

Open-Space Learning in Real World Contexts OUTLINE OF PROPOSED PROJECT

Up to £1000 is available for each of six OSL-based learning projects which may use external creative partners, resident or embedded practitioners, and/or the student ensemble. These projects are the core activity of OSL and will form the basis for case studies, mentored by Jonothan Neelands, demonstrating the relationship between performance-based learning and student achievement and confidence in their professional development.

1. Project description

Please include

- The title of your project
- Your aims and objectives
- The teaching and learning aspects of the project
- Your research questions and methods
- How you plan to carry out your project (design and methods)
- Any collaborations you wish to pursue

Real World Chemistry

Aims:

- 1) To continue to use OSL to enhance the learning experience of the first year cohort of students within the Chemistry Department.
- 2) To develop, in the light of the requirements of business, a session for students in their final year that addresses communication and presentation but remains subject-specific.
- 3) To further develop models for teaching chemistry within the context of OSL with a view extending them to more advanced courses and to other departments (both at Warwick and further afield) through dissemination at conferences and publication.

Teaching and learning aspects:

- 1) We will build on the first two years in which we have run "Capital Chemistry" by careful modification of the content and teaching methods based on both formal and informal feedback. The first-year workshop will now be a single event run early in the autumn term. This will continue to include student preparation, and 1-2hr workshops based on both the "periodic table" and "famous chemists" that have taken place in previous years. Facilitators from both the Capital Centre and the Chemistry Department will use methods such as formal lecturing, informal teaching, physical demonstration and role-playing (for example in a "University Challenge" format). The learning aspects entail deepening student knowledge of subject matter, but also softer skills such as communication, teamwork, self-management, confidence, and willingness to experiment and take risks.
- 2) The session(s) for final-year students will be run in the spring term and will focus on creating a "safe" space in which students can practice presenting their specific subject interests, rehearse pitching themselves and their subjects to potential employers, and learn to develop "presence".

Research questions and methods:

Design and Methods:

Workshop1: Famous Chemists/Periodic Table

Preparation. Students are assigned an element in lectures, and requested to produce a short paper on that element. They are also given a T-shirt (coloured according to the group of which that element is a part) and asked to illustrate it according to the symbol and properties of that element (for example in previous workshops some students drew direct applications or physical representations of their element, while others took a more abstract approach, experimenting with texture and colour to represent their element).

Students are assigned a famous chemist, which have been chosen with care in order to provoke a rich and varied learning experience within the group. They produce a short paper on their chemist. They are encouraged to equip themselves with props if they feel it will aid their workshop experience.

Workshop activities: Students are involved in a series of tasks involving embodying their element, finding out information about the other students' elements, and physicalising some aspects of their element's "character". Students ask general questions of each other, both scientific and social, and answer in a historically appropriate way as their chemist might, e.g. "why do things burn?", "what was the biggest obstacle in your research?" Each chemist then steps forward and the others reveal what they have learned about her/him. The chemists then assemble in a semi-circle according to their year of birth, and in turn, give a brief interview as their chemist in which they promote "their" ideas. The students then "discover" their elements on a large version of the periodic table. Following this, sub-groups of elements, or chemists, are formed, in which the students discuss the properties of their elements, or the relationship of their chemists, and represent an aspect of this in a "tableau". As a final activity students arrange themselves into a "living" periodic table and investigate the changing properties according to external stimuli (the facilitator reading out temperature scales or ionisation energies), or there is a "University Challenge" session on the students' knowledge of both their elements and chemists. The session ends with a plenary engaging the various different representations of periodic tables.

Workshop 2:

Real World Chemistry. There are 3 sessions and students can opt in – unlike the 1st-year work which is compulsory. Session one involves presenting students with a "real world" problem, e.g. "what is the chemistry underlying events in the gulf of Mexico?" Or, where is the chemistry in an I-pad?" Students are placed in small groups to discuss these matters and are then asked to make a short presentation to the other groups. This session is designed to allow students to think on their feet and produce something workable with no research. Session 2 is a session on "presence" and presentation skills designed to enhance students' skills in communicating beyond the complexities of their subjects. Session 3 invites students to present, individually, their ideas to a panel including OSL facilitators, academics (from Chemistry and other disciplines), and individuals from industry in a "boardroom" atmosphere (conference rooms at University House would be ideal for this). Students then receive feedback on their 3-minute presentations.

