



United Kingdom
National Commission for UNESCO

**The Economics of Open Source Meets
Digital Learning Content –
What are the future models of
sustainability for OERs?**

Seminar Report

*(Information Society Working Group, Communication &
Information Committee)*

May 2008



Leading education
and social research
Institute of Education
University of London

The UK National Commission for UNESCO is the focal point in the UK for UNESCO (United Nations Educational, Scientific and Cultural Organization)-related policies and activities.

As an independent body, the UK National Commission brings together a network of over 200 experts from across the UK in the fields of education, culture, sciences and communication. Working closely in partnership with HM Government and UK civil society, the UK National Commission aims to provide expert advice to the Government on UNESCO related matters, develop UK input into UNESCO policy-making, promote reforms within UNESCO, and encourage support in the UK for UNESCO's ideals and work.

In Memoriam

This report is dedicated to the memory of John Ivinson who passed away a few days after attending this event – it was the last time we had the pleasure of his company.

Friends and colleagues remember his wry humour, robust opinions and passionate commitment to the ideals of UNESCO, the appropriate use of technologies to human benefit and wider concerns for peace and prosperity in the world.

Published by the UK National Commission for UNESCO

May 2008

UK National Commission for UNESCO Secretariat

Suite 98, 3 Whitehall Court

London SW1A 2EL

United Kingdom

+44 (0) 20 7766 3492

Email: iwhite@unesco.org.uk

www.unesco.org.uk

While every care has been taken in the preparation of this publication, by its nature it may contain errors for which the publishers cannot be held responsible. Any part of this publication may be reproduced without permission but with acknowledgment.

Copies: For additional copies, contact the UK National Commission Secretariat

Copyright @ UK National Commission for UNESCO 2008

TABLE OF CONTENTS

ACRONYMS	2
BACKGROUND	3
WHY WAS THE EVENT HELD?.....	3
CONTEXT OF DISCUSSION	3
KEY ISSUES – THE CHALLENGE.....	5
CHANGING WORLD	6
WIDE SCOPE OF THE PROBLEM.....	6
FREE AND OPEN	7
KNOWLEDGE, LEARNING, TEACHING, CONTENT	7
ADDRESSING A DIVERSITY OF NEEDS.....	8
QUALITY ASSURANCE.....	8
DIRECTION AND TRAVEL – TRENDS AND DRIVERS.....	9
SOFTWARE.....	10
CONTENT IN TRANSITION.....	10
BUSINESS MODELS	10
VISION OF THE FUTURE	12
GLOBAL VIEW.....	13
USER VIEW.....	13
SERVICE PROVISION VIEW	13
ENABLING MEASURES AND ACTIONS	14
KNOW THE USERS BETTER	14
STANDARDS.....	14
WHO SHOULD DO WHAT?	14
CONTRIBUTORS AND ATTENDEES.....	15

ACRONYMS

ANSI	American National Standards Institute
BSI	British Standards Institute
C&I	Communication and Information
FOSS	Free and Open Source Software
HDI	Human Development Index
HE	Higher Education
ICT	Information and Communication Technology
IEEE	Institute of Electrical and Electronics Engineers
IS	Information Society
ISO	International Organisation of Standardisation
IT	Information Technology
OER	Open Educational Resource
OU	Open University
WSIS	World Summit on the Information Society

BACKGROUND

This forum was convened by the UK National Commission for UNESCO to discuss the sustainability issues that surround the creation, publishing and maintenance of 'Open Educational Resources' (OERs). OER's are digital learning content and tools made available on an open source or creative commons basis.

Issues of sustainability and scale in respect of open content delivery, as well as intellectual property, also require investigation in a world in which technology, the internet and globalisation are fast introducing structural forces which are likely to demand reconsideration of the current intellectual property regime.

- Open University Open Content Initiative, Application to The William and Flora Hewlett Foundation

Outputs from this event will be used to inform and provide evidence for the UK National Commission's policy and position on OERs. These findings will be shared with Mr Abdul Waheed Khan's Communications & Information policy team at UNESCO Headquarters, Paris.

Why was the event held?

