

ACETS Exemplar 08*

The Anatomy and Mechanics of Respiratory Ventilation

Heather Bull

University of Nottingham

* Note: this project was unable to find suitable third-party materials and therefore did not complete an ACETS Exemplar learning activity. This report outlines their experiences and the progress they were able to make.

ACETS Exemplar 08: Baseline Survey

Teacher/academic's name: Heather Bull

Teacher/academic's position: Health Lecturer

Teacher/academic's institution: University of Nottingham

Range of subjects taught: Bioscience and Maths for nurses

Contact information: School of Nursing (DRI centre) , University of Nottingham, Derbyshire Royal Infirmary, London Road, Derby

Principal interest: anatomy

ACETS Officer: Dawn Leeder

Date of survey: 15th July 2004

Do you know how to make web pages?	A little
Have you used the web in your teaching?	A lot
Do you use anything that you would consider a "learning object" in your teaching?	A lot
How would you rate your own computing skills against those of your colleagues?	Good
How would you rate your own teaching skills against those of your colleagues?	Good
How would you rate your own use of CAL against those of your colleagues?	Good
How much relevant staff development and training is available?	A lot
How much relevant staff development have you actually made use of?	A lot
Do you have access to support in making electronic learning materials?	A lot
Is this available as a free service?	With restrictions
Have you made use of this support service before?	A little
Would you expect that you would need to use this service to use learning objects in your teaching?	A little
Do you have a VLE (or equivalent) available to support your work?	Yes
What is the system called (eg WebCT, or equivalent local system name)?	WebCT
Does it allow you to put teaching/learning materials online for your students	A lot
If so, do you do this or is it done centrally for you?	both
How easy is it for you to get teaching materials online?	Quite easy
Do you have your own computer at work	Yes
Do you use a computer at home for work	Yes
What level of computer access do you think your students have in the institution and at home	Very good
how much of this is internet-enabled	A lot
How much teaching and learning materials are provided online for the students	A lot
To what degree do you expect the use of learning objects to enhance your teaching	A lot
To what degree do you expect the use of learning objects to enhance your students learning	A lot
To what degree do you expect the use of learning objects to make your work easier	A lot

ACETS Exemplar 08: Interview

<i>Exemplifier</i>	Heather Bull, Health Lecturer in Bioscience, School of Nursing, University of Nottingham
<i>Exemplar description</i>	An online reusable learning resource on the anatomy and mechanics of respiratory ventilation. Resource was developed to complement lead lectures in respiration and also to promote consolidation of concepts. Target students are first year human/health science undergraduates, GCSE, A-level, Access.
<i>Interviewer</i>	
<i>Date and location of interview</i>	26 January 2005, Nottingham.
<i>Context of use</i>	First year Nursing Diploma students.
<i>How did you go about putting the exemplar together? Was it hard to design and/or conceptualise your exemplar?</i>	I started by using a UCEL template. It was a good guide, but found I could not detail the content well enough to communicate my ideas to the developer. Instead, I used a word file and paper and pencil drawings. The drawings did present some difficulties as they had to be sent a colleague (developer) by post rather than E-mail which slowed the process up a little. I did not find it difficult to design or conceptualise because I had taught the content many times before. But the IT software enabled me to include animated illustrations that I had not been able to use before.
<i>How did you approach this work? How quickly were you able to come up with the activity design?</i>	I first considered how I would deliver it as a tutorial in class, with a particular emphasis on conciseness, simplicity and clarity. I then draw it up as an RLO specification with the aim of maintaining conciseness, clarity and simplicity even though a tutor might not be present (except in the form of a voice over). In this way I hoped it could be used in class or as a self-contained learning object for student self-study. I always kept a mental image in my mind of the students it is intended for so as to continually judge its level and coherence.
<i>Was the kind of activity something the students were familiar with?</i>	The "Activity" involves "clicking" on the correct (anatomy) items to enable a person to inhale and then exhale. This type of IT operation (selective "clicking" for a right/wrong response) is common in many packages. It is anticipated that the students will be familiar enough to apply themselves.
<i>How did you find/identify your third-party materials?</i>	The RLO developer produced all the photographs and images to complement the text.
<i>Did you use ACETS listed links and sources?</i>	Yes. I used the anatomy of the respiratory system with glossary as a link. I had restricted the anatomical content to that which was applicable to ventilation only. By including the ACETS link students will be able to view the anatomy of ventilation in the context of the whole respiratory system, i.e. expands it for those who want it at this stage.
<i>Did you look at/use JISC sources?</i>	No.
<i>Did you use commercial sources?</i>	No.
<i>Did you have to get clearance/permission to use the third party materials?</i>	No, they were produced by the developer using standard graphics software (Corel Draw, Fireworks).
<i>How did you go about getting clearance and with what success?</i>	N/A
<i>Was the exemplar easy to put together?</i>	Yes, I usually teach in that way – I prefer to teach in concepts anyway. It was easy to develop because the standard of the content and the voice over was so high.

