

## **ACETS Exemplar 06**

# **The Larynx Tutorial**

Andrew Ginty

University of Manchester

**ACETS Exemplar 06: Baseline Survey**

1	Teacher/academic's name	Andrew Ginty
2	Teacher/academic's position	Teaching Fellow
3	Teacher/academic's institution	University of Manchester, School of Biological Sciences
4	Range of subjects taught	Anatomy, pre-clinical medicine
5	Contact information	Andrew.ginty@man.ac.uk
6	Principal interest	anatomy
7	ACETS Officer	dleeder
8	Date of survey	5/6/2003
9	Do you know how to make web pages?	a lot
10	Have you used the web in your teaching?	a lot
11	Do you use anything that you would consider a 'learning object' in your teaching?	a lot
12	How would you rate your own computing skills against those of your colleagues?	expert
13	How would you rate your own teaching skills against those of your colleagues?	good
14	How would you rate your own use of CAL against those of your colleagues?	good
15	How much relevant staff development and training is available?	a lot
16	How much relevant staff development have you actually made use of?	a lot
17	Do you have access to support in making electronic learning materials?	a lot
18	Is this available as a free service?	with restrictions
19	Have you made use of this support service before?	a little
20	Would you expect that you would need to use this service to use learning objects in your teaching?	a lot
21	Do you have a VLE (or equivalent) available to support your work?	Yes
22	What is the system called (eg WebCT, or equivalent local system name)?	Boddington
23	Does it allow you to put teaching/learning materials online for your students	a lot
24	If so, do you do this or is it done centrally for you?	I do this
25	How easy is it for you to get teaching materials online?	quite easy
26	Do you have your own computer at work	Yes
27	Do you use a computer at home for work	no
28	What level of computer access do you think your students have in the institution and at home	very good
29	How much of this is internet-enabled ?	a lot
30	How much teaching and learning materials are provided online for the students	a lot
31	To what degree do you expect the use of learning objects to enhance your teaching	a lot
32	To what degree do you expect the use of learning objects to enhance your students learning	a lot
33	To what degree do you expect the use of learning objects to make your work easier	a little
34	Extra notes	

**ACETS Exemplar 06: Interview**

<i>Exemplifier</i>	Andrew Ginty
<i>Exemplar description</i>	A tutorial presenting the structures of the larynx and their functions. Includes 3D images to help the learner explore and to aid their understanding of the larynx.
<i>Interviewer</i>	Dawn Leeder
<i>Date and location of interview</i>	7 December 2004, Video-conference link between CARET, University of Cambridge and Computing Unit, University of Manchester
<i>Context of use</i>	Year two dental students on the BDS course at Manchester. The resource was used following a lecture on the larynx. The material was made available on a CD and also on a website. The computers were close to display of teaching material including prosections and models of the larynx. The material was made available following a lecture which was an hour long. The images used in the lecture were very similar to those used in the project. The resource will again be used later for a first year speech and language therapy course, in February to April next year.
<i>How did you go about putting the exemplar together? Was it hard to design and/or conceptualise your exemplar?</i>	I think choosing the resources was quite a challenge, certainly I wanted to use images and animation. We have a good working relationship with our artists so I certainly wanted to use their skills to make a really nice visual programme. I think a lot of websites can be too text based so we're trying to use their ideas to change that. In terms of the tool to make it, we wanted a website that was very easy to navigate and quite structured so that the same format could be used again. We used a special tool called (toot-o-matic) which I mentioned in the exemplar about how it was put together. The design was a bit of a challenge in the end I had to talk to the lecturer about the specific content. We tried to make it fit and look at the resources available for the dental students. The reflections of the students have also been helpful so we can take the resource a step further.
<i>How did you approach this work? How quickly were you able to come up with the activity design?</i>	I suppose the activity took a while to work through and what we wanted to do was go through some of existing illustrations and select concepts that we thought students might find difficult and try and create a package based on that. The structure of how it was laid out was very much once we'd got a design we liked the look and feel of we stuck to it, but in fact how the content is displayed can be evolved; you can go back and edit it again.
<i>Was the kind of activity something the students were familiar with?</i>	The concept of the larynx itself is important for the students but they wouldn't normally have this on a website however some dental students and medical students, generally in Manchester are very familiar with using websites for extra learning and there's a lot of computer based material available to students so I think the students were able to get into it. Some of the feedback we're getting reflected their lack of use of this type of presentation and maybe the more they get used to these things the easier they'll find their tutorials to support their work
<i>How did you find/identify your third-party materials?</i>	Very early on we performed searches on websites like Google ( <a href="http://www.google.com">www.google.com</a> ) and a website search engine called Scirus ( <a href="http://www.scirus.com">http://www.scirus.com</a> ) and that finds a lot of more specific material. We then went on to use a tool called Copernic ( <a href="http://www.copernic.com/">http://www.copernic.com/</a> ) which is a search engine that searches multiple websites. In addition there's some material which was provided by Dawn, a video link that to lifesign ( <a href="http://www.lifesign.ac.uk/">http://www.lifesign.ac.uk/</a> ), and we also followed links from the ACETS page to a free video resource. We also got permission to link to another website with video content. So certainly the video content was done outside. Other third party material we used was Manchester, the Art in Medicine unit had a set of illustrations we wanted to look at what those illustration were and add to them by creating a new model
<i>Did you use ACETS listed links and sources?</i>	Answered above
<i>Did you look at/use JISC sources?</i>	Well one we used was the video for Lifesign but in the end this video wasn't linked in because of problems with changes in Windows Media player, but we found easier sources to link to.

