JISC Final Report

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Table of Contents

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2) Report Summary

2.1 Project Overview

The DUCKLING project reviewed and renewed curriculum design and delivery practices for two course teams in two disciplines: a course team in the School of Psychology offering an MSc in Occupational Psychology and an MSc in the Psychology of Work, and one course team in the School of Education offering an MA TESOL and Applied Linguistics. All three Master's programmes are distance-learning work-based programmes. Key challenges faced by three programmes included adding flexibility to the curricula to accommodate learner mobility, increasing learner engagement both with learning materials and feedback, reducing learner isolation and improving retention. DUCKLING integrated four innovative learning

technologies (Podcasting, virtual worlds, e-book readers and voice boards) into the curriculum delivery, and researched the impact of the interventions on the learner experience on the three Master's programmes over a two-year period. The DUCKLING interventions resulted in improved learner engagement, more flexibility in the curricula to accommodate the needs of time-poor, work-based distance learners, and the reduction of learner isolation.

The results from the pilot action research showed that podcasting and voice board trials were the lowest-cost interventions with the highest impact on the learning. They resulted in a well-evidenced increase in learner benefits in terms of personalisation, flexibility, reduced isolation and increased engagement, at a marginal cost in tutor time. E-book readers added significant value to learning too, although at a higher cost to the institution than podcasting. Students commented favourably on the usability and flexibility afforded by e-book readers, and the ease of access to essential readings. The virtual world (Second Life) demanded customisation of the environment and the artefacts, in addition to the training of students and staff. It was piloted with small numbers of students and added limited value to curriculum delivery. Those who participated, however, found it engaging.

The evidence base generated by DUCKLING has informed decisions on curriculum change, innovation and embedding of technologies by the DUCKLING course teams. It has influenced and continues to inform curriculum delivery decisions made by many other Leicester colleagues and course teams across disciplines and at other HEIs.

2.2 Project Outputs

A summary of DUCKLING deliverables and outputs (available on DUCKLING website http://tinyurl.com/3xdx89w) is given below:

1. **A curriculum design and delivery lifecycle model** for effective, scalable and sustainable work-based distance curriculum delivery within a dual-mode university.
2. **Two exemplar delivery curricula** for two disciplines to illustrate how DUCKLING technology-supported changes made to design and delivery of the three curricula in two disciplines (see Appendix 3 and 4).
3. **An inventory of examples of technology-enhanced solutions** to work-based curriculum delivery. These are six case studies, each illustrating the integration of a learning technology to Psychology or Education.
4. **Guidelines:** for HE practitioners and managers to develop flexible and learner centred work-based curriculum delivery.
5. **Publications**:
    a. A journal article based on Psychology Podcasting, published in ALT-J,
6. **Dissemination activities:** A summary of the key dissemination activities
7. **Reports:**
    a. Evaluation reports: produced by Andrew Comrie, DUCKLING external evaluator
    b. Two interim reports
    c. Final report
8. **Podcast outputs:**

a. Psychology podcasts: the Psychology team produced 100 podcasts in six categories (Table 2). Five of these podcasts are available as Open Education Resources (OERs).

b. Education podcasts: the Education team produced a series of podcasts to supplement module content (Table 3). One of these podcasts is available as OERs.

9. **Virtual world outputs:**

    a. A Psychology Virtual world activity (VW-tivity) (see Table 5).

    b. An Education VW-tivity (see Table 6).

    c. A SECOND LIFE oil rig: The oil rig is available for access at the University of Leicester's Media Zoo island (http://slurl.com/secondlife/media%20zoo/168/149/17/)

    d. SECOND LIFE training guides and resources, available as OERs

    e. An oil rig evaluation video

10. **E-book reader outputs:**

    a. A guide to converting Word documents into ePub format, available as an OER

    b. An e-book reader video: recording of a discussion session with postgraduates at the University of Leicester via the Graduate School Media Zoo about e-books and e-readers

11. **Voice Board outputs:**

    a. Wimba Voice Board user guide

    b. Guide for e-moderating on voice boards

12. **Examples of research instruments**:

    a. A causal map example (Appendix 5)

    b. An e-book reader survey (Appendix 6)

    c. A SECOND LIFE survey (Appendix 7)

    d. A podcast feedback survey (Appendix 8)

13. **Web presence:**

    a. DUCKLING website: http://www.le.ac.uk/duckling

    b. DUCKLING blog: http://tinyurl.com/d8pqpp

    c. BDRA blog: http://beyonddistance.wordpress.com

14. **Other outputs:**

    a. Two DUCKLING posters

    b. A DUCKLING leaflet: providing an overview of DUCKLING methods and key findings.

    c. A summary of how DUCKLING technologies addressed the original challenges (Appendix 1)

    d. A cost-benefit analysis of DUCKLING technologies (Appendix 2)

    e. A document on the development of a consultancy task using video podcast. This task was run as part of the 2010 Occupational Psychology (OP) Course Conference.

    f. An overview document about how DUCKLING technologies were integrated into the two Psychology programmes.

2.3 Impact and Benefits to the Community

DUCKLING made a significant impact on all key stakeholders, see Table 1 below.

Stakeholders	DUCKLING's greatest benefits were…
Learners	Increased personalisation Improved quantity and quality of interactions Maximised engagement Improved curriculum flexibility to accommodate needs of mobile learners Highly effective feedback in more formats – no extension requests Reduced isolation
Course teams ('staff')	Much higher quality curriculum delivery at a marginal additional cost Low-cost, high-value, transferable and sustainable interventions embedded in the curricula Awareness of possibilities afforded by a range of learning technologies and how to capitalise on them New, powerful approaches to assessment and feedback Innovation facilitated by Teaching Fellows and shared across the university and beyond
University	Carpe Diem workshops (www.le.ac.uk/carpediem) and similar interventions as a successful, proven lever for innovation and change in learning design Sustainable, evidence-based innovation across programmes and departments Extensive and effective internal dissemination of curriculum enhancements and research findings Peer-reviewed publications Input into and evidence for the new Learning Innovation Strategy A much enhanced experience for learners

Table 1: Benefits to stakeholder groups

2.4 Main Lessons Learnt

Although DUCKLING's focus was on curriculum delivery, it has promoted changes to curriculum design, (see DUCKLING's curriculum lifecycle model, http://tinyurl.com/3xdx89w). For a curriculum to be delivered effectively, taking full advantage of the affordances of learning technologies, DUCKLING established that careful consideration needs to be given to design and re-design – not only of the curriculum, but also of the learning and teaching approaches on a course.

DUCKLING enhanced the experiences and increased the motivation of work-based distance learners by incorporating the four learning technologies (Podcasting, Second Life, e-book readers and Wimba Voice Board) in appropriate ways. Enhancements include:

- The use of four DUCKLING technologies in the delivery of three programmes made the student learning experience more enjoyable and flexible.

- Podcasting offered a level of personalisation that was not present in earlier versions of the three programmes. This technology enabled the course teams to design reusable learning resources that made it possible for them to 'design once and deliver many times'. This approach has been successful in terms of the sustainability and embedding of the interventions beyond the end of the funding.
- Learner support and engagement were greatly improved through podcasts that provided guidance and feedback.
- Voice boards enabled an enhanced level of interaction between learners and tutors around specific voice-tivities (v-tivities) for formative assessment.
- Delivering materials through e-book readers and ePub format via VLE met a need for increased flexibility for mobile learners.

The Second Life pilot helped staff of both disciplines to see the potential of a virtual world as a safe environment for practising skills and realise what was involved in the design and implementation of Second Life teaching activities.

The Teaching Fellow model[1], first used in DUCKLING and Carpe Diem workshops[2] proved effective in engaging academic course teams in using new technologies and providing support for technology-enhanced-redesign.

[1] DUCKLING funded a part-time (0.4 FTE) teaching fellow in each partner department to facilitate the introduction of innovation for lasting change. Both are subject experts and experienced users of technology in curriculum design and delivery.

[2] Carpe Diem (http://www.le.ac.uk/carpediem) is a well-researched, well-rehearsed team-based model for promoting change in learner-centred e-learning design and assessment, institutional capacity building and innovation.

3) Main Body of Report

3.1 What did you do? (Methodology)

3.1.1 Background and context

Work-based learning plays an important role in meeting the demand for increasing the employability of university graduates (Clamp and Warr, 2002; Hills et al., 2003). Most higher education institutions already have work-based learners as a vital segment of their target audience in their teaching and learning agendas. Work-based learning also acts as a driver for innovation in the Higher Education (HE) system (Nixon et al., 2006). Evidence suggests that work-based learning can be more resource-intensive than other modes of learning (Nixon et al., 2006). To provide cost-effective work-based learning solutions, Higher Education Institutions (HEIs) need a more flexible approach (Nixon et al. 2006; Gallacher and Reeve, 2002) and make the best possible use of the affordances of new technologies in delivery (Brennan, 2005). This will enable students to have greater controls over when and where their learning takes place and build their learning around other work and life commitments (Nixon et al., 2006).

The University of Leicester

University of Leicester is leading in the area of distance education. Since the early 1990s, over 18,000 students have earned degrees by studying at a distance. The university currently has over 7,000 students on 40 distance learning programmes offered by 13 departments. Over 50% of the distance students are outside the EU, with large numbers in Africa, the Caribbean and the United Arab Emirates. The vast majority of distance students are enrolled in work-based Master's programmes related to their professional lives. It is part of the university's mission to continue investing in and expanding the delivery of its work-based distance learning programmes and to enhance the experience of these learners through learning technologies.

Print is still the main delivery technology in most of Leicester's distance learning programmes. There is a strong need for innovation in their design and delivery, considering the range of technologies available today that might enhance the learning process. An increasing number of departments have opted for appropriate blends of online and print delivery. Six programmes are currently delivered solely or primarily online. This figure is likely to increase in the next 12 months.

Two Master's programmes in OP and one in Applied Linguistics and TESOL were targeted for specific innovations to be implemented and researched. Almost all students on the three programmes are in employment.

The School of Psychology

The School of Psychology of the University of Leicester started delivering two distance-taught programmes in 2000: the MSc in Occupational Psychology and the Diploma/MSc in the Psychology of Work. Each programme involves six 20-credit modules and a 60-credit dissertation. The two programmes attract about 50 part-time students per year in total, and can be completed in two years. In 2006, the OP team began to develop significantly its use of the university's Blackboard VLE beyond a document repository to enhance the delivery of these programmes. Tutor-moderated discussion forums provided guidance on the content and assignments for each module, and support to learners at all stages of preparing the dissertation, from initial ideas to final submission. Course materials have now been supplemented with web-based versions and active links to course readings. Blackboard is now the central hub for all student resources. Since 2007, students have submitted their assignments and dissertations through Blackboard's online submission system, and marking by tutors is now fully electronic.

The School of Education

The School of Education of the University of Leicester started delivering a Master's programme in Applied Linguistics and TESOL by distance learning in 1995. The programme is aimed at graduate teachers with at least two years of English Language Teaching (ELT) experience, who want to further their academic and professional development. This programme involves three 30-credit modules, two options modules (30 credits in total) and a 60-credit dissertation. This programme attracts about 90 part-time students per year, and can be completed within 2.5 to 5 years. In September 2008, the Education course team began to deliver course materials on Blackboard, the university's VLE. The Blackboard discussion board is used for each module and facilitated by an e-moderator where students can raise generic questions and discuss the module with the e-moderator and peers. Students are also supported by a personal tutor, who gives them feedback on assignment outlines and assists with any assessment-related queries.

DUCKLING Aims

The DUCKLING project develops advanced delivery, presentation and assessment processes to enhance the work-based learning experience for students studying remotely. The project will demonstrate the practical marriage of sound approaches in delivery together with new technologies and work–based pedagogies for learning support, communication and assessment of professional adult learners from commencement to completion of the programme of study.

The project aims to identify new opportunities for enhancing curriculum delivery for work-based programmes and to develop a range of innovative technology-based responses. DUCKLING targets three PG DL demonstrator programmes (2 in Psychology and 1 in Education) and aim to:

- Align learning experiences with students' work-related needs, enabling active, situated, work-based learning
- Enhance distance and work-based delivery with three innovative technology-mediated approaches to learning
- Engage key stakeholders throughout the delivery, development and piloting
- Be flexible enough not to require re-validation by enabling subject teams to design once and deliver many times
- Inform the two key curriculum delivery-orientated elements of Leicester's new DL strategy: Presentation and Performance review
- Inform senior managers, strategy and policy makers in the university and across the sector

The two teams, one in Occupational Psychology and one in Education have focused on enhancing the overall learning experience of distance and work-based learners on three programmes through appropriate incorporation of four DUCKLING technologies: podcasting, Second Life, Sony PRS-505 e-book readers and Wimba Voice Board.

3.1.2 Technology-enhanced solutions

1. Podcasting

Psychology podcasts

In 2009-10, the Psychology team produced more than 100 podcasts in six categories (see Table 2) to enhance the delivery of two programmes: (1) module overview (for two modules), (2) research methods, (3) assignment guidance and support, (4) discussion key concepts, issues or topics (for one module), (5) dissertation guidance and support, and (6) formative feedback for module assignments (for one module) and draft dissertations.

Podcast categories	Module(s) the podcasts were relevant to	No. of podcasts	Purpose
Module overview	Personnel Selection and Assessment	2	To provide an overview of the modules
	Training and Development	1	
Research methods	Research Methods in OP	11	To explain key concepts and approaches associated with research design, data gathering and analysis in OP
Assignment	Research Methods in OP	1	To provide support and detailed guidance on module assignments, including: ▪ Clarification of assignment requirements ▪ How to tackle assignments ▪ What markers are looking for
	Psychology of Organising	4	
	Training and Development	4	
	The Individual at Work	4	
	Personnel Selection and Assessment	4	
Key concepts	Training and Development	2	To provide discussions about key concepts, issues or topics
Dissertation	Dissertation	17	To guide students through the dissertation process (see Figure 1 for a small sample of these podcasts) To offer a scaffold and pointers to sources of help
Feedback	Training and Development	3	To provide general feedback to module assignments
	Dissertation	47	To provide individual feedback and comments on draft dissertation chapters

Table 2: Summary of Psychology podcasts

A simple podcasting planning tool was used to plan each podcast (see an example in Table 3, used to plan a podcast entitled *What makes a good research question?*). The grid helped the Psychology tutors to focus on the purpose and key messages that they wanted to deliver in each podcast.

The maximum recommended length of a podcast is 10 minutes. Some of the 100 podcasts feature a single Psychology tutor's voice, but most include the input of two, three or four tutors. Although carefully planned and structured, all the podcasts were informal, relaxed. They were largely unscripted. They were designed to motivate and engage Psychology learners by exploiting the affordances of digital audio.

Section	Purpose	Key concepts	Length	Who
1	To highlight the importance of well-articulated research questions	Achievable? Researchable? Novelty or repeat? Too broad? Narrow enough?	3'	AS & KB
2	To illustrate the need to explain the focus of the research	Why is it worth researching this? What contribution will this research make?	3'	AS
3	To highlight the need to demonstrate knowledge of existing literature covering earlier research	Literature review Related topics Contextual factors Creating, challenging extending	2'	KB
4	To recap	Review of main points covered	1'	AS & KB

Table 3: The planning tool applied to a *Research Methods* podcast

All learners had access to the module overview, research methods, assignment, discussion about key concepts, dissertation podcasts and podcasts providing general feedback to students on module assignments through the discussion forum on Blackboard (See Figure 1). Podcasts providing formative feedback on students' dissertation drafts were made available to individual learners via e-mail. These podcasts were not reusable. However, general feedback points were accessible by all and reusable across programmes. All podcasts were produced by four members of the Psychology team using a free software package called Audacity (http://audacity.download-latest.com) and with minimum input from DUCKLING learning technologists.

