TEL Tales:

stories of enhancing learning through technology

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This collection was prepared and edited by Gerry Gallagher, Angela Short, Bernadette Brereton, David Cranny and Moira Maguire. We gratefully acknowledge the support of Laura McKenna in getting this project off the ground.

Dedication

This collection is dedicated to all those colleagues who have participated in the module *'Enhancing Learning through Technology'* at Dundalk Institute of Technology - your innovation, creativity, enthusiasm and commitment to your students has been an inspiration.

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PREFACE

Moira Maguire,
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The What Works and Why project is dedicated to building digital literacy and engagement for staff and students by addressing the question, 'What works and why?' It is clear that digital technologies offer great potential in terms of enhancing learning and teaching across all education sectors but the professional development of teachers is crucial to harnessing this potential. In this collection, educators from higher education, further education, adult education and post-primary education answer the question 'What works and why?' by sharing their experiences of using technology to enhance their students' learning and support digital literacy.

These projects were developed in the course of the module Enhancing Learning through Technology on the Certificate in Learning and Teaching/MA Learning and Teaching offered by Dundalk Institute of Technology (DkIT). The programme has been running internally for DkIT staff since 2010. In 2015 we were delighted to offer it externally and have now welcomed two cohorts of colleagues from further and adult education, post-primary education and the health service. A significant benefit of this development has been the opportunity to share practice and facilitate dialogue between educators working in different sectors and contexts. We hope that this collection of TEL 'tales' will contribute to wider conversations about technology-enhanced learning (TEL) across educational sectors and settings. It includes examples and thoughtful evaluations of some of the ways in which technology can be used to promote learning in a wide range of contexts. As such, we hope it will be a useful resource.

The module, Enhancing Learning through Technology, has had a transformative effective on the practice of many colleagues. This is in no small part due to the excellent stewardship of Gerry Gallagher, ably assisted on this module by Angela Short, and to the dedication, skill and enthusiasm of the wider teaching team: Dr Bernadette Brereton, David Cranny, Karen Dunne and Conor McKevitt.

Last, but by no means least, I would like to pay tribute to our contributors who have demonstrated their commitment to embracing technology to enhance learning and have so generously shared their experiences. I hope you will enjoy reading their 'tales'.

INTRODUCTION

Angela Short and Gerry Gallagher

It is always interesting to observe the different reactions that our teacher colleagues have when they join us for the module, **Enhancing Learning through Technology**. The mere mention of technology in the context of learning and teaching evokes a variety of responses, ranging from those who are eager to engage with the tools they will encounter to others who are nervous and lacking in confidence. Add into the mix those who view technology with a 'healthy' degree of scepticism about what useful role it might play in their practice but who are willing and perhaps waiting to be convinced.

How do we deal with this variety of perspectives and, in particular, the sceptical and the fearful? Well, the foundations are laid in the first module of the programme, Student-centred Learning and Teaching, where the focus is firmly on asking our colleagues to reflect on and critically evaluate their classroom practices. We introduce technology gradually but purely as part of the delivery of the module, using some features of our online learning environment, Moodle, and some easy-to-use classroom tools such as Socrative, a student response system. This allows our colleagues to experience these tools as students, thereby giving them an insight into how their own students experience technology.

By modelling the use of technology in this way, we hope that our colleagues, in turn, may adopt these tools in their own teaching. Happily, many begin to do this, well in advance of the second module when they will concentrate more on classroom use of technology. Here, as they continue to experience technology as students, we now ask them to consider how they might use these tools as a teacher. They are encouraged to evaluate the tools with a critical eye as they seek to identify those which might be most appropriate for themselves and more importantly, their students.

We are conscious of not overwhelming those who are apprehensive so we ask them to take small steps, using tools that are easy to introduce but which deliver immediate and visible returns, and it is in this way that they build their confidence. At all times, we encourage them to be guided, as we try to be, by the principles of good teaching, emphasising that the technology's place is essentially as a catalyst for learning.

The module is a safe space to experiment, where our colleagues can take a risk and try things out. The culture is very much one of "have a go". We encourage them to try some of the tools with their students and gauge their reactions. Crucially, we encourage them to share their experiences of technology with each other, as we endeavour to cultivate a community of practice.

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One might legitimately ask if this approach to our teaching impacts equally on all our colleagues who complete the module. Not surprisingly, it doesn't. Each is encouraged to find what works for them and, most importantly, their students. Consistently, they report that they enjoy the opportunities that the module affords them to try things out and to discuss their practice with colleagues. There is no doubt that all do move forward in terms of technology. Some are happy to make only minor changes initially, others make more substantial changes with some incorporating technology as a core theme in their work on later modules in the MA programme.

Working on this module has been a tremendously enriching experience for us as teachers. When we assigned a title to the module, we were conscious that the "enhancing learning" aspect of the module should apply to both our teacher colleagues and their students - however, our own learning as teachers and technology users is continuously enhanced by our interactions with such a committed and student-centred group of colleagues.

We are delighted that this publication offers our colleagues the opportunity to tell their own stories, and in doing so to showcase how they are enhancing their own practice and their students' learning. Whilst the technology tools used and how they work will be of interest to the reader, the real value lies in the richness of the personal narrative accounts of a group of committed reflective practitioners. Sadly, space and time allowed only a small selection of the work to be featured and this provides but a flavour of the exemplary work of all our colleagues.

PLAY IT AGAIN

THE USE OF AUDIO BOOKS AND ONLINE PUZZLES TO DEVELOP LITERACY SKILLS IN ADULT BASIC EDUCATION

CLAIRE O'BOYLE

My name is Claire O'Boyle and I teach Adult Basic Education (ABE) which includes basic literacy, numeracy, ICT and English for Speakers of Other Languages (ESOL). My teaching is learner-centred in that there is often no set curriculum. The class decides what they need to work on, and a plan of work often changes according to the changing needs and interests of the learners. QQI (Quality & Qualifications Ireland) portfolios are created as evidence of achievement.

CHALLENGES OF USING TECHNOLOGY ENHANCED LEARNING (TEL)

One challenge is to find a way to use technology to enhance the learning in a way that empowers learners to work independently. For ABE learners, it is important to choose technology appropriately. For example, Microsoft Word requires users to navigate several tabs and drop-down menus, which may be demanding for some learners. Soft skills, such as being able to take part in class discussions, are also a vital part of ABE learning. This means that teachers using TEL need to ensure that there is an appropriate mix of face-to-face activities and technology.

WHAT I DID AND WHY

I started using technology to enhance spelling, grammar and reading skills. I did not want to use ICT just for the sake of it and was wary of the technology overshadowing the intended literacy outcomes, with the computers being a distraction rather than a learning aid. However, I realised that developing digital literacy would be an added benefit for learners as they could gain skills and improve their confidence in an area that is an unavoidable part of modern life.

AUDIO BOOKS

An important part of this class is reading aloud. This is something that ABE teachers often avoid asking their learners to do in class, because of the fear of putting people on the spot and possible past negative experiences of being asked to read aloud at school. However, I have found that most of my learners really enjoy reading aloud in a safe environment and grow in confidence as a result. Reading aloud is entirely optional and learners have the choice to take a turn reading or just listen. Either way they benefit and enjoy the activity. This is one activity which can be enhanced by using audio books.

Audio and visual stimuli are more effective than visual stimuli alone in enhancing vocabulary and sentence construction skills and can aid information processing and memory (Dighe, 2009).

A benefit of using audio books is that listeners can have access to more complex language than they could decode independently themselves. Listening to text being read by a competent, enthusiastic reader shows reading as a pleasurable pursuit and helps listeners deduce the meaning of unfamiliar words from the context, so increasing their vocabulary (Casbergue and Harris, 1996).

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FOR THE ACTIVITY:

- I chose an audio file of an actor reading our chosen class book.
- The learners all read along as they listened, pausing or rewinding if they needed to hear a piece of text again, or make a note of any unfamiliar words.
- We then discussed the chapter, and any difficult words that had been noted.