<i>Did you use commercial sources?</i>	No we haven't in the end but I looked at a few but certainly there were restrictions and we wanted to make something that we wouldn't be tied down with. There were some good larynx illustrations, we found on a couple of websites but they had restricted use for what we wanted to do. I think they're useful in lectures say or other content that would associate with these tutorials but for the product itself - no, it wouldn't be useful.
<i>Did you have to get clearance/permission to use the third party materials?</i>	N/A
<i>How did you go about getting clearance and with what success?</i>	It was just a link to somebody's website so I didn't want to link without letting them know and they said as long as we made the link explicit which had been done they were quite happy with the link to their website and actually said they were going to upgrade the quality of video. So it would be useful to look later on at their enhanced version
<i>Was the exemplar easy to put together?</i>	No, it never is because you have to go back to learning a software package going over ideas, how to lay it out, how should it really look, how should students interact with it, what's the point of the learning. I went back to a system I used two or three years ago, modified it so it's been relearning tools really. I certainly feel from that I could use it several more times.
<i>What tools did you use?</i>	Java based XML script content programme called Toot-o-matic which is free from the IBM website. I put the link on the ACETS diary. I also used QuickTime Pro 6 ( <a href="http://www.apple.com/quicktime/">http://www.apple.com/quicktime/</a> ) for video content and another tool called SwishVideo ( <a href="http://www.swishzone.com/">http://www.swishzone.com/</a> ) which was able to convert the video into Flash swf. The artists used a whole set of different tools
<i>Did you get any help?</i>	There were two artists involved (Ray Evans and Caroline Needham) and they had good experience of facial reconstruction and they do things for the TV so they're experts at that. They were very helpful in refining a 3d model I started creating from the visible human dataset. I built the first pro type myself in another tool called Winsurf ( <a href="http://www.surfdriver.com">www.surfdriver.com</a> ) which was actually drawn from the visible human female ( <a href="http://www.nlm.nih.gov/research/visible/visible_human.html">http://www.nlm.nih.gov/research/visible/visible_human.html</a> ) so the first illustrations are almost lifelike or they are lifelike because they're copies from this and the artists used that as the base to make the model look very realistic.
<i>Were you pushing your skills in doing this?</i>	Yes certainly from when we started to think about it which was probably a year ago we really tried to develop three dimensional work and actually even before this project was finished we were able to take the three dimensional material out to students in use it in teaching a new anatomy research skills course. So it's been really good for that. It's an area of anatomy and illustration that I wanted to be involved in so that was really useful, it's a good driving force to do a project sometimes you need a project to actually learn new skills and see it through go through the difficulties and challenges
<i>Did you use pre-existing services/tools?</i>	We just put it on a normal website. So we didn't use any extras we could to make it accessible only to our students or accessible to everybody but no we didn't. It's open access we just put a little note on it for people who want to use the images to contact us.
<i>Did you engage with colleagues in your own working context?</i>	Well we certainly got some ideas by working with the lecturer. We tried to match it closely to the lecture material. We checked with other staff to ask them to evaluate it and check the content of it. We did have one member of staff who's very good on the larynx, so we tried to get some of his advice when creating the models when we couldn't quite visualise it. So there was some working relationship there, I think we could certainly expand it I think it would work really well with what they're doing in Speech and Language, but we'll see how we can take it further
<i>Would that be the normal way you work?</i>	Yes I think so, we do collaborate quite effectively as a smaller group of staff. When sharing it across the University which is so large that's often limited to special events and things so I think this could be something maybe you