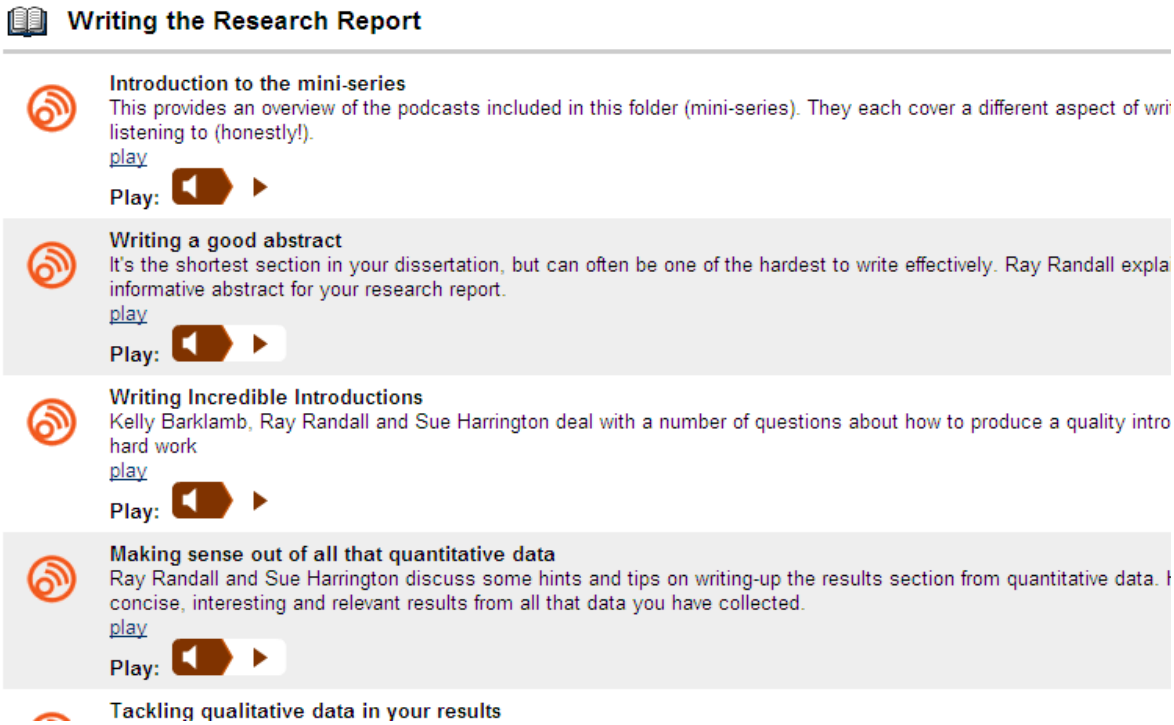

Figure 1: Sample podcasts to support the writing of the dissertation on Blackboard

Five Psychology podcasts (three on dissertations, two on research methods) were made available as Open Education Resources (OERs, http://tinyurl.com/yb6a79r).

The release of 5 Psychology podcasts as OERs was done within the OTTER project (www.le.ac.uk/otter). OTTER had a rigorous process in place to quality-enhance and clear content for release as OERs. These 5 podcasts were additional to the OTTER deliverables and were selected in discussions with the Psychology team as an illustration of the DUCKLING work. OTTER had already over-delivered in terms of the amount of content released as OERs. While it would have been ideal to release more DUCKLING podcasts of various kinds, this was not possible within the constraints of the OTTER project.

Education Podcasts

In 2009 and 2010, the Education team produced a series of podcasts (see Table 4) and embedded them into the Phonology, Sociolinguistics and Dissertation modules to supplement module content.

Module the podcasts were relevant to	Topic of the podcast(s)	No. of podcasts
Module 2: Phonology	Intonation audio files	50
Module 3: Language,	Introduction	2

Discourse and Society	Language change and variation	2
	Standard English	2
	World Englishes	3
	Bilingualism and language choice	1
	Talk analysis	2
Module 5: Dissertation	Introduction and guidance on the literature review	3

Table 4: Summary of Education podcasts

Most of these podcasts were produced by members of the Education team. The *World Englishes* podcasts were produced by members of Beyond Distance Research Alliance (BDRA). All the podcasts were developed using Audacity (http://audacity.download-latest.com) and with some support from DUCKLING learning technologists. All the podcasts were made available through the university's Blackboard course area for all the students to access. One of these podcasts is available as Open Education Resources (OERs, http://tinyurl.com/yb6a79r).

2. Second Life

Second Life oil rig

The Psychology team decided to integrate SECOND LIFE into Module 5 *Psychology of Occupational Training and Learning*. The aim of using SECOND LIFE was to get students doing some of the work that a qualified occupational psychologist would do. SECOND LIFE provided a safe environment for achieving this.

In November and December 2009, a structured activity in SECOND LIFE (SL-tivity) was designed by the Psychology team, using Salmon's (2004) 5-stage model, and trialled with four Psychology students studying Module 5. The four students were recruited voluntarily. This SL-tivity (see Table 5, also available from DUCKLING website http://tinyurl.com/ygjxfz2) involved students to participate in an evacuation excise from a SECOND LIFE oil rig. The purpose of the SL-tivity was to enable students to apply their learning about workplace training in a real-life scenario.

5-stage model	Weekly target	Key activities
Stage 1: Access and Motivation	**Week 1: Introduction**	• Explain why we are using SECOND LIFE • Provide an overview of the SL-tivity • Provide students with links, resources, and training guide
	Week 2: Getting started	Students using the training guide and resources to acquaint themselves with SECOND LIFE and learning how to: log in, choose an avatar name, create an avatar, teleport, move and communicate.
Stages 1 and 2: Access and Motivation and Online Socialisation	**Week 3: Acquiring competence, improving confidence and motivation**	A group training session in SECOND LIFE for students and staff led by Beyond Distance Learning Technologists, aiming to assist in the acquisition of the following skills: • Specific movements and gestures • Navigation • Camera control

5-stage model	Weekly target	Key activities
		• Different modes of communication
Stages 2 and 3: Online Socialisation and Information Exchange	**Week 4-1: Explaining and discussing the task**	An initial meeting will be held in SECOND LIFE to explain the task which will feature on a virtual Oil Rig. It will allow students to: • Ask questions • Discuss their views • Discuss general concerns • Comment on the task • Talk about the process so far
	Week 4-2: Initial visit to the Oil Rig	The tour will enable students to look around, inspect and familiarise themselves with the environment. At the end of the tour they will be asked their thoughts in relation to a brief which they will then present in a brief to the senior project team.
Stage 4: Knowledge Construction	**Week 5: Revisiting the Oil Rig**	Students will be free to visit Oil Rig as much as they wish whilst they are preparing their ideas. This may be done on their own or with other members of the project team.
	Week 6: The live event	The live fire will occur in which students will have to perform an evacuation.
	Week 7: Presentation of results	Students will be asked to present their findings in SECOND LIFE in a group.
Stage 5: Development	**Week 8-1: Feedback**	Each student will receive individual feedback on their presentation by email.
	Week 8-2: Evaluation	Participants will be emailed and thanked for their participation, and invited to respond via email to give their thoughts about the project and reflect upon the task if they wish to.

Table 5: The Psychology SL-tivity

An SECOND LIFE oil rig platform was used in the Psychology pilot. The oil rig platform was donated by a SECOND LIFE user and was placed at the University of Leicester's Media Zoo island (http://tinyurl.com/yhwqaa7). The Psychology team and a DUCKLING learning technologist collaborated to design the interior and specifications of the SECOND LIFE oil rig. To make the platform as realistic as possible, a control room, a bedroom, a kitchen, a living area, and two workshops were created; lifeboats, life jackets, and exit points were set up on the SECOND LIFE oil rig. The process of adapting the SECOND LIFE oil rig to suit the needs of the course was documented in detail in an article available from DUCKLING website http://tinyurl.com/ygjxfz2.

Two snapshots (See Picture 1 and 2) show activities that student avatars were engaged in during this oil rig evacuation activity.

Picture 1: A tour of SECOND LIFE oil rig

Picture 2: Group presentation on the SECOND LIFE oil rig platform

A live video of this event (http://tinyurl.com/ybhonz9) is available.

LanguageLab in Second Life

The purpose of integrating SECOND LIFE into the MA TESOL programme was threefold: to generate more interaction amongst the distance learners, to engage learners by using to use a variety of teaching approaches, and to enable students to transfer theories into practice by exposing them to a virtual world which they could adopt in their own teaching contexts

A structured activity in SECOND LIFE (SL-tivity) was designed by the Education team using Salmon's (2004) 5-stage model to enable students to consider the applicability of SECOND LIFE to their own teaching situations. The SL-tivity (see Table 6, also available from DUCKLING website http://tinyurl.com/ygjxfz2) involved students in observing language teaching classes in SECOND LIFE offered by Language Lab (http://www.languagelab.com/en) and sharing and reflecting on their experiences. This SL-tivity was trialled in October and November 2009 with six Education students studying this MA programme. The six students were recruited as volunteers.

5-stage model	Weekly target	Key activities
Stage 1 & 2: Access and Motivation Online Socialisation	**Week 1: Preparation**	• Sharing useful information/resources/ links about Second Life through Blackboard discussion board • Sharing information on our experiences in SECOND LIFE and questions if students have no experience of SECOND LIFE • At the end of this stage students can decide whether they want to proceed or not.
	Week 2: Getting started	Students use the training guide and resources to acquaint themselves with SECOND LIFE and learn how to: log in, choose an avatar name, create an avatar, teleport, move and communicate.
	Week 3: Acquiring competence, improving confidence and motivation	An optional group training session in SECOND LIFE for students and staff led by DUCKLING learning technologists, aiming to assist in the acquisition of the following skills: • Specific movements and gestures • Navigation • Camera control • Different modes of communication
Stages 2, 3, 4 and 5: Online Socialisation Information Exchange Knowledge Construction Development	**Week 4 & 5: Visiting language classes**	Students visit languagelab.com and observe classes. They take notes about what they observed and how they might use SECOND LIFE in their own teaching context, and share their reflections with others through the Blackboard discussion board.
Stage 5: Development	**Week 6: Evaluation**	Participants are invited to respond via a survey and interview to give their thoughts about the project and reflect upon the task.

Table 6: The Education SL-tivity

Second Life training

We provided training to students of both disciplines in two phases before they took part in the SL-tivities.

Phase 1: Learning individually

Here the focus was on helping individuals to gain access to SECOND LIFE, creating an avatar and choosing a name, logging on, teleporting, moving and using chatting tools. We developed a DUCKLING training guide for participants. The guide incorporates links to YouTube videos that demonstrate the basic skills. We also developed a guide for participants to set up audio and video systems in SECOND LIFE. Both guides (available from the DUCKLING website http://tinyurl.com/ygjxfz2), were sent to students via email before the pilot.

Phase 2: Learning in a group in-world (optional)

Here the focus was on acquiring competence in more sophisticated in-world skills such as movement, gestures, navigation, camera control, private chat and searching. We provided a one-hour training session for the student participants of both disciplines. The training session

was delivered in-world and led by a DUCKILNG learning technologist, and was optional. (Students who felt they had mastered the skills individually did not need to attend.)

A snapshot (See Picture 3) shows activities that student avatars were engaged in during an in-world training session.

Picture 3: Student avatars in in-world training

3. E-book readers

Between October 2009 and March 2010, 28 Sony e-book readers were given to 17 Education and 11 Psychology students for trialling. 27 of these e-book readers were Sony PRS-505s. This model was discontinued in 2010. For this reason, one of the Education students was given a Sony PRS-300, the replacement model of PRS-505. All 28 e-book readers were preloaded with course materials and podcasts. These were the same resources that were available via Blackboard, the university's Blackboard VLE, but in appropriate e-book reader formats. Eight Education students additionally received one Sociolinguistics textbook in e-book format in their e-book readers, for which copyright clearance was obtained from the publisher, Routledge. All participating students volunteered to be part of the study and were not required to return the e-book readers to the University of Leicester after the study.

The primary aim of the integration of e-book readers was to add flexibility and mobility to the curricula to allow students to access course materials from wherever they were and whenever they wanted, without having to be online, which is the third challenge: Enhancing flexibility and mobility in programmes aimed primarily at time-poor, work-based learners, faced by two course teams.

In addition, the course teams wanted to investigate the following possible benefits of e-book readers:

- The impact on cost, for both students and the institution. Delivering programmes through printed materials can be costly. According to the Psychology team, the purchase, printing and despatch of materials cost approximately £600 per student. It was hoped that e-book readers would be a cost-benefit solution, thus freeing up resources to enhance other elements of the course.
- Most of the students on the three programmes are time-poor students. The Education students in particular, expressed a challenge in accessing essential course readings, as many of them travel a lot in their work as TESOL instructors. It was hoped that an e-book reader preloaded with course resources would increase students' access to the essential readings while on the move and help them to maximise their study time.

Before the e-book readers were sent out to the students, the DUCKLING learning technologists uploaded the module content onto the devices. The transformation of materials from standard Word documents to a suitable e-book reader format included 6 steps:

Step 1: The course teams made sure that the course materials available on Blackboard were revised, proofread and up-to-date.

Step 2: The DUCKLING learning technologist accessed the course materials from Blackboard and in order to convert them into ePub format. The formatting was supported by the *Calibre* software (http://calibre.kovidgoyal.net/download), a free, cross-platform e-book reader management system. The procedure is illustrated in Figure 2.

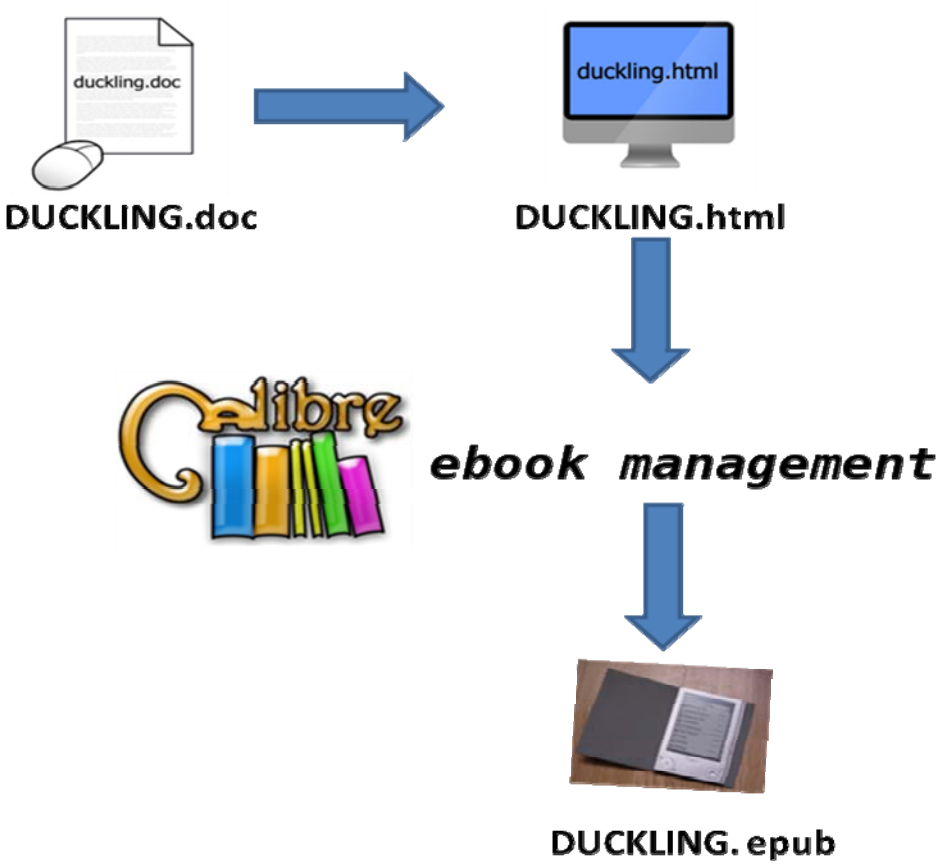

Figure 2: Steps in converting a Word document into ePub format

Step 3: The re-formatted course materials (in ePub format) and podcasts were uploaded onto the e-book readers.