OERs are high on UNESCO's agenda, in part because their use was heavily debated and promoted throughout the multi-stakeholder engagement process of the UN World Summit of the Information Society (WSIS) 2003-2005 and relevant follow-up implementation actions.

A seminar on the Information Society held at the 2006 UK National Commission for UNESCO annual conference identified the sustainability of OERs as one of the key areas where it was felt that the UK National Commission and UK stakeholders could contribute to global efforts in WSIS, particularly in the use of ICTs in Development and in the attainment of the Education for All Objectives and educational Millennium Development Goals.

Whilst the mega-trends towards smaller items content (selling music in single tracks, blogging, etc.) and payment for services rather than content itself (DVD subscription services, advertising revenue models on YouTube) may work in some sectors, there remain serious, unanswered questions around how the sustainability of education services following similar models can be assured.

Context of Discussion

Linda Leung, Head of the UK National Commission for UNESCO's Secretariat, provided context and background on the role and history of the UK National Commission.

Patrick Towell, Director of Patrick Towell Consulting and co-sponsor of the event, thanked the Institute of Education and Professor Diana Laurillard for the provision of the meeting venue.

As the member of the National Commission's Communications & Information (C&I) Committee and Information Society (IS) Working Group with responsibility for policy arising from WSIS, Mr Towell presented the relevance and context of OERs to WSIS and the National Commission's C&I and IS priorities.

Andreia dos Santos, Open Content Research Fellow at the Institute of Educational Technology of the Open University (OU), gave a presentation on Sustainability Scenarios for the OU's OpenLearn initiative.

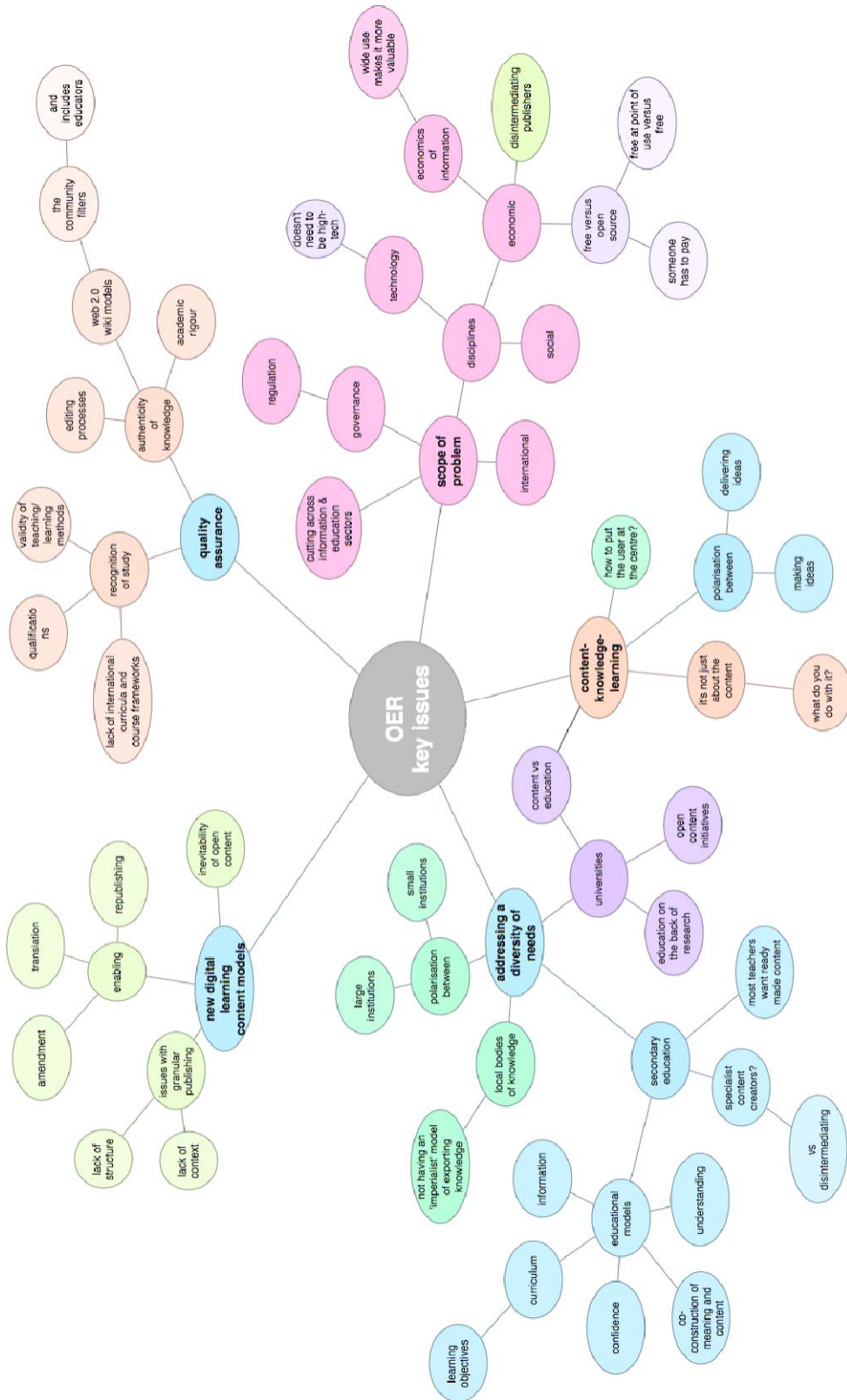
Bjoern Hassler from the Centre for Applied Research in Educational Technologies, Cambridge University, spoke on *'Bridging the Digital Divide: Rethinking Open Learning for a Global Audience'*.