	mentioned maybe running some events in Manchester so more people could see it, I think that would be really great to get more people involved
<i>Did you engage with the ACETS project or X4L programme?</i>	Well in terms of ACETS we tried to develop on that reflective diary looking at the resources available. I think the exemplars that were out have given us a confidence in knowing what we want to do I think it's very much difficult to find what exactly we wanted and what ACETS wanted as well. They showed the diversity of approaches we could take. The ACETS workshop in Manchester was helpful it was interesting to see there were so many people in the University who were doing the same sort of thing or had the same interest in developing this sort of material. It gave us an idea that we wanted to develop these things, it gave a structure to a lot of it, learning materials made now are actually designed by students there aren't as many that come from staff so it was actually quite a refreshing approach to go back to the staff and create some packages and also work out how the students want to use them when you get to the evaluation.
<i>Did you engage with other external bodies?</i>	No we are confident in what we've got in Manchester so we tend to work in house. I think maybe that sets the limits of what we wanted to do I think that was probably enough for this topic.
<i>Was the exemplar easy to deliver/use?</i>	It was very easy to make our website it was a bit of a struggle to a CD playing the webpage but we eventually sorted that one out . I think it's always a challenge to engage the students, when students aren't used to finding computer material effectively even though there are computers available. Your approach is to make the students want to use this material and to make sure they are aware it's available and how useful it is and how structured it is to the teaching they're also being given. I think for the students they're probably a bit reluctant early on. I think as it becomes more common for staff to present their material via website students will see this as a useful way to go about learning. Certainly the computer facilities in anatomy they have been reduced and now there's a drive to increase them and these sorts of anatomical images and illustration will actually support that works as it gives a multiplicity of opportunity for students.
<i>Did it give pedagogical benefit</i>	It certainly structures what we want to deliver. It's really helped to get the feedback from students and see how we can make it better and what they really want out of the material. From the different groups, the dental students they found the videos interesting and excellent but then they've asked us for bits that really do fit just to their course. From other students it's more the design of the videos and the interactivity they would like. I think really from a framework created the product could be used in different ways and should be developed differently for different student groups.
<i>Did it give economies of scale and efficiency</i>	Well because it's creating something new it's obviously not economic in the first instance but I think I could imagine it would be used again later on with the students and again next year overall long term there certainly will be an efficiency. What we're creating can be used again and again so yes I think eventually
<i>Did it give diversity of approach and experiment</i>	I think so certainly the video part we found the students thought was really good and they certainly liked the illustrations it's very hard with things like larynx's when you're looking at them in dissection rooms because there's so much tissue around it's hard to identify individual actions of muscles and the like. And I was really pleased with an animation that we sort of created from a description more than a model. Lots of the models of the larynx that are created use pivots on pins and they don't really create exactly what actually happens so we tried to create an animation that was more realistic. I think that would give the students a view to what's really going on so it might help on that point.
<i>Have you evaluated it?</i>	Yes
<i>What was the form of the evaluation?</i>	Evaluations were undertaken by a group of students who were creating their final year projects where they have to create a computer resource themselves. We asked them to look at it as a tutorial and rate it from 1 to 5. They were very helpful we also asked for comments. I've also asked our anatomy students to evaluate it. We conducted a paper evaluation for dental students working through the tutorial asking them how long it took to get through it, whether they enjoyed it, or found the information useful. If they thought it reinforced the lecture material and