Step 4: The e-book readers, preloaded with course materials (in ePub format) and podcasts were couriered to the students.

Step 5: Any updated versions of the materials and new resources were also uploaded to Blackboard in ePub format for students to add to their e-book readers.

Step 6: The DUCKLING team produced guidance documentation for students to follow on receipt of their e-book readers and instructions on how to drag and drop new materials as they became available.

This 6-step process was fully tested and trialled in DUCKLING and the whole process ran smoothly. The guidance document is now available as an OER (http://tinyurl.com/37sdzef) for other practitioners to use.

4. Wimba Voice Board

From April to June 2010, six Education students studying Module 3 *Language Discourse and Society* took part in the Wimba Voice Board pilot over an 11-week period. The six students were recruited voluntarily. The discussion on the Voice Board was structured around four v-tivities. The four v-tivities

were adapted from four portfolio tasks in the module materials. One of the purposes of using the Voice Board was to generate interaction amongst tutors and peers. Another purpose was to trial the Voice Board for formative assessment. Previously, students were assessed through portfolio tasks in written format. In this pilot, students were assessed through interactive tasks via the Voice Board.

The four v-tivities used in this pilot were designed using Salmon's concept of e-tivity (2002). An example of the four v-tivities is given in Table 7. The v-tivities were delivered through the course's discussion board on Blackboard, and each v-tivity has five components: **Spark, Purpose, Task, Response,** and **Reflection**.

Voice Board Pilot: V-tivity 4 – Critical Discourse Analysis

Spark	How would you analyse the newspaper headline below 'critically'? What assumptions does it make? What kind of ideology informs the text? "Rioting Blacks shot dead by Police as ANC[1] leaders meet" Trew (1979: 94) If you need some ideas, have a look at the key to Activity 2 at the end of Unit 14. (If you google this headline, you will also find several commentaries on it on the Web.)
Purpose	To show your understanding of issues related to critical discourse analysis.
Step 1: **The task**	Find a short **written text** of your own choice which you think lends itself to a critical analysis, considering ideology, how power relations and implicit assumptions in the text are made explicit through linguistic choices. Post an **audio commentary** on the Voice Board for v-tivity 4, analysing the text in terms of some of the aspects discussed in Unit 14, such as: • Routinisation of language dominance – the routine use of certain linguistic devices to create or maintain power distances between individuals, or individuals and institutions, e.g. nominalization and the use of the passive voice (Ng 1990, Lackoff 1990) or pronoun choice (Fairclough 1989, Brown and Gilman 1960) and use of metaphor (Alvesson 1994) • Conversationalisation (Fairclough 1989) • Utilitarian Discourse System (Scollon and Scollon (1995)) • Rhetorical devices such as "three-part lists" and "two-part contrasts" (Atkinson 1984) Share your insights as to how the linguistic choices in your chosen text demonstrate 'powerful' or 'powerless' speech styles, how they may be used to influence or control others, or how they reflect particular political and ideological assumptions. Remember to tell us where we can find your text – you can either give us the disabled-URL (web link) in the text box accompanying your voice message, or post an attachment to the discussion forum in Blackboard. Please make it clear which framework you are using to analyse the text, and justify your analysis with reference to the literature (rather than personal/ subjective views). Your commentary should be approximately 4 to 5 minutes in length. **Timing:** **To be posted before 20 June**

Step 2: **The response**	Respond to at least two other people's postings, adding any additional insights you can think of to their commentary. Your response can be spoken or written. Please start by responding to someone who has not yet received any other responses. **Timing: To be posted before 27 June**
Step 3: **Reflection**	If you have not yet reflected on the use of Voice Board for the v-tivities, or if you have any further reflections to add, please go to the reflection Voice Board here and post your thoughts. This discussion board will be available throughout the pilot.
Guidelines	The activities are designed for you to show engagement with the content of the module and show the development of your thinking as you progress through the module units. Any contributions you make, either written or spoken should be well prepared and clearly presented. They should show evidence of your ability to provide critical comment on a specified topic and to be able to support this with reference(s) to relevant research literature. The activities may also give you the opportunity to show your ability to relate theoretical issues to professional contexts. Contributions to activities should be long enough to answer the question while completing the task, bearing in mind that there should be an upper limit of approximately 500 written words or 2-3 minutes recorded speech - some contributions may be much shorter than this.

Table 7: An Education v-tivity for the Wimba Voice Board

The first v-tivity took place over three weeks, and the second, third and fourth v-tivities took two weeks each to complete. A schedule of this Voice Board pilot is given in Table 8.

Week	Dates	V-tivities
1	13-18 April 2010	V-tivity 1: World Englishes
2	19-25 April 2010	
3	26 April - 2 May 2010	
4	3-9 May 2010	V-tivity 2: Gender and language
5	10-16 May 2010	
6	17-23 May 2010	Break
7	24-30 May 2010	V-tivity 3: Analysing Talk
8	31 May - 6 June 2010	
9	7-13 June	Break
10	14-20 June	V-tivity 4: Critical Discourse Analysis
11	21-27 June	

Table 8: Schedule of the Education Voice Board pilot

Before the start of the pilot, each student participant was given a login name and password to access the Wimba Voice Board. A Wimba Voice Board user guide and the link to the Voice Board were given through the course's Blackboard discussion board. Throughout the project, the six students were supported through the Blackboard discussion board and Wimba Voice Board by a DUCKLING learning technologist.

3.1.3. Methodology

DUCKLING focused on enhancing the way students learn while in employment through effective technology-enhanced delivery. The scope of the research covered three work-based Master's programmes: one in Education and two in Psychology. DUCKLING has six research questions to address:

> **RQ1**: How appropriate are the new approaches to work-based curriculum delivery in addressing the identified challenges?
>
> **RQ2**: How do the four new learning innovations compare to the previous delivery of the curriculum via Blackboard for the work-based learners in the study?
>
> **RQ3**: How does employer engagement contribute to improvements in the delivery of the three curricula and in student learning?
>
> **RQ4**: How can the DUCKLING curriculum delivery methods be transferred to other modules and courses delivered at a distance for work-based learners?
>
> **RQ5**: What are the critical conditions for transfer, success and sustainability, and what are the likely limitations when applying this model to new contexts?
>
> **RQ6**: Out of the four technologies under investigation, which ones provide for best deployment of innovations in work-based and distance learning pedagogy for work-based distance learners?

The DUCKLING research was conducted using an action research methodology involving the 'action-reflection' cycle (McNiff and Whitehead, 2006, p.9). The action-reflection cycle started before the incorporation of the four DUCKLING technologies. Through a baseline study, staff, students and employers of both disciplines were consulted via surveys and interviews on the challenges faced in course delivery from the very start of the project. Their views were analysed and results were fed back to the two course teams to inform the course redesign. As the four technologies were integrated into the redesign, feedback from students and staff of the two disciplines was regularly gathered and analysed. Evidence was fed back to the two course teams to inform the next set of design changes.

1. Data collection methods used in the baseline study

The baseline study was conducted with staff, students and employers of both disciplines at the beginning of DUCKLING to find out their views on the issues and challenges that were faced in curriculum delivery, and how these problems could be addressed through the incorporation of the DUCKLING technologies.

Views from staff of both disciplines were collected through informal meetings and discussions. Semi-structured interviews were conducted with a self-selected sample of six Education and seven Psychology students. A list of questions used for student interviews is provided in Appendix 10.

Two Blackboard-based student surveys were also administered: (1) a survey asking for students' general comments on specific modules, and (2) a survey designed to capture learners' ideas on how the technologies might enhance their learning (the 'technology survey', see Appendix 9). Table 9 summarises these surveys.

Survey types	Purpose	Student sample
Module survey	To evaluate satisfaction with a specific module, covering: quality of material, content, reading list, assessment, support and feedback.	12 Education students 23 Psychology students
Technology survey	To find out the level of student access to technologies such as computers, the internet and personal mobile devices; To establish learners' previous experience with podcasting, SECOND LIFE and e-book reader; To gather learners' ideas on how podcasting, SECOND LIFE and e-book reader can be integrated to improve their learning experience.	14 Education students 34 Psychology students

Table 9: Blackboard student surveys used in the baseline study

Employers of both disciplines were consulted on the issues and challenges faced in curriculum delivery. Their views were collected through semi-structured interviews with three employers in Psychology and three employers in the field of English language teaching.

2. Data collection methods used in the Podcasting study

The impact of podcasting on the staff's experience was captured through informal but regular meetings with four Psychology tutors. Semi-structured interviews were conducted with seven Psychology students to gather their overall experience of using the podcasts. Four of them were among the seven who had been interviewed for the baseline study. Data from the interviews was supplemented by the comments and feedback contributed by students through two Blackboard-based surveys used in the baseline study (see Table 9) and via the Blackboard discussion board. Additionally, 11 Psychology students completed a short survey (see Appendix 8) specifically about their use of the podcast feedback provided for their dissertation draft.

At the time of writing, the development of podcasts is still ongoing within the Education team. So far, three Education students have provided feedback and comments on the podcasts through semi-structured interviews and the Blackboard discussion board. Staff' views were captured through informal meetings with two Education tutors.

3. Data collection methods used in the e-book readers study

The e-book readers study was conducted using qualitative and cognitive mapping (Bryson et al., 2004) methods.

An e-book reader survey (see Appendix 6) was administered via the Blackboard VLE to capture students' views about the usage, usability and usefulness of the e-book reader at the start of the study. The survey was completed by all 28 students participating in the trial: 17 from Education and 11 from Psychology, a 100% response rate.

To further establish how students used their e-book readers and what they used the devices for, interviews with nine Education and three Psychology students were conducted using cognitive mapping (Bryson et al., 2004). This method was developed based on Kelly's (1955) theory of personal constructs. The rationale for this method is, "People make sense of their lives and situations by constructing, elaborating, revisiting and re-revising a system of interconnected concepts (more formally called 'constructs')." (Bryson et al. 2004, p.21). This method was used to capture a causal map of a student's views, perceptions and experience of using the e-book reader.

A causal map is "a word-and-arrow diagram in which ideas and actions are causally linked with one another through the use of arrows. The arrows indicate how one idea or action leads to another." (Bryson et al., 2004, p.4). Figure 3 illustrates a fragment of causal map created using *Decision Explorer* from an interview with an Education student about his use of the e-book reader. The links from Concept 3 to 4, and from 4 to 2 are interpreted as, 'The module material is put in short sections',

so 'I can just read the material a little bit from the e-book reader, put it down, and pick it up and resume later'; and, *for that reason*, 'I've using the e-book reader mainly at work when I've got a spare 15-20 minutes.'

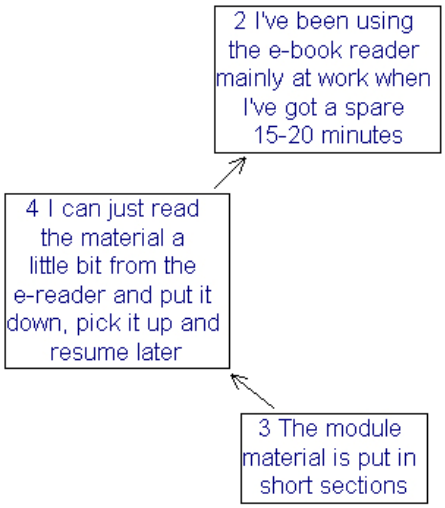

Figure 3: A sample piece of a causal map

Student interviews focused on two questions: What do you use the e-book reader for, and how do you use it? For each of the 12 students interviewed a causal map was developed that summarised their views, perceptions and experiences of using the e-book reader. The 12 causal maps of this study were created using *Decision Explorer* software (http://www.banxia.com/demain.html). A causal map developed from an interview with an Education student was provided in Appendix 5.

Using the same method, two causal maps were developed based on an interview with a Psychology tutor and an Education tutor. Additional comments from other staff members of both disciplines were gathered from three Psychology and one Education tutors through informal meetings and discussions.

4. Data collection methods used in the Second Life study

The SECOND LIFE study was conducted using qualitative and cognitive mapping methods. A SECOND LIFE survey (see Appendix 7) was sent to student participants of both disciplines via email to capture their views of and experiences in SECOND LIFE at the start of the study. The survey was completed by four Psychology and four Education students.

To further establish to what extent students found SECOND LIFE useful and relevant to their studies, interviews with four Education and two Psychology students were conducted using cognitive mapping. Six causal maps were created using *Decision Explorer* software (http://www.banxia.com/demain.html).

Using the same method, two causal maps were developed based on an interview with a Psychology and an Education tutor. Additional comments from other staff members of both disciplines were gathered from three Psychology and one Education tutors through informal meetings and discussions.

5. Data collection methods used in the Wimba Voice Board study

Views from Education students about the voice board were collected via the Wimba Voice Board itself. There is a *Reflection* component within each v-tivity (see Table 7).

Reflection:	Please remember to reflect on the use of Voice Board for the v-tivities. You can click here to go to the Reflection discussion.

Six Education students were asked to reflect on their experiences of using the Voice Board by answering the following questions:

- What do you think of using voice to interact with tutors and peers?
- What do you think are the differences between using the text-based Blackboard discussion forum and the Voice Board for interacting with tutors and peers?
- How do you feel about being assessed on interactive tasks via the Voice Board rather than the usual portfolio assessment?
- Any other comments or feedback about using the Voice Board?

Staff views were collected through informal meetings and discussions with three Education tutors.

6. Summary of data collection methods used in DUCKLING research

A summary of data collection methods, along with the number of participants involved in each study is given in Table 10.

Studies	Data collection methods and number of participants
Baseline	Staff views were collected through: • Informal meetings and discussions with four Psychology and two Education tutors Students' views were collected through: • Two Blackboard surveys: a module survey completed by 23 Psychology and 12 Education students; a technology survey completed by 34 Psychology and 14 Education students • Semi-structured interviews with seven Psychology and six Education students Employers' views were collected through: • Semi-structured interviews with three Psychology and three English language teaching employers
Podcasting	Staff views were collected through: • Informal meetings and discussions with four Psychology and two Education tutors Students' views were collected through: • Two Blackboard surveys: a module survey completed by 23 and a technology survey completed by 34 Psychology students • Semi-structured interviews with seven Psychology and three Education students • Student comments (both disciplines)made on the Blackboard discussion board • A survey completed by 11 Psychology students about the feedback podcast
Second Life	Staff views were collected through: • A cognitive mapping interview with a Psychology and an Education tutor • Informal meetings and discussions with three Psychology and one Education

Studies	Data collection methods and number of participants
	tutors Students' views were collected through: • A survey completed by four Psychology and four Education students • Cognitive mapping interviews with two Psychology and four Education students
E-book readers	Staff views were collected through: • A cognitive mapping interview with a Psychology and an Education tutor • Informal meetings and discussions with three Psychology and one Education tutors Students' views were collected through: • A Blackboard survey completed by 11 Psychology and 17 Education students • Cognitive mapping interviews with three Psychology and nine Education students
Wimba Voice Board	Staff views were collected through: • Informal meetings and discussions with three Education tutors Students' views were collected through: • Comments and feedback provided by six Education students via the Wimba Voice Board

Table 10: A summary of data collection methods used in DUCKLING research

7. Data analysis methods

Quantitative data collected from student surveys used in the baseline, podcasting, Second Life and e-book reader studies was transferred into Excel spreadsheets and descriptive statistics were complied for answers to the closed questions.

Qualitative data gathered from semi-structured interviews used in the baseline and podcasting studies, from student contributions via Blackboard discuss forums and Wimba Voice Board, and from student surveys used in the baseline, podcasting, Second Life and e-book readers studies was coded using data-driven (inductive) coding (Boyatzis, 1998) and analysed using thematic analysis (Boyatzis, 1998; Joffe and Yardley, 2004) to identify categories and combine categories into themes.