Collaborations: This project builds on the existing collaboration between Jonny Heron, Dr. Nick Monk (Capital Centre) and Prof. Peter Sadler and Dr. Nicky Farrer (Chemistry). It is an ideal project for involving PhD/Masters students in alternative teaching methods and as such we are requesting funds in order to pay the teaching time of these students (who would otherwise be paid for demonstrating labs). A new collaboration will be explored with other members of the chemistry department who are interested in finding out about OSL as well as new OSL facilitators who will support JH and NM in the autumn sessions.

2. Which aspect of Open-space Learning does the project address? (Please include all that apply and give details of how they will be addressed)

- Exploring innovative teaching and learning in and for the higher education community in England.
- Applying workshop practice and collaborative learning in flexible teaching spaces.
- Employing enactive and experiential learning, applied drama, role play and ethnodrama.
- Identifying workable assessment methodologies for these styles of learning.
- Testing the efficacy of OSL and measuring its impact.

The project has been carefully developed to address all the above aspects of OSL. The teaching methods are certainly innovative for higher education in Chemistry, where the majority of learning of material is through the non-interactive lecture format. The activities in all the sessions are heavily workshop-based and students learn through both primary (reading they have done themselves) and secondary (gaining knowledge from other students/facilitators in the workshop) mechanisms. Role play is employed in both the Periodic Table and Famous Chemists workshops. Although more difficult to assess than more traditional learning formats, the examination performance is likely to be an indicator. The impact of using OSL will be initially through informal assessment such as “did the students think they had understood more about their subject as a result of the session?”, or “do students feel the sessions have better equipped them for entry into the world of work”?

How does your project link with the aims and objectives of the OSL project?

The project was born out of the desire to use innovative methods to teach Chemistry. OSL has proved a useful way to this and so addresses OSL’s commitment to interdisciplinarity. OSL’s focus on “real world” contexts is highly relevant here, also, in both sessions as students develop skills that address their needs beyond university. Finally, all the methods detailed above provide an experiential method of learning that engages students both physically and intellectually.

3. Timescale

Preferred start date: ...Oct
2010.....

Estimated completion date: ...March 2010 although the project is ongoing (on an academic year basis)

What is your proposed schedule of work for this project? Please indicate the numbers of students involved and key dates.

Number of Students: depending on intake can be 100 – 160 for the 1st year sessions. Each workshop takes approximately 30 students (limit is due to studio size). 20-25 students for Real World Chemistry. Entry will be application based.

Key dates:

Workshop 1 (Periodic Table/Famous Chemists) Oct 2010 (precise date depends on timetabling). n.b. This initial workshop is held in second week of term which also allows it to act as an ice-breaker and bring facilities for OSL to the attention of students.

Workshop 2 (Real World Chemistry) Feb/March 2011.

4. Impact

What are the expected outputs and outcomes of your project? What are your success criteria?

Outputs: to have used OSL to enhance the learning experience of the first year of students within the Chemistry Department, and to have experimented with OSL techniques to improve communication skills and confidence of both facilitators and students. To have further developed a framework for teaching chemistry within the context of OSL.

Outcomes: To further disseminate findings at conferences and through publication. To have developed students' employability. Success will be measured by considering both formal (questionnaire) and informal feedback from the students, by self-evaluation of the facilitators, through examination performance, and in the longer term through longitudinal studies.

5. Dissemination and evaluation

How do you see the outputs disseminated within the University of Warwick and outside?

Within the university: word-of-mouth, workshop demonstrations to small groups (as in previous years). Outside: presentation at pedagogical conferences, and through continuing publication in journals such as the RSC journal "Chemical Education, Research and Practice" and the US journal "Chemical Education".

How will you evaluate the success of your project?

The "soft skills" aspects (did the students enjoy it? did it challenge their way of thinking about chemical concepts and ways of learning chemistry?) will be primarily through student feedback, both formal (questionnaire) and informal (conversations within tutorials in the chemistry department). Also, the panel for workshop 2 will be asked for their feedback on the process. Assessing the formal learning outcomes (Workshop 1: greater understanding of periodic trends, the properties of the elements) will be considered by Professor Sadler at examination time (although the workshop is not formally examinable).

6. Resources

What are the resources you need to carry out your project? e.g. Travel, video/audio recording, fees, specialist equipment, clerical support...

Name (please print):Peter Sadler.....

Date: April 2010.....