	enhanced their understanding of the larynx. We also asked if they thought the videos and diagrams were clear and if the level of the tutorial was suitable and if they'd use it again and recommend it to other a friend
<i>What was the result of the evaluation?</i>	Almost every student gave the product four and a few gave it a five. A few said it could be improved by changing the video format – which we did. At first they found navigation confusing, but I think the students will get used to the structure. A few students said they would like a quiz at the end of it, the students who weren't anatomists who were evaluating it found the terminology a bit more difficult. But over the entire students rate it highly we got 24 responses so far from those students.
<i>Did it meet your expectations?</i>	I think so at the end of the day I'm quite pleased with what has been created. I can certainly see different directions how it can get better and how we would make it a more enhanced tutorial. I would like to have included some case studies, but it didn't quite fit with the structure of teaching
<i>How easy was it to use third-party materials?</i>	N/A
<i>Has this enhanced your teaching? In what way?</i>	Well I certainly know a lot more about the larynx than when I started. I think it's nice to give a diversity of approach to the students
<i>Has this enhanced your students learning? In what way?</i>	Well the comments from the students so far have been positive so I think we need a few more responses to be sure but when we've asked them if they'd use it again the students have said definitely yes. Other resources may appear for a week and then be put away put this can be used whenever they like.
<i>Can you report back on the success of this assessment?</i>	N/A
<i>How important was it that you were able to get hold of third party materials to use in your teaching?</i>	Well I suppose the illustrations are third party (Art in Medicine Unit not directly anatomy) they are really important. The videos I think have been helpful, the one we used most was a free resource and that was really helpful because we were able to edit and take sections out. All the students so far do pick out that as a nice feature.
<i>Has the use of learning objects made your work easier?</i>	I don't know because as yet it's not broken down into a series of learning objects, we've got <u>an</u> object we can use but I think really we need to go back and reflect and try and break that content into separate bits that can be used and reused in different ways. All the illustrations now will be used for next years' lectures, the video is shown in lectures, which it wouldn't if we hadn't found it. So it has enhanced the content given and will be enhanced in the future.
<i>Would you do it again?</i>	I think I would because I think it was useful and I'd like to see this developed a lot further. There's also quite a challenge there to think about what you want in an online learning activity, and it's a useful way to go about it. Universities are promoting the use of online materials and I think going through how to build one gives you a better insight when approaching it or asking someone else to build one for you.
<i>Was it hard to adapt materials or teaching practices to do this?</i>	We knew what the resources were and how we could deliver what we created so that wasn't too much of a challenge. It actually did involve collaboration with a number of people getting the staff in the dissecting room to make sure the computers work and the discs run for students and encouraging students to use the website and see it as part of their learning, getting the staff to incorporate it into the session and make them see it as a whole. That took a bit of work really.
<i>Has this changed your practice?</i>	Of course.
<i>Any other points or comments?</i>	I think we wanted to do a lot more artwork or work with illustrators and that's been really useful and I think that will continue. I think it's been a long time since I've created some online material for students that was in 2001 so it's been good to do that.

## **ACETS Exemplar 06: Reflective Diary**

### **Preliminary meetings**

First meeting, Thursday 8 May 4pm, Stopford Building, Manchester University

DL met with Andrew and two of his anatomist colleagues, Niggy Gouldsbrough and Marianne Conway at his office in Manchester Medical Sciences Building on Thursday 8 May at 4pm.

Andrew is expert in IT, running modules that get BSc students to actually create multimedia online course materials as part of their degree programme. These materials (the best of them) are subsequently used for medical T & L.

They are keen to create a full multimedia resource to support anatomy T&L, and to do this on a needs basis. They initially discussed images in radiology and histology and all thought that web-based images would be good for PBL.

Andrew is very experienced in searching BIOME/OMNI and uses it regularly. He showed some collections DL hadn't seen before! So she felt it would be helpful if we also recruited the two anatomists who were not so web-proficient. When asked how they'd formulate a search, they both said they'd "ask Andrew!".

Marianne said she would like to compare a real section with an image – for example slices through the neck with X-ray/CT. Andrew went straight to a bookmarked page on the Manchester VLE which already did just that – but without animations – just images.

They then began to think about using audio to take full advantage of the media opportunities this project offered. They provide a module on language and speech for both speech therapists and audiologists and immediately recognised how reusable a resource based on this could be. Andrew has identified "Cyberanatomy of the Larynx" at Newcastle which is rich but has no animations – just html and images. All questioned the quality of existing material, especially animations. They affirmed that critical judgement was very important in selecting appropriate resources as there were often inaccuracies – even in textbooks. DL outlined the UCEL peer-review process as an example of how web-based materials could be badged as factually accurate, pedagogically effective and contain appropriate activities and assessments by applying a straightforward marking scheme.

Actions: DL will email Niggy and Marianne the base-line survey. Andrew, Niggy and Marianne will narrow down the area around which they'll develop their resource. All will meet again at Andrew's office at 9.30am on Tuesday 3 June for some further resource discovery.