The Domain and Central analyses provided by *Decision Explorer* were applied to the students' and tutors' causal maps created in the Second Life and e-book reader studies. In cognitive mapping, the Domain analysis calculates "the total number of in arrow and out arrows from each node". The result of Domain analysis indicates the richness of meaning of each particular node. The node with the highest score is the "nub of the issue" (Bryson et al., 2004, p.324) of that map. The Central analysis calculates the centrality of a node within the map by exploring the impact of its successive layers. A higher score in the Central analysis implies that the node is of structural significance of that map. Both Domain and Central analyses detect the most important or 'busiest' concepts of each map. These important concepts were compared and contrasted with the themes developed from the Second Life and e-book reader surveys.

3.2 What did you learn?

3.2.1 Findings

1. The baseline study

The baseline study was conducted with staff, students and employers of both disciplines at the beginning of DUCKLING to find out their views on the issues and challenges that were faced in curriculum delivery, and how these problems could be addressed through the incorporation of DUCKLING technologies. Four Psychology and two Education tutors, 34 Psychology and 14 Education students, three employers in Psychology and three in Education were involved in the baseline study.

Staff and students of both disciplines identified four key challenges in curriculum design and delivery, most of which are common in distance and work-based learning:

- Improving learner engagement with course content by bringing the materials to life and offering a variety of teaching approaches
- Improving learner support by offering enhanced guidance, support and feedback in a variety of media formats
- Enhancing flexibility and mobility in programmes aimed primarily at time-poor, work-based learners
- Reducing learner isolation through the provision of additional opportunities for student-student and student-tutor interactions

In DUCKLING, the employers' voices were taken into account to improve the curriculum delivery of the three programmes. Three employers in the Psychology field were consulted through interviews. They are all Chartered Occupational Psychologists, based in the UK, who have plenty of experience of working in the business and public sectors and academia. Three employers from the language teaching field were interviewed too. They are all practising English teachers based in South America, who work for universities or English teaching and exam centres. All six employers interviewed had positive attitudes towards technologies. Some of them were already in use of some technologies in their teaching and training practice.

The interviews with these employers mainly covered two themes:

- Their perceptions of the professional development needs of the employees in their organisations.
- Their ideas and insights on how a Masters course in Occupational Psychology or Applied Linguistics and TESOL can help practising psychologists or language teachers meet their professional development needs.

All three employers in the Psychology field identified two professional development needs faced by practising psychologists which can be addressed through the enhancement of curriculum delivery:

- To enhance quantitative and qualitative research skills
- To enable skills development, such as developing consultancy skills

All three employers in language teaching also identified two professional development needs faced by the practising language teachers in their organisations:

- How to incorporate technologies into the design and delivery of a language course
- How to transfer theory into practice

From the interviews with employers of both disciplines, a need for skills development and transferring theory into practice for work-based learners was identified as another key challenge in curriculum delivery.

The results of the employer interviews were fed back to the two course teams to inform the course redesign. The Psychology team produced 11 podcasts on research methods to help enhance student research skills, and used SECOND LIFE to create a simulated working environment for students to

practise skills as occupational psychologists. The Education team used languagelab.com in SECOND LIFE to enable students to transfer theories into practice and consider the applicability of a 3D virtual environment to their own teaching situations.

Engaging employers to contribute to the enhancement of curriculum delivery process has proved effective and valuable. The outcomes reported here addressed to some extent RQ3: How does employer engagement contribute to improvements in the delivery of the three curricula and in student learning? In DUCKLING, we collected the employers' views only at the beginning stage. It would have impacted more if the employers were engaged at different stages throughout the project, for example, we could ask them to give feedback on the outcomes of the interventions.

2. The Podcasting study

34 Psychology students were involved in providing feedback on the impact of podcasts on their learning. Four Psychology tutors were consulted on their views and experiences of using podcasting for teaching practice.

Evidence from the Psychology podcasting study suggested that the students' learning experience improved as a result of four key benefits associated with the integration of podcasting into learning design: (1) personalisation, (2) an additional and different format for providing and presenting clear and engaging guidance, support and feedback, (3) increased flexibility and mobility within the curricula, and (4) 'design once, deliver many times' with minimum adaptation. Table 11 captures the key points associated with each of the main outcomes (Nie et al. 2010).

Outcomes		Key points	Student and staff quotes
The learner experience	**The human touch**	Personalisation, interaction, relationship-building Livening up the learning experience Reduction in the isolation associated with distance learning	The most interesting thing was hearing someone's voice. I didn't feel quite so distant. Podcasts made me feel closer to my tutors and I think they help you to build a relationship with them.
	Guidance, support and feedback in different formats	Effective provision of feedback, guidance and support in different formats Additional opportunities for effective engagement	Thanks for the podcasts. I've found them very helpful. I managed to understand more what we are expected from MA 1[Module assignment 1]. It (podcast) reassured that I was on the right lines.
	Flexibility and mobility	Access to quality content through mobile devices	I was able to download the dissertation podcasts on the computer and then onto my iPhone. This made it easy to listen when I had a spare gap. This was useful and enabled me to think things through while I was at work or out.
Innovation and sustainability	**Design once, deliver often**	Reusability of resources, minimum adaptation Low-cost, high-value innovation Reduced online traffic on non-	It's amazing how much information you can pack in a 3-5 minute podcast. The material that might take 4-5 pages to write can be covered in a 4-5 minute podcast.

Outcomes		Key points	Student and staff quotes
		academic matters Better and more cost-effective use of tutors' time Transferability of frameworks and lessons learned	Again, in terms of time-saving, the lecturer may not have 5-6 hours to write something, but he or she has half an hour to do a podcast. For a 5-minute podcast, I only need to plan half an hour to complete the recording and editing. It's a very fast and efficient way to turn things around.

Table 11: Summary of key research outcomes from Psychology podcasts

Additionally, 11 Psychology students commented about their use of the podcast that provided feedback to their dissertation draft by responding to an electronic survey. Most of the findings from this survey reinforced the findings shown in Table 11. All 11 students found the feedback podcast very useful and effective in providing a different way to engage students with feedback, supporting the emotional aspects of learning, and providing in-depth information, detailed and specific examples, which helped clarify messages and identify the most important issues with their dissertation. 10 out of 11 students preferred to have a combination of both audio and written feedback on their assessed work. These students usually used the audio feedback first, and the written feedback later, as they found the audio feedback helped them understand the issue as a whole.

Evidence also suggests that the quality of dissertation and retention improved. The provision of dissertation guidance, support and feedback through podcasts played a key role in these improvements. A Psychology tutor observed:

> …not a single one of our dissertation students has needed an extension this year (this is unheard of and a very pleasant surprise!). All those who have not suspended have handed in their final dissertations on time. The only difference from previous years is that all have had access to the feedback podcasts on their draft dissertations.

At the time of writing, the development of podcasts in Education is still ongoing. Initial findings from a small number of students showed the podcasts were perceived as beneficial to student learning in terms of adding human dimensions and enriching the teaching approaches on the distance learning programme. Podcasts were also considered effective in enhancing understanding of subject-specific concepts and demonstrating language variants, a key concept in the *Language, Discourse and Society* module.

Two case studies of incorporating podcasting into the two disciplines are available from DUCKLING website http://tinyurl.com/3xdx89w.

3. The Second Life study

Four Psychology and six Education students participated in the SECOND LIFE study. Additionally, three Psychology and two Education tutors offered views on using SECOND LIFE for teaching.

Evidence from students of both disciplines show that SECOND LIFE is an effective way of creating simulated environments that students would otherwise not experience. The SECOND LIFE environment enabled the students to apply theory in a practical setting safely, in a non-threatening environment. The small group of students participating in the simulation pilot enjoyed learning in this way and felt that collaborative tasks in SECOND LIFE enabled opportunities for distance learning students to interact with their tutors and peers. The advantages and potential of SECOND LIFE for teaching and learning is summarised in Table 12.

SECOND LIFE: advantages & potential	Examples
Simulation and role-play	Visiting LanguageLab classes enabled students to observe pedagogical and language teaching theories at work in a virtual environment. In Psychology it would be unethical to tamper with real working environments (e.g. in safety critical environments such an oil-rig). Second Life give users a safe environment to 'practice in'. The SECOND LIFE oil rig activity enabled students to practise skills as occupational psychologists in a simulated, non-threatening working environment.
Interaction and collaboration	Collaborative tasks such as group presentation and oil rig evacuation in SECOND LIFE enabled opportunities for distance learning students to interact with their tutors and peers.
Rich variety of near-authentic environments enables independent project work	Second Life provides a myriad of possibilities for project-type work, in that it contains replicas of so many real-world locations, such as shops, theatres, parks and other public places. In DUCKLING, the Education course team made use of the existence of a virtual in-world language school, which enabled students to benefit from Second Life without having to meet synchronously in-world.

Table 12: Advantages and potentials of SECOND LIFE for teaching and learning

There are limitations to the effective use of SECOND LIFE for learning and teaching purposes. We had a low take-up rate for the pilot, which is not unusual in SECOND LIFE research. For example, 18 Education students expressed interest at the beginning of the pilot, but only six students progressed to the end of the project and five completed it. Table 13 summaries the key barriers and problems that constrained the use of SECOND LIFE for the 12 who chose not to proceed.

Barriers and limitations	Key points
Access restricted by firewalls	Access can be restricted by an organisation's firewall. Some students studying at a distance experienced access problems if they tried to use SL from work-based computers.
Connectivity and resources	SECOND LIFE requires a broadband connection and relatively high-spec graphics card, which still makes it outside of the reach of many of our distance learners.
Technical support and training required	Using SECOND LIFE for learning and teaching purposes requires both staff and students to have some level of support, before they are able to function effectively in the environment. This support can be expensive and time-consuming to provide. Within the DUCKLING research project, this support was provided by learning technologists.
Technical competence and confidence required	Staff and students need a basic level of technical competence and confidence to use SECOND LIFE effectively.
Technical problems	Technical problems experienced by students during SECOND LIFE sessions, e.g. audio system not working, avatars stuck, slow internet connection, sometimes interfered with the SECOND LIFE experience.
Discomfort with SECOND	Students may give up using SECOND LIFE due to discomfort with its

Barriers and limitations	Key points
LIFE features	features, e.g. difficulty in orienting one's avatar, feeling anxious or nervous.
Time difference	In the Psychology pilot, managing students in different time zones together for the collaborative task was a challenge. (In the Education pilot this challenge was avoided as there was no requirement for students to meet in real time.)

Table 13: Summary of barriers and limitations of using SECOND LIFE

In addition to the above findings from the learners, staff had difficulties in engaging in the SECOND LIFE pilot, since SECOND LIFE is not currently supported across the institution, and staff could only use the platform at home or in the University of Leicester's Media Zoo.

Two case studies describing how SECOND LIFE was incorporated into the two disciplines are available from DUCKLING website http://tinyurl.com/3xdx89w.

4. The e-book reader study

11 Psychology and 17 Education students participated in the e-book reader study. Additionally, three Psychology and two Education tutors offered views and experiences of integrating e-book readers for curriculum delivery.

Evidence from students of both disciplines shows that the technology functioned according to our expectations and the participants were generally satisfied with their readers. The devices enhanced student learning in a number of ways: increasing flexibility and mobility, saving money and resources, making better use of 'dead' time, and optimising study strategies. Table 14 summarises these points.

Key points	Examples	Student quotes
Enhanced curriculum flexibility to meet mobility demands	Students used their e-book readers in different places (at home, in the office, in public places and on the move) to access all essential course readings.	I loved the small size/weight and thought it would be practical to carry when I'm travelling by plane, car, etc., allowing me to study without transporting a lot of heavy books. I'm a bike commuter as well, so it would also be practical for daily trips to work, the library, or the beach or park, where I like to do a lot of my reading.
Better use of time	Students found it easy to take the e-book reader anywhere and read whenever an opportunity arose. They used gaps between other activities during the day for study purposes.	I am using the e-reader to access the unit materials every day. This has increased the amount of course materials I have gotten through (I have finished reading through the Part A on Sociolinguistics). Before this, I had been allocating weekends to spend on one or two units, and I would only study through the week if I had a few hours to spare.
Cost savings	Some students became less dependent on printed material and more selective when printing materials out.	I do like to have paper copies some of the time, but not all the time. I can read the notes on the e-book reader. If I think I need a copy I will print them out. If the memory was bigger I probably wouldn't print out that much at all.
New study strategies	Some students changed their strategies for keeping notes, approaching assignments and reading, making use of a combination of devices for these purposes, and choosing which device to use for specific circumstances.	I used my e-book reader for reading while on the move, the iPhone for a quick check on the materials, and I printed material for note-taking and highlighting.

Table 14: A summary of key findings from the e-book readers study

Evidence shows that the device enabled students to read more widely to some extent. In addition to using the preloaded materials, 18 out of 28 students of both disciplines transferred journal articles of their own choice to their e-book readers, 13 transferred novels for leisure reading, and eight copied other internet materials onto the device (see Table 15). Transferring additional materials to the e-book readers was considered easy for students.

Types of reading	Education students	Psychology students	Total
Novels	9	4	**13**
Course related material (i.e. journal articles)	11	7	**18**
Material to support my study from other sources (i.e. the internet)	6	2	**8**
Documents created by myself	4	0	**4**
Audio material other than the course podcasts	1	0	**1**
Pictures and photos	1	1	**2**

Table 15: Use of e-book readers in addition to the preloaded materials

Evidence also shows that there were limitations in functionality that restricted student use of the device throughout their studies. Students were generally not satisfied with the lack of a note-taking function in the Sony PRS-505, and they felt that this limited their use of the device throughout their studies. For this reason, the e-book reader was considered appropriate for light reading, such as reading for a general overview. Many students went back to the printed materials, where they could underline and make notes, especially during revision and preparation for assignments or the dissertation. Some considered e-book readers more useful and appropriate for reading for leisure than for study purposes.

Another functionality that students were not satisfied with was the delay in page-turning. Some reported in the survey that the delay was 'disappointing' and sometimes 'disturbing' and 'annoying'. However, the majority of the students put up with this discomfort and continued to use their e-book readers on a regular basis. Only one student completely gave up using the device because of this limitation.

Two case studies describing how e-book readers were incorporated into the two disciplines are available from DUCKLING website http://tinyurl.com/3xdx89w.

5. The Wimba Voice Board study

Six Education students and three tutors participated in the voice board pilot. Evidence from students shows a range of advantages of voice board for distance learning. Key points were summarised in Table 16.

Findings	Key points	Student quotes
Adding a human dimension	Reduces isolation, remoteness Creates a feeling of 'real' and 'personal' Draws people closer, builds relationships Brings the distance learning programme to life Enables a feeling of being in a seminar environment similar to campus learning	I thought it was just an excellent way to bring the course to life really. The interactive nature, the voice, even though it wasn't in real time (was) very useful. It takes you one step closer to be in a seminar kind of environment. One of the drawbacks about a distance learning course can be the feeling [of being isolated]… When I was an undergraduate, you could really see where your money is going. I would have lectures and seminars. But with a distance learning course, I felt just like (I was) reading and doing all the work by myself and getting a few points (via e-mail) from my tutor every couple of months. It (the voice board) is really a good way to personalize the delivery of the degree.
Advantages of voice- over text-based communication	Expresses emotions and tones better than in text, through the use of intonation Clarifies messages to avoid misinterpretation Captures participants' attitudes and topical stands Stimulates learners to read and participate more Encourages students to articulate	The expression in the voice and emotions and things like that ... rather than having to kind of type emotions …The emotions [and] tone are better expressed in the voice [through the use of intonation] than in the text. Messages are a lot clearer in voice communication, whereas they can be misinterpreted when you use text only. It challenges me to articulate my points. Points that are quite easy to make on paper can be quite difficult to do in real time by voice.

Findings	Key points	Student quotes
	their points more clearly	
Assessment through interactive tasks	Enables formative feedback from tutors and peers Generates additional discussion around the topics Encourages students to study readings recommended by peers Motivates students to study more and perform better (to avoid 'sounding stupid')	I think it's much, much better than text. The reason that I do is because for Module 1 and 2…for the structured v-tivities…the comments we get are limited to one or two sentences, which is ok, but there could be more. Something like this [voice boards] is great because not only you get constructive feedback from the tutors, you get it from your classmates too.