WHAT WORKED AND WHY

- Learners then read chapter aloud, having already having heard the unfamiliar words, and understanding the context of the story.
- Social interaction is an important part of this class and was built in by having discussions before and after using the computers to listen to the audio file.

ONLINE WORD GAMES AND PUZZLES

I chose online games as a fun way to practise grammar covered in class. According to the Professional Development Service for Teachers, students need to encounter new words up to 17 times before they become part of their everyday vocabulary. Word searches are one way to ensure repetition of keywords. The learners in my class enjoy doing these puzzles for homework and I thought that this would be a fun, interactive exercise to do in class.

THE PROCESS

- I taught the grammar of adjectives and adverbs.
- We discussed how the use of these parts of speech can make text come to life.
- Using a grammar game on BBC Bitewise, learners chose appropriate adverbs and adjectives to complete advertising slogans.

WHAT WORKED AND WHY

- The online games were a visually stimulating and entertaining way of reviewing what we had covered in the face-to-face part of class.
- This was a nice interactive exercise and the learners had fun reading out their slogans. The activity supported the development of mouse skills to drag and drop.
- The game allowed for a lot of repetition of the grammar points which could have been boring in a face-to-face class.

ADVICE FOR OTHERS

The use of technology can bring lessons to life and can be a great asset to any level of literacy class. The type of technology used needs to be carefully considered, based on learners' skills. However, even those with no ICT experience can benefit from watching YouTube clips or news reports before a class discussion, or using audio to support reading. Having started using TEL in a structured manner with my literacy classes, rather than sporadically as an entertaining break from routine, I see that there are numerous ways ABE teachers can incorporate technology into their teaching of literacy and language skills. Learners can gain the skills necessary for independent online learning and improve their digital literacy along the way.

RESOURCES

Casbergue, R.M. and Harris, K. (1996). Listening and literacy: Audiobooks in the reading program. *Reading Horizons,* 37(1), p.4.

Chen, S.H.L. (2004). Improving Reading Skills through Audiobooks. School Library. *Media Activities Monthly,* 21(1), pp.22-25.

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I SEE WHAT YOU MEAN
USING SCREENCASTING FOR FEEDBACK ON ASSIGNMENTS

CIARA FLYNN

My name is Ciara Flynn and I am a teacher of Music and Music Technology in Cavan Institute. In our music department we offer awards at both QQI Level 5 and 6 alongside a BTEC Higher National Diploma in Music Production.

I am a very passionate teacher and am constantly looking for ways to improve the student experience. I spend roughly 80% of my teaching in computer rooms so, naturally, technology plays an important role in my classroom both in terms of learning activities and skill development. I am a self-confessed technology geek and, as a result, I like to keep in touch with the latest teaching technologies.

WHAT I DID AND WHY

I teach a lot of software based modules and make extensive use of my own video tutorials or screencasts in my teaching. These screencasts are video recordings of my actions on a computer screen, usually accompanied by a narration. My students are very positive about the videos so I decided to try screencasting as a way of giving them feedback on their assignments.

Normally, I provide feedback to students in the form of annotations on written work accompanied by marking sheets containing summary comments for the student to consider going forward. However, I felt that giving feedback in the form of a video that can be paused and replayed at leisure would be more beneficial. In this way, I hoped to:

- make feedback more personal,
- enhance student engagement with feedback, and
- save time.

Firstly, I was guided by key principles of effective feedback (Nicol and Macfarlane-Dick, 2006), which are important to consider when providing feedback in any format. In addition, Haxton and McGarvey (2011) have provided some suggestions on using screencasts for feedback:

- Consider the length - break larger questions into sections.
- Stay focused - avoid incorporating additional examples or too many alternative explanations.
- Organise material logically to minimise demands on working memory;
- Write a script or plan and follow it.
- Ensure that students have access to facilities with sound and have sufficient IT skills to access the screencasts.
- Ensure audio is of sufficient quality – in-built microphones may lead to quiet recordings.
- Turn off email or other programmes – pop up notifications will be recorded on screencasts!


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PROCESS

I used the screencasted feedback with my Music Production students as I spend over half of my teaching time with this group and felt this would give me more time to discuss the screencast feedback with them. I provided feedback for two separate assignments, an essay for the Work Experience module and a reflective portfolio created using Microsoft Sway for the Research and Study Skills Module.

I used Screencast-o-matic *(https://screencast-o-matic.com)* to record the videos. This is a free application that allows recording times of up to 15 minutes per video. The Pro version of the software, which costs $15 per year, has editing tools, draw and zoom features and allows longer recordings.

I used the following approach:

- I marked each essay/project based on the marking scheme and then added annotations using my Samsung Tab Pro.
- Instead of writing summary comments, I recorded myself talking through the assignment and marking sheet.
- I used Screencast-o-matic for recording and connected an external 'Zoom' microphone to ensure audio quality.
- I saved the videos and uploaded them to my OneDrive account. I then shared them with individual students by creating personal links and posting them in their feedback sections on Moodle.
- To ensure that the feedback was timely, I had a one-week turnaround.
- I encouraged students to spend some time looking at their feedback during class time so that I could deal with any issues they had accessing it.

WHAT WORKED AND WHY

I carried out a short survey with the students to evaluate screencasting as a feedback tool. Unfortunately, as it was late in the term, I only received 11 responses. However, the student feedback was overwhelming positive. They felt that the video feedback was easier to follow and understand than written feedback. They could see and hear the sections of their work I was referring to as well as the areas that needed improvement. They particularly liked being able to pause the video and play it again at their leisure. The quick turnaround was also important for them. From my perspective, I found that they paid close attention to the content of the feedback and were much more open to discussion with me.

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CONCLUSION

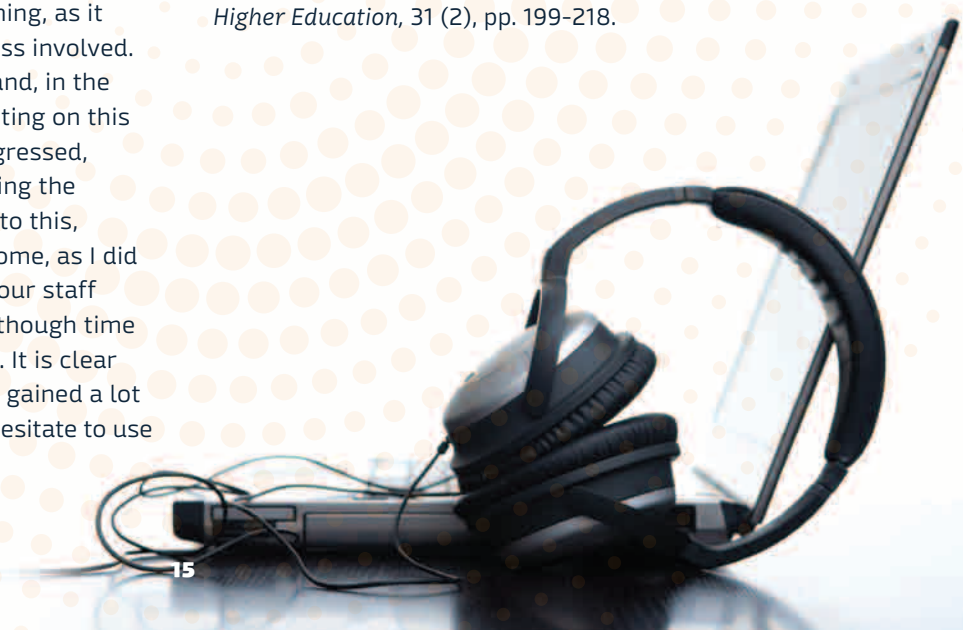
I feel that the screencasting was successful in achieving my aim of adding a more personal element and engaging students with the feedback process. At this point, however, I am unable to determine its impact on subsequent assignments but I am hopeful of seeing an improvement.