<i>What tools did you use?</i>	Macromedia Fireworks and Flash.
<i>Did you get any help?</i>	Yes, IT development was undertaken by a colleague with appropriate skills.
<i>Were you pushing your skills in doing this?</i>	Not for writing and designing the exemplar.
<i>Did you use pre-existing services/tools?</i>	Yes. Viv, the developer used Flash and Corel draw and basic PC environment then loaded onto WebCT
<i>Did you engage with colleagues in your own working context?</i>	No – I sat at home with pen and paper at first. Then I wasn't sure what was possible for the animations etc, so I took pen & paper drawings to Fred (Riley) who said yes it was possible. (Fred is lead developer at Nottingham School of Nursing).
<i>Would that be the normal way you work?</i>	Yes. Other people would sit alongside the developer but we all did our bit separately although we had presentations and discussions as part of our health education research group and biology research group.
<i>Did you engage with the ACETS project or X4L programme?</i>	Not during the development stages.
<i>Did you engage with other external bodies?</i>	No.
<i>Was the exemplar easy to deliver/use?</i>	Awaiting evaluation.
<i>Did it give pedagogical benefit</i>	Awaiting evaluation.
<i>Did it give economies of scale and efficiency</i>	Awaiting evaluation.
<i>Did it give diversity of approach and experiment</i>	Awaiting evaluation
<i>Have you evaluated it?</i>	No. Will be evaluated in March-April 2005 when students commence diploma.
<i>What was the form of the evaluation?</i>	It will be a questionnaire.
<i>How easy was it to use third-party materials?</i>	N/A
<i>Has this enhanced your teaching? In what way?</i>	I anticipate it will enable me to demonstrate movement of the chest wall during ventilation. This is not possible with static PowerPoint slides as is used at present.
<i>Has this enhanced your students learning? In what way?</i>	I anticipate that it will. Students have commented on many occasions that animated illustrations make processes easier to grasp.
<i>Can you report back on the success of this assessment?</i>	Awaiting.
<i>How important was it that you were able to get hold of third party materials to use in your teaching?</i>	Not important for this exercise.
<i>Has the use of learning objects made your work easier?</i>	Animations will enable me to demonstrate the mechanics of ventilation. I also anticipate it will enable students to effectively consolidate their learning in their own time.
<i>Would you do it again?</i>	Yes. It's really enthused me to go on and do more. I'd like to try out some

	new ideas.
<i>Was it hard to adapt materials or teaching practices to do this?</i>	No.
<i>Has this changed your practice?</i>	I anticipate it will change it a little, to start with.
<i>Any other points or comments?</i>	None.