Table 16: Summary of the potential of Wimba Voice Board for distance learning

There were limitations with the technology, mainly to do with lack of certain functions such as, unable to edit and delete posts, add attachments, subscribe, identify new and old posts, and leave private messages.

A case study describing the incorporation of Wimba Voice Board into the MA TESOL programme is available from DUCKLING website http://tinyurl.com/3xdx89w.

6. Summary

Evidence from the podcasting, SECOND LIFE, e-book readers, and Wimba Voice Board studies suggests that DUCKLING's technology-enhanced approach is appropriate for work-based distance delivery. Compared to the previous approach used in both disciplines, in which the VLE was used as a content repository and for optional discussion of a generic nature on the discussion forum, the addition of the four DUCKLING technologies in the ways described above provided several benefits. It increased the interactivity of the curricula, enriched teaching and assessment approaches, increased flexibility of the curricula to better support mobile learners, and enabled some transfer of theory into practice for work-based delivery. Appendix 1 summarised how the four DUCKLING technologies addressed the original challenges identified by the Psychology and Education teams at the beginning of the project. The outcomes reported under this section addressed two DUCKLING research questions:

> **RQ1**: How appropriate are the new approaches to work-based curriculum delivery in addressing the identified challenges?
>
> **RQ2**: How do the four new learning innovations compare to the previous delivery of the curriculum via Blackboard for the work-based learners in the study?

3.2.2 Lessons learnt

1. Podcasting

Low cost, high value

In line with earlier research into curriculum design and delivery, the low cost but high value of the human voice in digital, portable audio format has been confirmed in DUCKLING. Podcasting has made a substantial contribution to curriculum transformation for the Psychology programmes. Evidence suggests that the students' learning experience improved as a result of four key benefits associated with the integration of podcasting in learning design: (1) personalisation, (2) an additional and different format for providing and presenting clear and engaging guidance, support and feedback,

(3) increased flexibility and mobility within the curricula, and (4) 'design once, deliver many times' with minimum adaptation.

'Push' or 'Pull' technology

Both the Psychology and Education teams choose to deliver podcasts through the university's Blackboard VLE, as it is considered to be an environment that is both secure and familiar to staff and students. In our case, making the podcasts available through the university's VLE offers another advantage: through the 'Content collection', staff can share podcasts across different cohorts and departments. The Content Collection is an institutional content repository, capable of supporting the sharing of content amongst courses and modules within the VLE. However, at the time of writing, RSS feeds were not available on the University of Leicester's version of Blackboard. Students have to log in to the VLE to download the podcasts onto their computers and mobile devices. Podcasting has so far been used as a 'pull' rather than a 'push' technology (i.e. no syndication feeds have been used).

Taking advantage of the mobile potential

Evidence showed that some Psychology students listened to podcasts from their portable mobile devices, indicating the potential of podcasting to enhance the mobility and flexibility of student learning. However, data from student interviews and surveys and informal comments from the Blackboard discussion forum indicated that not every student was aware of the possibility of using podcasts on portable devices. Additional guidance could maximise the benefit of podcasts for learners.

2. Second Life

Exploiting existing resources

Our experience of collaborating with LanguageLab and using an SECOND LIFE oil rig platform denoted by a SECOND LIFE user for the SECOND LIFE pilots showed that it is feasible to use the affordances of SECOND LIFE without expending any resources on building new resources.

SECOND LIFE- a flexible resource

The Education students went into SECOND LIFE individually and could select from a wide range of times on a 24-hour schedule to observe English language classes at languagelab.com. All communication within the cohort took place asynchronously on the Blackboard discussion forum. This shows SECOND LIFE can be used as a resource for students to carry out study-related tasks in their own time, without requiring synchronous meetings in SECOND LIFE. This makes SECOND LIFE a flexible resource for distance learning.

Barriers and limitations

There are still considerable limitations to the effective use of SECOND LIFE for learning and teaching purposes. Access issues, technical problems, demand for support and training, discomfort with SECOND LIFE features and managing students in different time zones together (when required for the task, as in the Psychology pilot) are challenges for the sustainable integration of SECOND LIFE into the two disciplines. These barriers are summarised in Table 13.

3. E-book readers

Cost-saving

Delivering programmes through printed materials can be costly. According to the Psychology team, the purchase, printing and despatch of materials cost approximately £600 per student. The School of Education offers students the option of sending out the printed materials at £50 per module (amounting to a total cost of £250 for the whole course). While only a handful of students request the printed materials, many simply make their own printouts, thereby possibly incurring ongoing costs throughout the programme Delivering course materials through e-book readers can therefore offer

cost-saving benefits for the students – especially if students make use of the reader for other purposes as well.

For institutions where paper delivery is still used, the provision of courseware on devices such as the e-book reader can still generate significant savings for programme delivery. Table 17 summarised the cost involved in the incorporation of e-book readers into our teaching programmes in 2009.

Device	Sony-PRS-505 (discontinued, replaced by SONY PRS-300)	£150
Delivery	Cost for DHL	£30 per parcel overseas
Materials	Formatting and converting module materials into ePUB	£60 per device
Total cost per student	**£240**	

Table 17: Cost for incorporating e-book readers in curriculum delivery

Table 17 shows a cost of around £240 per student for provision of materials via an e-book reader, saving about £360 compared to £600 per student in paper delivery.

Limitations with regard to functionality

Findings showed that students were not satisfied with the lack of a note-taking function in the Sony PRS-505, and the flickering and delays in turning pages. These drawbacks limited student use of their e-book reader throughout their studies (See Section 3.2.1.) Higher-specification models, such as the Sony PRS-600, and models produced by other manufacturers, such as the latest Kindles, offer highlighting and annotation functions. Further research is needed to establish the extent to which this note-taking ability can enable a better learning experience.

Further areas for improvement include: a bigger touchscreen, wireless connectivity, better presentation of tables and diagrams, and a more intuitive, straight-forward solution for converting Word documents into ePub format. Newer devices, such as the third generation Kindle and the iPad do offer some of these benefits. The new Kindle is cheaper than the Sony we used in 2009 and offers a range of additional benefits, including Wi-Fi and optional 3G connectivity.

Use of audio

Evidence showed that the audio capability of the e-book reader was not used very much by the learners. Only one third of the students used the course podcasts from their e-book readers. These learners appreciated the convenience of accessing the podcasts and other materials from the same device without an internet connection.

Two-thirds of the students did not use the podcasts that had been pre-loaded onto the device. Listening preference or habit is one of the reasons. Some students preferred to use the podcasts online or from their iPod or other MP3 player. Not being familiar with or aware of the idea of listening to a podcast on their e-book reader was another reason. The smaller size of an MP3 player and the intuitive interface of iTunes were mentioned as the reasons why some students chose other devices over the e-book readers for listening to the podcasts. The ability to combine listening with other activities was also mentioned. The Education students considered that “Blackboard integrates the listening better”, as the Education podcasts were well embedded into the materials. On an e-book reader, students have to switch between folders to access the podcasts while reading, which is cumbersome.

Copyright and IPR

IPR and copyright are major issues encountered in the use of e-book readers. Despite extensive help and collaboration from the university's library and contacts made at all levels, publishers give blanket refusals to preloading copyrighted materials onto the e-book readers. A single Education e-book in Sociolinguistics was made available on the e-book readers after obtaining agreement from its publisher. The use of e-book readers has increased students' accessibility to the course materials. However, the e-book readers could have been much more useful if all essential readings, including core textbooks and journal articles, had been preloaded on them – or if students could have had the option to download textbooks of their choice (at a reasonable cost) onto the devices. To sustain and scale up the use of the device, a possible way forward is the extensive use of OERs. Further research is needed to establish the feasibility and impact of this approach.

Technology in transition

E-book readers are in transition and have changed rapidly over the past two years. More recent e-book reader models than the ones used in this research are not only cheaper and faster, but they offer a range of functions that our students would have benefited from, such as highlighting text, annotation, Wi-Fi and 3G connectivity. Whether these additional features would contribute to better reading and learning experiences is worth researching.

4. Wimba Voice Board

Formative assessment via v-tivities

The Education students preferred being assessed through interactive v-tivities via the Voice Board than through portfolio tasks individually. They liked the fact that they were able to receive more constructive feedback from the e-moderators and peers as opposed to getting limited feedback on the portfolio tasks from the tutor only which they found "didn't give you too much motivation". Students also considered that the v-tivities generated more discussion around the tasks with peers, and enabled them to do more readings recommended by peers. On the whole, students appreciated the interactive element of the v-tivities and were happy about their formative assessment being done this way. One concluded, "From my point of view, the v-tivities have been a great success." The Education tutors also think that assessing students by interactive tasks through the Voice Board is a positive innovation for this course.

Combination of voice- and text-based communication

Students identified a range of advantages of using voice over the text-based discussion board (in Table 16). However, three students expressed a feeling that recording a post on the Voice Board was more difficult than they thought, and that they had to prepare for talking by using guided notes. Not all students came up with such strategies to improve the effectiveness of their communication, however: a tutor reflected that "In voice board, there is less focus on clarity of expression, brevity, organisation, academic rigour". For this reason, a tutor suggested that "a mixture of voice and text would be a good idea, to save time, to ensure that students still write."

Technical limitations

Students and tutors identified limitations with the voice technology - the interface and lack of functionalities. We recognised that we were in the early days of the use of voice boards, but if you are choosing one for learning purposes we suggest you check:

- Interface and navigation, (in our trial making it too easy to click on another title and stop the recording you are listening to)
- Need to move more easily from one voice posting to another
- Need to be open to open it to full screen (not available to us)
- Editing of voice postings (not available in our trial)
- Ability to download a voice message (not available in our trial)

- Ability to attach voice or other attachments (not available in our trial)
- Ability to subscribe to receive a notification of a new posting (not available in our trial)
- Ability to identify which voice posts you had listened to and which not and were new (not available in our trial)
- Ability to leave private, rather than group voice message (not available to us)

5. Summary

The lessons learnt reported here addressed two of the DUCKLING research questions:

> **RQ1**: How appropriate are the new approaches to work-based curriculum delivery in addressing the identified challenges?
>
> **RQ2**: How do the four new learning innovations compare to the previous delivery of the curriculum via Blackboard for the work-based learners in the study?

In summary, both Podcasts and Voice Boards proved to be the lowest-cost, highest-impact interventions. There was evidence of benefits to learners of personalisation, flexibility, reduced isolation and increased engagement, at a marginal cost in tutor time. E-book readers added significant value to the student learning, although at a higher cost to the institution than podcasting. Students appreciated the usability and flexibility afforded by e-book readers while they were on the move and the ease of access to essential readings. The SECOND LIFE virtual world required considerable preparation and planning, in addition to the customisation of the environment to meet the requirements of the course teams. It also required induction and training of staff and prospective student participants. We then had difficulty in engaging sufficient students and staff in the SECOND LIFE experiments to be able to draw meaningful conclusions. However, our experience in DUCKLING led onto the use of SECOND LIFE as one of the successful technologies for our Learning Futures Festival 2010 (see http://www.youtube.com/watch?v=Gubz67oniuQ) and to another experiment SWIFT, http://www.le.ac.uk/swift.

3.3 Impact

3.3.1 Impact on the Psychology team

1. Podcasting

The Psychology team considers podcasting to be a low-cost, high impact technology that has made a dramatic difference to the design and delivery of their two Master's programmes. Ease of creation, coupled with reusability, ensure sustainability of the podcasts and embedding into the curriculum beyond the end of DUCKLING. One of the Psychology tutors concluded:

> I think that the podcasts have been an excellent addition to the course overall. Not only has the feedback from students been very positive, but the experience of producing and recording them has been enjoyable. The process itself is very simple: 'Audacity' [the free, open-source software used] is easy to use and the resources required are minimal. The 'feed forward' podcasts (which talk through the requirements of specific MAs [Module Assignments] and UAs [Unit Assignments]) strike me as being a particularly useful addition to the existing course content and I will be keen to see how they are received by the students. It will also be interesting to see whether these appear to have any impact on subsequent grades. Overall, the initial findings suggest that the addition of podcasts can be an effective way of making a difference to the course with minimal additional costs.

Podcasting has become almost 'second nature' to many of the OP team. It is envisaged that the team will continue to use podcasts for both teaching specific module information and providing feedback. Podcasting is now truly embedded in the practice of the Psychology team.

2. Second Life

The oil rig experience made the Psychology team to realize the potential of SECOND LIFE as a safe interactive practice environment. However, as a curriculum delivery innovation, SECOND LIFE has demanded additional effort and investment from academic staff and learning technologists, including building or importing the required SECOND LIFE artefacts and several training, orientation and trial sessions for students and staff. The Psychology staff felt that the SECOND LIFE work would be very hard to sustain as part of the curriculum over time. The cost-benefit relation for SECOND LIFE in curriculum delivery, therefore, has been far less favourable than with podcasting. One of the Psychology tutors concluded,

> Of the three technologies, I found this [SECOND LIFE] the least impactful for our distance learning courses for three reasons: it is difficult to navigate around in Second Life and takes considerable practice and time, which our students often have in limited supply; its ease of use is also dependent on your computer, and access to SECOND LIFE itself is often restricted by organisations, both of which can therefore exclude some of students from contributing to the activities; and the real-time nature of the exercise we used presents difficulties for a student population in different time-zones with high work and family commitments.

For the reasons discussed above the Psychology team decided not to use SECOND LIFE immediately for delivery of the two programmes.

3. E-book readers

The pilot investigating the use of e-book readers as part of the curriculum delivery has proved to be effective and successful. Our evidence shows that the technology functioned according to our expectations and the participants were generally satisfied with this solution. The e-book reader does make the work-based distance learner's life easier in a number of ways: increasing the flexibility and mobility of the students' learning experience, making essential readings more accessible, enabling time-poor students to make better use of 'dead' time, saving costs and resources associated with printing, and optimising students' study strategies. This innovation increased the perceived quality of distance learning for students who value flexibility and learning on the move.

There are limitations with the device. First of all, there are technical limitations such as the lack of note-taking and delays in page-turning that come with the model we used, and that limited student use of the device throughout their studies. The IPR and copyright restrictions limited our ability to make as many essential readings as possible available from the device.

One Psychology tutor reflected on the positives and challenges in using this technology,

> I am a big fan of this technology, and the mobility of their learning materials can be a real benefit to our students. The BDRA team did a great job of converting our course materials into an enjoyable and engaging format for the e-book readers. However, I believe that to fully exploit this benefit of mobility, the technology should provide the students with greater functionality, such as the ability to annotate, so that it replaces the need to take pen and paper with their e-book reader and, therefore, provides an active and functional studying tool for them.

The Psychology team decided that they will not use the model Sony PRS-505 or PRS-300 as part of the curriculum delivery, but may reconsider using the iPad in future. However, they are open to the idea of informing students of the benefits of e-book readers and similar devices, and providing resources on Blackboard to support students in accessing relevant materials, converting them into suitable e-book reader formats, and uploading them onto devices of the students' choice.

The use of eBooks will definitely be the way forward for many of students in Higher Education. The Psychology team has now converted all their course materials into ePub format. As new materials become available, they will be made available in e-book format on Blackboard course area for

students to drag and drop onto their e-readers. In this way, students are supported to access their course materials in e-book format on whatever device they choose.

3.3.2 Impact on the Education team

1. Podcasting

The Education team thinks that podcasting is likely to have the most immediate impact on the delivery of their MA programme, partly because it is the easiest to introduce into the delivery. Podcasting is self-sustainable, and most of the team members now feel comfortable about producing podcasts on their own after receiving some training and support from DUCKLING technologists during the project.

The Education team has produced podcasts for all of their modules. The podcasts in the Sociolinguistics module on *World Englishes* were particularly well received by students. A further 50 podcasts will be introduced to the Phonology module in September. Podcasts have also been incorporated into *Materials Development*, an optional module, and three podcasts have so far been produced to support the *Dissertation*, with further podcasts in the pipeline for this module.

