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Thriving in the 21st century: Learning Literacies for the Digital Age (LLiDA project)

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Executive summary

Aims

The LLiDA project set out to
- review the evidence of change in the contexts of learning, including the nature of work, knowledge, social life and citizenship, communications media and other technologies
- review current responses to these challenges from the further and higher education sectors, in terms of:
  - the kinds of *capabilities* valued, taught for and assessed (especially as revealed through competence frameworks);
  - the ways in which capabilities are supported ('*provision*')
  - the *value* placed on staff and student 'literacies of the digital'
- collect original data concerning current practice in literacies provision in UK FE and HE, including 15 institutional audits and over 40 examples of forward thinking practice
- offer conclusions and recommendations, in terms of the same issues reviewed in 2

Review of evidence

Key messages from the background review include the following:

- Learners can, under the right conditions, become more critical, evaluative, self-aware, self-confident, skilled and capable in the use of technologies
- Learners can also, under the right conditions, develop a wider and more effective range of strategies for their own learning
- Although some of these capabilities may be 'generic', the consensus is that they are best supported in 'communities of practice', 'communities of inquiry', or 'learning groups' focused on tasks of value and interest to the learner
- Skills acquired iteratively, through practice within authentic tasks and as needed are better retained than those taught one-off, in isolation, and through instruction.
- Understanding literacies as situated practice means, in developing learners:
  - providing authentic contexts for practice, including digitally-mediated contexts
  - individual scaffolding and support
  - making explicit community practices of meaning-making
  - anticipating and helping learners manage conflict between different practice contexts
  - recognising and helping learners integrate their prior conceptions and practices
- There is a tension between recognising an 'entitlement' to basic digital literacy, and recognising technology practice as diverse and constitutive of personal identity, including identity in different peer, subject and workplace communities, and individual styles of participation.

Key messages from the review of future learning scenarios are that educational institutions must adapt to help students deal with:
- economic uncertainty
- high competition for employment in the global knowledge economy
- increased levels of alternative, contract-based and self-employment
- the rise of interdisciplinary and multi-disciplinary teams focused on specific tasks
- a networked society and communities
- multi-cultural working and living environments
- blurring boundaries of real and virtual, public and private, work and leisure
- increasingly ubiquitous and embedded digital technologies
- increasing ubiquity, availability and reusability of digital knowledge assets
- distribution of cognitive work into (human and non-human) networks of expertise
- rapid social and techno-social change

Capabilities which are likely to be required across a range of future scenarios include:
- Manage work/life balance, particularly as technologies erode the boundaries between work, leisure and learning, between home, school and workplace.
- Social entrepreneurlaism – the capacity to understand how social systems work, innovate within systems, and adopt roles flexibly and strategically
- Develop and project identities, manage reputation (cf Owens et al 2007)

- Communicate and collaborate across national and cultural boundaries, using a variety of technologies and media
- Contribute to knowledge and understanding in hybrid networks of people and non-human cognitive agents
- Manage career path, learning path and professional development
- Exercise judgement and expertise, bring knowledge to bear
- Act safely, ethically and responsibly in environments where public and private are being redefined
- Reflect, plan, seek support, learn from situations and from others
- Assess and address threats to health and to the environment
- Exercise multiple modes of meaning making (cf Kress 2003, SeelyBrown 2005, Siemens 2004 and 2006)

Recent studies of digital and learning literacy provision suggest the following challenges and pinch points:

- Learners' information literacies are relatively weak but learners have little awareness of the problem
- There is poor support for learners' developing strategies to make effective use of technologies for learning, and in some institutions there are still barriers to use of personal technologies and social networks
- Learners require intensive support in migrating to more ICT-based study practices, particularly at transition points such as course selection, induction, final year preparation, move to post-graduate study
- Many learners lack general critical and research skills: 'digital scholarship' is poorly communicated and modelled in many subject contexts
- Learners' different approaches, attitudes and experiences of technology represent a new form of diversity which institutions must address to ensure equity of access
- Most learners use only basic functionality and are reluctant to explore the capabilities of technology
- Most learners are still strongly led by tutors and course practices: tutor skills and confidence with technology are therefore critical to learners' development
- There is a potential clash of academic/internet knowledge cultures, emerging particularly around issues of plagiarism, assessment, and originality in student writing.
- Students are often dissatisfied with the feedback and assessment process, and it is rarely used as an opportunity to further the development of self-awareness and literacies of learning
- There is often insufficient opportunity and motivation for learners to integrate literacies in authentic tasks
- Tutors are still insufficiently competent and confident with digital technologies for learning, despite evidence that learners are strongly influenced by their example
- Institutions need to respond to external agendas such as European harmonisation, the demand for higher skills, and demographic shifts in the learning population

Summary of the LLiDA '**Framework of Frameworks**' for analysing the components of digital and learning literacy (or capabilities leading to effective learning for a digital age)

High-level terms, framing ideas	Component competences
Learning to learn, metacognition	Reflection Strategic planning Self-evaluation, self-analysis Organisation (time, etc.)
Academic practice, study skills	Comprehension Reading/apprehension Organisation (knowledge) Synthesis Argumentation Problem-solving Research skills Academic writing Specific subject discipline skills as appropriate
Information literacy	identification accession organisation evaluation

	interpretation analysis synthesis application
Communication and collaboration skills	Teamwork Networking 'Speaking' and 'listening' skills (see below for different media)
Media literacy (also 'visual' and 'audio' and 'video' literacies)	Critical 'reading' Creative production
ICT/digital/computer literacy	Keyboard skills Use of capture technologies Use of analysis tools Use of presentation tools General navigation/UI skills Adaptivity Agility Confidence/exploration
Employability	Self-regulation Teamworking Problem solving Business and customer awareness Innovation/enterprise
Citizenship	Participation and engagement Ethicality/responsibility Political, social, personal responsibility

Selected findings from the research studies

Due to a lack of clear ownership at institutional level, learning and digital literacies are rarely the basis of an integrated institutional strategy. Effective integration can be provided where the Learning and Teaching Strategy addresses learning in the digital age directly, prioritises innovation in programme design, and establishes clear lines of action/responsibility to other strategies such as ICT, Quality, Employability, e-Learning, Learning Resources and devolved faculty/department and service-level strategies. An institutional literacies champion should be capable of initiating action in both the digital and the academic/learning development area of institutional provision, and of working across the curriculum teams/central services boundary.

