



Curriculum Design Pattern

Global Learning by Design

Name of Pattern

Connecting study with work: Engaging the first year cohort

Date

December 2014

Abstract

First year classes at RMIT University are high teaching impact areas often with student enrolments at >100, which frequently encompass students studying across a range of higher education programs that require a fundamental understanding of knowledge that is not perceived in their area of study. This provides a challenge in terms of engaging and maintaining student interest, primarily because students do not recognize the application of knowledge to their field of study. The challenge is to contextualize the content for the range of student cohorts within the one course. This is a global issue within many of the programs offered at RMIT University.

This pattern addresses the implementation of activities that incorporate the flexible delivery of content, including online media-rich interactive learning via the creation of short videos, to illustrate the direct application and relevance of the content and thereby capturing student interest and increasing their motivation to learn.

Learning Context

CHEM1239 (Chemistry for Life Sciences) is a large first year chemistry course (>150 students) taught in a face-to-face mode. It comprises the units of Organic, Physical and Inorganic Chemistry and within each unit is a series of topic areas.

Rationale/Aim

To create a series of short chemistry videos to supplement and aid in the explanation of topic areas and applications in an Australian context.

Learning Design

Learning outcomes

- To foster and enhance the student learning experience in non-traditional chemistry disciplines.

Process of Activities

Step 1: Identify topic area where inclusion of video content will enhance learning.

Step 2: Identify any similar online products and identify any gaps in content areas eg. Australian industry focus.

Step 3 : Develop a storyboard for the proposed video addressing the key topic area utilizing a content expert eg. a lecturer with expertise in the area.

Step 4 : Identify and approach potential Australian industry contributors to create the video.

Step 5 : Create video as per storyboard. Consider appropriate options when deciding on how the video is to be made eg. video using a range of options:

- in-house development of video using appropriate software
- outsourcing production (internal or external to RMIT).

Step 6 : Seek academic peer review and feedback of videos particularly of the content/concept (mainly with project team members and other academics in the relevant area).

Step 7 : Identify the most appropriate means to implement videos for students to engage eg. linked as part of your Blackboard Learn site via YouTube release.

Step 8 : Seek student feedback (via quizzes, survey and CES). Use of gaming websites like Kahoot.it for increased and stimulating student engagement.

Step 9 : Provide a step by step guide on how the development of the videos was undertaken

Challenges

Ensure timely consultation with:

- relevant industries to provide an industry focus
- arrange access to media and video production (eg. voice over, RMIT branding and publication to YouTube)
- assistance with copyright permissions at RMIT University, selection and supervision of a suitably qualified research assistant
- identify if ethics approval will be necessary due to content
- identify and locate training and advice with implementing surveys and quizzes
- creating video yourself using off-the-shelf software

Conditions

Critical success indicators/useage/implementation

The pattern has been implemented and evaluated in CHEM1239 (Chemistry for Life Sciences) using simple quizzes and a survey created through Google Drive and also using Kahoot.it.

Views of the videos created have also been tracked via YouTube and also in Blackboard Learn. The intention was to obtain feedback on the video content and student comprehension. This has been achieved in real time at the lectures (on a voluntary and anonymous basis as required by the ethics application). Students have interacted via Kahoot.it which provides a quiz and a survey via a game scenario. The survey was a series of ten questions aimed at getting student feedback on the videos created as part of the GLbD pattern. Responses in the CES and actual performance of the student cohort will provide the final evidence to evaluate the project/pattern.

The creation of these videos is directly relevant to a number of first year undergraduate chemistry courses (CHEM1014, CHEM1015, CHEM1030, CHEM1031, CHEM1240, CHEM1242, CHEM1257, CHEM1268, ONPS2320 and ONPS2321) that incorporate students from the Food Science and Nutrition, Chemical Engineering, Applied Science, Biotechnology, Environmental Science programs spanning across the School of Applied Sciences as well as within the College of Science, Engineering and Health (SEH), some of which are online offerings through Open Universities Australia (OUA). Some of the videos created will be adopted immediately in 2016 into some of these courses while in other areas a similar approach could be taken to include further videos into some of the other chemistry topics covered.