AG and MC still keen to do resource based on larynx and vocal chords. MC would like to use imaging., Audio will be used extensively, showing both sounds and waveforms. They have a non-exclusive licence to use Visible Human material.

AG has identified Gordon Findlater's cyberanatomy of the larynx as a good resource.

Timescale: they would like this material for their next language and speech module which commences in February 2004. The larynx would be taught in March/April.

Actions: search for existing material (all). AG and MC to define learning objective.

### **Stage one: resource discovery**

This was done at the start of the project with a number of web searches. At first on Google and [www.scirus.com](http://www.scirus.com) for larynx anatomy. Quite a few US websites turned up. Most were textbook style with textbook like pictures. A visit to the Art in Medicine unit in the university produced some positive outcomes. This and another funded project required images and I was able to identify a set of overlay illustrations that were done several years ago by one of the artists. The use of these images was important to provide high quality content and copyright content. I have worked with one of the staff from the unit who talks about copyright to a group of students I manage in developing website content. A new course that ran in Feb-March gave me the opportunity to create some 3d content. A group of 3 students set about using the visible human dataset to produce 3d bitmap content, coloured and from several angles. I was really pleased with the output. They had used realistic patterns and colours to make the larynx look good. There views into the larynx from above and below were particularly good. I mentioned this resource at the ACETS meeting in Manchester. Unsure of right to use outside the Uni I set about rebuilding the models correcting any errors. It was not possible to create 3d images that moved by the students and the possibility of creating 3d and more illustrative images was passed on to the Art Unit. Most recently I invested in a software tool to support resource discovery. The tool plugs into IE and is called Onfolio. I was able to use it to organise and add tags to data and send them back and forth from work to laptop PCs. Keeping a good list of site is one of the outcomes from the project that I have learnt needs a tool to help.

Resources identify by other staff include one member of staff who lectures this topic to dental students. She provided a cd of images taken of larynx. Some included slides that are been used. Anatomical images will not be used. I was intending to link to the anatomy tutorials at Newcastle uni but these disappeared when I looked in Sept. Other resources I have found similar online content

Resource discovery is more than the images and text I found. I felt that tools that would help me was an outcome that I could use in future projects. I was diverted into considering building the tutorial in RSS. A indepth search into RSS found that whilst I could create new updates that could be inserted into website and included in many different website (tutorials) that I may create it was not sufficient alone to build something that students would want to utilise again and again. I may add updates as RSS. What the RSS did was to bring a new range of resources to me. Medical content from a range of sites that could add to the longevity of the RLO created by bringing new information from feeds to part of the website.

Some of the bookmarks saved from website searches These are a mix of images, surgical and textbased content. The RLO will be evaluated against some of these in its final phase. Patient Information: the larynx and phonosurgery <http://www.medicine.uiowa.edu/otolaryngology/cases/index1.htm> Gross Anatomy Image <http://www.med.umich.edu/lrc/coursepages/M1/anatomy/html/atlas/rsa3p2.html> Functional anatomy of the larynx [http://www.ling.upenn.edu/courses/Fall\\_2003/ling001/flarynx.html](http://www.ling.upenn.edu/courses/Fall_2003/ling001/flarynx.html) Laryngeal Anatomy <http://www.sandiegovoice.org/larynxanat.html> UAMS Department of Anatomy - Neuroscience [http://anatomy.uams.edu/anatomyhtml/gross\\_atlas.html](http://anatomy.uams.edu/anatomyhtml/gross_atlas.html) UAMS Anatomy - Atlas Images [http://anatomy.uams.edu/anatomyhtml/atlas\\_html/rsa3p2.html](http://anatomy.uams.edu/anatomyhtml/atlas_html/rsa3p2.html) [http://www.ling.mq.edu.au/units/sph302/anatomy\\_slides/larynx.html](http://www.ling.mq.edu.au/units/sph302/anatomy_slides/larynx.html) [http://www.ling.mq.edu.au/units/sph302/anatomy\\_slides/larynx.html](http://www.ling.mq.edu.au/units/sph302/anatomy_slides/larynx.html) University of Pittsburgh Voice Center, Anatomy of the Larynx, UPMC | University of Pittsburgh Medica <http://voicecenter.upmc.com/Anatomy.htm> The Larynx <http://www.sfu.ca/~saunders/l33098/L5/L5Main.html> Singing Voice: Anatomy <http://www.worldzone.net/music/singingvoice/anatomy.html> Anatomy and Examination of the Larynx <http://www.pitt.edu/~crosen/voice/anatomy2.html> <http://www.emory.edu/ANATOMY/AnatomyManual/pharynx.html> <http://www.emory.edu/ANATOMY/AnatomyManual/pharynx.html> Anatomy & Physiology of the Larynx <http://www.gbmc.org/voice/anatomyphysiologyofthelarynx.cfm> Anatomy of the Larynx <http://www.sfu.ca/~saunders/l33098/L5/L5Fset.html> Review of Anatomy: The Larynx <http://www.bcm.edu/oto/studs/anat/larynx.html> Univ of Michigan - Gross Anatomy - Images [http://www.med.umich.edu/lrc/coursepages/M1/anatomy/html/atlas/atlas\\_index.html](http://www.med.umich.edu/lrc/coursepages/M1/anatomy/html/atlas/atlas_index.html) Vesalius Image Archive: Larynx Anatomy, Superior View <http://www.vesalius.com/graphics/archive/archtn.asp?VID=394&nrVID=234> The Department of Otolaryngology Head and Neck Surgery <http://www.hopkinsmedicine.org/voice/anatomy.html>