The MA TESOL programme is delivered on campus as well as by distance, and the podcasts produced for the distance programme have also been used in the campus programme. The Education team will be increasing the number of podcasts after DUCKLING, and will be introducing video podcasts into the delivery in future.

2. Wimba Voice Board

The Education team sees Wimba Voice Board as another sustainable technology. Although the voice board was not planned as one of the original three DUCKLING technologies, the approach was very well received by the six Educations students studying Module 3 who volunteered for the pilot, and the course team considers the voice board one of the successful trials in DUCKLING. They have started introducing voice boards into other modules of the TESOL programme, starting in September 2010. Course team members attended a two-day Carpe Diem workshop provided by Beyond Distance in July 2010 to convert parts of the materials in Module 1 into four e-tivities, one of which is run via the voice board from September 2010.

The voice boards were not supported by the university's IT Services when our pilot took place. Because of DUCKLING evidence, however, voice boards are now being considered for inclusion in the group of centrally-supported learning technologies by the university. This will impact positively on all distance programmes across the institution.

Second Life

The Education team found SECOND LIFE had the least impact on their MA programme as a whole, although they could see the value of it in relation to the technology-focused, optional module Computer *Assisted Language Learning* (CALL). Some members of the team found it difficult to see the added value that SECOND LIFE offers to language teaching outside of that context. One of the tutors reflected:

> To me SECOND LIFE provides the opportunities for simulations. That's the added value it gives. It provides an environment for simulation, simulating contexts that you can't do in real life. So it lends itself very well to engineering for example, if want to do a collaborative building of a prototype car or something. It's an obvious tool to use. Whereas, it's not so obvious what you can do with the humanities like language teaching…It still needs a bit of a journey before it becomes easy to use as a delivery mechanism... There is still some way to go to work out how it could be used for language teaching. An obvious way is to simulate classrooms in virtual worlds, which is what we tried to do. But some of the feedback suggested what's the added value, what is it actually doing that I can't do in real life…Commercially there is still a limit as to how much it has been used by language schools. So I suppose until that happens, it still seems to be peripheral. It's not obvious yet [for language teaching].

However, the Education team plans to continue offering the SL-tivities as part of the CALL module for future cohorts. The use of SECOND LIFE in this module will create a requirement for the kind of student support that was provided by the DUCKLING teaching fellow in the trial. The team is therefore considering recruitment of an associate or e-moderator with the expertise. The team considers SECOND LIFE to be an emerging technology, with a lot of future potential.

3. E-book readers

The Education team thinks that the e-book reader trial was very successful. The response from students was very positive, and those who used the device said that they would be happy to use it throughout their studies. However, the Education team also decided against issuing e-book readers to students outside of the pilot, because of the cost involved. They consider that providing course materials and essential readings in appropriate formats via the VLE for students to upload onto their own mobile devices (i.e. smart phone, e-book reader) is the way forward.

4. Impact of the DUCKLING project on the Education team

The collaboration with a teaching fellow around the introduction of innovative technologies to the curriculum delivery also led to some significant unexpected outcomes for the MA programme and the course team:

- 5 members of the course team have experimented with learning technologies in ways they would not otherwise have done, and there is growing interest in the potential value of technology for enhancing curriculum delivery – both for distance students and for campus-based students. This has prompted some academics to begin redesigning their courses to explicitly encourage more peer interaction using the affordances of the available technologies.
- The voice board pilot enabled significantly more interaction between students than previously and was used as a model for rolling out v-tivities, linked to formative assessment, across all the modules on the programme.
- The support system for distance learners is being developed and enhanced as a direct result of DUCKLING interventions, particularly the voice board pilot, which provided a model for the e-moderator's role in formative assessment, and raised questions about the overlap between tutors' and e-moderators' roles. The allocation of duties between tutors and e-moderators is currently under discussion, with the aim of providing richer support for distance students throughout the MA.

3.3.3 Cost-Impact matrix

Coupled with the discussion and debate above, a cost-impact matrix is provided in Figure 4 to show the cost of each DUCKLING technology against its impact.

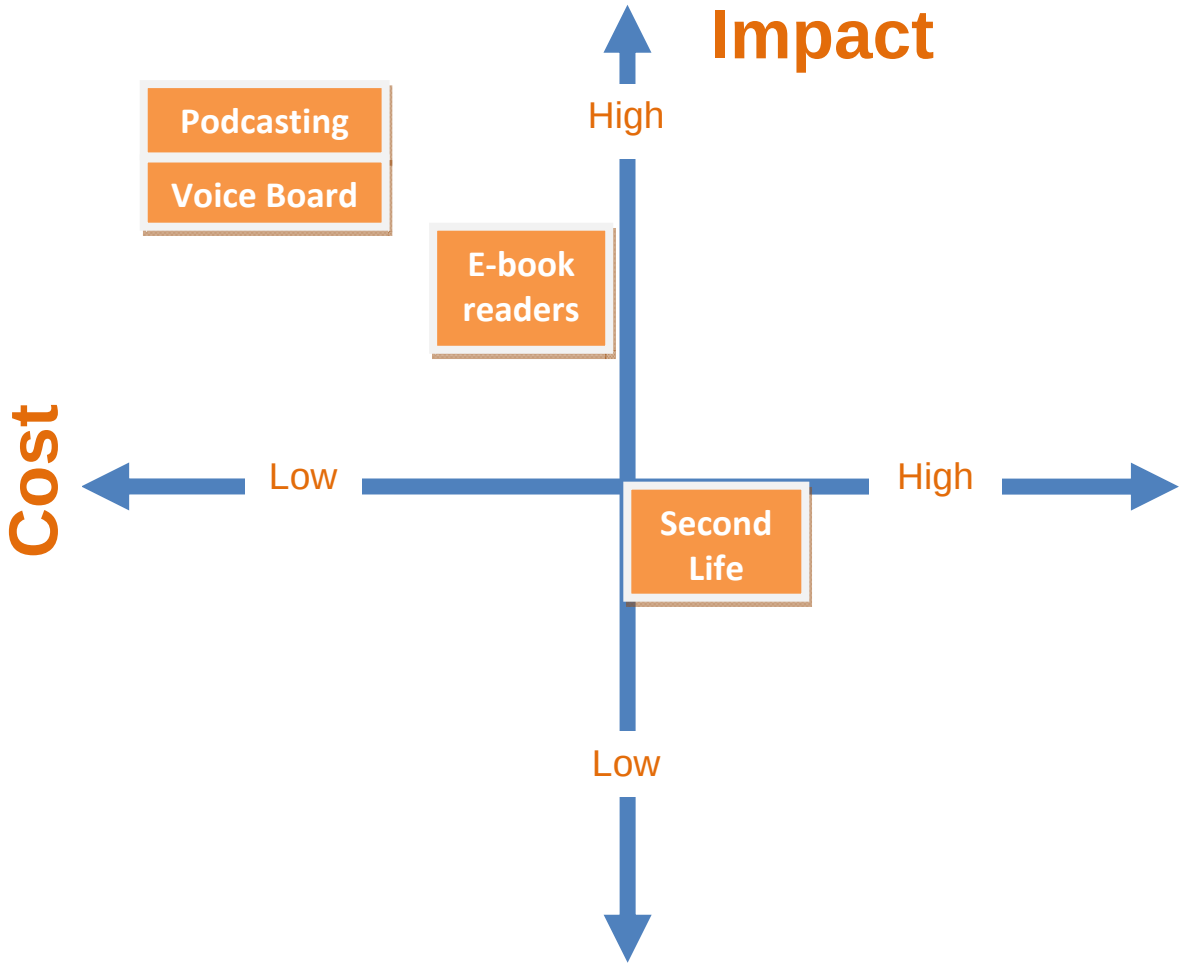

Figure 4: Cost-Impact matrix

The analysis of impact was conducted in relation to the initial challenges that the course teams had identified. Podcasting proved to be a low-cost, high-value technology in that it helped address those challenges without any significant capital or time investment. It also proved to be easily embeddable into the curricula and sustainable over time. In addition, data being collected at the time of writing this report suggests that podcasting has begun to help the Psychology course team to reduce the number of dissertation resubmissions and enhance the quality of dissertations by an estimated 10%. The only difference between the cohorts being analysed is the introduction of podcasts. On the other hand, Second Life, for example, has not delivered such benefits, despite the very significant development and training time invested in it.

Note: The costs associated with e-book readers vary according to the implementation model used: whether (a) the institution purchases the devices and sends them out to students, preloaded with content; (b) the students purchase their own devices (or use devices they already own) and upload the content from the VLE onto their devices themselves; or (c) students are given the choice to use their own devices or receive a pre-loaded device. Whichever model is chosen however, the institution will need to ensure that the materials are made available in an easily transferable format such as ePub, as well as providing guidelines to students on how to upload materials and trouble-shooting advice.

3.3.4 Impact beyond DUCKLING

Effective dissemination of DUCKLING findings and engagement with key stakeholder communities has been taking place from the beginning of the project via the project website, the Media Zoo, events organised by University of Leicester, JISC and HEA, national and international conferences and publications. A summary of the key dissemination activities is provided through the DUCKLING website http://bit.ly/aEnhm4. Synergies with other projects (e.g. OTTER, www.le.ac.uk/otter) have multiplied the impact of our dissemination activities.

Both the Psychology and Education teams have given presentations of their DUCKLING experiences to colleagues across the university, for example, at the PANTHER workshop about podcasting for assessment (http://tinyurl.com/2wgtwjk). Their dissemination has been received positively and a great deal of interest has been raised in attending workshops about the use of new technologies. This is likely to encourage other programmes within the schools, Colleges and in other disciplines to continue using the DUCKLING technologies.

The DUCKLING approach to the incorporation of podcasting has proved to be the most relevant to other subject areas, institutions and stakeholders. Positive change is spreading at Leicester. Pro-active internal dissemination of findings undertaken by the Psychology team and Beyond Distance, including Media Zoo events (Armellini et al, 2009), through Leicester's Assessment and Feedback Working Party, the Distance Learning Forum and BDRA's 2010 Learning Futures Festival (www.le.ac.uk/beyonddistance/festival) have taken the outcomes of this research to other parts of the university. Evidence gathered through the DUCKLING project and exemplars from the Psychology redesign experience have featured prominently in all of these events, which have constituted excellent opportunities for sharing experiences and research findings in technology-enhanced curriculum transformation and delivery. Academic and support staff from across the university have actively participated in the events and continue to do so.

The presentation of research evidence in a variety of usable formats has enabled others across the University to relate to exemplars and evidence, adapt and test the ideas in their own courses and promote pedagogical innovation. The Education team is now adapting dissertation podcasts developed by the Psychology team to support their dissertation module. Practitioners from five departments (Criminology, Engineering, Lifelong Learning, Management and Media and Communications) are now either redesigning parts of their curricula by making use of podcasting or planning changes that may, in future, incorporate the findings of this research.

The new Learning Innovation Strategy, approved by the University Senate in July 2009, provides an appropriate context for the DUCKLING innovations to take place in a supported way across the institution. Through internal, national and international dissemination, including conferences, publications and a significant online presence, the DUCKLING research into new technologies continues to inform institutional transformation and innovation well beyond the University of Leicester.

A Distance Learning Benchmarking Club of seven universities across the world, all active in distance online learning in a dual-mode fashion, was set up to benchmark their online distance learning activity. All the partner institutions are universities with at least 10,000 students whose Distance/ Online learning offering has in excess of 1,000 students and also has a wide range of programmes. The seven institutions participating in the exercise are the University of Leicester (UK-Lead), the University of Liverpool (UK), the University of Southern Queensland (Australia), Massey University (New Zealand), Thompson Rivers University (Canada), Lund University (Sweden) and KTH-Royal Institute of Technology (Sweden). This international benchmarking exercise, with support from the DUCKLING project, is nearing completion. Initial indications point towards shared concerns among dual-mode institutions across the world about challenges faced in curriculum design and delivery as applicable to work-based and distance learning.

3.3.5 Summary of impact

The impact reported under this section addressed three DUCKLING research questions:

RQ4: How can the DUCKLING curriculum delivery methods be transferred to other modules and courses delivered at a distance for work-based learners?

RQ5: What are the critical conditions for transfer, success and sustainability, and what are the likely limitations when applying this model to new contexts?

RQ6: Out of the four technologies under investigation, which ones provide for best deployment of innovations in work-based and distance learning pedagogy for work-based distance learners?

In conclusion, DUCKLING has made a positive impact on both the Psychology and Education teams. A significant change has happened to the delivery of the three programmes involved. DUCKLING methods are transferred across all modules of the three programmes. All the modules are already using a variety of methods for delivery. Two diagrams (Appendix 3 and 4) provide an overall picture of how the delivery of the two Master's programmes in Psychology and one in Education was supported by the technologies before and after DUCKLING. A full report of the curriculum transformation is documented in two exemplars, available from DUCKLING website http://tinyurl.com/3xdx89w.

4) Conclusions & Recommendations

4.1 Recommendations

The Teaching Fellow model

DUCKLING enabled the funding of a part-time (0.4 FTE) teaching fellow in each partner department to facilitate the introduction of innovation for lasting change. Both are subject experts and experienced users of technology in curriculum design and delivery. The teaching fellows bridge the gap between the research being carried out by the DUCKLING team at Beyond Distance and the delivery of the programmes by the project partners (Education and Psychology). The teaching fellows are especially crucial in start-up work. They are change enablers: without their work, it would have been more difficult to undertake worthwhile interventions and gain access to learners for research purposes, research and embed the innovations in curriculum design and delivery. This approach has been highly successful and has benefited the partners, the researchers and the students.

At Leicester, the Psychology team is now recruiting a new teaching fellow whose role will have a prominent component to instigate and support the use of new technology for teaching and tutoring. The Education team is also considering recruiting a teaching fellow as a technology enabler. Our recommendation is for the teaching fellow model to be embedded in more disciplines in HE to support course teams in the use of emerging technologies for enhancing teaching and learning. It will also be useful to form a Community of Practice with teaching fellows who take on similar roles and are located within different departments and institutions to share experience and transfer knowledge.

Synergies between curriculum design and delivery

Although DUCKLING's focus was on curriculum delivery project, it has promoted changes to curriculum design, (see DUCKLING's curriculum lifecycle model, http://tinyurl.com/3xdx89w). For a curriculum to be delivered effectively, taking full advantage of the affordances of learning technologies, DUCKLING established that careful consideration needs to be given to design and re-design – not only of the curriculum itself, but also of the learning and teaching approaches on a course. For example attention must be paid to the nature of student support activities carried out by tutors and e-moderators and the role of peer interaction in student support.

Carpe Diem

Before the incorporation of each of the DUCKLING technologies, Beyond Distance ran Carpe Diem (www.le.ac.uk/carpediem) workshops for both course teams to guide and support the design of learning activities on each technology. The workshops focused on challenges and problems faced by

each course team. The course team was introduced to technology-enhanced solutions and associated research evidence to help them overcome the challenges. The course teams articulated their pedagogical challenges and/or need to enhance threshold knowledge and were helped to establish which of the technological opportunities may help. The Carpe Diem model has proved effective in introducing new technologies to academic course teams and providing support for technology-enhanced re-design. Each course team produced useful activities which can be reused and repurposed in the future. For example, the e-tivities designed by the Education team that can be run on a variety of technologies and platforms, such as Wimba Voice Board, Blackboard discussion forum and wiki.

DUCKLING approach to engaging stakeholders

The teaching fellow model and Carpe Diems proved effective in engaging the two course teams in technology-enhanced re-design throughout the project. Meetings with course teams where DUCKLING updates were presented also proved useful; in retrospect more frequent communication with whole course teams (rather than just the individuals who were working most closely with the project) might have helped to engage more academics earlier on in the process.