Institutions have to prepare themselves, and not just their learners, for an uncertain future. Among the paradigm-breaking scenarios considered in this study, an increase in contract-based and self-employment giving rise to a loss of confidence in formal qualifications is perhaps the one that should give institutions most cause for concern. Institutions must position themselves to respond quickly and flexibly to the need for new kinds of capability, and to recognise and represent graduate capabilities in new ways.

Our study found consistent good practice in central provision for the three areas of academic/learning literacy, information literacy, and ICT skills. Staff in these areas have their own well established cultures, frameworks and forums for sharing professional practice. In many cases these cultures include a focus on learners as individuals, with their own preferred approaches and particular needs. A systemic problem is that staff working in these areas are still operating in relative isolation from one another, and – in many cases – from staff in academic departments too. Support is most effectively integrated where there is an institution-wide policy of assessing and progressing learners' skills. In FE this is usually delivered around guidance tutorials, while in HE the availability of an e-portfolio system can be the catalyst and focus of provision. ,However, even these good examples are not sufficiently far-reaching. In addition, students' digital and learning literacies need to be assessed and supported as they engage in academic tasks, and they need to be equipped with the habits – including reflection and peergroup support – that will allow them to improve their learning strategies throughout life.

Employability is often the stated rationale for an integrated approach. However, careers staff were difficult to reach in our study, and although 'employability' extends beyond careers, we draw a tentative connection between the lack of engagement with the 'literacies' agenda by careers staff and a tendency for 'employability' itself to be poorly articulated and supported. There is a need for further work to extend perceptions of employability beyond conventional careers services to include approaches to learning, programme design and engagement with employers.

Librarians have a long tradition of supporting literacies and working with academic departments. One problem, though, is that where librarians have championed the digital aspects of information literacy, this is regarded as having 'solved' the problem of the digital in learning. Our study found very little central support for media literacy, including critical aspects of reading different media and creative practices of media production. There was also very little mention of communicating and sharing ideas either as an aspect of information literacy or in its own right. Effective learners require both of these, and other digital capabilities such as navigating virtual and immersive worlds, managing digital identities and reputation, and using digital technologies for reflecting, planning and making sense of their learning experiences. While librarians can be regarded as pioneers in articulating the impact of digital technologies on their area of expertise, and adapting their practices of support, digital literacies cannot be left to librarians if they are to be embedded throughout the institution.

There is great diversity in the literacies mandated for consideration during the curriculum design and validation process. We identified three modes of integrating literacies:
- Institution-wide programme (usually portfolio-based) with generic processes of review and reflection, but the specific skills practised and assessed in subject modules
- Skills modules or module components, delivered alongside 'subject' teaching, typically by central services staff: may include tailored (subject-specific) tasks or examples
- Literacy provision fully integrated into modules and/or programmes of study, including learning outcomes and assessment: typically in professional/vocational programmes that are already competence-based (but in one case via the tutorial system).

The great majority of our examples across all modes came from vocational and professional courses, and there is plenty of evidence that these are the subjects spearheading support for literacies in the curriculum.

Much excellent practice in disciplines was not visible to our study methods. Many literacies are so deeply and tacitly embedded in subject teaching that academic staff do not identify their practice as literacy-based at all. Examples might be visual literacies in art, or critical media literacies in media studies. Recognising that different subjects can contribute expertise in different literacies for learning is a first step towards finding and sharing good practice.

Social software is now widely being used to enable peer mentoring and group support, for example around skills workshops, during induction and first-semester studies, on placement, and for group work. Study buddy and student mentor initiatives rarely address digital literacies directly, but could be adapted to do so: student help-desks are common for supporting proficiency with digital devices and networks. All of these approaches are being tried by central service staff with good evidence of success.

Inevitably much peer support takes place under the academic radar, but academic staff can help by being explicit about what kinds of collaboration are appropriate, establishing peer review processes, and setting group assignments.

Our findings confirmed and expanded upon the challenges identified in the literature review:
- institutional silos, so learners often have several places to seek help with their learning, and cultural differences can make cross-service/dept collaboration difficult
- (often) poor embedding of literacies into the curriculum, particularly at the level of feedback and assessment
- (often) poor integration of information/digital literacies with academic/learning literacies
- curriculum provision tends to be one-off and cohort-based, rather than based on an ethos of personal development: central provision is more personal and developmental but rarely reaches learners when they are actually engaged in authentic tasks
- Academic staff perceive students as being more digitally capable than is really the case
- poor self-evaluation by learners, particularly in relation to their information skills, so voluntary services are not reaching those in most need, and skills modules are not perceived as relevant or important

Student expectations, student diversity and employability were the main agendas driving change in provision for learning and digital literacy.