Unfortunately, I did not meet my aim of saving time. I found this method of feedback time consuming, as it took me some time to get used to the process involved. Each video took time to export and upload and, in the beginning, I found I wasted a lot of time waiting on this process to be completed. However, as I progressed, I found myself getting into a routine and using the waiting time more productively. In addition to this, most of the work had to be carried out at home, as I did not have access to a quiet enough space in our staff room to carry out the recording process. Although time consuming, I do not feel it was time wasted. It is clear from conversations with students that they gained a lot from this form of feedback, so I would not hesitate to use it again in the future.

RESOURCES

Haxton, K. and McGarvey, D. (2011). Screencasting as a means of providing timely, general feedback on assessment. *New Directions,* 1 (7). Available at: https://www.heacademy.ac.uk/sites/default/files/ndir.1.7f.pdf

Nicol, D. and Macfarlane-Dick, D. (2006). Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in Higher Education,* 31 (2), pp. 199-218.



‘SHOW AND TELL TIME’
USING SCREENCASTING TO IMPROVE READING AND PRONUNCIATION SKILLS IN A FOUNDATION ENGLISH MODULE

MARY KENNEDY

My name is Mary Kennedy and I have worked in the School of Business and Humanities at Dundalk Institute of Technology for the past twenty years as a teacher of French and English (TESOL).

Although once a late adopter of technology and a little nervous of it, more recently I have made an effort to embrace technology in my practice and I am now more open-minded towards it and eager to exploit the opportunities it presents in language education.

WHAT I DID AND WHY

For my learning intervention I focused on developing the pronounciation skills of a group of students taking a Foundation English module. The reading skills element of the module includes an extensive reading project design to improve the students’ reading fluency. In addition to reading abridged novels of their choice in English, students make a short presentation on every book they read.

During previous presentations I noted that many students had serious difficulties with pronunciation often meaning that their presentations were sometimes difficult to understand, despite being quite well-written.

For this reason, I started looking at the extensive reading project as a way to improve their pronunciation skills as well as their reading fluency. I hoped that improving their pronunciation would:

- increase their overall communication skills and intelligibility;
- improve their confidence in speaking English;
- facilitate their participation in student life.

Pronunciation is not usually taught in a structured, explicit manner, but in a reactive manner. For example, when a student makes a pronunciation mistake in class, the teacher will usually correct him or her, and then carry on with the activity.

In recent years, I have become convinced that pronunciation should play a greater role in the language classes and should be addressed in a more systematic manner, as pronunciation problems can be a barrier to full participation in classroom activities once our students progress to undergraduate courses. These difficulties can impede their integration to college life and affect their self-confidence, particularly if they are afraid of being misunderstood every time they attempt to make an oral contribution.

In recent years, I have become convinced that pronunciation should play a greater role in the language classes and should be addressed in a more systematic manner, as pronunciation problems can be a barrier to full participation in classroom activities once our students progress to undergraduate courses.

I chose to use screencasting *(https://screencast-o-matic.com)* as it combines a visual and audio element, which suits the needs of my students.

Initially, I created a screencast of a report on a book that I had read myself and enjoyed. This was intended to allow the students to

- see how a book report should be laid out and
- hear a native speaker make the presentation and read the text at the same time.

In the lab, I invited the students to use the screencast to listen and read. I then asked them to look at the screencast again to check if I had covered all the required points on the checklist for the book report (I had deliberately left one out).

The following week, I showed them how to use Screencast-o-matic, gave them a hard copy of my book report and asked them to make a screencast of it lasting 1 to 2 minutes. They then played the recordings back and listened to themselves.

Two weeks later, when they had read their first book and received feedback from me on their written report, I asked them to make a screencast of the report, in preparation for their presentation. They then uploaded their screencasts to Moodle.

I was very pleased with this intervention as it led to a marked improvement in pronunciation in the student presentations. Last year's presentations had been partly unintelligible, but this year the students mispronounced fewer words, spoke more slowly and clearly and appeared to be far more confident.

- I listened to the screencasts in my office and filled out a feedback form I had prepared for each student. At this stage, I had already given them feedback on the content of the reports, so I was now focusing on pronunciation rather than other aspects of language.
- I then prepared a screencast of my original book report and included several common pronunciation mistakes made by the students. The words I mispronounced included 'read' (in the past tense)', 'written' (they all said 'write-en'), 'character' (they pronounced the initial 'ch' like the 'ch' in 'church') and several others.
- In the next class, I explained that they were going to listen to a screencast containing 10 common pronunciation mistakes and I asked them to identify them.
- After we corrected that exercise together, I asked them to read the individual feedback I had prepared for them and to do a new screencast of their book report.

WHAT WORKED AND WHY

I was very pleased with this intervention as it led to a marked improvement in pronunciation in the student presentations. Last year's presentations had been partly unintelligible, but this year the students mispronounced fewer words, spoke more slowly and clearly and appeared to be far more confident. This improvement was reflected in the marks they received, with an average improvement of 15% compared with last year.

The students themselves gave positive feedback on screencasting. They found it useful and would like to do it again next semester.

For these students, who have just arrived in Ireland and are nervous about speaking English, screencasting for pronunciation offers a number of advantages as, unlike most pronunciation activities, there is a strong visual element which adds to the oral and aural elements. Screencasting:

- facilitates the integration of the skills of writing, reading and presenting;
- allows the learner's individual pronunciation needs to be met in a very targeted and personalised manner;
- allows learners to create their own materials, giving them a greater sense of ownership of their learning;
- offers unlimited opportunities for free composition and refining of pronunciation attempts;
- allows learners to evaluate their own pronunciation in private and the teacher feedback is placed in a real context;
- is not time-consuming as, once the preparatory work is done (i.e. the students have written their book report in a word document), it takes only a few minutes to record a screencast.

I am delighted that screencasting has made such a positive difference to learning of my students and look forward to integrating it further into my practice.

FROM ANIMATION TO PRONUNCIATION

DEVELOPING STUDENTS' SPANISH SPEAKING SKILLS USING CRAZYTALK

GEMMA DUFFY

Hola, me llamo Gemma Duffy! I am a Spanish teacher at Bush Post Primary. In 2014, I completed a Postgraduate Diploma in Information Technology and, as a result, I am now also a teacher of web design and programming! I also spend four hours a week teaching adults in Drogheda Institute of Further Education. I am quite comfortable using technology and would identify myself as part of the 'Early Majority' and sometimes even an 'Early Adopter' in terms of technology. However, I believe it has to be implemented in a way that actually enhances the learning.

WHAT I DID AND WHY

I asked students to record and evaluate themselves speaking about their families in Spanish. This is a good way for first year students to practise basic, yet important, phrases and it is a nice way to introduce them to using technology to enhance their learning. Learning languages requires four skills - speaking, listening, reading and writing. It is vital for my students to hear themselves speaking Spanish to develop their confidence. However, it can be difficult to assess their speaking in class due to student numbers and lack of time.

I asked two groups of first-year students to record themselves speaking. This allowed me to have a recording of each student speaking. It also meant that students were able to access recordings of themselves speaking whenever they wanted, and compare their recording to the sample recording that I provided via the class website. I also developed a structured template for them to self-assess their pronunciation. I focused on one unit, La Familia (the Family) as all four skills are used in this activity in which students will be **writing** first to prepare their paragraph, **reading** over their own work (perhaps reading another student's work in a paired activity), **listening** to the sample recording to check pronunciation and finally **speaking** when recording themselves.