Students were kept informed about the DUCKLING studies through announcements on Blackboard and e-mails. Support was provided promptly for students who had problems with the technologies. For example, SECOND LIFE problems were addressed via the discussion forum on Blackboard, as were difficulties that students experienced with their e-book readers. Students were regularly asked to reflect on their experiences of using the DUCKLING technologies. There was some evidence to show that student engagement was higher in the studies where the DUCKLING technologies were related to formative assessment. For example, the Wimba Voice Board pilot in Education generated more student input than any of the other studies in Education.

Support for mobile learners

The use of eBooks and devices to read them on (such as smart phones and e-book readers) is increasing. Some consider this to be the way forward for many students in HE (see Johnson et al, 2010). Many students already have one or more such devices of their own. The course team should provide course materials and essential readings in e-book format via the VLE and give support to students in uploading resources from the VLE onto their own devices. The course team might also consider offering students the option to pay for a pre-loaded device from the institution. In this way, students can be supported to access their course materials in e-book format on whatever device they choose. This will also give students the ability to control and personalise the technology they use.

Share generic SECOND LIFE developments

Our experience of collaborating with LanguageLab for our Education SECOND LIFE pilot shows an example of using the affordances of SECOND LIFE without expending any resources on building new resources. Our Psychology SECOND LIFE pilot involved using an SECOND LIFE oil rig platform donated by a SECOND LIFE user. This oil rig environment was further developed by DUCKLING technologists to cater for the learning need. This SECOND LIFE oil rig platform is now an OER for other practitioners to use.

Extensive use of OERs

Intellectual Property Rights (IPR) and copyright issues were encountered in the e-book reader study. The university's library supported DUCKLING approaching publishers but they gave blanket refusals to pre-loading copyrighted materials such as eBooks and journal articles onto the e-book readers. However, one relevant Education eBook on Sociolinguistics was made available on the e-book readers after obtaining agreement from its publisher. The e-book readers could have been much more useful if all essential readings, including core textbooks and journal articles, had been pre-loaded on them. To sustain and scale up the use of the e-book readers in the way that DUCKLING did (i.e. pre-loading materials), a possible way forward is the extensive and systematic use of appropriate OERs.

4.2 Conclusions

Evidence from the podcasting, SECOND LIFE, e-book readers, and Wimba Voice Board studies suggests that DUCKLING's technology-enhanced approach is appropriate for work-based distance delivery. Compared to the previous approach used in both disciplines, in which the VLE was used largely as a content repository and for optional discussion of a generic nature on the discussion forum, the addition of the four DUCKLING technologies in the ways described above provided several benefits. It increased the interactivity of the curricula, enriched teaching and assessment approaches, and increased flexibility of the curricula to better support mobile learners.

In conclusion, DUCKLING has met its original aims and objectives (in Section 3.1.1). Table 18 summarises how DUCKLING achieved its original DUCKLING aims/objectives.

DUCKLING aims/objectives	DUCKLING achievements
Align learning experiences with students' work-related needs, enabling active, situated, work-based learning	Four technologies used in the delivery of three programmes aligned with students' work-based learning needs: • Podcasting and e-book readers enabled flexible learning and accommodated needs of mobile learners • Second Life enabled active and situated learning
Enhance distance and work-based delivery with three innovative technology-mediated approaches to learning	DUCKLING provides four technology-enhanced approaches to enhance distance and work-based delivery.
Engage key stakeholders throughout the delivery, development and piloting	• The academics of two course teams were engaged throughout the project for the development of technology-enhanced curriculum. The Teaching Fellow model and Carpe Diems used by DUCKLING proved effective in engaging academic course teams. • Students on the three Masters' programmes were engaged throughout the project to provide feedback and comments on technology-enhanced curriculum. • Employers of both disciplines were engaged in the baseline study. They offered invaluable opinions on how to improve the curriculum delivery through the integration of technologies.
Be flexible enough not to require re-validation by enabling subject teams to design once and deliver many times	Examples include: • Tutors were able to 'design once and deliver many times' by transferring content between podcasts with minimum adaptation and versioning. • E-tivities designed can be delivered via discussion boards, voice boards or wikis.
Inform the two key curriculum delivery-orientated elements of Leicester's new DL strategy: Presentation and Performance review	Presentation: • Enriching teaching and assessment approaches through the use of a variety of media formats • Podcasting offered a level of personalisation and human touch • Learner support and engagement were greatly improved through podcasts that provided guidance, support and feedback • Voice Boards enabled an enhanced level of audio-based interaction between learners and tutors around specific v-tivities

DUCKLING aims/objectives	DUCKLING achievements
	for formative assessment • Delivering materials through e-book readers and ePub format via VLE increased flexibility for the needs of mobile learners • Second Life enabled active and situated learning Performance: • The quality of student dissertation (in Psychology) improved • Retention (in Psychology) improved
Inform senior managers, strategy and policy makers in the university and across the sector	• Extensive and effective internal dissemination of curriculum enhancements and research findings • Input into and evidence for the new Learning Innovation Strategy • Peer-reviewed publications

Table 18 DUCKLING achieved its original aims/objectives

5) Implications for the future

5.1 Implications for other professionals

Dissemination of outputs and academic publication has been key activities in DUCKLING. Colleagues in Further and Higher Education can benefit from the adaptation and application of these outputs, which have been made available in highly usable, transferable formats. Some of the academic content developed as part of DUCKLING (e.g. some of the podcasts) have also been turned into OERs and can be accessed via JorumOpen.

5.2 New research and development work

Research into retention and quality of assessed work

The introduction of DUCKLING technologies into three curricula resulted in an enhanced experience for distance and work-based learners. Retention and the quality of assessed work in relation to curriculum renewal and pedagogical innovation have emerged as two key areas for future investigation. Evidence from the Psychology programmes in the study suggests that as a result of the curriculum enhancement process, retention has improved, as has the quality of the dissertation. In the case of Education, integration of the voice board study with formative assessment appeared to lead to greater levels of engagement by students, and more carefully considered submissions than before. With these new technologies now embedded in the three Master's programmes, it would be possible to reach firm conclusions by carrying out research over time, as several cohorts go through the programmes.

Research into e-book readers

Several areas have emerged as suitable for further investigation in the academic use of e-book readers:

- Better access to course materials and new study strategies do not necessarily mean better reading comprehension or better learning. This merits further investigation.
- In future, we would like to provide course materials and essential readings in ePub format via the VLE and give support to students in uploading resources from the VLE onto their own devices. We would like to research the impact on students' learning, and identify and document best practice for supporting mobile learners in the use of reading devices.

- E-book readers are in transition and have changed rapidly over the past two years. More recent e-book reader models than the ones used in this research are not only cheaper and faster, but they offer a range of functions that our students might have benefited from, such as highlighting text, annotation, Wi-Fi and 3G connectivity. Whether these additional features would contribute to better reading and learning experiences is also worth researching.
- Many advocates of eBooks and e-book readers use the 'green' argument to make their case. This certainly merits proper research. At present, it is unclear whether the amounts of lithium, metal, glass, rubber and other components involved in building and disposing of e-book readers – as well as the carbon footprint involved in firing up servers for 3G and wi-fi connectivity – make the device any 'greener' than printed books.
- The e-book reader was originally designed for one purpose: to offer a very good reading experience at a reasonable price. More recent multi-function tools such as the iPad claim to offer not just an excellent reading experience, but thousands of additional applications. Will these newer devices push the e-book reader aside, or will the e-book reader maintain its market niche as dedicated tool for reading and as a low-cost, high-value learning technology? We would like to gather evidence of best practice by students, academics and institutions in the use of these emerging technologies.

Research into voice boards

In the MA in Applied Linguistics and TESOL, voice boards will be piloted with all students in Modules 1 and 2 from September 2010, as a direct impact of the success of the voice board pilot. This pilot will be on a larger scale than the DUCKLING pilot, as all students on these modules will be required to participate (as opposed to a small group of volunteers). This will raise new research questions, for example:

- In the DUCKLING pilot, no second-language speakers of English volunteered to participate, although these students constitute a large proportion of the student body. Are there particular issues, or particular support needs, for second language students on voice boards?
- Best practices for assessment design when introducing peer interaction into formative assessment.
- How students respond to the use of voice for assessed tasks, and flexible ways of allowing students to combine the use of voice and writing to suit their learning styles.

The Psychology team will also pilot voice boards beyond DUCKLING. These will give us further opportunities to research the impact of this tool on distance learning, especially for formative assessment.

5.3 Sustainability

DUCKLING's approach to sustainability within the university has been twofold. First, interventions within both the OP and Education course teams have built capacity within both departments, enabling them to do what they were unable to do themselves before. Specifically, they (and other academics in their departments) can now record and upload podcasts, set up and moderate voice boards, use e-book readers and visit many SECOND LIFE locations. The course teams and their colleagues in each department now have a skill set that makes them more autonomous, creative and resourceful in terms of effective applications of learning technologies.

Second, we have widened access to and increased the range of capacity building interventions such as Carpe Diem (www.le.ac.uk/carpediem), with a specific focus on the DUCKLING technologies. These interventions, usually held in Leicester's Media Zoo, have attracted many colleagues from other departments, who have benefited from the evidence gathered within DUCKLING and have used it to enhance their own provision. Their autonomy has also improved, which has made the

incorporation of learning technologies relevant, rewarding and effective. The experiences of learners have been enhanced, well beyond the two programmes that were the focus of DUCKLING.

The project website http://www.le.ac.uk/duckling will be maintained for the minimum three years after DUCKLING finishes. The website will be continuously used as a main repository for preserving project outputs and deliverables, including DUCKLING curriculum delivery lifecycle, case studies and exemplars of technology-enhanced curriculum re-design, and guidance and resources for other practitioners to use.

The DUCKLING funding will of course be missed in future months. However, this is due to our desire to continue building on the innovations from DUCKLING, and to expand the impact on learners' experiences, rather than the sustainability of the innovations that we successfully implemented and researched during the project.

5.4 Related research and development we would carry out if we had the resources

If we had the resources to do so, we would continue DUCKLING along the following directions:

- Encourage and facilitate the formation of Special Interest Groups (SIGs) and communities of practice for practitioners in HE based on the technologies investigated in DUCKLING.
- Create a SIG to identify best practice in introducing technology-enhanced innovation in learning design, and develop a checklist for quality assurance purposes.
- Proactively assist JISC to make the Design Studio (and alternatives) more usable by the practising academic and give the sector ownership of it. At present, it is geared more towards the JISC community.
- Research retention, progression and student numbers in the three Masters' studied in the DUCKLING project, linking the research to DUCKLING interventions.
- Disseminate creative approaches to stakeholder engagement and support, including the teaching fellow model.
- Investigate the concept of personalisation more deeply (e.g. in relation to e-readers)
- Approach employers for partnerships (e.g. SEMTA.org.uk, Creative Industries, E-Skills, retail) to further investigate the use of the DUCKLING technologies in work-based learning.
- Offer support to the JISC Curriculum Design projects based on findings from DUCKLING.
- Illustrate the integration between the Curriculum Design and Delivery programme and other JISC programmes, e.g. OERs projects.
- Further investigate the use of cognitive mapping as an innovative research method.

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7) Appendices

Appendix 1: How DUCKLING technologies addressed the challenges faced in curriculum delivery

Challenges faced in curriculum delivery	Podcasting	Second Life (SL)	E-book readers	Wimba Voice Board
Lack of interaction	Increased and improved interactions with tutors	Enabling interactions with tutors and peers through collaborative tasks in SECOND LIFE - Psychology SECOND LIFE activity generated interactions with tutors and peers through Blackboard discussion board - Education	E-book readers generated interactions with tutors and peers through Blackboard discussion board - Education	Generating interactions with tutors and peers
Dry material	Bringing materials to life	Bringing materials to life	-	Bring materials to life
Lack of variety in teaching approaches	Enriching teaching approaches	Enriching teaching approaches	Enriching teaching approaches	Enriching teaching and assessment approaches
Need for mobility	Enabling students to play podcasts from their mobile devices (i.e. iPod, iPhone, MP3 player) and on the move (i.e. on a bus or train) - Psychology	-	Enabling students to read course materials on the move (i.e. on a train or plane)	-
Need for flexibility	Enabling students to use podcasts at different locations: at home, office, public places (i.e. Café) and on the move - Psychology	SECOND LIFE can be used asynchronously; students can complete SECOND LIFE task at a time and place of their choice - Education	Enabling students to read course materials at different locations: at home, office, public places (i.e. Café) and on the move.	-
Need for transferring theories into practice	-	Enabling Psychology students to practise skills as occupational psychologists, and Education students to apply pedagogical and language teaching theories in a simulated, non-threatening working environment.	-	Enabling linking theories to practice through in-depth discussion and peer feedback

Appendix 2: Cost-Benefit analysis of DUCKLING technologies

DUCKILNG technologies	Direct Costs	Indirect Costs	Benefits/Impact
Podcasting	▪ Computer and headphone, or a MP3 player or digital recorder ▪ Audacity is free	▪ Initial technical training and support from a learning technologist ▪ Initial time investment in planning and designing the podcasts ▪ Time investment in recording and editing the podcasts	▪ Adds personalisation, interactivity in distance learning ▪ Relationship-building, reduction isolation associated with distance learning ▪ Effective provision of feedback, guidance and support in different formats ▪ Increases flexibility and mobility of student learning ▪ Design once, deliver often
E-book readers	▪ The device ▪ Delivery and postage ▪ Additional e-books	▪ Converting course materials into ePub format by a learning technologist ▪ Ongoing technical support for users	▪ Increases flexibility and mobility of student learning ▪ Saves cost and resources for printing ▪ Enables students to make better use of their time during the day ▪ Optimises study strategy
Second Life	▪ High-spec computer and headphone ▪ Broadband internet ▪ Initial investment in buying or paying for using an island in SECOND LIFE	▪ Developing architectures and artefacts, or adapting existing architectures or artefacts to suit the teaching need ▪ Technical training, orientation and ongoing support ▪ E-moderating student activities in SECOND LIFE	▪ SECOND LIFE is effective in creating a simulated environment that students would otherwise not experience ▪ Enables students to apply theories and practise skills in a safe non-threatening way ▪ Enables interaction and collaboration opportunities for distance learners
Wimba Voice Board	▪ Computer and headphone ▪ Broadband internet	▪ E-moderating ▪ Marking and evaluation ▪ Design of v-tivities	▪ Adds personalisation, interaction and reduction isolation associated with distance learning ▪ Advantages of voice- over text-based communication

Appendix 3

Technology-enhanced curriculum delivery for Masters distance learning programmes in Occupational Psychology

This diagram has been developed as part of the JISC-funded DUCKLING project (www.le.ac.uk/duckling), led by the Beyond Distance Research Alliance, University of Leicester.