In two of the sites I found there are case histories. Having not initially thought of including this I thought this would be a good ideas. Especially since PBL is so widely used here.

Initially I will link to these sites from the RLOs and encourage students to look at case histories <http://www.medicine.uiowa.edu/otolaryngology/cases/index1.htm> is one of the sites.

Maybe later this RLO can be expanded to get a case history or two added.

### *Video content*

Larynx and the voice

[http://www.archive.org/movies/details-db.php?collection=prelinger&collectionid=larynx\\_and\\_the\\_voice&PHPSESSID=4bd79b8ff1b435224b69a599d1ea17b2](http://www.archive.org/movies/details-db.php?collection=prelinger&collectionid=larynx_and_the_voice&PHPSESSID=4bd79b8ff1b435224b69a599d1ea17b2)

The human body lifestory

<http://www.lifesign.ac.uk/catalogue/videostreams/collection/bbc/bbc.asp?pg=2>

<http://www.ling.mq.edu.au/units/sph302/movies/fibrescope/index.html>

separate animation from a speech and physiology course at Macquarie University, AUS. Asked for permission to link to these movies.

Thumbnails for Larynx and the Voice

<http://www.archive.org/movies/thumbnails.php?id=10820>. Downloaded this movie and will run from fileserver

The Vesalius content is useful resource but its copyright does not allow inclusion to the product

To edit videos I used QuickTime pro 6. The cost was 25 pounds. This enabled me to edit the open source video sequence selecting two tracks. In addition the images created by the artists at Manchester produced two avi animations. These were converted to QuickTime and mpeg4 formats.

Found using Copernic was better at finding new material. More specific searches for aerodynamic myoelastic theory or quadrangular membrane proved to be better at finding similar tutorial material. A few projects appeared but this package being created has a better balance of images and text. IMHO

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### **Stage two: preparation**

After disappointing attempts with web tools the RLOs is being built in the Tootomatic resource released by IBM in 2001. The RLO is a website that will be placed within the university intranet initially. The choice was difficult because of so many tools. I had thought of using tools such as Coursegenie since the content is easy to add to WebCT. But am pleased with the tool I selected. Reload looked interesting when mentioned at the ACETS conference and I may see what it looks like when restructure in RELOAD at the end of the project. The illustrations were from a collection that I requested to be made in Nov 03 scanned by the photographic unit from image overlays. These show individual illustrations on separate transparent layers so that individual cartilages and muscles could be shown from one illustration. The illustrations are from a set by a prolific artist, now elsewhere, and there are plenty to use if I ever expand the tutorial to other parts of the body. Each image was cleaned up to a digitised format by staff in the AIM unit.

Some of the problems with using the tool I found was that the images could only be on the left side and one per page. The need for popups may mean that with XPSP2 some content would be automatically blocked. This will not be an issue on the uni PCs currently.