For the listening and speaking I used an animation application called CrazyTalk (www.reallusion.com/crazytalk), which combines a voice recording with a caricature whose mouth moves. I chose to use CrazyTalk because I had been in Spain last summer at a technology course for teachers of Spanish as a foreign language and this was one of the applications they recommended! I loved the idea of recording either myself or another person speaking Spanish and then combining it with an entertaining image, partly because it seems more real for

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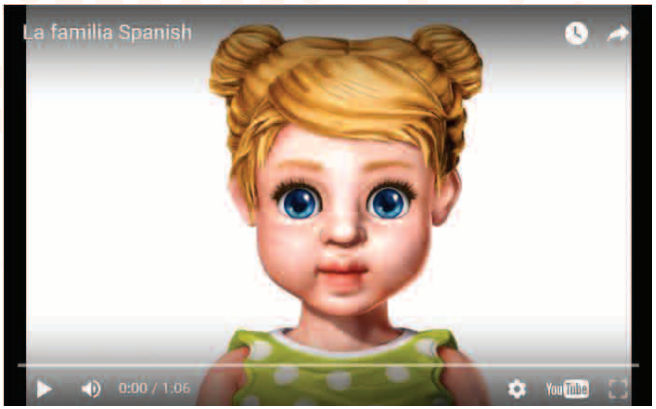
the students, as they may not realise it is their teacher's voice and as it is something different, it can grab their attention. Also, I hoped to record some native speakers and that way it would make aural practice a bit more interesting for visual learners.

MY CRAZYTALK VIDO



Source: Screenshot of sample CrazyTalk video used

THE PROCESS

First, students completed a template with details about their own families.

Hola, Me llamo _____. En mi familia hay _____ personas. Mi _____, mi _____, mi _____ y yo. Mi _____ se llama _____. Tiene _____ años. Su cumpleaños es el _____ de _____.

They then listened to a sample recording in class and answered questions to check for understanding. After the students had completed their written preparation and listened to the sample recording, they were given one week to complete the activity. They either used their own devices to record themselves or used my dictaphone. Those who used their own devices sent their recordings to me via email or by using AirDrop for the iPad, which I had demonstrated for them. After listening to the recordings, I made a list of commonly mispronounced words and recapped these with the class. I also created a self-assessment form for students to evaluate their own recordings. Those who completed and submitted the self-assessment form were awarded full marks as it showed that they had corrected (or at least attempted to correct) their mistakes.

WHAT WORKED AND WHY

Students responded very positively to the sample recording and many of them were eager to see their own voices combined with a character on video as the animation factor generated both excitement and enthusiasm. When asked what they had learned from completing the activity, the majority of students identified learning related to the Spanish content. In this way, the technology, as used in this activity, did enhance the learning, as students learned about the subject content rather than just about how to use technology.

From my perspective, the activity allowed me to assess speaking skills outside of class time and, as replaying the recordings allowed me to check various aspects of the speaking - grammar, pronunciation and syntax, this facilitated meaningful student feedback. It also allowed me to build up audio resources.

From my perspective, the activity allowed me to assess speaking skills outside of class time and, as replaying the recordings allowed me to check various aspects of the speaking- grammar, pronunciation and syntax, this facilitated meaningful student feedback.

CHALLENGES

Gordon (2014) highlights the fact that developing e-learning activities offers "true flexibility but comes at an increasing staff cost in terms of preparation". It took considerable time to explain the task to the students and it was difficult for students who were absent to catch up. Some students also had issues with sending their files to me despite my having demonstrated this. I realised, also, that there was quite a bit of work involved in keeping track of the files received and organising them.

ADVICE TO OTHERS

Don't tell the students you are going to combine their voices with a character unless you are sure you have time to do it and unless you are sure they will be sending you the correct file type. Video files won't work - it must be audio.

Prepare questions to accompany any recordings you make so the students have something to listen out for.

Keep the recording simple, especially if the students are to compare their own recordings to it.

Check it works if moving files via USB. I had problems with the audio initially but it uploaded to YouTube perfectly. If you don't want to upload to YouTube, test it in your classroom in advance of your class so you can troubleshoot any issues.

For further information, email gduffy.bpp@lmetb.ie

RESOURCES

Gordon, N. (2014). *Flexible Pedagogies: technology-enhanced learning*. Higher Education Academy.

PUTTING THE 'TECH' IN 'TECHNIQUE'

SCREENCASTING TO DEVELOP LEAVING CERTIFICATE ENGLISH COMPREHENSION SKILLS

KATHRYN GARDINER

I am a secondary school teacher at Dunshaughlin Community College, where I teach English and Geography. I have a particular interest in the application of technology in the classroom and think of myself as an early-adopter. I have seen at first hand the impact that technology can make as students looking for supplementary materials or students who have a question for me in the evenings, frequent my classroom blog.

WHAT I DID AND WHY

My learning intervention focuses on the comprehension section of the Leaving Certificate English course, an area where I have noticed students commonly lose marks due to a lack of technique. Students assume that they are well able to answer questions on a comprehension, as they have been doing this since they began in school. However, at Leaving Certificate level, they are required to analyse the form and style of the language. It is not a difficult exercise, but in the absence of an appropriate technique, students often use up a great deal of their limited time and consequently sacrifice marks.

To assist my students in developing the three skills required for the reading comprehension, I recorded three screencast videos:

1. Reading the text. 2. Analysing the Question. 3. Answering the Question.

These screencasts are based on Leaving Certificate comprehension questions which are displayed on screen. The software then allows me to record my movements and voiceover as I explain the techniques involved. The videos are designed to support the learning that takes place in the classroom and to be used for self-directed learning and revision. I used the screencasts with my 5th Year English Higher Level class, who are a motivated, high ability group. The techniques for reading and answering the comprehension questions were new to them. They had not practised or developed these skills before and some found them difficult. I hoped that by using the videos, which I made available on YouTube and on the class blog, students would be able to perfect their approach and maximise their marks in the future.

The videos were created using Educreations *(www.educreations.com)*, an interactive whiteboard and screencasting tool which allows one to annotate, animate or narrate information in a video. Although primarily devised as an iPad app, it can now be used with most operating systems. The resulting videos are then published so they can be viewed on any device. The Standard version, which I used, is free, very simple to use and produces high quality videos.

The videos are designed to support the learning that takes place in the classroom and to be used for self-directed learning and revision.

Capture Your Ideas

Share Instantly

Replay Anytime

WHAT WORKED AND WHY

The videos were made available on YouTube and the class blog after each lesson on the specific topic and students accessed them in their own time. Overall the response from students was very positive. They liked the flexibility that the videos afforded them with many remarking that it was "handy" that they could catch up on material, particularly if they missed a lesson due to extra-curricular activities or absenteeism. The students also made suggestions for improvement such as first giving a sample question, allowing time for them to pause the video and try it, and then play it again to test themselves. They also suggested that they could divide up the course and make videos themselves. Finally, most students found the videos more accessible and engaging than written notes, so much so that I am frequently asked now for more screencasts to help with other topics.

The student feedback echoes the benefits of using video highlighted by Brame (2013):

- **Pacing:** Students can watch the videos at their own speed and when they are comfortable with one part they can move on;
- **Self-Direction:** Students can use the video to aid their own learning;
- **Absenteeism:** Students often fall behind due to extended periods of absenteeism. By watching the videos they can keep on top of/catch up with classwork;
- **Accessibility:** They can be accessed anytime and at any place;
- **Language Barriers:** Often students with English as a second language find it difficult to keep pace with other students. The videos allow them to pause and work at their own speed;
- **Revision:** Often there are long gaps, where no comprehension work will be done on the Leaving Certificate course. As a result, students find it difficult to revise during exams. The videos aim to combat this issue;
- **Simplicity:** The videos are very user friendly. This is important so as to encourage students to access and use them.

The students also made suggestions for improvement such as first giving a sample question, allowing time for them to pause the video and try it, and then play it again to test themselves. They also suggested that they could divide up the course and make videos themselves.

CHALLENGES

It is important also to note the limitations associated with the use of videos such as:

- **Version:** The videos are limited in that they are only one snapshot of an explanation. In a face-to-face environment I may explain ideas two or more ways to help students' understanding.
- **Date:** If the screencasts are used with a number of groups over a couple of years, the resource may date as the questions and style of the text may have changed.
- **Access:** The screencasts require students to have internet access and the videos may not work well if the internet speed is poor.

From my own point of view, the positive feedback from the students has encouraged me to continue to incorporate video-based learning into my teaching. In the past, I had made some videos for students, with varying success. However, I was surprised by how easy I found the Educreations app to use and how quickly the videos could be recorded and then uploaded to YouTube and embedded into the class blog. The success of this intervention has made me more confident about implementing technology in my classroom as I have seen the benefits they offer to my students.