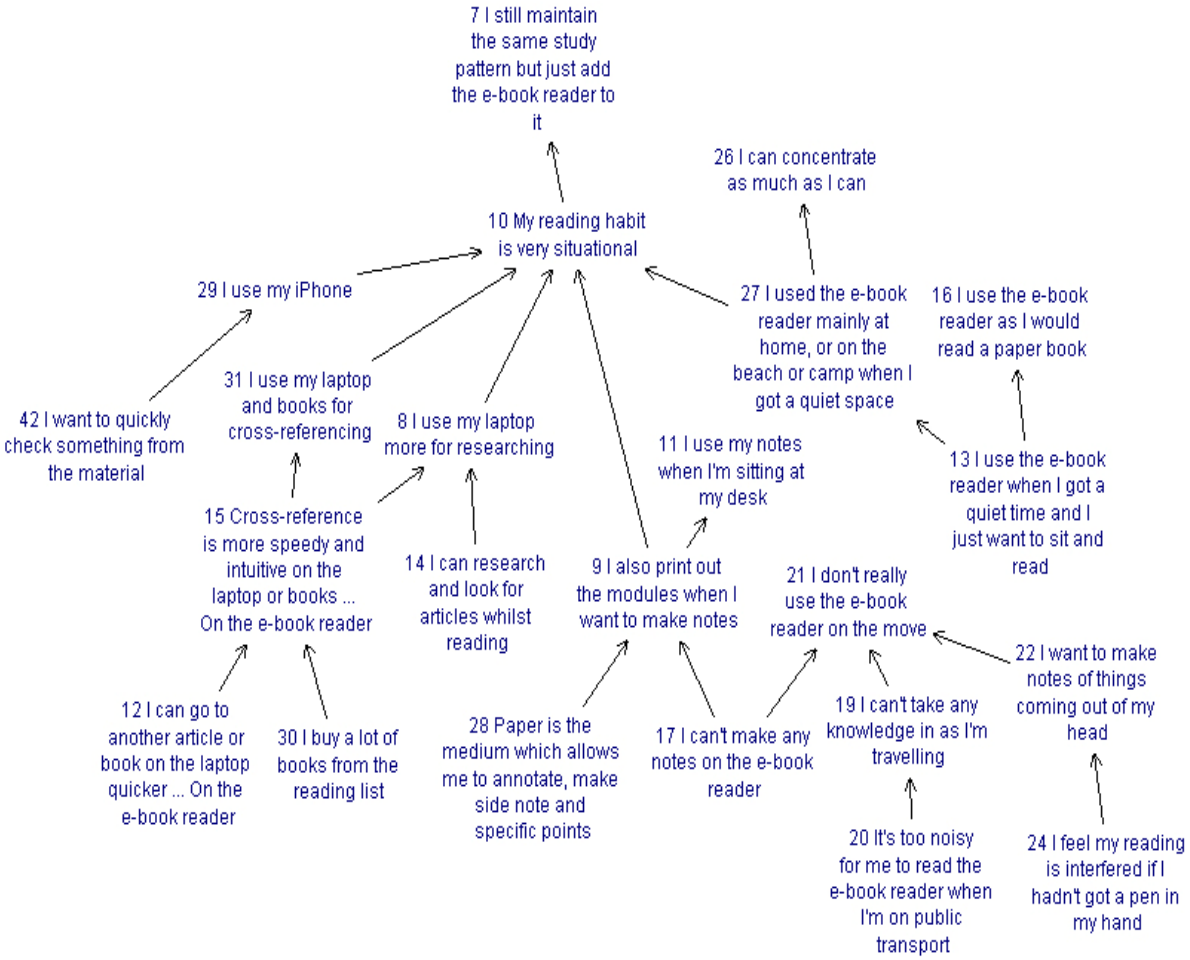
Appendix 4

Technology-enhanced curriculum delivery for a Masters distance learning programme in Applied Linguistics and TESOL

This diagram has been developed as part of the JISC-funded DUCKLING project (www.le.ac.uk/duckling), led by the Beyond Distance Research Alliance, University of Leicester.

Appendix 5: An example causal map

This causal map was developed from an interview with an Education student about his use of the e-book reader.



Appendix 6: The e-book reader survey

1. **Can you tell us your initial impression and thoughts about the e-book reader when you first received it and started to use it?**
2. **Now you have been using the e-book reader for a while, have these thoughts and impressions changed at all, and in what way?**
3. **How often do you use the Course Module material on the e-book reader?**

   ☐ Very often (i.e. most days)

   ☐ Relatively often (i.e. a couple of times a week)

   ☐ Not often (i.e. a few times a month at the most)

   ☐ Never use it

4. **How often do you use the podcasts on the e-book reader?**

   ☐ Very often (i.e. most days)

   ☐ Relatively often (i.e. a couple of times a week)

   ☐ Not often (i.e. a few times a month at the most)

   ☐ Never use them

5. **How long do you use the e-book reader each time?**

   ☐ Under 30 minutes

   ☐ Between 30 to 60 minutes

   ☐ More than 60 minutes

   ☐ It depends

6. **If you answered 'It depends' to Question 5, can you please briefly explain?**
7. **Where do you usually use the e-book reader?** (You can choose more than one answer)

   ☐ At home

   ☐ At office

   ☐ At public places (i.e. the library, Café)

   ☐ On the move (i.e. train, bus, plane)

8. **To what extent do you find the Course Module material on the e-book reader easy to read?**

   ☐ Very easy

   ☐ Easy

   ☐ Neither easy nor difficult

   ☐ Difficult

   ☐ Very difficult

9. **To what extent do you find the podcasts on the e-book reader easy to use?**

- ☐ Very easy
- ☐ Easy
- ☐ Neither easy nor difficult
- ☐ Difficult
- ☐ Very difficult

10. **If you find the course materials or podcasts on the e-book reader difficult to use, can you briefly explain why?**

11. **How helpful do you find the e-book reader in your studies?**

- ☐ Very helpful
- ☐ Helpful to some extent
- ☐ It doesn't make any difference
- ☐ Not helpful at all

12. **Can you briefly explain your choice in Question 11?**

13. **Has the e-book reader changed the way that you study?**

- ☐ Yes
- ☐ No

14. **If you answered 'Yes' to Question 13, can you briefly explain what has been changed?**

15. **Are there any functions that you wish the e-book had that would help in your studies?**

16. **Given these three choices of having the course material in print, e-book reader or the Blackboard online format, please rank your preferences for reading your course material.** (For example, if you choose **Print** under First (preferred choice), **E-book reader** under Second choice, and **Blackboard (online)** under Third choice. This will be interpreted as: you prefer to read the printed course material, you consider reading course materials from the e-book reader the second choice, and reading the course materials directly from Blackboard online the last choice.)

First (preferred) choice	Second choice	Third choice
☐ Print	☐ Print	☐ Print
☐ E-book reader	☐ E-book reader	☐ E-book reader
☐ Blackboard (online)	☐ Blackboard (online)	☐ Blackboard (online)

17. **Can you briefly justify the order you chose in Question 16?**

18. **Giving these three choices of listening to the course podcasts on iPod/iPhone/MP3 player, e-book reader or Blackboard online, please rank your preferences for using the podcasts?** (For example, if you choose **iPod/iPhone/MP3 player** under First (preferred choice), **E-book reader** under Second choice, and **Blackboard (online)** under Third choice. This will be interpreted as: you prefer to listen to the course podcasts on your own portable device, you consider listening

to course podcasts from the e-book reader the second choice, and listening to course podcasts directly from Blackboard online the last choice.)

First (preferred) choice	Second choice	Third choice
☐ iPod/iPhone/MP3 player	☐ iPod/iPhone/MP3 player	☐ iPod/iPhone/MP3 player
☐ E-book reader	☐ E-book reader	☐ E-book reader
☐ Blackboard (online)	☐ Blackboard (online)	☐ Blackboard (online)

19. Can you briefly justify the order your chose in Question 18?

20. **Can you tell us what else you use the e-book reader for?** (You may choose more than one answer)

☐ Novels

☐ Course related material (i.e. journal articles)

☐ Material to support my study from other sources (i.e. the internet)

☐ Documents created by myself

☐ Audio material other than the podcasts

☐ Pictures and photos

☐ Others

21. If you answered 'Others' to Question 20, can you please explain briefly what other activities you used the e-book reader for?

22. How easy it is to transfer documents onto the e-book reader?

☐ Very easy

☐ Relatively easy

☐ Relatively difficult

☐ Very difficult

☐ I've never transferred any documents onto my e-book reader

23. If you find it difficult to transfer documents onto your e-book reader, can you briefly explain what the problem or difficulty is?

24. Please rate your overall satisfaction with the e-book reader.

☐ Very satisfied

☐ Satisfied to some extent

☐ Not satisfied at all

25. If you're not satisfied with the e-book reader, can you briefly explain the reason?

26. Overall, how would you summarise your experience with the e-book reader?

Appendix 7: The Second Life survey

1a. Have you used Second Life (SL) before?

☐ Yes

☐ No

1b. If you answered 'Yes', can you briefly tell us your previous experience in SL?

2. Can you tell us your engagement with computer games?

☐ I play computer games a lot

☐ I play some computer games

☐ I never play computer games

3a. To what extent did you find the oil rig activity in SL useful and relevant to your study?

☐ It was very useful and relevant

☐ It was useful and relevant to some extent

☐ It wasn't useful and relevant

3b. In what aspects did you find the oil rig activity useful and relevant to your study? (You can choose more than one answer)

☐ It enables interaction with the tutors

☐ It enables interaction with other students

☐ It offers opportunities to work collaboratively with other students

☐ It was a fun and enjoyable experience

☐ It enables me to practice skills as an Occupational Psychologist in a safe and non-threatening environment

☐ It allows me to 'see' and 'explore' a simulated working environment which wouldn't be possible for me to visit in real life

☐ It offers me an opportunity to learn a new technology

☐ Others Please briefly explain:

3c. Do you have any suggestions about how we might improve the oil rig activity if we run it again?

4a. How easy it is for you to learn to use SL?

☐ Very easy

☐ Relatively easy

☐ Relatively difficult

☐ Very difficult

4b. If you found SL difficult to learn, can you tell us what difficulties you had experienced?

5a. Have you experienced any technical problems or difficulties when using SL?

☐ Yes

☐ No

5b. If you answered 'Yes', can you tell us what technical problems or difficulties you had experienced?

6a. Did you find the training session in SL useful?

☐ Yes, it was useful

☐ No, it wasn't useful

☐ I didn't attend the training session

6b. If you answered 'Yes', can you tell us what you enjoyed the most in the training session? (You can choose more than one answer)

☐ An opportunity to learn, practice and enhance basic skills

☐ Having an expert guiding me what to do and how to do it is a lot easier than learning on my own and reading through the guide

☐ I felt safe having an expert accompanying me through the learning journey (i.e. someone can rescue me if I fall into water or get lost)

☐ I enjoyed learning in a group and having interaction and fun with the trainers and peers

☐ I enjoyed learning with other learners at the same level

☐ I enjoyed the friendly, relaxed and supportive atmosphere

☐ Others Please briefly explain:

6c. If you found the training session in SL not useful, can you briefly explain why?

6d. Do you have any suggestions about how we might improve the training session if we run it again?

7a. Did you find the training guide useful?

☐ Yes, it was useful

☐ No, it wasn't useful

☐ I didn't use the training guide

7b. If you answered 'Yes', can you tell us in what ways you found the training guide useful? (You can choose more than one answer)

☐ As a beginner, it's important to know where to start with

☐ It is well structured. It tells me what to do step by step

☐ It tells me what the basic skills are required

☐ I found the YouTube videos in the guide very useful for me to learn the basic skills

☐ Others Please briefly explain:

7c. If you found the training guide not useful, can you briefly explain why?

7d. Do you have any suggestions about how we might improve the training guide?

8a. How often do you log in SL at your own time (other than participating in the training and two oil rig sessions) since the start of this SL project?

☐ Very often (i.e. most days)

☐ Relatively often (i.e. a couple of times a week)

☐ Not often (i.e. a few times in total)

☐ Other than attending the training and oil rig sessions, I never used SL at my own time

8b. How long do you log in SL each time when you visit SL at your own time?

☐ Under 30 minutes

☐ Between 30 to 60 minutes

☐ More than 60 minutes

☐ Other than attending the training and oil rig sessions, I never used SL at my own time

☐ It depends Please briefly explain:

8c. When you log in SL at your own time, what activities you were engaged with? (You can choose more than one answer)

☐ Exploring the oil rig, becoming familiar with the platform to complete my task

☐ Practicing basic skills

☐ Exploring other functions in SL

☐ Visiting other places and islands in SL

☐ Meeting and socialising with other avatars

☐ Shopping

☐ Others Please briefly explain:

Appendix 8: The survey on podcast feedback

Part 1: Was the feedback podcast useful?

1. **Was the podcast providing feedback to your dissertation draft useful?**

   ☐ Yes

   ☐ No

2. **If you find the podcast useful, could you tell us how helpful the podcast was to your study?**

3. **If you find the podcast not useful, could you tell us why?**

Part 2: Which form of feedback did you find more useful?

4. **In relation to the feedback given to your draft dissertation, which statement better captures your experience?**

   ☐ I found the podcast feedback more useful than the written feedback

   ☐ I found the written feedback more useful than the podcast feedback

   ☐ I found the combination of podcast and written feedback useful

   ☐ I found receiving both forms of feedback repetitive. Either the audio or written feedback would be sufficient enough

   ☐ I found neither the podcast nor the written feedback useful

5. **Compared to the other assignments where you have only received written feedback, which statement better captures your expectation for feedback provision?**

   ☐ I would like to receive audio feedback to all my other assignments

   ☐ I would like to receive written feedback to all my other assignments

   ☐ I would like to receive a combination of audio and written feedback to all my other assignments

   ☐ I'm happy to receive either the audio or written feedback to all my other assignments

   ☐ It doesn't matter. Neither the podcast nor the written feedback is useful.

6. **Has the provision of a combination of podcast and written feedback to your dissertation draft changed the way you use the feedback and amend your dissertation?**

   ☐ Yes

   ☐ No

7. **Can you briefly explain the answer that you provided to Question 6?**

8. **What do you think are the differences between audio and written feedback?**

9. **In relation to providing feedback to your dissertation or assignments, what we can improve to make your experience even better?**

Part 3: How did you use the feedback podcast?

10. Did you listen to the podcast feedback one-off or repeat listening?

- ☐ I listened to it one-off
- ☐ I listened to it several times

11. Did you make notes while listening to the podcast feedback?

- ☐ Yes
- ☐ No

12. Where did you use the feedback podcast?

- ☐ At home
- ☐ At work
- ☐ In public places (i.e. Café, library)
- ☐ When travelling or on the move

13. How did you access the feedback podcast?

- ☐ I streamed it directly from my computer or laptop
- ☐ I downloaded it onto a personal device (i.e. my iPod or iPhone)

Appendix 9: The technology survey (used in the baseline study)

1. **Please state which course you are taking?**
    a. **MSc in Occupational Psychology**
    b. **MSc/Diploma in Psychology of Work**
2. **Do you have access to a computer? (tick all the options that apply)**
    a. **No.**
    b. **Yes, a desktop computer**
    c. **Yes, a laptop/notebook computer**
3. **Do you have access to broadband internet? (tick all the options that apply)**
    a. **No.**
    b. **Yes, at home**
    c. **Yes, at work**
    d. **Yes, at public places such as in the library, internet Café**
    e. **Yes, mobile broadband**
4. **Do you have access to any kind of mobile device? (tick all the options that apply)**
    a. **No.**
    b. **Yes, an MP3/MP4 (e.g. an iPod)**
    c. **Yes, a mobile phone**
    d. **Yes, a PDA**
    e. **Other (please specify) …….**
5. **Have you used audio or video podcasts?**
    a. **No.**
    b. **Yes. Please briefly explain what kind of podcast(s) you used and for what purpose. What was that experience like?**
6. **Have you used Second Life?**
    a. **No.**
    b. **Yes. Please briefly explain what kind of activity you did and for what purpose. What was that experience like?**
7. **Have you used an E-book reader?**
    a. **No.**
    b. **Yes. Please briefly explain what kind of material you read and for what purpose. What was that experience like?**
8. **Can you suggest ways in which the addition of new technologies (e.g. Podcasting, Second Life and e-book readers) may enhance your experience as a distance learner on this course?**
9. **Which of these technologies (Podcasting, Second Life and e-book readers) would you find particularly beneficial? Please explain your answer.**
10. **Are there any other technologies you would consider as being beneficial to you on this course?**

Appendix 10: Interview questions for students (used in the baseline study)

1. Why were you interested in this distance learning programme?
    a. What was your job when you did the course?
    b. How did this course help you professionally?
2. How did you conduct and organize your study?
    a. When?
    b. Where?
    c. What technologies or tools did you use to support your study?
3. What did you think of the overall delivery of the course?
    a. What did you like best about the course delivery?
    b. In what ways do you think the course delivery could be improved in future?
4. What do you think of the level of support that you got while doing the course?
    a. What was your interaction with tutors like?
    b. What was the interaction with other students on the same course like?
5. Have you used or heard of any of these technologies: Podcasting, Second Life and E-book reader? If so, do you think any of these technologies could have been used in the delivery of the course?
6. Overall, do you have any suggestions on how we can improve the course delivery?