

LEONARDO DA VINCI Project No (EL/01/BP LA 114443))

ORION: Development of Virtual Learning Environment in environmental science, with online re-usable interactive modules in marine pollution and ecology, with self-learning packages in English, Greek, Portuguese and Swedish

**SHARE AND RE-USE CONTENT MODULES
WORKPACKAGE 3**

**SELF-STUDY LANGUAGE MODULES
WORKPACKAGE 4
UNNUMBERED Deliverable**

**REPORT OF PILOTING EVENTS IN
SHARE AND RE-USE COURSES
SELF-STUDY LANGUAGE MODULES**



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1. INTRODUCTION

1.1 Course and language modules' provenance

1.1.1 *Scope of previous relevant work*

The English matrix for the ORION language modules and the course modules used in the basic marine ecology units, entitled “Introduction to the Marine Environment”, originated from work done by the ORION Coordinator in the ONEDIN project (EL/99/1/086810/PI/III.3a and EL/99/1/068610/PI/III.3.a/CONT), as was made clear in the original project proposal.

The present Piloting and External User Report (not a numbered deliverable) therefore describes in detail the piloting which took place in advance of, and led up to, the ORION project. Without a full description of these previous events, the rationale and execution of this aspect of the ORION project will not be clear to those responsible for its final evaluation. The present Report therefore commences with a description of the previous piloting and use of these materials and their prolonged gestation period, referring to the processes of creation, piloting, testing, analysis and modifications carried out from 1998-2002.

1.1.2 *Scope of ORION course and language modules piloting*

The materials referred to above (para.1.1.1) underwent exhaustive piloting and testing for their suitability for use and delivery as ODL course modules. The results and teaching methodology upon which the finalised modules were communicated to all the ORION partners while the proposal was being formulated. Consequently, the ORION partners were already convinced by the methods, so that piloting of the other ORION courses was limited to a very small multi-lingual sample, in order to verify the functionality of the ORION distributed network, and the use of the ORION tool as an acceptable and user-friendly ODL methodology, suitable for the needs of both tutor and student user.

1.1.3 *Need for proof of piloting*

The National Agency has requested on more than one occasion tangible proof that such piloting did indeed take place. It is therefore a major function of the present report to deliver the tangible proof required from the Coordinator that such piloting had taken place. Since the piloting took place over several years, and was documented in detail, this documentation is provided (in its original form, where available, as requested by the National Agency on the occasion of the control meeting in Crete on 9th September 2004).

1.2 Background and Evolution of ORION online courses

1.2.1 *Provenance of language modules*

The ORION Coordinator, Mrs M.Eleftheriou, lectured in English at the Department of Biology, University of Crete, from 1988-2002. Her English for Specific Purposes course was a 4-semester compulsory course, each semester valued at 4 ECTS credits; this non-elective total of 16 ECTS credits is an indicator of the value given to the English for Biology modules by an external evaluator. A detailed list of the results obtained during this period is given in **Appendix 1**, both for confirmation of work done and as a point of reference for certain figures quoted.

During this period she piloted several innovatory ICT and online courses, including the basis of the ORION language modules and the marine ecology module "Introduction to the Marine Environment".¹

1.2.2 *Rationale of Course Structure and Delivery*

From an in-depth investigation of the students' previous knowledge of English carried out by the Coordinator in 1995 (reported in Deliverable 12), it became evident that some students vastly over-estimated their current state of knowledge. A diagnostic/placement test enabled the Coordinator to pinpoint, not only those students with difficulties, but also the gaps in knowledge of grammar and syntax of the whole year cohort. From the resulting remedial support created, used, tested and updated by the very experienced ORION Coordinator from 1996-2001 (described in detail in D12 and therefore not repeated here), derives the linguistic content of the ORION basic language modules. A description of the work covered therein (shown below) mirrors the description of the grammar and syntax deliverables which form part of ORION WP 6:

- a) the use of: singular/plural nouns, irregular plurals, definite/indefinite article, demonstrative pronouns, countable /uncountable nouns, present tense (forms and functions), agreements (subject/verb), pronouns, adjectives
- b) classification and measurement (numbers, quantities/amounts, weight, dimension/area, volume, location/position, properties, shape
- c) how to make statements, negative statements, asking and answering questions
- d) how to make simple measurements, how to make simple comparisons/contrasts).