Conclusions and recommendations

In supporting digital and learning literacies, support staff and curriculum teams should:
- Design flexible learning opportunities
- Situate those learning opportunities, where possible and appropriate, in authentic contexts (workplace, community, placement)
- Design learning opportunities for highly interconnected individuals, operating in distributed networks of expertise
- Continually review how technologies are integrated into curriculum tasks
- Continually review learners' techno-social practices and the practices of professional and scholarly communities (anticipating that these will be different and that helping learners negotiate the differences will become part of the pedagogic agenda)
- Support learners to use their own technologies and to develop effective strategies for learning with technology
- Use assessment and feedback to encourage innovation in learners' approaches to study, rewarding exploration as a process: current assessment regimes often reward conservatism
- Support learners' developing self-efficacy and self-direction in learning, empowering them to navigate increasingly complex learning landscapes
- Support learners' personal reflection, progression and planning, for example by engaging with e-portfolios and learning records

In changing cultures of learning to place greater value on 'literacies of the digital', institutions should:
- engage and motivate students to develop learning literacies by:
  - monitoring, supporting and assessing digital competences across the learning experience
  - articulating the educational benefits and importance of digital literacies
  - recognising and rewarding the expertise that digitally proficient students can offer to others in the learning community
  - using rich learner-related data to support portfolio-building, personalised advice and guidance, and where appropriate personal curricula and learning environments
  - enabling learners to record a wide range of achievements and to present rich accounts of their learning history to different audiences
- engage staff in rethinking their practice by:
  - realigning reward structures around innovation in learning and teaching
  - supporting flexibility, stakeholder-responsiveness, and innovation in curriculum design
  - making learning development an explicit concern of teaching staff
  - fostering digital scholarship and digital professionalism, linked to changes in teaching practice
- engage employers and other stakeholders:
  - in meaningful dialogue, recognising that the stated needs of graduate employers are only one perspective on employability in a rapidly-changing social and economic landscape
  - in continuous review of the purposes and outcomes of the curriculum

Those who have worked in and reflected on this area, including our reviewed authors and participating auditors/contributors, are clear that literacies cannot be bolted onto existing programmes of study. Literacies emerge through authentic, well-designed tasks in meaningful contexts. If UK HE and FE is to reposition its offering around 21st century graduate skills, it will need to invest heavily in the three areas currently prioritised by the JISC e-learning programme: flexible curriculum design processes: innovative curriculum delivery and support that exploits digital technologies wherever appropriate; and management of knowledge resources in an environment where educational content is openly available to all..

1. Introduction: learning literacies in the digital age

1. 1 Why 'learning literacies for a digital age'?

The phrase *digital literacies* or *literacies for a digital age* expresses a tension between two points of view:

- education needs to carry on doing much what it has always done (literacy as a generic capacity for thinking, communicating ideas, and intellectual work)
- education needs to change fundamentally (digital technologies and networks as transforming what it means to work, think, communicate and learn)

This digital challenge to the educational status quo comes in the form of several profound social shifts, explored in more detail in the following section. Arguments over the definition and project of 'digital literacy' often revolve around which of these shifts are seen as most radical and defining of the current moment, and what degree of challenge they are perceived as presenting to current systems of education and learner support.

Without doubt today's learners, and their educators, need to respond to changes in:

- the nature of work
- the nature of learning for work, and learning in work
- (arguably) the nature of cognition or knowledge processing
- the nature of useful knowledge in society
- the nature of social life and citizenship
- communications media
- other technologies and technical capabilities
- the experience and expectations of learners themselves, as a consequence of the above

Against this background of change, the practices of colleges and universities, and the capabilities of their graduates, are under critical review. It seems likely that the challenges outlined above can be met by changes in:

- The kinds of capabilities valued, taught (for) and assessed by colleges and universities
- The ways in which learners' capabilities are supported and assessed
- (Arguably) the value colleges and universities place on 'literacies of the digital' and the investment they make in staff and student skills

However, some evidence we review in this study suggests that a more radical challenge to educational institutions and their practices is underway.

In this study we review the evidence of change in the contexts of learning, likely future scenarios, and current responses (Section 2). We analyse frameworks of competence and capability that have been developed to help institutions understand and respond to the literacies agenda (Section 3). We go on to describe our findings from a study of current practice in literacies provision in UK FE and HE (Section 4), including evidence from 15 audited institutions and over 40 examples of forward thinking practice. Finally, in Section 5, we offer some conclusions and recommendations.

1.2 Scope and definitions

For the purpose of this study, our understanding of '*learning literacies'* encompasses the range of practices that underpin effective learning in a digital age.

We are using the phrase '*learning literacies for a digital age'* rather than 'digital literacies' to indicate that we are open to finding major continuities in what makes for effective learning and in how institutions should provide for it, while at the same time foregrounding a context in which what is required of learners is changing, perhaps fundamentally.

We use the term '(underpinning) *practices'* in the hope of side-stepping some of the debates about definition and philosophy that beset literacies research, and in particular the 'paradigm contest' between cognitive and

socially situated accounts of learning. Our focus in the study is on the pragmatic challenges that face learners and the institutions and educators that seek to support their development *in practice* as more capable human beings.

We understand the term '*literacy*' – in contrast to other terms such as 'skill' or 'competence' – to involve:

- a foundational knowledge or capability, such as reading, writing or numeracy, on which more specific skills depend
- a cultural entitlement – a practice without which a learner is impoverished in relation to culturally valued knowledge
- communication – expressing how an individual relates to culturally significant communications in a variety of media
- the need for practice – acquired through continued development and refinement in different contexts, rather than once-and-for-all mastery
- a socially and culturally situated practice – often highly dependent on the context in which it is carried out
- self-transformation - literacies (and their lack) have a lifelong, lifewide impact.

Drawing on the work of the JISC Learners' Experiences of e-Learning programme, we use the term '*effective learning'* as characteristic of '*capable, self-aware learners with the capacity to participate in learning using technologies and approaches of their own choosing'*. However, we recognise that 'effectiveness' can only properly be understood in relation to particular contexts and goals. Some of the policy statements we examine in Section 4 offer alternative or complementary versions of our definition: indeed it is characteristic of HE institutions in particular that they should develop their own account of what makes for effective learning, just as individual learners will measure effectiveness against their own values and agendas.