ACETS Exemplar 08: Reflective Diary

Day 1. Basic decision-making: choosing a suitable topic

The first stage in the design of the reusable learning object (RLO), was to select a topic that I thought would benefit from being delivered to students through this medium. I wanted to select a topic that is of particular importance to student nurses during the first few weeks of the Nursing Diploma course. Respiratory ventilation is a topic that is introduced early in the physiology module DN4 as a lead lecture. It is also underpinning knowledge for a practical class that follows and for observing respiratory rate in patients during their first clinical placement which commences week six of the course. Therefore, it is important that the students grasp the basic principles early on. I also saw the importance of being able to apply it directly to an identifiable component of my teaching to enable me to evaluate it. The RLO medium has the potential to aid learning through the use of animations and the opportunity for students to repeatedly revisit the RLO in private study. Previously, the topic was presented using static Power-Point slides, and consolidated with textbook reading.

At first I looked to my own teaching to identify a topic then I considered to what extent it would be reusable in other courses and by other teaching staff and students. I consider the RLO will have application in many new learners at first level undergraduate courses in basic physiology and also in further education such as GCSE, A-level, Access, BTEC. Regarding use by other teaching staff: I recognise that it is often difficult to use other teachers Power-Point presentations because of the way concepts are envisaged / demonstrated and also because a session may progress with a slightly different logic to my own. With this in mind I decided to keep the RLO simple with relatable images.

Day 2. Deciding on the content.

I began by sketching out content on paper and realised I had far too much for an RLO. This was the first RLO I had written and I automatically thought in terms of a class session which includes for ventilation: introductory background, anatomy, physiology, gas movement, neural control, clinical implications. So I had to give a lot of thought to how I could limit the content to “a bite-sized chunk” yet still keep it meaningful and reusable for other courses and teachers. I cut the content into sub-sections and saw that gas movement and neural control of ventilation were RLOs in their own right.

I wrote the first draft of text/voice-over and limited the first slide to lay-terms for new learners, then introduced the anatomical vocabulary in the second section. I decided to use analogies to get the basic concepts across in more familiar terms. I used a template provided by UCEL. This was valuable as it enabled me to identify the content or constructional requisites of the RLO more easily. At the same time I considered the illustrations. I was aware I had developer-support and so could give my imagination some free range as opposed to being restricted to images/animations already available. I was also aware that new Student Nurses need to grasp concepts and processes rather than recognise the appearance of organs etc on photograph. Therefore, on paper, I drew up some animated illustrations of key concepts. I made a preference for animated cartoon graphics accompanied by a little humour, so as to lighten-up the RLO and also to help avoid the “digital textbook” situation.

Day 3. Are ideas feasible?

I arranged to meet with the Head Developer at Nottingham. Being as I am not trained in illustration / animation software, I had not got a clear idea as to what was possible. He assured me immediately that the animations could be done.

Day 4. Redrafting text.

With the illustrations agreed upon, I was now in a position to finalise the accompanying text. I gave a lot of thought to three basic considerations:

1. I decided not to bombard the students with too many new terms (daunting for new learners on the Nursing Diploma). With this in mind I limited the anatomical vocabulary to only those items that related to ventilation. For those students who wanted to expand on this, I identified the web link to the ACETS Respiratory System - Structure Detail, which contains a glossary as well.
2. I ensured that the non-biological vocabulary was not unnecessarily complex and tried to keep it as simple as possible. Although students will have the opportunity to read the text at their own pace, I thought the voice-over should be as easy to grasp as possible at a speaking pace.

3. I compared the length of the RLO to others that had been successfully developed and implemented. I reduced the length of some sections by simplifying them further.
4. I redrafted the language to ensure that it flowed naturally as a written text and as an oral presentation as well. As an extra test on the latter, I taped myself speaking the voice-over and played it back to enable me to listen more clearly for any awkward phrase. I made several amendments

Day 5. Exercise, Assessment and Links

I wanted the exercise and the assessment to focus on key aspects of the RLO, whereas the links were to expand on the content for further interest and context.

The section which labels the respiratory system and explains each part's contribution is a key aspect for new learners of respiration. I thought a mix and match approach would be suitable for the assessment as it would provide prompts and feedback, and help lay-down the fundamentals in the students' memories on which they can build on. For the exercise I decided to put the students in charge of enabling a cartoon figures respiratory ventilation (echoes role in clinical practice). Again, I tried to introduce a little light humour to lighten it up and encourage participation.