Other attendees included commercial publishers, a representative of an educational suppliers trade body, the UK National Commission for UNESCO and a media/development NGO. All attendees are listed and acknowledged at the end of this report.

Through facilitated discussions in two groups, participants were asked to map out and discuss the following four areas:

- Key issues
- Direction of travel
- Vision of the future
- Enabling actions and measures

KEY ISSUES - THE CHALLENGE



CHANGING WORLD

New models for digital content publishing and the delivery of learning are emerging. These models overlap in the realm of digital learning content.

The economic, social and technology factors that have brought us free and open source software (FOSS) are heralding Open Educational Resources (OERs) – digital learning content that is ‘freely’ available and which is changeable through underpinning open systems and/or open source technologies.

The increased prevalence of OERs is seen as inevitable. The ability to amend, translate, repurpose and republish is popular amongst certain users.

However, at a management and policy level, the sustainability of organisations, services and initiatives following OER models is of more concern. As in the case of businesses and organisations running under FOSS principles, people are ‘finding their way’ in terms of business and/or sustainability models.

OER-only markets could lack the diversity and innovation that commercial publishing can bring. OERs could result in rich countries exporting their knowledge (and world-view) in a digital learning analogue of ‘aid’ rather than ‘trade’, with knock-on consequences for cultural and linguistic diversity and local capacity.

Or OERs could be the ‘intermediate technology’ of teaching and learning. By removing profit and engaging voluntary labour and local knowledge, they enable developing countries to compete and even leapfrog their market-bound colleagues and secure their own e-learning capacity and culture.

You decide. We did not. We did however manage to better define and structure the problem and better elaborate upon our desired state.

Wide Scope of the Problem

OERs cut across the education and information sectors. Digital publishing is by its very nature – and education is increasingly – international.

Governmental and inter-governmental solutions have a tendency to focus on governance models and, in particular, regulation. However, publishing, media, the Internet, and digital publishing and digital learning content/services, are all heavily enabled by the private sector and subject to, and in many ways enabled by free markets.

What disciplines can assist us in examining issues and potential solutions for the sustainability of OERs? There are clearly social and economic aspects to consider, but it must be noted that technology is not merely a passive enabler.

Economic changes wrought by the Internet include disintermediation and new kinds of intermediaries. This is no less so in digital publishing and digital educational publishing and services. The economics of information is also somewhat different to that of tangible products and manufacturing. Value of such weightless intangibles can increase with use and with interconnectedness, creating more of a value network than a traditional value chain.

OERs are not a panacea to international content shortages, even with increased availability there will be significant challenges to the adoption of OERs, including:

- Pedagogical approach
- Country context
- Technical validity

Free and Open

'Free' doesn't mean that someone, somewhere isn't paying.