We use the term '*digital age'* as a shorthand for technical, social, economic, cultural and educational contexts in which digital forms of information and communication predominate. In this study and its recommendations we explore how literacy provision might adapt to fit graduates for living and working in such contexts.

Throughout, we see effective learning practice as arising not only from technical competences but also from the learner's previous experiences (Goodyear and Ellis, 2008), from dispositions such as confidence, self-efficacy and motivation (Philip, 1991), and from qualities of the environment where that practice takes place, including of course the available digital technologies (Engström, 1999).

1.3 Study methods

Our **desk review** acknowledges that significant work has already been undertaken, and is being undertaken, in the area of digital literacies. Outcomes of the review are found in sections two and three. The **data collection** element of our study acknowledges that data essential for future policy and planning in this area, particularly evidence of how UK HE and FE institutions are already responding to the need for change, is not available in the literature. The data collection methods are laid out in more detail in Section 4. They comprise:

- An audit of current institutional provision for learning literacies and key institutional drivers, barriers and reflections
- A collation of brief case studies or exemplars of forward thinking practice across HE and FE
- Consultation with key players in the sector:
    - a working group of institutional representatives who were involved in the study throughout
    - four public workshops at which methods and findings were checked out with self-selecting researchers and practitioners (Longbridge, Glasgow, Lancaster, Edinburgh)

2. Literature review

This section falls into four parts:

2.1 review of theoretical fields and high level concepts that have been deployed to help understand digital and learning literacies
2.2 review of current trends (the changing context outlined in Section 1) and more detailed evidence of the scale and scope of change
2.3 review of future scenarios likely to be of help in identifying future literacy requirements and trends
2.4 review of recent studies into how, in practice, learners' literacies are changing and institutions are responding to their needs

The preponderance of theoretical work over applied research in this field suggests a danger of digital literacies becoming a new orthodoxy: a set of terms to be laid over existing policies and institutional practices without any real changes to how learners experience their relationships with knowledge, learning and technology. We have tried to be alert to this danger in reporting our findings.

2.1 Key concepts

This brief review is not intended to provide a comprehensive account of the diverse literatures of learning and digital literacy, but to summarise key concepts of relevance to our scope and aims. References are provided for further exploration, and these are available in the form of live links on our web site: http://www.academy.gcal.ac.uk/llida/.

Theoretical field, high level term	Key concept(s)	Key theorists
Literacies as social/situated practices		
Academic writing/literacy	Literacy is to be understood: as social practice, involving power relations; as rhetorical activity embedded in different situations and cultures (e.g. disciplinary cultures but also peer and family cultures); as contested and constitutive of personal identity	Lea, Street, Ivanic
New literacies	Literacies = 'social practices of using codes for making and exchanging meanings'. New literacies come about in response to changes in the technical, epistemological and cultural order.	Street, Lankshear & Nobel
Meaning making	Literacy is about how meaning is produced and communicated: is bound up with knowledge in society/culture (including disciplinary cultures); changes continuously rather than discontinuously as technologies change.	Hannon, Kellner
Situated knowledge	All meaning-making takes place in specific social situations: literacies are best understood as situated knowledge practices. (Also) capability in practice is the product of an interaction between personal capability or disposition and the environment supporting action.	Brown, Collins, Duguid, Spiro
Literacy as embedded and contextual	Practitioner conceptions of 'graduate attributes' show wide disparity of understandings. Two clear tiers emerged: high-level 'stances' or 'attitudes' (scholarship, citizenship and lifelong learning); along with 'personal skills and aptitudes' which are highly context-dependent i.e. realised differently in different subject areas.	Barrie
Non-transferability of skills and knowledge	There is evidence that transferring skills from one context to another is more problematic than has been acknowledged. Learners also struggle to transfer formally learned ('analytic') knowledge to complex realworld situations where it must be applied. Tacit situational knowledge plays a vital role in competent performance.	Eraut, Dreyfus and Dreyfus See also Mannion et al discussed below

Technology and technical literacies		
Critical 'technoliteracies'	Pits the US 'no child left behind' Act of 2001 against the UN '2000+' project, arguing that the latter offers a democratic vision of mutiple and critical literacies of technology, rather than a single standard of competence. Sees technical literacy as politically and culturally contested.	Kahn and Kellner, Feenburg (and many writers against 'technological determinism')
Next generation (user) skills	Changes to technology, e.g. organisational to personal and social, tethered to ubiquitous, applications to services, individual to shared, all entail new skills: agile adoption, personalisation, re-combination, exploration, a 'constant beta' mentality	JISC emerge community
Media and media literacies		
MultiModality	Representations now more commonly accessed via screen than page: this has a fundamental impact on how we 'read', on situated literacy practices, on knowledge and on learning.	Kress, Jewitt, Hannon
(Multi)media literacy	Technical changes to the nature of media, including computer gaming, entail shifts in education towards a multi-media knowledge practice and a 'postmodern' curriculum.	Buckingham, Sefton Green
Hypertext, hypermedia, metamedia	A completely new capacity for meaning-making is called for when representations become multiply linked and layered.	Landow, Lemke
Information literacy	...is '[the ability] to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information' Information literacy is the most widely recognised and supported of the digital literacies. To date the focus has largely been on individual use in the context of a specific task or problem. The idea of information literacy may need to be extended to include sharing and collaboration, and to accommodate ethical dimensions.	Spitzer, see also LearnHigher (2006) for review and references
Learning to learn and meta-literacies		
Learning to learn	There is a cross-curricular, general competence that can be defined as 'the ability to pursue and persist in learning'; also to 'develop learning strategies' suitable for different situations. This competence can be specifically trained and strengthened.	Claxton
Conceptions of learning	How learners interpret their experience is highly influenced by prior experiences of learning, and the interpretations that have arising from those. Digital literacies cannot be bolted onto existing practices and prior conceptions: these must be recognised, incorporated and (if necessary) reconceptualised.	Goodyear and Ellis, Biggs, Entwistle, Ramsden, Säljö, Prosser and Trigwell
Multiple intelligences	*"literacies, skills, and disciplines ought to be pursued as tools that allow us to enhance our understanding of important questions, topics, and themes."*	Howard Gardner
MultiModality (again)	All learning involves multimodality: not understood as separate literacies but (Kress) a generic capacity to make sense across modes and media.	Kress, Jewitt, Hannon
Self-efficacy, self-regulation	Self-regulation is both a goal of learning and a process that supports learning: it is increasingly demanded in workplaces especially where knowledge work and innovation are involved. Forethought, performance and self-reflection are three stages of self-regulated learning.	Zimmerman