Although the videos were developed for CHEM1239, topic areas were selected so that the videos can also be used in other first or second year chemistry courses such as CHEM1015 (Environmental Science program, year 1), CHEM1240 (Pharmacy, Pharmaceutical Sciences, Medical Laboratory Science and Biomedical Sciences programs, year 1), CHEM1030 (Chemistry program, year 1), CHEM1039 (Chemistry program, year 2), CHEM1059 (Environmental Science program, year 2) as well as electives such as ONPS2188 (Chemistry of Drugs and Toxins). During semester 2, 2015 several of the videos were shown in other courses such as CHEM1015 and ONPS2188 where the content is relevant and these were well received by the students. Student focus groups were also set up at the beginning of semester 2, 2015 to provide valuable student insight

Resources/Technology

Education resources

- Human ethics application (ASEHAPP 18-15 URBAN Global Learning by Design Major Project RMIT University: Contextualizing Learning in Diverse First-year Programs: approved 4th May 2015
- For the conotoxin video a perpetual license was purchased from the ABC for a 15 second frame of a Catalyst program entitled “Plant Based Medicine”
- Music site (Creative Commons): <http://freemusicarchive.org/>
- For RMIT branding: <http://www1.rmit.edu.au/browse;ID=fpqn0dyn0a6zz>
- For upload to YouTube: <http://www1.rmit.edu.au/eve/videoupload>
- Australian Industry involvement

Thalidomide video

- The Tragedy of Thalidomide <https://youtu.be/BIORZvhGUlI>
- [Therapeutic Drugs and Administration \(TGA\)](#)

Insulin video

Insulin: The holy grail of diabetes treatment
https://youtu.be/agN_Vg6ZA9w

[Diabetes Australia](#)

Conotoxin video

- Conotoxins: Mastery of painkilling medicines from nature
<https://youtu.be/TjUmk7nebOY>
- [Institute for Molecular Bioscience \(IMB\)](#), University of Queensland
- [Invitro Technologies Pty Ltd](#)

Carbohydrate video

- The Sweet World of Carbohydrates
<https://youtu.be/CcNcqP1yBXg>
- [Australian Sugar Milling Council](#)
- [Sugar Research Australia](#)

Margarine video

- The Science of Making Margarine
<https://youtu.be/m1q9QvLI9VY>
- [Australian Oilseeds Federation](#)
- [Australian Institute of Food Science and Technology](#)

Cisplatin video

- Cisplatin: The Role of Platinum in Cancer Treatment
<https://youtu.be/RHZjnJCcvYg>
- [Peter MacCallum Cancer Centre](#)

Pressure cooking video

- The Chemistry of Pressure Cooking
<https://youtu.be/Z4877fx2hwg>
- [William Angliss Institute \(WAI\)](#)

Technology resources

1. Video creation: Adobe Premier CC, and Museo font
2. Video hosting: YouTube
3. Blackboard Learn: CHEM1239 Chemistry for Life Sciences
4. Quizzes and Surveys: Google Forms and Kahoot.it
5. Kahoot: Creating a Kahoot for easy and fun formative feedback

Case Studies

To date two implementations of the videos created include:

1. In ONPS2188 Chemistry of drugs and toxins which is a student elective to showcase three of the videos (thalidomide, insulin and conotoxins) as important examples of drugs
2. In CHEM1015 Environmental Chemistry 1B Fundamentals, where the thalidomide video was shown to engage first year students and showcase a real life important example of the importance of stereochemistry (thalidomide video).

Outcomes

The use of the videos, which have an Australian industry connection, showcases the real life relevance of chemistry for the current student cohort and presents potential future employers in relevant fields of study.

The videos, together with the use of Kahoot.it for the quizzes and survey, provide a stimulating student experience, engaging them immediately with the course content in a real life example with Australian industry relevance. Students participate in quizzes/survey using any mobile device and the academic obtains a real time response, enabling immediate engagement and revision/review of content.

Keywords

Contextualized Learning, diverse student cohorts, student engagement.