologies essential for a career in the sector, and will help the students foster interdisciplinary collaboration and form a foundation for future learning.

The language courses, in which the English teacher will enhance the qualitative dimension of CLIL, will get the students involved in the learning and study activities associated with content. The two teachers will collaborate to design meaningful learning activities in which to use technology, but will be working separately in the first year, together in the second, structuring the activities so that the learners will feel confident rather than anxious, and creating a positive and supportive learning environment in the classroom. In this integrated approach content, language acquisition, and
acquaintance with classroom tools and field archaeology techniques will be brought together in a single course.

A questionnaire (specifying name, age, gender, interests, previous non-native language learning) circulated among the applicants and designed to identify English language competence, followed by an interview with the subject and language teachers will help organize the language and content courses. The classes carried out not in Italian but in English by the content teacher, who is an expert in palaeopathology and funerary archaeology (often invited to present his findings at national and international meetings and conferences), will be preceded by two parallel-running language courses taught by the native speaker, and attended by undergraduates whose interests range from archaeology, to anthropology, medicine and palaeopathology. Applicants with some background preparation in archaeology, ancient history, art history and anthropology will also be welcome. The students will develop an understanding of the basic concepts of the discipline fostering interdisciplinary collaboration and forming a foundation for future learning.

This paper is organized as follows: the introduction outlines the organization and principal aims of the course, and of the funerary archaeology course in particular. Part two is concerned with the main features of both the content and language courses. Part three describes the different types of technology employed and phases of work on an excavation site. Finally, part four focuses on the specific activities carried out at the presence of both teachers and the specific tasks assigned to the students, highlighting the possibilities offered by a course of this type in terms of future work.

2 LANGUAGE COURSES

The language courses will consist in a basic, more frequent course running alongside a less intensive one for the more advanced students. These courses - carried out in the first months of the academic year - will prepare the graduates for the content course held by the subject teacher in English in the second part of the year.

At the beginning of each lesson the teacher will give an overview of what the students will be doing and specify the objectives, which will include strengthening the four skills (listening, speaking, reading and writing) and getting acquainted with the specific vocabulary of funerary archaeology, using the different types of technology made available on the course. The activities performed will range from question-answering, matching words with their definitions, gap-filling, etc. The language teacher will explain the different language items in context, looking at the ways in which they are used, examining authentic examples of real text. Rather than a traditional student's book designed to introduce to the basics of the English language, the undergraduates will be studying the essential grammar points exploiting texts which are related to the specific discipline. Other materials agreed upon by the two teachers will be in the form of articles, essays, dissertations, or will be downloaded from the Internet. The students will also watch DVDs and videos in English and listen to audiovisual material developed from online sources and media, for example from important satellite television programs (BBC, National Geographic, Discovery Channel, etc.), as well as CNR videos.
The students taking part in these courses will become familiar with numerous software programs that facilitate learning, and they will draw on their own experiences to promote social awareness, multicultural perspectives, and academic skills. We are convinced that students exposed to innovative information technology supporting the effective dissemination of learning materials will exhibit greater interest in the subject matter and will perform better than those exposed to traditional teaching environments. The technological tools increasingly available in the educational context support the teachers in making the learning process easier and more engaging, and help clarify certain concepts in order to accomplish various instructional objectives. Integrating computers and other electronic technologies into instruction also provides learners with the possibility of spending more time in contact with the target language, engaging them in authentic learning tasks.

2.1 Grammar-in-context

Students will become acquainted with the basic grammatical structures of the English language using material drawn from the content course. In particular, they will be asked to increase an electronic grammar under construction which explains the different language items by means of examples-in-context drawn from the specialised texts in funerary archaeology used by the content teacher during his classes. In the future, the grammar will be expanded by those students who intend to carry out an in-depth study of the discipline and specialize in funerary archaeology. The possibilities offered by the computer in terms of space will make it possible to store any additional and useful information; it is unlikely that the dictionary will be completed in the first two years, but those parts that remain empty will be filled in by the students of the following years.