Free at point of use is a principle embedded in many countries' educational provision, even where a quasi-market operates, which it may do especially with ICT-based services. Higher Education (HE) or other public services creating freely available content are not 'free'. They are in most cases paid for by taxpayers who may not be aware that they are funding content being made freely available. Even where most of the costs are born by volunteer time, this has opportunity costs and needs to be valued if not paid for. Finally, OERs may include copyright-infringed material.

'Free' is also different from 'open'.

Open source is a model of collaboratively developing software using a community of volunteers. The results of their work are made available under open licenses which put obligations on users to contribute enhancements back into the 'knowledge pool'. These licenses may or may not be free.

Open systems approaches derive from a desire to not be locked in to the solutions or technologies of individual vendors (and thus reduce market pressures on them to enhance, assure or make their products and services a better value). Open systems have been enabled by the increasing adoption of standards (not necessarily open), which allow systems to interoperate and content to be portable between systems. Integration has been increasingly enabled by software being designed or reconfigured to present itself as services.

Standards – which act like the digital equivalent of the same 'railtrack gauge' or 'electric plug type' – can be developed in an open forum (as 'open standards') in organisations such as the IEEE, or within formal bodies such as BSI, ANSI or ISO (which although formal and with a high degree of consensus are not completely open processes). They may also be developed within industry consortia such as those that originally created DVD and CD formats (which may be proprietary standards and not open development processes).

So there is a difference between free and open. Things can be free to different people in different ways – but someone somewhere is bearing a cost, even if it is a personal rather than monetary one. 'Open' can mean openly developed and/or open to integration, often based on standards which may or not be themselves open.

Knowledge, Learning, Teaching, Content

Knowledge, learning, teaching, and content are all different.

We all store knowledge about ourselves, other people and the world in our heads. Cultural and heritage organisations attempt in their role as 'knowledge institutions' to capture and preserve this as

a societal good for the future. Research and innovation in all the sciences, technologies and arts attempt to create new knowledge and ideas.

Internalising and making sense of the knowledge and ideas of others is learning. Learning may also include self-knowledge, which sits outside this definition. Teaching is one way of enabling others to learn. Creating ideas and knowledge is different to 'delivering' them to others, although to what extent we deliver them rather than expose them, is a subject of pedagogical debate.

Content has a part to play in learning and teaching and the representation of knowledge. However, it's not just about the content – it's what you do with it. Indeed some content may be more like a tool or a content template or generator. Increasingly highly interactive content is more software platform or application and is as much about its functionality and the processes users can undertake rather than the idea of passive content.

Finally, not all digital content used in teaching, learning, training and research is 'learning content'. Some of it is just content used in a learning context, such as research data, cultural artefacts or their representations. So we may be better placed looking at digital content used in learning and teaching than digital learning content.

Addressing a Diversity of Needs

One size does not fit all because the OER 'market' is as diverse as its users and producers – ranging from primary and secondary education, through informal bodies of knowledge to higher education.

Universities are at the forefront of many of the larger OER initiatives, often initially funded through charitable grants. With a long history of publishing, as intermediaries between research and education, they are keen to be part of the new models enabled and stimulated by the Internet.

As with any profession, a minority drive innovation, whilst a majority want to use tried and tested methods. This results in e-learning content that mirrors traditional teaching methods and/or content that is ready-made rather than requiring significant preparation through customisation or contextualisation.

As we noted above, content is only part of teaching and learning. In addition to the information and achievement of individual learning objectives within a curriculum, content can rarely deliver confidence and thorough understanding on its own. The ability of teachers and learners to co-construct meaning, knowledge and content is enabled by open content and learning authoring systems.

Quality Assurance

For qualifications to be valued and recognised they need to be assured. The lack of international curricula and course frameworks poses a barrier to creating consistent quality frameworks for learning, and therefore for e-learning services and related digital content. In addition, with teaching and learning methods evolving to utilise new technologies and the lack of consensus and research around this, the assurance of these methods is less mature than in traditional education provision.