RESOURCES

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I THINK I CAN...
IMPROVING ADULT LITERACY WITH IPADS

SHARON MURPHY

My name is Sharon Murphy and I have been involved in Adult Education for twenty years. I currently work with an Education and Training Board (ETB) where I tutor a variety of groups of students undertaking learning at QQI (Quality and Qualifications Ireland) levels 1 to 5.

THE TECHNOLOGY

My TEL tale revolves around the use of iPads with learners using the Adult literacy Service.

WHAT I DID AND WHY

I had recently purchased and started to use an iPad myself and had been thinking about how this technology changed the way in which we communicate with friends, family and colleagues. This led me to consider who this group might respond to this technology and I felt it was worth introducing iPads to the classroom.

I wanted to try something that the group could engage with in a collaborative way and that would involve them in activities that up to this point may have seemed ambitious - using iPads in the classroom seemed a possible way to do this.

I had recently purchased and started to use an iPad myself and had been thinking about how this technology changed the way in which we communicate with friends, family and colleagues.

I wanted to try something that the group could engage with in a collaborative way and that would involve them in activities that up to this point may have seemed ambitious - using iPads in the classroom seemed a possible way to do this.

WHAT WORKED AND WHY

The introduction of a literacy tool that could be used for reading and writing combined with a means of communicating digitally really appealed to me. However, when I first introduced the idea to my group they were initially reluctant to engage with the idea of the iPads as the connection between the iPad and improving their reading and writing skills was not immediately obvious. As with all innovation, the acceptance of change can be a barrier (Evans-Andris, 1995).

There were also a number of other logistical challenges to overcome such as the booking of iPads with the service, ensuring that they were charged ready for use, accessing an Apple ID and password so that applications (apps) could be downloaded, and finally ensuring that the classroom had Wi-Fi access and that I was given the access code. Another challenge was trying to source suitable apps to download for the group. The main problem was that most of the suitable apps that would help with literacy were geared towards children - few apps cater specifically for adults. However, I managed to find overcome all of the challenges and proceeded with the iPad teaching sessions.

Having introduced the iPads, one of the first things I noticed was the learners' sense of ownership and personal control of their learning while using the devices - their confidence increased simply as a result of been given a chance to use the iPads and being trusted to have them. Learners in the adult literacy service have often had negative schooling experiences which affects what they believe they can achieve. A couple of learners mentioned that they had told family members that they were using iPads and I also heard their iPad use being discussed with members of another group of students at break time.

ADVICE TO OTHERS

Overall the iPad use appeared to provide a much more engaging learning experience for them- they enjoyed the applications and the learning activities. The iPad, while useful for providing the learners with resources to help them to practise forming letters, would not necessarily be a good resource for practising their actual writing and in this regard, the basic exercise of handwriting could be overlooked when using the technology. It is therefore important to see the use of the iPad as a supplement to reading and writing exercises rather than a replacement for traditional literacy teaching methods.

Having introduced the iPads, one of the first things I noticed was the learners' sense of ownership and personal control of their learning while using the devices - their confidence increased simply as a result of been given a chance to use the iPads and being trusted to have them.

It was interesting to see the ways in which learners engaged with the iPads, for example by using sound and narration features and games that used phonics. This has subsequently led me to consider making more use of reading aloud strategies as a technique to improve reading and writing skills.

However I also found the iPad provided a simple means of introducing the internet in a non-threatening way - learners learned to search for information on various topics which then informed their writing.

It was interesting to see the ways in which learners engaged with the iPads, for example by using sound and narration features and games that used phonics. This has subsequently led me to consider making more use of reading aloud strategies as a technique to improve reading and writing skills.

The most striking impact of this initiative was the extent to which learners felt more 'included' in today's digital world. When students improve their literacy, it allows them to participate more fully in society - digital literacy serves to enhance this even more.

RESOURCES

Evans-Andris, M. (1995). Barriers to Computer Integration: micro-interaction among computer coordinators and classroom teachers in elementary schools. *Journal of Research on Computing in Education,* 28, pp. 29-45.

NAILING IT
MOODLE QUIZZES FOR FORMATIVE ASSESSMENT IN A MANICURE AND PEDICURE MODULE

MICHELLE WOODS

My name is Michelle Woods. I teach Beauty Therapy at Drogheda Institute of Further Education. Until recently my use of technology in the classroom was rather limited. Completing the Enhancing Learning through Technology module on the MA in Learning and Teaching in DKIT has opened my eyes to the value and use of certain technologies in the classroom.

WHAT I DID AND WHY

I teach a module on Manicure and Pedicure on the ITEC Diploma in Nail Technology. One of the most important learning outcomes of the module is that students are able to identify and deal with nail diseases and disorders. Historically, this has proven to be a challenge for students as the terminology is technical and derived from Greek. The students have difficulty with both the pronunciation of the terms and differentiating one disorder from another. Also, as this topic is very factual, there is often a lack of student participation and interaction with the material.

I decided to use the quiz function on Moodle to see if it would facilitate more active learning in my classes and also provide formative feedback to students, thereby allowing it to be used as an effective revision tool.

I was particularly keen to encourage all students to engage and interact with the resources on Moodle. With this in mind, I introduced some activities into the Moodle module and linked them to the Progress Bar. This bar, which appears at the side of the Moodle page, can be linked to activities on Moodle and, as these are completed, the corresponding sections of the bar change from blue to green, or red if the quiz or activity has not been completed by the expected date. It is very useful for motivating students to engage with activities on Moodle.

I began by asking them to access some notes on Moodle as well as a video tutorial of the manicure routine. For each of these there was a section on the Progress Bar. Once students began to use these, I felt it was a good time to introduce the quizzes.

I decided to use the quiz function on Moodle to see if it would facilitate more active learning in my classes and also provide formative feedback to students, thereby allowing it to be used as an effective revision tool.

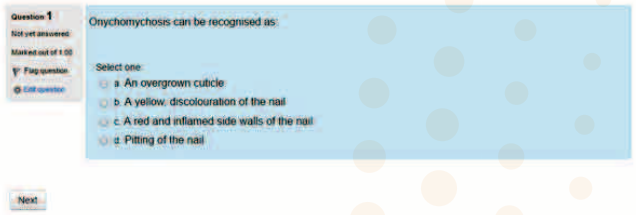
One of the most important learning outcomes of the module is that students are able to identify and deal with nail diseases and disorders. Historically, this has proven to be a challenge for students as the terminology is technical and derived from Greek.

Source: Moodle (https://moodle.org/)

I created weekly quizzes which were linked to the topics that we had covered. The quizzes consisted of multiple choice questions as the theory examinations for the module are presented in this format. I created a number of variations of the questions on each disease or disorder to cover different aspects of the disease e.g. how it might be classified, the symptoms, its common name. When students attempted the quizzes they got immediate feedback on their scores. They could attempt the quizzes as often as they wanted to improve their score.

The quizzes provided formative feedback for the students and, in this way, enabled them to be more self-regulated in their learning.

SAMPLE QUESTION



Source: Moodle quiz screenshot

WHAT WORKED AND WHY

In using the Moodle quizzes on a weekly basis it became apparent that the students liked them and were engaging with them. They reported that that the quizzes helped them learn about the topic and they found them to be an excellent revision tool.

I distributed an anonymous survey to the students to ask them about their experiences of using the quizzes. The feedback was extremely positive. A number of students wanted more quizzes to cover other learning outcomes with even more questions.

The positive effect of the quizzes can be seen in the following student comments:

"I wasn't looking forward to accessing Moodle let alone doing a quiz but I was made do it and ended up enjoying it more than I thought I would. The first quiz was awful because I got most of them wrong but I had to keep going to change the bar to green. By the end of the third quiz I was buzzing so I went back and re-sat the first quiz. I really like this way of learning and there are times when I have forgotten what was set out for revision. Now I feel confident in logging into Moodle and find the work most enjoyable."