I did a Goggle search and found a number of websites regarding ventilation, but many were digital textbooks with content that I had already covered and so added little to the RLO. Then I came across a tutorial on respiratory sounds which puts the theory presented in the RLO into a regular healthcare activity in clinical practice.

Day 6+: IT Development.

After further redrafting, I forwarded the whole RLO specification (text and illustrations) for peer review. This was a slower process that had been anticipated because my coloured diagrams were on paper and when scanned were too big to send by E-mail. Therefore communication was by post and staff pigeon hole, which was much slower. I made a few recommended amendments and then recorded the voice over with basic microphone and software, which took around 50 minutes to get right. The sound file and final specification was forwarded to the developer.

This RLO was designed and developed November 2004 - January 2005. There will not be an opportunity to evaluate it with Student Nurses until March 2005 when a new intake commences on the Diploma in Nursing course.

ACETS Exemplar 08: Semi-structured Learning Design

<i>Learning Design Name:</i>	The anatomy and mechanics of respiratory ventilation
<i>Learning Designer(s):</i>	Heather Bull (author) Vivien Rolfe (developer) with Heather Wharrad and Fred Riley
<i>Institution(s):</i>	University of Nottingham
<i>Course Context(s):</i>	Diploma in Nursing
<i>ACETS exemplar ID:</i>	08
<i>LD period:</i>	March – June & Sept-Dec
<i>LD duration:</i>	Until update required

<i>In order to attain the following learning objective(s):</i>	Specific learning objectives	Minimal: recognise and name structural features of the lung; describe the process of ventilation Optimum: Understand relationship between structure and function of the lung; explain the process of ventilation using the correct terminology		
	General learning outcomes	Understand the importance and relevance to clinical practice		
<i>With prerequisite(s):</i>	GCSE level science			
<i>Trigger(s):</i>	Start: tutor specifies the resource needs to be used at a certain time in the module and provides URL to resource LO Stop: resource LO always available for revision but needs to be completed in the first instance before the cut off date specified by tutor			
<i>The following persons/roles:</i>	Name	Type (staff, student)	Description	
	Tutor	Staff	Identify need for resource, create resource, point students to the resource	
	Student	Student	Use resource and evaluate resource	
	Developer	Staff	Develop & test resource	
<i>Perform:</i>	<i>Which roles?</i>	<i>Do what?</i>		
<i>Learning activity(s):</i>	Student	Work through resource LO , carry out activities and self-assessment, use for revision. Reflect on links to practice		
	Tutor	Assess student knowledge, answer questions arising from resource, analyse evaluations, update resource, explain importance in relation to nursing practice		
<i>Support activity(s):</i>	Tutor	Lectures and tutorials on biological systems of the body, contextualise the resource, practical classes, placements		
	Student	Guided reading from texts and links to other e-resources, using library,		
<i>Using environment(s) or scenario(s):</i>	Student	Using resource LO and other resources in computer labs and from home		
	Tutor	Lecture theatre, tutorial room, skeletal models for demo purposes		
<i>Using:</i>	<i>Which roles?</i>	<i>Use what?</i>	<i>To do what?</i>	
<i>Tool object(s):</i>	All	Internet-enabled computers, MS Office, WebCT	Accessing resources, typing assignments, for assessment	
<i>Knowledge object(s):</i>	All	Resource LO	Complete activity and work through material	
<i>Test object(s):</i>	All	WebCT	MCQ exam	
<i>Search service(s):</i>	N/A			
<i>Communicate service(s):</i>	All	Email	Communicate with students	
<i>Announce service(s):</i>	All	Course website noticeboard	Announce new resources available;	

			changes to resources
<i>Other elements or notes:</i>	Based on this first experience of developing an on-line resource, author will generate more RLOs in other topics		

Completion Survey

Recorder:	Dawn Leeder
Date:	26.1.05
Other meta-metadata:	Completed by Heather Wharrad and Heather Bull