New pedagogies		
Learning 2.0	Learners' familiarity with web 2.0 technologies opens up a completely new space for and style of learning, focusing on: collaborative knowledge building; shared assets; breakdown of distinction between knowledge and communication	Downes, Anderson, Alexander, Walton
Learning 2.0 counter-evidence	Evidence that pro-active, creative web 2.0 practitioners are still in the minority of users (1:9:90 rule): many learners are introduced to such practices by teachers. Ubiquity, accessibility and ease of use are, however, features of technology that are changing informal learning practices.	Redecker, see JISC Learners' Experiences of e-Learning programme in section 2.3
Connectivism	Individual processing of information gives way to development of networks of trusted people, content and tools: the task of knowing is "offloaded onto the network itself"	Siemens
Communities of enquiry	Building on Wenger's notion of communities of practice, (higher) learning conceived in terms of participation, with learners experiencing social, cognitive and pedagogic aspects of community.	Wenger, Garrison and Anderson
Theory/practice, practical inquiry	Action (practice) and discussion (theory) in shared worlds is internalised, leading to personal capability (practice) and conceptualisation. Specifically facilitated thru social technologies and CSCW	Vygotsky, Garrison,
Academic apprenticeship	Literacy as situated social practice is best acquired through apprenticeship model, situated in disciplinary ways of knowing	Holme
E-learning, e-pedagogy	New forms of learning and teaching are enabled – and required – by digital technologies. Typically more constructivist and learner-led.	Mayes and Fowler, Cronje
'New' learners		
Lifelong learners	Changing patterns of employment require workers to constantly update their skills; demographic changes are also skewing participation towards older learners in full or part-time employment. Technology is seen as key to delivering flexible opportunities to lifelong learners.	Boud, Field, Coffield
Virtual learners	Saturation in virtual worlds and online networks alters perceptions of self and relationships with others, including learning relationships. For some this can be liberating: others struggle with a loss of 'presence' and changed social cues.	Smith and Curtin, MacLuhan See also 'online learning' literatures
Digital natives, immigrants and refuseniks	The post-internet generation inhabit a digitally-mediated world: the older generation, including most teachers, struggle to be at home in this culture. In fact the evidence is against a strongly age-related effect (see below) and even Prensky has moved against this distinction.	Prensky, Tapscott, see also OfCom (2008) in section 2.3.
Google Generation	Those born since 1985 exhibit particular tendencies towards information and learning: ubiquitous information, constant communication, multi-tasking, juggling multiple identities, valuing knowledge for how it can be used and re-used in the moment, 'cool', interconnected	Oblinger and Oblinger

Digital natives/ Google Generation – counter evidence	Situation, available technology and prior experience are all more powerful predictors of 'googling' behaviours than age (i.e. it is not primarily a generation effect) Factors such as social class, level of education and prior experience of technology may be more significant than generation. Technology is ubiquitous in young peoples' lives but most lack information skills and strategies for learning with technology. Empirical studies suggest use of web 2.0 and innovative technologies quite limited: far more young people read blogs and wikis than contribute to them, for example.	Bennet, Margaryan and Littlejohn, see also JISC Learners' experiences of e-Learning and Digital Natives reports in section 2.3.
Learners' informal techno-social practices		
Collaborative production (prosumerism/produsage)	New ways of sharing content online are blurring the boundaries between creative production and consumption, thru practices such as commenting, reviewing, re-purposing, re-tweeting, media meshing. Education needs to respond by focusing on creative collaboration.	Bruns & Humphreys, Landow
Informal and nonformal learning	Online social networks and open content create vast new opportunities for individuals to learn, outside of or alongside formal learning.	Downes, Katz Seely Brown & Adler, Luckin
Visual learning	There is conflicting evidence over whether younger and non-traditional learners in particular prefer image-based over textual content for learning.	Coffield, see also JISC/British Library study in section 2.3
Knowledge practices (clash of)	Learners with experience of free content, open sharing sites, the 'eternal now' of the network, distributed attention, and the opinion-led blogosphere (amateurisation, collective intelligence), may struggle with academic knowledge practices around originality, authority, depth of attention, historical paradigms, and attention to method. Also highly textual vs 'media-mesh'.	Gurak, Jewitt
New institutions, and challenges to the institution		
The University in the digital age	Digital networks and open content present specific challenges to the integrity of the university: e.g. permeable boundaries; how to give students a coherent educational experience; how to balance students' free use of technology with risk of copyright violations or security threats; destabilization of the traditional lines of authority in the classroom; clash of values and practices around knowledge.	Benkler, Barnet
21st century skills/literacies	Govt-led agenda in both UK and US to maintain and extend competitive advantage by upskilling workforce with skills for a largely ICT-based, high-value service economy – entails major refocusing of post-compulsory learning around perceived needs of national economy, partnerships with employers and employment sectors.	UK Govt (e.g. Leitch report, e-skills) US govt (e.g. No Child Left Behind, 21st century skills partnership)
Informal and nonformal learning	Online social networks and open content create vast new opportunities for individuals to learn what they need to know without engaging in formal learning.	Luckin & Garnet,

Deschooling	A European Commission communiqué in 2001, suggested current models of schooling could not generate sufficient digital capacity, that European states must distribute teaching capacity much more widely through society, and consider whether more effective learning could take place via ICT delivered to homes, workplaces and local communities.	Illich

Table 2.1 Key concepts and theorists of learning and digital literacies

2.1.1 Summary of key messages and some practical implications

Literacies as situated practices
Literacies as defined in our scoping section cannot be acquired through one-off induction sessions or skills training, though these can help orient learners to what will be required of them in further and higher education.