"I did find it a rich experience and feel it has helped me so much because the way the questions are worked you have to think about the answers and work them out, I loved it".

CHALLENGES

The main challenge that I faced in using the quizzes was creating the actual quiz questions. This takes time and planning. However, it is time well spent as, once the questions are created, they can be saved and used in the future.

CONCLUSION

Using technology in my classes in this way has allowed my students to take more ownership of their learning and, in doing so, has developed their capacity to self-regulate. Technology is not only about enriching the learning for the student but also about the enrichment of teaching. I too feel enriched by this experience and am eager to continue updating my skills.

"I wasn't looking forward to accessing Moodle let alone doing a quiz but I was made do it and ended up enjoying it more than I thought I would. The first quiz was awful because I got most of them wrong but I had to keep going to change the bar to green. By the end of the third quiz I was buzzing so I went back and re-sat the first quiz."

LET'S ASK THE AUDIENCE...
USING SOCRATIVE TO ASSESS STUDENT LEARNING IN THE CLASSROOM

SIOBHAN MCCARTHY

I'm a zoologist by training although my postgraduate work brought me down the path of freshwater biology. For the past 8 years I have been teaching in the Department of Applied Sciences in DkIT. I teach a variety of modules and undergraduate stages, starting with fundamental biology for 1st years to more focused environmental modules at award stages. When it comes to using technology, I am a digital immigrant! However, I can see the instrumental value of using technology both inside and outside the classroom. The medium of lecturing has changed dramatically since I was a student. Students no longer transcribe lectures from blackboards and now expect more visually pleasing material. I have found that many students use YouTube to revise rather than their lecture notes. So, teaching needs to move with the times and make content more engaging to appeal to 'Generation Y'.

WHAT I DID AND WHY

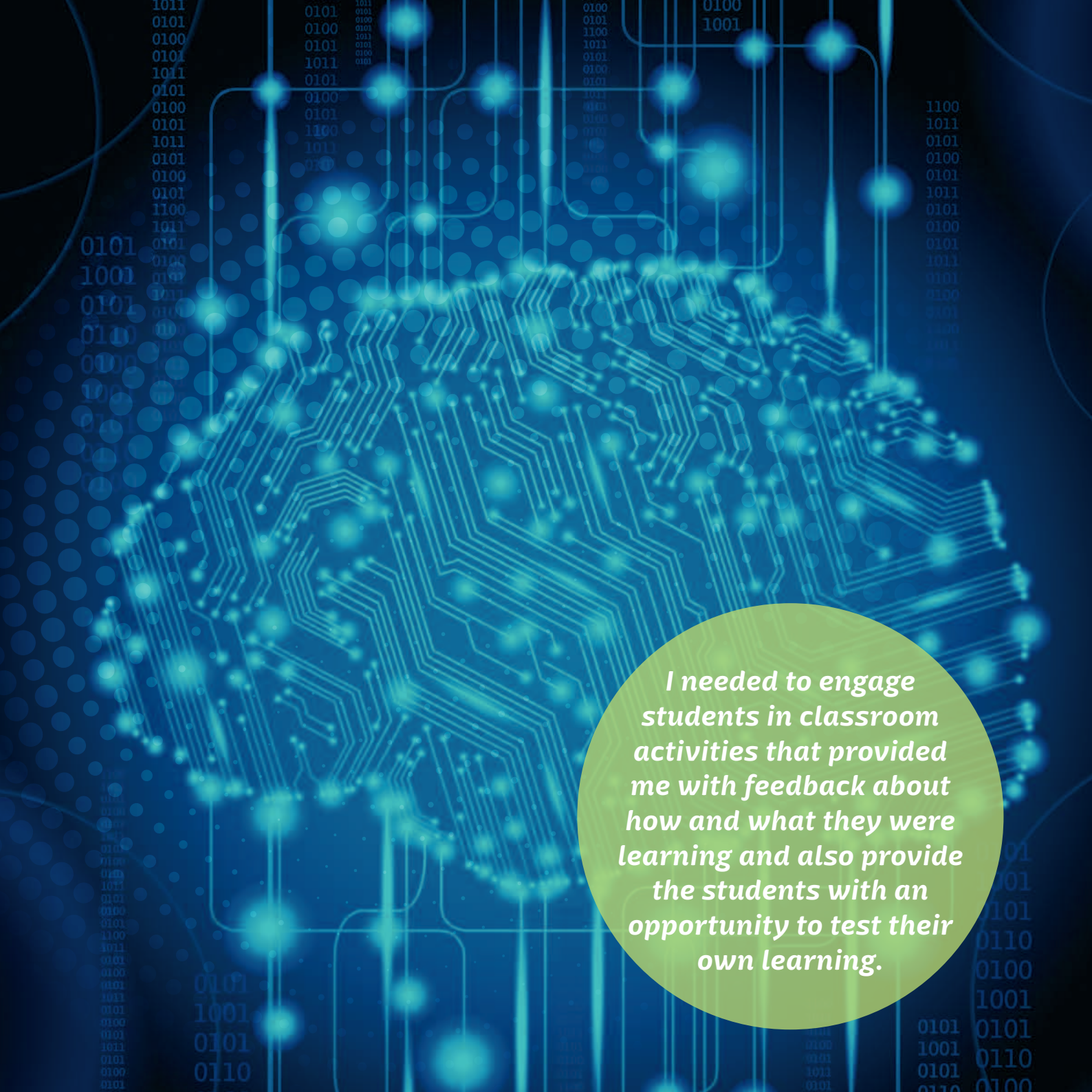
I decided that I needed to engage students in classroom activities that provided me with feedback about how and what they were learning and also provide the students with an opportunity to test their own learning. This formative assessment and feedback can result in some of the largest gains in student learning when compared to other interventions (Black and Wiliam, 1998) but formative feedback is often lacking in large classroom settings (Black and McCormick, 2010).

To do this I used a classroom response system called Socrative in my first year Biology module. Socrative is application which allows students to answer questions using their phones, laptops or tablets and in this way increase student participation and interaction.

THE PROCESS

Students can download the free Socrative app (www.socrative.com) or access it on the internet. The lecturer can pose questions in a variety of ways:

1. Quizzes with short answer, multiple choice and true/false questions.
2. Space race - this is essentially a table quiz where students are divided into teams and race to answer all the questions.
3. Exit ticket - the exit ticket is a way to 'hook' the students at the end of a class. Students are asked two standard questions ('How well did you understand today's material?' and 'What did you learn in today's class?') and a question posed by the lecturer.


I needed to engage students in classroom activities that provided me with feedback about how and what they were learning and also provide the students with an opportunity to test their own learning.

The students were very attentive and really applied themselves to the tasks. It felt very rewarding to have students happily engaging with activities.

WHAT WORKED AND WHY

It was evident that every time I used Socrative in the classroom, the students really enjoyed it. They were very enthusiastic and kept asking for more questions - even after the class time was up they wanted to stay back and do more. This is a far cry from the rustle of papers and packing up ten minutes before the end of a class! The students were very attentive and really applied themselves to the tasks. It felt very rewarding to have students happily engaging with activities.

The use of Socrative led to more active learning and engagement in class, it served as an activity to break up the class and students were able to monitor their own learning, prompting self-regulation.

WHAT DID THE STUDENTS THINK?

I distributed a survey to ask students about the use of technology in the classroom. Forty students responded and overwhelmingly, the comments about Socrative were positive. Students found it enjoyable, interactive, educational and useful for summarising new information. There were several comments about wanting to use it more often in the future. When asked to rate Socrative on how helpful it was for their learning (1 = not helpful at all; 5 = very helpful), the average score was 4.4, which indicates that students considered it useful tool that could enhance their learning experience.

CHALLENGES

When I first used Socrative I only used the quiz feature with a couple of tutorial groups. While students enjoyed it and were very positive about it there were some teething issues such as:

- some students didn't have smartphones or other devices
- lack of wireless connectivity in the classroom and
- the anonymous feature meant that students were unable to track their progress compared to others.