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### **Stage three: creation**

Having decided to create a project on the larynx I am keen to include animations. My previous experience of Flash was going to be used to build these tutorials, however after many attempts I could not get a tutorial style I was happy with. It was going to take too long. At the ACETS meeting I had thought to use a tootomatic xml tutorial builder that I had used in 2001. This tool covers text content from one very long xml file into a website with navigation, zip copy and pdf. First the look of the page had to be modified but the tutorial worked well. The only downside was the need to keep building and check for parsing errors. The tutorial would not build if there were any xml errors in the file. Finding an error was much easier as I went along. The compilation was in dos. So I had to gather all resources and work with dos window, notepad and a copy of Photoshop to edit any images. The great thing about this odd style of working is that it is very productive. The navigation is automatic.

An outcome for myself is to broaden my knowledge of the tools to create anatomy content. The project spurred me to learn 3d to make my own 3d models. I found a suitable tool from a link in the visible human project called surfdriver. When I discussed this with anatomy staff and an artist I found we had a copy we were using. I examined the output that a final year student had produced and I remembered talking to the student when he was reconstructing a liver into a 3d VRML. ACETS, 3d and a new course gave me the reason to learn the tools and incorporate into a new project skills course for anatomists. This ran successfully in Feb 04. After teaching all student to use 3d I was given 3 small project groups. 2 wanted 3d one chose the brain and another the neck. This year I have used 3d models when teaching kidney, liver, spleen anatomy, incorporating 3d journeys into lectures. In the end my models to use in this project are being illustrated with the help of our art unit.

To develop the resource I downloaded the dataset for the visible female at 0.33mm intervals. Burnt onto CD and traced using winsurf, new name for surfdriver using a wacom tablet. After drawing the cartilages I was learning more anatomy. In particular that the VHP had food in her throat that I drew before releasing it was not looking like anything I expected. These images are to be developed further.

Help needed Illustrations - art in medicine unit Forms to evaluate - computer support unit Expertise - other anatomy staff who teach this topic. The topic was chosen by the staff as a group and whilst I will build it the larynx is not my specialism so feedback is needed.

Tootomatic used in creating the larynx tutorial can be downloaded FOC.

<http://www-128.ibm.com/developerworks/xml/library/x-toot/index.html>

Download the tootomatic.zip and jars at the end of the page.

A full tutorial online at <http://www-106.ibm.com/developerworks/edu/x-dw-toottut-i.html> but also in the package itself by running the dos command

tootomatic tootomatic.xml and looking in the new folder t-o-m

You will need Sun JAVA SDK

Notepad or Notetab (free)

www.notetab.com

DOS window to compile the tutorials

To customise edit the dwstyles.xml file and others as needed.

Open tootomatic.zip in a close to root folder eg: c:\toot so it becomes easier to type dos commands.

software used for the tutorial:

- winsurf [www.surfdriver.com](http://www.surfdriver.com)
- Adobe Photoshop
- Swift3d [www.erain.com](http://www.erain.com)

To further develop the 3d output created by myself these objects are being edited using a virtual clay modelling tool. This is being completed by our art unit and the aim is to release these to the repository for HE use. The work looks promising and could be used through the entire tutorial.

The images I had created in surfdriver (winsurf) formed the basis for illustrations by the artists together with a set of slides. The finding of additional slides was a bonus to help draw the quadrangular membrane.

Images have been rendered from a 3d model and added to the tutorial. A WRL file for 3d is yet to be incorporated.

The package is nearly complete. It sits on a fileservers at <http://www.biomed2.man.ac.uk/gintya/larynx/> Just a couple of images and text check needed before its first use with a group of dental students.

The 3d model has replaced all current images except one showing innervation of the larynx.

Swapped out editors to use notepad ++ v2.5. This tool finds makes finding errors in xml easier since its colour coded.

The tool is free from [www.sourceforge.net](http://www.sourceforge.net)

FTP client SmartFtp. Free from [www.smartftp.com](http://www.smartftp.com)

#### **Stage four: use and evaluation**

How well did the activity go, was it effective, was it better than before, are there evaluation data on its use?

The project will be evaluated by several groups of students. The initial group who would evaluate the RLOs would be a speech therapy year 1 group. The rlo was not complete for the time the students were taught the larynx and so the RLO would be given to this group in the next year starting Feb05. A dental group were selected. These students would be asked to complete the tutorial following a lecture on the larynx in Nov 04. A group of students in the final year would be asked to evaluate the tutorial. These students are learning about creating online content and could compare the tutorial to the theory they were being asked to apply to their own projects. Data will be collected from completed online forms and recorded into excel.

An evaluation for the dental group will ask the students to consider how the tutorial supports their lecture on the larynx and its usefulness. A second evaluation with anatomy and final year students is planned for the following week.