More generally, the importance of identifying the authenticity and provenance of knowledge is recognised. Approaches to such assurances are divergent from the academic rigour ensured by peer review and traditional editing processes. Instead, there is web 2.0 wiki-style collaborative filtering, tagging and editing, with a philosophical divide which in some cases shows itself between the two.

DIRECTION AND TRAVEL - TRENDS AND DRIVERS



Software

Again, the distinction between 'free' and 'open' was made.

Software may be 'free' because it is bundled with hardware or services. Conversely, services (such as installation advice or other technical support) may be bundled free with paid for software.

Competencies which are extremely expensive to resource locally and ad hoc, may be substitutable through en masse provision.

Solutions such as OpenOffice substitute paid-for software such as Microsoft Office and sustain themselves through volunteer effort and ancillary revenues. Bundled 'free' tools such as GarageBand may provide sufficient functionality for hobbyist users but may be insufficient for professional users who will use paid-for tools.

Content in Transition

Open content through the use of easy-to-use and freely available authoring tools can be about self-publishing. Alternatively, re-publishing by third parties other than the original author or publisher can provide specialist adaptation of content to local linguistic, cultural or educational needs.

Public sector investments – such as BBC JAM – can have a significant impact on commercial players, with the money that public bodies can spend being a significant proportion of the total annual market. Some questioned whether such initiatives are always the best use of public money and whether the impact on paid-for content services is sufficiently considered.

There is a desire to go beyond course materials that cover the bases, but may fail to inspire or compare well to other media that learners are exposed to. The opportunities for creating truly engaging learning materials afforded by interactive and multi-media are a key answer to that desire.

Business Models

Open source is seen as inevitable. Attitudes to this vary from perceiving it as a threat – 'proprietary software going out of business' – or an opportunity – 'small players can now compete with global giants'.

UNESCO has objectives which it helps to fulfil, such as the universal right to primary education enshrined in the Millennium Development Goals. But UNESCO appears not to have a strong position on OERs, encouraging their development while at the same time working with commercial players. The social good of education with the culture, and often necessity, of provision free at point of use, influences the business models of sector providers.

Pricing digital content is increasingly difficult, particularly as content and form become separate and content is disaggregated. This is an issue for all traditional publishers. How do you compare a segment of video to an image? How do you compare its educational value or the prospect of financial investment? How much can the market afford? Should it be linked to HDI to make educational access to content equitable?

Does funding of OERs by central government agencies interfere with market dynamics? Should they only focus on niche areas which the market has failed to fill? What is the impact of OERs on innovation? These are all important questions with implications on both funding and sustainability.

People pay for the value they perceive. Some agree that the value of content is going down. Certainly the idea of charging for putting things on paper has waned. It was argued that the translation of high-density 'raw knowledge' into useful teaching materials and the process of peer review, are both still highly valued.

But who pays? For the infrastructure? For facilitation? The point was made that open source works because the contributors have a different job for which they are paid.

If software and content are moving away from ownership of IP to a service model, this doesn't always sit well with the education sector. It was argued that the education sector wants to buy assets – that they 'don't get the idea' of payment for services.

Global View

We are aiming for an educated and rational world, with confident young citizens, who have respect for others and engaged with current matters.

This is built on access and opportunity, particularly access to education and knowledge, which can empower individuals and communities. Open versus accessible may be a false dichotomy – what matters is accessibility, and this continually drives the creation and adoption of alternative models.

‘Appropriateness’ was a key concept – that education and knowledge be provided as wanted and tailored, as opposed to driven by the priorities of the provider.

Local customisation, enabled in part by open content, was seen as a way of catering to the needs of individuals and embedding local relativism naturally.

User View

We presume that users want more choice. This may be provided by greater plurality of provision. It may also be enabled by small recombinable elements of software, tools and content. Greater on-the-fly and 24 hour access to content is also a driver to smaller chunks of content.

Users need things ‘to work’.

With technology underpinning so many of the authoring, production and learning processes, this requires ‘interoperability’. Interoperability is achieved through the adoption across the supply chain of mutually compatible standards. Usefulness is more important to users than the openness of the standards. There may be different standards, and not all of them may be ‘openly’ produced, and there may need to be translations between different standards.

From a licensing point of view, there needs to be intellectual property models that give people ‘fair use’.