To address these issues I used the following approaches:

- I only used Socrative in classrooms that had good wireless connectivity.
- I also printed out a few copies of quizzes for students that either didn't have smartphones or whose smartphones weren't charged. They were also free to look in with someone else if they wished.
- Instead of using the anonymous feature, I told the students to use a nickname or moniker that would allow them to track their progress but that I would not recognise, hence assuring anonymity.

Finally, I would conclude that the 'Exit ticket' in Socrative proved most useful from my point of view. It was helpful to see what students felt the take home message was, and what concepts they didn't understand. I generally started the subsequent lecture with this in mind and recapped concepts that students may have had difficulty with. The immediate feedback from students has really helped inform my future teaching and recognise areas that students find challenging. It is also a good way of implementing closure for a lecture. It helps in summarising information at the end of the lecture to emphasise new knowledge that the student has built and helps with motivation to learn and engage (Gibbs and Habeshaw, 1992).

Finally, I would conclude that the 'Exit ticket' in Socrative proved most useful from my point of view. It was helpful to see what students felt the take home message was, and what concepts they didn't understand. I generally started the subsequent lecture with this in mind and recapped concepts that students may have had difficulty with.

RESOURCES

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Black, P. and McCormick, R. (2010) 'Reflections and new directions', *Assessment and Evaluation in Higher Education,* 35(5), pp. 493 - 499.

Gibbs, G. and Habeshaw, T. (1992) *Preparing to Teach: An introduction to effective teaching in higher education,* 2nd ed., Technical & Educational Services Ltd.

MAKING "SCENTS" OF IT
USING MOODLE QUIZZES IN AN AROMATHERAPY MODULE

PAULA DUNNE

My name is Paula Dunne and I have been a tutor at Drogheda Institute of Further Education for the past ten years where I am a member of the Beauty Therapy Department and teach Reflexology, Aromatherapy and Indian Head Massage to second year students. These modules are equivalent to FETAC Level 5. They are externally assessed, using theory and practical examinations, by ITEC which is a leading international specialist examination board.

WHAT I DID AND WHY

The theory assessment for the Aromatherapy module is an hour-long examination consisting of fifty multiple choice questions. To date, I have prepared my students for this examination by formatively assessing them using written practice examinations during class. Although these help to identify strengths, weaknesses and knowledge gaps, grading them is quite time consuming for me as a teacher. Also, the students have to wait a week to get the results and feedback as I only see them once per week.

This module provided an ideal opportunity for me to implement online quizzes for formative assessment. The quiz activity in Moodle would enable me to create quizzes comprising of various types of questions, for example, multiple choice, matching, short-answer and true/false answers. I had a few options open to me with this facility. I could allow my students to attempt each quiz multiple times, with questions shuffled or randomly selected from the question bank. I could also set a time limit. Each attempt is marked automatically and the grade is recorded in the gradebook. I could also choose when and if hints, feedback and correct answers are shown to students.

I used Moodle to set up two online quizzes. The first quiz had ten True or False questions. These questions assessed my students' knowledge of the botanical names of the forty-two essential oils they had been studying. The second quiz consisted of ten multiple choice questions on the therapeutic properties of essential oils. Due to time constraints, I chose not to add specific feedback on each question. So, when students attempted the quizzes, they would be able to see their overall score and which answers were correct or incorrect.

I previewed and attempted each of the quizzes myself before I made them available to my students. This allowed me see if any errors had been made in setting them up. The students were then given a defined period of twelve hours to complete each quiz.

This module provided an ideal opportunity for me to implement online quizzes for formative assessment. The quiz activity in Moodle enabled me to create quizzes comprising of various types of questions, for example, multiple choice, matching, short-answer and true/false answers.

The students commented that these online quizzes were an excellent tool to prepare them for their summative examination at the end of semester two.

WHAT WORKED AND WHY

Almost all students completed both quizzes. To assist me in evaluating this exercise and planning for the future, I asked for class representatives to report back to me. These self-selected volunteers provided the following feedback:

- They found the quizzes permitted them to engage in meaningful revision of the topics covered by the quizzes;
- They enjoyed the flexibility and accessibility of when and where they could complete the quizzes;
- They appreciated the timely grading of these quizzes;
- It was reported that students with dyslexia welcomed the opportunity to personalise their view of the questions (e.g., font types, sizes, colours) as it made their reading more efficient and productive;
- They preferred the multiple choice questions over the True/False questions as this is the format for their summative assessment by the external examiner at the end of semester two;
- They liked the opportunity to use these quizzes as a revision tool;
- They unanimously agreed that they would like to be formatively assessed by this method in the future;
- The students commented that these online quizzes were an excellent tool to prepare them for their summative examination at the end of semester two.

From my own point of view, the setting up of these quizzes did not take as much time as I had anticipated. Traditionally, I would have been typing up these quizzes anyway so, once I was familiar with this Moodle activity, it didn't take any extra time. I created different categories in the question bank. This will allow me repeat quizzes on certain elements of this course with future groups of students. Although, I found it straightforward to administer the quizzes, I feel it is important to preview and attempt each quiz before it is released to the students, to iron out any potential glitches.

The time saved by not having to grade these quizzes can be used in other course preparation or creation of other quizzes. The detailed report of the students' results is very valuable as it immediately highlights any gaps in student knowledge and understanding. The online quizzes are readily available as a revision exercise for students to re-take at their own convenience. As a teacher, I will be in a position to monitor on Moodle how many times a quiz is taken and any improvement in the results.

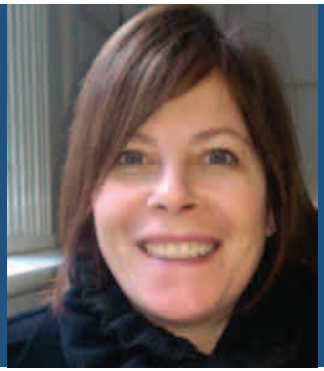
The student volunteers clearly articulated the value in the quizzes. Whilst the students have voiced their preference for multiple choice questions over true/false questions, I would still use this style of question as it is very helpful in monitoring students' progress in certain aspects of the course.

One area that I feel I can improve on is by giving feedback to the student with each of their answers as it is important to explain to students why an answer is incorrect. This will help to ensure that the assessment itself promotes learning.

CONCLUSION

Prior to beginning this TEL module, I had some reservations, mostly about my technology competencies, wondering how I could practically embrace technology to help me develop my teaching practice in flexible and creative ways. However, reading around this area and practising in our lab sessions have enabled me to better understand what can be achieved and how technology can enhance face-to-face delivery and make my practice more student-centred.

FROM 'BORED' TO 'BOARD'
YOUTHREACH STUDENTS' USE OF THE INTERACTIVE WHITEBOARD



MARLEEN DUNNE

My name is Marleen Dunne and I began tutoring in a volunteering capacity over five years ago. My initial role was as a volunteer tutor working with adults to improve their literacy. There was no technology involved in this work - I was there to build confidence and help answer the learners' questions as they learned at their own pace.

I gradually progressed to working in a Community Training Centre where I tutored communications and Literacy. The age profile of these learners was a little younger and their needs a little different. It was a role I thoroughly enjoyed but eventually the Centre was closed and I began looking for a new role and that is where I am today. I work in a Youthreach Centre with early school-leavers who have no qualifications and are accessing second chance education.

WHAT I DID AND WHY

As a tutor on Youthreach, it is imperative that I provide the students with regular feedback on their learning so that they can learn how and when to adjust their efforts. As there was an interactive whiteboard available in my classroom, I decided to teach myself how to use it so that I could use it as an aid to my teaching. Although I had no experience of using this technology previously, I decided it was time to develop my skills. But, first, I had to understand how an interactive board actually worked and then I had to work out how best to use it so that I could assist the learners to achieve the learning outcomes in the module.