2. USE OF GRAMMAR AND SYNTAX DIAGNOSTIC

2.1 The Diagnostic/placement test

The Diagnostic Test consisted of 5 elements: Listening (20 points), Grammar and Syntax(40 points), Sentence construction (10 points), Guided letter-writing (10 points) and Comprehension (40 points). In the Grammar and Syntax section, the part used as a basis for the ORION total beginner English Language Matrix, 30 points were the minimum accepted cutoff point. The response to each question was recorded and served as a class diagnostic for the teacher. Only one of these original working documents has survived, for the year 1998-1999, and it is shown as **Appendix 2**. Copies of the Coordinator's detailed but rough working notes of results are also shown as **Appendix 3**, in response to the direct request, made at the Control Meeting of September 9 2004, that these particular pieces of documentation be submitted

2.2 Use of all parts of Diagnostic

The Grammar Diagnostic test (now sadly out-of-date in its choice of "interesting" characters since the events in Athens August 2004) is appended to D12. It is therefore easily available to the Evaluator if evidence of its existence is required. All parts of the Diagnostic test were used by the Coordinator in designing the ORION basic language self-instructional modules for the English matrix. However, it was understood that each partner would not merely translate the grammar part of the materials into the native language, but would also provide an easily understood basic grammar, as well as a translation of the matrix language texts.

¹ The Biology Department (University of Crete) participated in the European Community Course Credit Transfer System (ECTS), with courses calculated in credits (140 credits for the B.Sc. award) since 1993.

3. PILOTING OF ONLINE COURSE MODULES IN ENGLISH (UNIVERSITY OF CRETE)

3.1 Rationale

In 1997, the Department of Biology, having made a considerable investment of funds, staffing and resources in its computer classroom dedicated for student use, decided on the objectives for using online materials in its compulsory English course. These were:

- i) to familiarize students with the concept of distance learning, which was new to them, and which the new learning environment was particularly suited to deliver
- ii) to provide a specially designed IT tool in a necessary, not especially difficult subject area which lends itself well to modular delivery and which students often find boring by traditional delivery methods
- iii) to enhance the learning process by means of new technology which can present certain types of material more easily and more flexibly than by traditional methods

3.2 Development of online course materials

Specially designed course modules for the English course were designed and developed over several years, always keeping in mind the needs of all students, including absolute and false beginners. Thus the course "Introduction to the Marine Environment" was chosen as a follow-up pilot study for English in 1999, with every aspect subject to careful monitoring by Mrs Eleftheriou, in order to ensure that the ODL methodology was suitable and that the items chosen to verify the methodology were also appropriate. Coincidentally at this time, student numbers increased very rapidly, and it soon became clear that the use of a "virtual classroom" with regular tutor support would prove to be a useful innovation, if the methodology carried out all its promises. In fact, it was found after the first year of operation, that students and teacher could cover the course material more than adequately in spite of the continuing increase in student numbers.

4. INTRODUCTORY AND PILOTING STUDIES

4.1 General objectives -1999

In 1999, the online course "Introduction to the Marine Environment" was run as a single downloadable pdf, exactly copying the hard copy print format, as this was the received wisdom concerning online course delivery at that time. Utilising the pdf format had several consequences: the course would not be a simple html cut-and-paste job; it would be capable of being accessed asynchronously and therefore flexibly; it would be enhanced by an internal glossary and many online resources.

However, it very soon became apparent that there were several disadvantages to the pdf format: a) although the document looked very attractive, because it was a single six-chapter document, it took a long time to download; b) the live links to websites could not be used directly, which also went against the spirit of information retrieval which formed an important part of the course; c) the internal glossary worked in a very clumsy fashion in the pdf format and was also very slow to download.

There were initially 3 assignments (Annexes 1-3), all of which were given electronically and individually to the students, and which were set as an integral part of

the syllabus for the third semester. Each student had been provided with an email address by the University(linked to Department entrance number). Details of these initial tests from 1999 were analysed using the results from the item analysis carried out, in order to ensure that the items chosen were a valid and reliable test of the teaching methodology and student performance.

After careful scrutiny of the tests carried out by means of a detailed and thorough Item Analysis (given below), the type of online provision of the course was changed from pdf format to live Internet connection, which improved the accessibility of the material. The Greek translation of the course then became available online and both English and Greek materials could be accessed on a dedicated website.

4.2 Changes in 2000 in response to 1st year's pilot study

In 2000, the pilot tests were re-run under different conditions. Changes were made as a direct result of the previous pilot studies and the subsequent Item Analyses (see below). There was a third factor involved: poor results from a voluntary examination which was held at the end of the academic year 1999-2000 (June), 10 weeks after the end of the pilot study. 18 students opted to take this exam, which they knew was not to feature as part of their final exam. They were all aware that this was a voluntary pilot exam, under examination conditions, in which normal summative assessment instruments were used. Only 6 out of 18 passed, i.e., achieved 50%. Of the remaining 12, only 3 achieved a “respectable” fail, and overall 50% failed the summative examination.