Learners require opportunities for ongoing practice, embedded in subject contexts and in tasks of real relevance to their learning goals and assessment criteria.
Practices of knowledge creation and sharing in subject contexts must be made clear to learners as part of their ongoing development.

Capable individuals acquire a range of meaning-making practices, and manage contradictions among them in terms of their participation in different contexts (sometimes termed rhetorical competence, related to managing multiple identities).

Learning to learn
'The ability to pursue and persist in learning' can be enhanced in individuals, largely through positive experiences of learning. However, there is some evidence that exposure to successful learning strategies and habits, and/or explicit prompts to reflect, self-diagnose, analyse and plan, help learners develop their own strategies for learning.

Digital technology offers new opportunities for exposing learners to the practices and habits of others (e.g through process and data capture, participatory technologies) and for supporting reflection, diagnosis and planning (e.g. through e-portfolios).

Digital literacies cannot be bolted onto learners existing practices and prior conceptions: these must be recognised, incorporated and (if necessary) reconceptualised.

Technologies and technical literacies
Those who think digital tools can readily be assimilated to existing practices of representation and communication are in a minority: most believe that they are fundamentally changing what it means to communicate, make meaning, think, work and learn.

Those changes come about because of changes to our culture and social practice around the use of technologies, rather than through the technologies themselves.

Education can play a role in influencing future cultural and social practices with technology.

Ubiquity, availability, ease of use, low cost are all features of technology that are having major impacts on how learners access information and communicate with one another: there may be changed expectations of education as a result

In terms of functional access to basic ICT, the digital divide may be getting narrower but deeper as lack of access has a more profound impact on individual learners.

Media and representation
Learners need skills in critically evaluating and creatively producing representations in a variety of media. General media types include text, speech and image.

The media required may vary from subject to subject: media with a clear subject relevance include mathematical and scientific (notation systems), spatial, narrative, virtual (e.g. gaming, simulations).

The jury is still out on whether digital hypermedia (multiple forms of representation, multiply linked) require a fundamentally different approach.

Informal media practices – perhaps particularly among young people - differ from academic practices of representation and production.

Information literacies
There is less theoretical and conceptual disagreement over information literacies, probably because it has been much longer established as a concept and set of practices.

Existing conceptions of information literacy have been criticised for focusing too strongly on individual use in the context of a specific task or problem, and for failing to recognise different cultures of information use.

There may be a case for extending the idea of information literacy to acknowledge that many informational tasks are carried out collaboratively, to include sharing of information as a component competence, and to accommodate cultural, ethical, safety and citizenship dimensions.

There is also debate over the best way to support information literacies, whether by expert subject librarians in specialist settings, or integrated fully into curriculum tasks, assessment and learning support.

As institutions move towards more integrated strategies for educational content management, including learner-generated content, the requirements for information literacy among staff and students may be further extended.

Learners
Ubiquity, accessibility, rapid feedback and ease of use are all features of learners' daily experience with digital technologies which are changing their expectations of education.

Experience with web 2.0 technologies, particularly active engagement such as creation of blogs and wikis, tagging, meme-ing, reviewing, writing fan fiction, remain minority activities to which many learners are introduced by educators.

Educators make assumptions about learners' facility with technology at their peril:

- even confident internet users often lack evaluative and critical skills
- even learners with their own laptop, smartphone and other devices may have no idea how best to use them to support their learning
- even the 'net generation' can have low levels of ICT skill and a history of negative experiences with technology in school
- HE and FE are increasingly catering for adult learners who may have little or no experience of ICT use

The jury is still out on whether there is a clear 'google generation' effect in terms of preferences for and approaches to learning: the picture is more complex than the buzzwords suggest.

The digital natives/digital immigrants distinction is no longer regarded as particularly helpful, even by Prensky (2001, 2009), who now prefers the notion of 'digital wisdom'. Other commentators agree that digital capabilities are multiple and individual.

Learners make choices about technology – indeed choice and consumption is a key frame through which they view the technology-mediated world. There is some evidence of a minority of 'digital refuseniks' making active choices to avoid the use of ICT for aspects of their social and educational practice.

Developing learners
Learners can become more critical, evaluative, self-aware, self-confident, skilled and capable in the use of technologies

Learners can develop a wider and more effective range of strategies for their own learning.
Although some of these capabilities may be 'generic', the consensus is that they are best supported in

'communities of practice', 'communities of inquiry', or 'learning groups' focused on tasks of value and interest to the learner.

Skills acquired iteratively, through practice, and as needed are better retained than those taught one-off, in isolation, and through instruction.

There is conflicting evidence about the success of 'new' pedagogies of the digital (the 'no significant difference' phenomenon) in supporting learners to develop new skills.

Understanding literacies as situated practice means, in developing learners:

- providing authentic contexts for practice, including digitally-mediated contexts
- individual scaffolding and support
- making explicit community practices of meaning-making
- anticipating and helping learners manage conflict between different practice contexts
- recognising and helping learners integrate their prior conceptions and practices

There is a tension between recognising an 'entitlement' to basic digital literacy, and recognising technology practice as diverse and constitutive of personal identity, including identity in different peer, subject and workplace communities, and individual styles of participation.

These conceptual conclusions and implications have directly informed our Framework of Frameworks in Section 3.