The examples selected by the students to accompany the explanation of the different grammar points should not only show the word in context but should also be explanatory and “rich” in content. Therefore, a sentence for the modal verb must, used to express strong obligation on the part of the speaker, could be:

The excavator of the remains (the “field” anthropologist) must assure the precise identification of each bone element or fragment of an element in situ, record the exact position of each, its anatomical orientation, and relation to other bone elements. [13]

Likewise, for can expressing possibility, an appropriate sentence could be:

Disturbance of burials is the process of movement of human remains as a result of some later activity unconnected with these remains, such as … Disturbance can also be caused by non-human agencies, such as rodents … [13]

Finally, may with the meaning of possibility or potential reality, could be the following:

The evidence for secondary burials may sometimes be confused with disturbance when based on the lack of completeness of the burials. [13]
2.2 Glossary

Another of the goals of the course is to produce a bilingual English-Italian glossary of funerary archaeology terms organized according to the different areas related to the discipline (period of study, position of the bodies, artefacts, diseases, etc.). The glossary will be created on the basis of the specialized terms and definitions drawn from scientific or expert texts, written by authorities in the sector. A list of headwords extracted from the indexes of the most important English funerary archaeology texts used for the course will need to be accompanied by one or more simple definitions drawn from these texts, and each headword will be translated into Italian. Despite the considerable number of dictionaries in the different fields, there seems to be a growing need for more specific sectorial dictionaries representing essential tools for the students who wish to dispose of a useful resource book but also for specialists who need an easy and rapid consultation handbook providing the translation of a specific term in a language other than their own. For the preparation of the glossary, the students will organize the information they retrieve using the Excel application of Microsoft Office.

<table>
<thead>
<tr>
<th>English</th>
<th>Italian</th>
</tr>
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<tbody>
<tr>
<td>body position</td>
<td>posizione del corpo</td>
</tr>
<tr>
<td>crouched</td>
<td>accovacciato</td>
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<tr>
<td>flexed</td>
<td>flesso</td>
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<td>prone</td>
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<td>sitting</td>
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<td>supine</td>
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<td>bone</td>
<td>osso</td>
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<td>bone bundle</td>
<td>insieme di ossa</td>
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<tr>
<td>bone growth</td>
<td>crescita ossea</td>
</tr>
<tr>
<td>stray bone</td>
<td>osso isolato</td>
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<tr>
<td>burial</td>
<td>sepoltura</td>
</tr>
<tr>
<td>child</td>
<td>bambino</td>
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<tr>
<td>communal/collective</td>
<td>comune/collettivo</td>
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<tr>
<td>primary</td>
<td>primario</td>
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<tr>
<td>reburial</td>
<td>risepellimento</td>
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<tr>
<td>primary</td>
<td>primaria</td>
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<td>secondary</td>
<td>secondario</td>
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<td>coffin</td>
<td>bara</td>
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<td>coffin plate</td>
<td>copertura della bara</td>
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<td>crypt</td>
<td>cripta</td>
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</table>

Fig. 1. Sample list of funerary archaeology terms from Social Archaeology of Funerary Remains
3. EXCAVATION TECHNIQUES

In the summer period between the first and second year, the students will be involved in an intensive two-month practical training course. Archaeological fieldwork will be undertaken in the area surrounding the village of Benabbio located near Bagni di Lucca in northern Tuscany, where excavations have been going on since 2007. Students from previous traditional funerary archaeology courses have been supported by the Division of Palaeopathology of Pisa University. Guided by the content teacher, they have exhumed individuals buried near the medieval church of the Castle of Benabbio (also in course of excavation), and of people who died in the village during the cholera epidemic of the year 1855. The archaeological locality is an area with dense concentrations of features, artefacts, and organic material.

This practical part of the course will concentrate on the principal techniques and equipment currently used in field archaeology, such as balloon aerial photography, by which it is possible to detect traces of buried structures that are not visible at ground level; georadars, which allow to gain information about the location of past human cultures in particular areas, the extent and structure of a site, as well as other important indications of the archeological features; and archaeological excavation. The fieldwork will start with balloon aerial photography followed by georadar and geographic information system (GIS), the science that allows to view, interpret, and visualize data concerning maps, globes, reports, and charts. High-resolution georadar survey has confirmed to be the best tool to perform non-destructive survey also on very delicate surfaces. With accurate planning and efficient data processing it is possible to obtain results with very high resolution in a short time. This equipment allows to explore the subsoil with a detail which is not obtainable with other techniques. Finally, some of the bodies will be submitted to computerized axial tomography (CAT) for a more thorough investigation, that can reveal and clarify certain types of information that would have been impossible to obtain in the past. Over the last few decades the progress in archaeological techniques has undergone rapid changes and is likely to develop further.