First evaluations from students using a simple form returned 24 responses. Comments showed the videos were not playing despite having checked on some PCs. Reading an article on using swishvideo in PCW magazine I downloaded a version and converted the files to swf format. I have used Swish the flash tool so found it easy. The file size went from 800K to 15Mb which is problematic. For the dental students a CD copy is being made available in the DR.

**ACETS Exemplar 06: Semi-structured Learning Design Statement**

<i>Learning Design Name:</i>	Anatomy: Larynx tutorial
<i>Learning Designer(s):</i>	Andrew Ginty (artists: Ray Evans, Caroline Needham)
<i>Institution(s):</i>	The University of Manchester
<i>Course Context(s):</i>	Dentistry
<i>ACETS exemplar ID:</i>	06
<i>LD period:</i>	Year 2 Semester 1
<i>LD duration:</i>	1 week following lecture

<i>In order to attain the following learning objective(s):</i>	Specific learning objectives	Minimal: To be able to recognise and name the major structures of the larynx. Optimum: To understand the larynx its cartilaginous structures, the muscles which move these structures and their innervation.	
	General learning outcomes	Minimal: Students will be able to recall the structure and function of the larynx. Optimum: Students will be able to explain the structure of the larynx and relate its function to that of the pharynx and respiratory system.	
<i>With prerequisite(s):</i>	Prerequisite: Optimally students will have completed accompanying lecture on the larynx Educational level is set for Dental undergraduate or Speech and Language Therapy or Anatomy undergraduate students.		
<i>Trigger(s):</i>	Lecture on larynx with PPT presentation. 45-60 mins. duration Practical display of prosected material from the Manchester University anatomy dissecting room.		
<i>The following persons/roles:</i>	Name	Type (staff, student)	Description
	Student learner (SL)	Students	Active participant in using tutorial (online or CD-ROM in DR)
	Anatomy teaching staff (ATS)	Staff	Facilitator in teaching sessions
	Technical staff (TS)	Staff	Provide technical support teaching staff and students
<i>Perform:</i>	Which roles?	Do what?	
<i>Learning activity(s):</i>	Staff	Teaching staff demonstrate and promote the <b>tutorial LO</b> to students. They liaise with technical staff to make CD version available and request that it be included in resource displays with dissecting room (DR) teaching area.	
	Students	Students work through the <b>tutorial LO</b> at the own pace. The structured navigation of the tutorial guides students through all sections but allows students who choose to view sections in any order.	
	Students	Students return to material for revision as stand-alone component at later date.	
<i>Support activity(s):</i>	Staff	Delivery introductory lecture on the larynx for 45 mins. -1 hour in large lecture theatre event (90 students)	
	Staff	Prosections available within the DR in the "dental resource area"	
<i>Using environment(s) or scenario(s):</i>	Students and staff	WWW access from University Clusters within Faculty. WWW version is available as independent-learning resource to all students	
	Students and staff	Available on other Clusters PCs within the University	
	Students and staff	CD-ROM version of <b>tutorial LO</b> available within DR cluster	
<i>Using:</i>	Which roles?	Use what?	To do what?
<i>Tool object(s):</i>	Student	PCs	Work through larynx <b>tutorial LO</b> , either during practical session or anytime after (online

			only) using cluster PCs
<i>Knowledge object(s):</i>	Student	CD-ROM version of <b>tutorial LO</b>	For DR access only
	Student	Web-site version of <b>tutorial LO</b>	For asynchronous access
<i>Test object(s):</i>	Student	Not implemented within resource although a quiz is intended to be added at a later stage.	
<i>Search service(s):</i>	n/a		
<i>Communicate service(s):</i>	n/a		
<i>Announce service(s):</i>	All	Students informed of the resource during theatre event and the resource was made available during the practical class display which was available for 1 week. All anatomy teaching staff informed of the resource via email Intranet announcement service used to invite evaluators	
<i>Other elements or notes:</i>	Tutorial will be modified for different target audiences. Quiz to be added for some target groups. Videos are several megabytes and not suitable for dial-up access, possibility of providing student CD copies on loan. Poster to promote resource to be made and put up with DR.		

## Completion Survey

<i>Recorder:</i>	Dawn Leeder
<i>Date:</i>	December 22, 2004
<i>Other meta-metadata:</i>	Via email and with information provided by Exemplifier