2.2 The changing context

The nature of **work** is changing, not just for the growing numbers of graduates directly employed in the 'digital' industries (est. 1,500,000[1]). An estimated 77% of UK jobs[2] involve some form of ICT competence, requiring updating of skills as technology changes. Global digital networks are also having a profound impact on how organisations recruit the expertise they need. A recent TLRP report on *Education, Globalisation and the Knowledge Economy* (2008) notes that British graduates are competing for high skills, high value jobs on a global stage, in which graduates from emerging economies have several advantages. As the performance gap narrows rapidly, differences in labour costs are narrowing far more slowly, giving companies greater scope to extract value from highly skilled people in different locations. Thus ' *it can no longer be assumed that even British-based corporations will choose to employ British graduates if the same talent is available at lower cost elsewhere. Colleges and Universities in emerging economies are expanding faster than those in the UK and arguably expanding smarter, learning lessons from other education systems without the same brakes on organisational and cultural innovation*.'

This report uses the term 'digital taylorism' to describe the trend towards division of labour in the service and intellectual industries, dissecting what used to be coherent professional roles down to the level of discrete projects or even tasks. This is described as '*a power struggle within the middle classes, as these processes depend on reducing the autonomy and discretion of the majority of well qualified technical, managerial and professional employees. It encourages the segmentation of expertise based on 'talent', in ways that reserve the 'permission to think' to a small proportion of employees [or non-employees] responsible for driving the business forward.* Middle class labour is also becoming less secure as digital networks make it easier for tasks to be contracted out on a piece-meal basis[3], loosening the ties between businesses and employees. One likely outcome of the current recession is a restratification of middle class occupations.

Although estimates of the number of people likely to be employed in the 'knowledge economy' vary, it seems clear that individual working lives are becoming more complex, unpredictable, and inter-woven. There is a greater requirement for workers to be independent, self-motivated and self-evaluating, as well as a tendency for individuals to move jobs and careers more frequently and to be in fixed-term or flexible contracts (Naswall et al, 2007). Learning for life is no longer a policy buzz word but a requirement for individual economic well-being.

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[1] Source: e-Skills UK (2009) *Technology Counts: IT and Telecoms Insights 2008*

[2] Source: ibid.

[3] See e.g. https://www.mturk.com/mturk/welcome

Opportunities for learning are also changing and by most measures becoming more numerous and openly available. Open educational content is burgeoning thanks to several high profile initiatives by leading global universities. Not only have digital technologies become widespread in formal education, but non-educational organisations are waking up to the potential of ICT to capture and communicate know-how (see e.g. Senge, 2006), while practical and social knowledge Is shared almost continuously via the social web (Downes, 2005, Anderson, 2007, Alexander, 2008, Walton et al, 2008). A complication is that ICT skills are particularly likely to be acquired through self study or informal assistance from colleagues, relatives and friends[4]. Informal/non-formal learning has achieved a new prominence in educational discourse, to the extent that it has almost become the measure by which formal learning is judged.

Ideas about the value and purpose of formal education have undergone a revolution in this environment. Academic content is no longer a unique selling point, and institutions are rebranding themselves around accreditation, flexibility, and the learning experience. Models of education as a bespoke service to learners are readily available in the e-learning literature and are supported by some of the technical developments that have recently been made (e.g. e-Portfolios, personal competence management systems[5]). As graduates face a period of increasing uncertainty about their employment prospects, they are also looking for opportunities to practice and demonstrate their value to potential employers. In this environment, a first degree is no guarantee of 'graduate' employment, and varieties of postgraduate CPD are booming. Finally, an increasingly complex landscape of post-16 provision is hastening modularisation and standardisation of qualifications. All of these trends are promoting a more competence-based approach to the curriculum, in which notions of literacy have more purchase.

The nature of **knowledge** is changing, so that what counts as useful knowledge is increasingly biased towards what can be represented in digital form, and/or applied to immediate problems and situations. Many scientific and research enterprises now depend on data being shared in the almost instantaneous fashion enabled by the Internet, while the sheer processing power available to researchers is ushering in new methods of investigation and in places whole new disciplines and genres of knowledge. At the same time as digital scholarship progresses, the rewards and recognition for scholarship become less certain. The outcomes of creative and intellectual work are more freely available than ever before, the logic of many market sectors is towards openness and collective knowledge bases, and conflicts over intellectual property, access and licensing are becoming acute.

The texture of **social life** is changing, with more and more people conducting and sustaining relationships via digital media. Many social practices, from purchasing to voting to registering for healthcare, can now be conducted online. In its recent statement on 'Digital Britain'[6], the Government expresses an active intention to enhance this trend, and lists 'media literacies and IT skills' second only after access to the internet as a requirement for building a society of 'empowered and informed consumers and citizens'.

Trends shaping technology and community, from Wenger et al (2005), are:

- Fabric of connectivity – always on, virtual presence
- Modes of engagement – generalised self-expression, mass collaboration, creative re-appropriation
- Active medium – social computing, semantic web, digital footprint
- Reconfigured geographies – homesteading of the web, individualisation of orientation
- Modulating polarities – togetherness and separation, interacting and publishing, individual and group
- Dealing with multiplicity – competing services, multi-membership, thin connections
- New communities – multi-space, multi-scale, dynamic boundaries, social learning spaces.

In a related fashion, c**ommunications and media** are changing profoundly and rapidly, with the new social media and gaming technologies being embraced by innovative educators (Martin & Madigan, 2006, Lankshear & Knobel, 2008). However, whilst the forms of communication and media are clearly significant in shaping thinking and knowledge work, recent research on learners has suggested that their engagement with digital media is more complex than the 'digital natives' discourse would imply (Bennet et al., 2008, Hargittai & Walejko, 2008). In this space, the idea of multimodal literacy (Kress and Van Leeuwen, 2001), understood as a complex set of critical and social practices, has largely replaced the discourse of 'learning styles' (e.g. Kolb, 1984, Honey and Mumford, 1982), which tended to imply a fixed set of capabilities or preferences on the part of the individual .A *critical* engagement with ideas in different media, once an aspect of specialist courses such as media studies, is becoming understood as an essential skill for navigating the

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[4] Source: Eurostat (2007) *Community Survey on ICT usage in households and by individuals* 2007
[5] http://www.tencompetence.org/
[6] http://www.culture.gov.uk/reference_library/media_releases/5548.aspx

information age, at the same time as novice learners' *lack* of criticality is being widely lamented.