Service Provision View

Open content, e-learning, digital learning content, tools, systems, and applications are used in multiple domains: formal and informal education; the private and public sectors; vocational and academic study; to name but a few. These different uses need to some extent, be joined up.

Universities differ significantly in their approaches. Some are thought leaders whilst others follow and focus on teaching. This applies as much to e-learning as other areas. They often collaborate poorly but global challenges and technology requires that they collaborate more effectively.

Will there be one copy of a course? Or will there be many courses based on the same content? Or will there be a continuum? Not knowing the answer, it was felt that the options were only there if there was a core minimum level of interoperability.

If HE supply the content free, it is assumed that people will then pay for the accreditation and the support.

ENABLING MEASURES AND ACTIONS

An integrated approach to digital content supply is necessary, which should include:

1. A central directory service which allows easy search and discovery by content consumers
2. A simple search and discovery system with learning platforms and suitable content
3. A trusted global logistics and support infrastructure to support customers and partners worldwide
4. A multi-stakeholder approach to meet on-demand content needs

Know the users better

We need to talk to customers and users. User requirements need to be better specified, independent of devices and technologies.

We need to understand what level institutions are currently at. A common entitlement to infrastructure has not been defined or delivered.

Standards

We need standards which cover the overlap between education and IT and are developed at UK, European and worldwide levels. Standards need to be developed with an eye to commercial drivers and openness. Mobile standards were highlighted because of the number of developing countries leaping over 'wired' internet, direct to mobile and wireless provision.

Standards are often set by industry participants not actively engaged in the provision of a specific sector and do not include a wide set of target users. For example, RM is designing a new Interactive Whiteboard standard for BECTA however SMART, Promethean or Hitachi would be better positioned.

There is often a division between ICT provider standards and publishers/content providers. This may occur in a packaging standard, metadata or system interoperability. If there is not alignment, cost increases and implementation is reduced.

There is the perception that some 'standards' – such as Flash or Google – happen 'naturally' because: firstly, 'someone else' has done the work and few UK stakeholders have been directly involved; and, secondly, there was no formal or public policy statement about it because the majority of the motivation and resourcing has come from enterprises. Such 'Natural' provision by the market requires that there is – or at least there is potential for – a thriving market.

Who should do what?

There is an assumption that governments should act because education is within their traditional competence in every territory. As regulators and significant procurers, governments should require open standards and the use of open document formats.

People felt that to solve such complex and unconstrained problems, there needs to be 'intelligent improvisation'. The private sector is good at innovation where there are clear incentives.

There is the feeling that in order to add value UNESCO needs to go beyond conventional wisdom.

CONTRIBUTORS AND ATTENDEES

The following individuals are gratefully acknowledged for contributing their time, energy and experience to the event and its discussion.

Name	Title	Organisation
Andreia dos Santos	Open Content Research Fellow - OpenLearn	Institute of Educational Technology, Open University
Bjoern Hassler		Centre for Applied Research in Educational Technologies, Cambridge University
Dave Catlin	CEO	Valiant Technology
Ed Nash		Sibelius Software
Ian Grant	Managing Director, EMEA	Encyclopaedia Britannica (UK) Ltd
Jeff Maness	Director	Pivotal Focus
John Ivinson	Chair, Information Society Working Group	UK National Commission for UNESCO
Linda Leung	Head of Secretariat	UK National Commission for UNESCO
Patrick Towell	Member, Communications & Information Committee and Information Society Working Group	UK National Commission for UNESCO / Patrick Towell Consulting
Peter Thompson	Director	World Update / World Press Centre
Phil Hemmings	Director of Corporate Affairs Chair	Research Machines (RM) British Educational Suppliers Association (BESA)
Stuart Dempster	The Strategic e-Content Alliance	The Joint Information Systems Committee (JISC)

Apologies were received from:

Diana Laurillard	Professor of Learning with Digital Technologies (Host)	Institute of Education, London Knowledge Lab
Ben Arora	Commissioning and Market Management Children's Services	Department for Children, Schools & Families

Special thanks to Dr. Theo Lynn from the Applied Learning Technologies Research Group, Dublin City University, for his input and feedback on this report.