![Combined field archaeology techniques](image)

Fig. 2. Combined field archaeology techniques
On arrival at the site, the subject teacher will start to show the students how to use the different types of tools, with practical demonstrations, starting from georadar through to the final phase. The employment of different types of technology in this particular field of study will enhance learning through a combination of human and non-human resources. Mastery of the English language and knowledge of how the different technological and fieldwork tools work make it possible for the students to communicate ideas, share experiences, and speak about their work with British peers from English-speaking countries, who are spending the summer period at Benabbio on exchange courses, and graduating in funerary archaeology in their country. Students will make a list of all the objects, materials and artefacts found, and keep a detailed report of the progress made, using both traditional and modern high technology survey equipment.

Fig. 3. Burials of the 18th-19th centuries in excellent state of preservation

This work will take place in partnership with local communities in the region, and the students will be featured by the local television and the press as occurred during the excavations of the previous years. Some of the well-preserved bodies recovered were adorned with jewels (in particular rings and ear-rings), and different artefacts were found, ranging from pottery, to glassware and coins. The students will have to classify and catalogue the artefacts found, documenting the different phases of the excavations with photographs and captions. Furthermore, a website illustrating the results achieved so far prepared by the students of the previous courses will be constantly updated with new information.

The archeological research-led excavations carried out in the village of Benabbio as well as the content and language classes of the first year will serve as a basis for the work of the second year in the way of workshops, tutorials and laboratory practicals guided by the subject teacher in English and supported by the presence of the language teacher. The students will be asked to report on the activities carried out in the classroom and on the excavation site, exchanging ideas and experiences. We wish to stress the importance of this full immersion English course where “learning while using” and “using while learning” are key factors for success and long-lasting results.
4. SECOND YEAR CLIL COURSES

In the second year of the course, the content and language teachers will both be present in the classroom where the students will perform a number of tasks individually, in pairs, and in small interactive and rotated groups, reading around a specific area, watching a video, bringing together what has been learnt in the classroom in terms of both language and technology, with the stronger students helping the weaker ones. Various technologies will be made available, from electronic blackboards to computers, audiotapes, DVDs and videos, integrating conventional educational experiences with modern practices, in order to achieve advanced education.

The undergraduates will also acquire practice in a variety of academic language functions such as defining a word or concept, describing, explaining, narrating, classifying and speculating. The two teachers will help the students reformulate any ill-formulated sentences and any incorrect terms will be replaced by appropriate ones, for example substituting the common word “thing” with others such as artefacts, utensils, etc. The tenses associated to these functions will be essentially the present continuous (e.g., The body is lying on…, They are excavating…), to describe what can be seen in an illustration or what is happening in a video film; the present perfect (e.g. The corpse has just been recovered…); or simple past, We found various artefacts, and so on. By the end of the first year, the students will also have achieved familiarity with the modal verbs, It might/could be the body of an adult male. Word, Excel, Power-Point will be used as support tools, together with visual materials taken from the important television programmes, films, CNR cassettes, and the videos shot by the students themselves during the excavations. Students will be expected to respond to simple questions like What can you see now? What do you think they are going to do? or slightly more difficult ones, pausing the video and removing the sound, for example, according to the needs of the teacher or student.

The final exam will consist of a dissertation written in English on an independent study topic, where each student will illustrate a particular issue related to the subject of funerary archaeology, with the support of the grammar and the glossary prepared in collaboration, and taking into account the work conducted with the support of field archaeology equipment. The oral part of the exam will consist in a Power-point presentation about the experience gained during the excavation phase, allowing the students to show the competences attained in terms of knowledge of funerary archaeology, use of appropriate terminology, and proficiency in the language. The written and oral forms of production will be complementary, playing a reciprocally supporting role and providing highly useful skills for future possibilities of employment and career development.

On completion of the course, the students will have developed competences for their working life and will have achieved multidisciplinary skills, including research, computing, field survey, and language, as well as presentation and report-writing skills. The course will give the students the opportunity to access educational material (also including figures, images, maps), and to interact with each other and cooperate. Funerary archaeology offers learning that is experiential, constructive, collaborative and differentiated, a perfect vehicle to get to know more about the past.

The classes, workshops and laboratory practicals will help the students build confidence in applying techniques to real-life problems, and attain a range of expertise in areas that are in high demand by potential employers. We hope this course will provide a range of expertise, opening up
new paths after graduation, that can lead to working in the field of funerary archaeology.

References