The 2000 results also underwent detailed Item Analyses, and overall showed some improvement in success rates. A re-vamped examination was included as an obligatory part of the final examination at the end of the academic year 2000-2001, and this time the results were very much better. Once the students knew that the examination of ODL material was part of the system, they behaved normally, that is, after the ten-week gap, they looked at their notes and revised the material.

The tests in 2001 continued to undergo Item Analyses, but the results are now presented as in terms of mastery (using Biology Department performance criteria for mastery, i.e., 90%).

4.3 Conclusions

The material, including the tests, were used with confidence in 2001-2002 academic year. Item Analyses had revealed areas of ambiguity and misunderstandings, but had also indicated several factors which gave reasons for students' poor showing, i.e. , there were several occasions when the questions were well formulated and relevant, but the students still did not respond well. Because this was a pilot study, the students showed interest in both ODL methodology and their own reaction to innovatory delivery. Long before the term “blended learning” began to be in use, it was shown that the students of the Biology Department of the University of Crete, though highly appreciative of the flexible learning aspect of the modules, were considerably more responsive when the ODL materials were delivered personally by the tutor, and when there was also a weekly face-to-face tutorial of lecture, in which difficult issues could be raised.

5. ASSESSMENTS INSTRUMENTS ITEM ANALYSES

5.1 1999 TEST 1 (See ANNEX 1- all tests given in final format)

5.1.1 *TITLE - How to use the module*

5.1.1.1 Type of question

Almost all questions were concerned with knowledge and navigation of the module, as there is no point in setting students work and assignments which is completely outside their experience. In Test 1, questions 1-8 obliged students to read the instructions (something that not all users do, apparently!) and to demonstrate their ability to handle this type of learning activity. Questions 9 and 10 concerned information retrieval at a basic level (involving finding of correct terminology and correct dates) to verify that the lesson had indeed been learnt.

5.1.1.2 Class performance 1999 (16 in class)

Test 1 had 10 questions, 2 of which had several interlinked parts. Success rates were as follows: No.1-87%. No.2-94%. No.3 – 94%. No. 4 – 94%. No. 5 – 94%. No. 6 – 81%. No. 7(i) – 94%, No. 7 (ii) – 94%, No. 7(iii) 68%. No. 8 (i) 87%, No 8 (ii) – 87%. No. 9 – 81%. No. 10 – 62%.

These results showed that Nos. 7(iii) and 10 needed to be scrutinised (see footnote²). It was decided that No. 10 was a fair question and should be retained.

5.1.1.3 Class performance 2000 (36 in class)

Question 1-information(94%); Nos. 2 & 3-terminology (100%); Nos 4-8 – navigation; no 4(27%0; Nos. 5,6,7,8 (97-100%). No 9 -vocabulary (86%); No 10-information retrieval (100%).

From this it was abundantly clear that Question 4 either had to go or be radically changed in the future. ("How do you use the glossary?" changed to :How can you access the glossary?)

5.1.1.4 Class performance 2001 (45 in class)

In the academic year 2001-2002, 91% of students achieved 100%. **All students achieved mastery.**

5.1.1.5 Results

The questions had now been subjected to detailed Item Analyses, which had shown up ambiguities in one question. The delivery of the course had changed from pdf to live online Internet delivery, test items had been validated and found to be reliable. The ODL modules were now an integral part of the course.

5.2 **Test 2 (See Annex 2 – first version)**

5.2.1 *Abiotic Elements*

5.2.1.1 Type of question

Test 2- 10 questions ranging from straight factual comprehension (4), guided comprehension (2), finding correct definitions (1) and inferential (3), involving making conclusions after information search.

² 7. ii) What does BLUE text indicate?

iii) "Write down a site that you have used"-changed to "Write down one that you have used"

10. When did the Rio de Janeiro Conference take place?

There were 7 questions , all with multiple parts except no. 7. Skills tested ranged from straight factual comprehension, guided comprehension, finding correct definitions, and inferential, involving making conclusions after information search.

5.2.1.2 Class performance 1999

In all sections of Nos. 1-6, there was 100% success rate. No. 7 however, had only 58% success rate (see footnote³).

Further examination of the test answers gave the conclusion that the straight information retrieval question were well-formulated, and that the final question (No. 7) should have been open-ended rather than close. It was therefore clear that it should be rephrased. **90% of learners achieved 90%, i.e., mastery.**

5.2.1.3 Class Performance 2000

In 2000, all questions apart from Nos.1 (iv) (86%) and 7 (25%), achieved 98-100% success. No 7 was still giving problems. But **90% of learners achieved 90% (mastery).**

5.2.1.4 Class Performance 2001

67.5% achieved 100%, 22.5% achieved 90%. **Therefore 90% achieved mastery.** A further 2.5 achieved 75%. However, a small percentage (7.5%) were given a zero rating because the course tutor felt that they had cheated (an issue not relevant to this report).