The interactive whiteboard is an instructional tool that allows computer images to be displayed onto a board using a digital projector and the tutor can manipulate elements and images by using the board as a touch screen. As a pedagogical tool the whiteboard can promote creative teaching and motivate students to learn. According to a study by Miller and Glover (2002) students' zest for learning is enhanced by the element of surprise with an interactive whiteboard. It can accommodate a variety of learning styles, a feature that is particularly important in the education sector I work in. Tactile/kinaesthetic learners can touch the board and move things around, visual learners benefit from clear views of what is happening and auditory learners can participate in class discussions. It can also promote discussion and group work and it was this that constituted the most noticeable change in my classroom as it enabled the students to contribute ideas and interact.

The interactive whiteboard is an instructional tool that allows computer images to be displayed onto a board using a digital projector and the tutor can manipulate elements and images by using the board as a touch screen.

Firstly, I was amazed by how quickly the classes went and secondly how engaged the group were. For a change, I was not the only one talking in class and I was encouraged to see how even the quieter students were interacting and taking their turn at the whiteboard.

WHAT WORKED AND WHY

Engaging learners on Youthreach programmes can be a challenge as their experience of education is often a negative one. For me as their tutor, the whiteboard meant that I could interact with students at their work stations as opposed to doing the chalk and talk thing at the front of the class. The use of the whiteboard also gave the students the opportunity to present work to the class and, as Bell (2001) states, this was likely to improve attention and engagement in the learning process. I also used the whiteboard to deliver a class on relationship and supports, which is a learning outcome for Personal and Interpersonal Skills level 3. I used the board to engage the students in class discussion and used YouTube examples on the whiteboard to demonstrate relationships. The students also took turns investigating support group names and details on the whiteboard to help with individual problems.

Firstly, I was amazed by how quickly the classes went and secondly how engaged the group were. For a change, I was not the only one talking in class and I was encouraged to see how even the quieter students were interacting and taking their turn at the whiteboard.

I am aware that the use of whiteboard can be restricted if there is poor broadband coverage, and tutors with no previous training in the technology can be challenged when faced with using it. However, the flexibility, efficiency and choice of resources offered through the use of an interactive whiteboard more than make up for any potential downsides.

ADVICE TO OTHERS

I realise that this was a simple step in using the interactive whiteboard but it has demonstrated to me that technology can support and facilitate student-centred learning. I am a novice tutor but I am a true convert to the use of technology in my teaching. I am aware that the use of whiteboard can be restricted if there is poor broadband coverage, and tutors with no previous training in the technology can be challenged when faced with using it. However, the flexibility, efficiency and choice of resources offered through the use of an interactive whiteboard more than make up for any potential downsides.

RESOURCES

Bell, B. and Cowie, B., 2001. Teacher Development for Formative Assessment. *Waikato Journal of Education,* 7.

Glover, D. and Miller, D. (2002). 'The interactive whiteboard as a force for pedagogic change: the experience of five elementary schools in an English education authority'. *Information Technology in Childhood Education,* Vol. 2002 Issue 1: AACE Digital Library

TAKING THE 'LABOR' OUT OF LABORATORY NOTEBOOKS

IMPLEMENTING AN ELECTRONIC LABORATORY NOTEBOOK IN AN ANALYTICAL SCIENCE MODULE

SINEAD LOUGHRAN

I have been teaching in the Department of Applied Science at Dundalk Institute of Technology since 2012. My research interest is primarily in the area of viral oncology which is the study of cancers caused by viruses. Although passionate about this area of research, I am committed to excellence in teaching and learning and feel a great sense of privilege to be able to teach, influence and, hopefully, inspire my students to become the scientists of tomorrow. I am positively disposed to using technology to enhance my practice and use Moodle extensively.

WHAT I DID AND WHY

The learning activity I have implemented is the use of the electronic laboratory notebook (ELN) for assessment of laboratory reports and to collaborate on and compile an online portfolio of Analytical Science. The move to an ELN was initially borne out of frustration on my part at having to carry 60+ hard-back lab notebooks home for grading and assessment. Initially, I adopted it for students taking the 'Advanced Analytical Science' module and, to date, this is the only module in Ireland where students get training and experience in the use of this emerging reporting tool for lab data and documentation management.

The LabArchives ELN *(www.labarchives.com)*, which I used, is a cloud-based application that allows the user to easily create, store, share and manage their lab research data. It is inherently environmentally friendly and students can access the software and their reports on their smartphones if they wish.

The classroom edition is free to use for teachers but there is a cost associated with student accounts. With the help of a subsidy from my department each student's subscription amounted to little more than the cost of a hard back science notebook.

USING THE ELECTRONIC LAB NOTEBOOK

Initially, there was a significant time investment as I participated in a webinar on using the ELN, prepared the lab report templates for each week and entered all the student email addresses manually. After this setup, students received an invitation from LabArchives to join my course. They could then set up an account linked to the course after which I was able to access their lab reports.

Students were able to register for the training webinars or, alternatively, watch the series of explanatory videos available on the LabArchives website. Also, if they had problems accessing or using the technology, there was a dedicated support team to contact and liaise with.

The move to an ELN was initially borne out of frustration on my part at having to carry 60+ hard-back lab notebooks home for grading and assessment.

SAMPLE TEMPLATE

Source: www.labarchives.com, reproduced with kind permission.

STUDENT PORTFOLIOS

I also replaced the project element of the Analytical Science module with a portfolio where students could collate and share their reports from two linked modules in second and third year (both in Analytical Science) to produce a 'polished' e-portfolio of Analytical Science expertise, showcasing their knowledge and technical skills with a focus on their employability. This is not something that could be easily replicated with the more common paper-based reports.

Students worked in teams but submitted individual portfolios. Within each portfolio they demonstrated how they actively engaged in and participated in teamwork (an industrially relevant ability) through a reflective writing piece. This helped them see the relevance of what they do to the real-world industry situation.

WHAT WORKED AND WHY

The response from students has been very positive with many citing this as an important industry-facing skill that they hope will distinguish them from other graduates. In a survey, circulated by the LabArchives development team, students agreed that they would like to see the ELN used in other science classes and indicated that the ELN was:

- Easy to use
- Preferable to paper-based reports
- Required less time to create than paper-based reports

A major positive was that I was able to create a template each week and instantly share this with the students. This meant that rather than having to spend considerable time drawing tables, demarcating sections and writing headers etc., as in a paper-based lab report, they could focus their time on reporting, discussing and interpreting the data. It also allowed me to maintain a consistent style for templates by copying the previous template and amending accordingly.

CHALLENGES

Students suggested that the ELN could be improved by indicating when the WiFi connection is lost and by enhancing the drag and drop features. It should also be noted that the student subscription expires at the end of the semester, after which time students can view but not edit their portfolios.

CONCLUSION

For me as a teacher, adopting the ELN was a huge leap and required a considerable time investment. However, once I had the ELN up and running and the lab report templates generated, all went smoothly. Students embraced both the lab reporting and the portfolio elements and next year's cohort will benefit from viewing exemplars of the portfolios produced by this year's group.

At a recent careers fair, the fact that Analytical Science graduates were emerging from the Institute with experience in using the ELN was noted by a pharmaceutical company representative as being an important differentiator in terms of their employability.

The impact of the ELN and portfolio was summed up by a recent graduate who expressed his thanks, writing "I was hand-picked by the production manager because I produced the portfolio you helped me put together. I brought it with me to the interview. They've told me it's a managerial position I have... So I'd like to take this opportunity to thank you ...".

USEFUL RESOURCES

Rubacha, M., Rattan, A.K. and Hosselet, S.C. (2011) A Review of Electronic Laboratory Notebooks Available in the Market Today. *Journal of Laboratory Automation,* 16 (90), pp. 90-98. Available at: http://jla.sagepub.com/content/16/1/90.short

Voegele, C, Bouchereau, B., Robinot, N., McKay, J., Damiecki, P. and Alteyrac, L. (2013) A universal open-source Electronic Laboratory Notebook. *Bioinformatics,* Vol. 29 no. 13, pp. 1710–1712. Available at: http://bioinformatics.oxfordjournals.org/content/suppl/2013/05/03/btt253.DC1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What Works &why


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