5.3 Test 3 (See Annex 3)

5.3.1 *Title -Abiotic elements (Part 2)*

5.3.1.1 Type of question

This contained 4 questions with multiple parts, 2 guided comprehension, 1 relating to correct use of terminology, and 1 inferential.

5.3.1.2 Class Performance 1999

All gained 93% success rate, apart from 3 (ii) which had only 50% success rate. It was decided to keep this question as there was no valid reason for changing it.

5.3.1.3 Class Performance 2000

The content of the questions remained as before, but they were divided up differently into 6, again with multiple parts. Rate of success was again very high, with **all questions achieving between 90-100% rate of success.** Once again, the “rogue” question had a low rate of success (30%).

5.3.1.4 Class Performance 2001

The “rogue” question remained, and was responsible for the failures. However, 86.5% achieved 100% and a further 11% achieved a very respectable 75%. Only 2.5% failed. Therefore **87.5 % achieved mastery.**

5.4. Test 4 (Annex 4)

5.4.1 *Title – The Living Element*

5.4.1.1 2000 Test 4

³ 7. Is the stratification of sea water a year-round phenomenon? Give details.

A new assignment was added, to mark the success of the ODL methodology and its acceptance by both Department and student body.

5.4.1.2 Type of question

There were 7 questions: No.1 – inferential, No. 2 – definition/information search, No.3- information search No. 4 – inferential, categorisation; No. 5 – search & comprehension of terminology and biological concept; No. 6 – categorisation; No. 7 (i) search and inferential; 7 (ii) biological concept and knowledge.

5.4.1.3 Class Performance 2001

This was a considerable test of knowledge and this showed in the results: 23.5% achieved 90% or above; 65% achieved 70% or above. 11.5% achieved 50%. Therefore **88.5% achieved mastery**, and all achieved 50%, considered as normal pass rate in summative assessment.

5.4.1.4 Results

This test proved to be a real discriminator. The 8 questions set were rather more testing: 2 concerned simple searches for information, 2 were inferential, 2 concerned categorisation linked to inferences, and 2 were concerned with knowledge and comprehension of biological concepts. **Only 25% achieved 90%, ie., mastery** according to Biology Department standards, 71% achieved 70%, ie., mastery as defined by accepted CRA standards, and 2% achieved only 50%.

6. EXTERNAL USE OF ORION COURSE MODULES

6.1 External evaluation questionnaires

The University of Cork (Dr. G.Mousakitis) provided an external evaluation tool for student users, after trying out several different exemplars. These evaluation tools are shown in English, ~Portuguese and Greek at Appendix 4. All of these evaluation tools were made available online as part of the restricted course materials, so that students could evaluate the course and send their evaluations direct to the tutor concerned. This was obviously very useful for the very small sample needed to test the functionality of the multi-lingual distributed site.

6.2 2004 Piloting of Greek course materials

The 2004 Greek evaluations of the Greek course materials were carried out at the University of Crete, by one M.Sc. student and one Ph.D.student, and at the University of the Aegean in Mytilini by one M.Sc. student and one Ph.D. student. Their evaluations are shown as Appendix 5. All commented favourably on the courses and the mode of delivery, as well as the accessibility of the material on a secure distributed site.

6.3 2004 Piloting of Portuguese course materials

Two Portuguese under-graduate students evaluated the Portuguese course materials and their evaluations are shown in Appendix 6. Again, the responses were positive and very favourable. Several Portuguese students also tested these materials while carrying out exchanges in the University of Cork, but left during the summer of 2004 without completing the online evaluation questionnaire. However, their anecdotal evidence was also positive and helped towards the formulation of interest in the ORION tool from the

Joint European Masters (Maqfish –SOCRATES project) led by the University of Ghent in which the University of Cork is a partner.

6.4 2004 Piloting of Swedish new course

The University of Stockholm has created an entirely new course in Tropical Ecology, with 34 student users from several countries. The list of users is shown as Appendix 7. There has as yet been no feedback from these users of a new course. However, the new course itself is proving to be very successful, as it combines all those elements which were foreseen in the proposal: easily accessible online course, run on a distributed network, which allows both student and tutor easy, asynchronous and flexible access from several countries.

7.CONCLUSIONS

Pitfalls caused by complexity of objectives

The ORION language modules are seen by the Project external evaluators as a very exciting and ambitious concept, but one which is very difficult to achieve because of its complexity. E-learning and online projects are obviously very complex in their scope (witness the comments made at the Bologna Elearning Seminar in Gent 4-5 June 2004). The ORION project has had more than its fair share of administrative difficulties, caused by structural changes brought about by government policy. However, the partners have tried extremely hard to fulfil all the project deliverables but are well aware that the project will require some fine-tuning if it is to succeed in its long-term aims.

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