Closely related to this last point, **literacy practices** are changing. Writing has moved from a paper-based to a largely screen-based medium (Kress, 2003), and associated searching and editing software have profoundly changed the way in which writing is typically constructed (Cushman, 2004). Images and video are also increasingly used to access and communicate knowledge (JISC/British Library, 2008). Collective intelligence and amateurisation are key terms for the new ways knowledge is being constructed through social media.

Changing **techologies** are dealt with in more detail in the futures section below, but present trends include:

- Institutional technologies giving way to learners' personal technologies and personal access to third party (or 'public') services
- Large-scale, stable applications giving way to small scale apps and services, some in constant beta mode
- Trusted content sources giving way to personal aggregators
- Online articles giving way to blog entries and tweets
- VLEs giving way to learner-owned or -shared spaces for collaboration and knowledge building

All this places much greater onus on learners to choose, use and manage their own technologies, develop their own working spaces and practices, and find their own learning communities. It also puts enormous strain on institutional ICT support and ICT skills provision. In fact it is clear that institutions are simply not resourced to keep pace with the rate of socio-technical change, such that they can claim to support whatever technologies learners bring into the learning situation. 'We know, we teach you' may no longer work as a paradigm for ICT skills provision.

2.3 Future scenarios

Having examined current trends, this section scans the further horizon to consider possible future requirements for literacy, competence and learning. The resources reviewed here took different approaches to future thinking, and had different remits in terms of scope and coverage. While much of the work of these projects has been speculative, this review is limited to the trends identified as significant for future thinking by at least two studies.

For each trend identified as of interest to this review, possible implications for learners' skills, literacies and dispositions are explored. This section, and the interpretations made of source documents, is intentionally speculative.

Resources reviewed for this section:

- Challenge summaries from Beyond Current Horizons (2008/09, UK, all sectors, lookahead 2025)
- Educause Connect report 2008 (2008, US/global, all sectors, lookahead 5+ years)
- Reports from the Open University's 'Open Thinking on HE' (2008, UK, HE, lookahead 10 years)
- OECD Schooling Scenarios (2008, international, schools, lookahead 2020)
- Learning2.0: The Impact of Web2.0 Innovation on Education and Training in Europe (2008, Europe, all sectors + training, lookahead unclear)
- e-Skills UK Technology Counts: IT and telecoms insights (2008, UK, FE/HE/employment, lookahead 3-5 years

Trend	Skills/literacies/dispositions
Open University 'Open thinking on HE' seminar series	
The knowledge society demands: ▪ broadening of curriculum (less discipline-bound) ▪ students' approaches to learning being actively developed ▪ learning how to (continue to) learn The knowledge society likely to mean: ▪ legitimisation of knowledge as use-value rather than based on established protocols and methods, values of 'truth' etc ▪ distributed sites of learning (including the workplace) ▪ rhetoric of high skill economy -may hide restratification of middle class work, high performance anxiety	Interdisciplinary thinking learning to learn eclectic methodologies persuasive and rhetorical skills capacity to make sense of experience in multiple contexts
Globalisation/internationalisation of HE: features ▪ Physical mobility (students and scholars) ▪ Recognition of prior study across national boundaries ▪ Other modes of knowledge transfer (collaborative research, transnational education) ▪ Internationality of teaching, learning and research ▪ International orientations and attitudes	Globally recognised qualifications: capacity to present achievements in globally recognised ways 'International' orientation and attitude Capacity to collaborate across national and cultural boundaries Mobility (cultural, geographical)
Democracy and social justice: aspirations OECD (2006): 'promote democracy, tolerance and social cohesion' IAU (2005): 'instill …the critical thinking that underpins responsible citizenship' CoE (2006): developing 'democratic culture', 'active citizenship' and 'well-being of whole society', 'human rights and social dialogue'	Citizenship education Social participation Social innovation
Beyond Current Horizons pre-determined elements of future scenarios	
Population ageing	Maintain good health throughout life Maintain interest in learning throughout life
Climate changing	Assess and address environmental threats Resilience
Ever greater facility to connect to knowledge, resources, people and tools, and to gather, store and examine data Better systems/practices for working together at a distance, facilitating globalisation of economic and social life More porous boundaries between working and learning, and between working and personal life Decentralisation of technology with systems organised around individual rather than institution More devolution of responsibility to machines and computer systems, with implications for 'human' work roles Location increasingly important in terms of the technological systems available, governance of systems, and the way in which virtual and physical information is merged. Drugs which enhance cognitive functioning for limited periods of time will continue to be available – poss of other kinds of cognitive enhancement	Connect with knowledge, resources, people and tools as required Gather, manage and analyse data (ubiquitous, epic scale) Work at a distance and across cultural/national boundaries Manage work/life balance Take personal responsibility for technology systems Work in networks of expertise with other humans and ICT systems Create and manage own virtual/physical spaces Understand and manage own cognitive processes Act to preserve health of the environment, the body, and society

E-Skills Technology Counts emerging trends	
Industrialisation of technology delivery and business transformation through ICT Security and data protection Communications convergence Innovation at a premium Outsourcing, geo-sourcing, automation and commoditisation Green IT Convergence of home/work/college ICT systems Peer-to-peer networks	Analyse, design and develop technology-enabled projects Broad business skills e.g. analytics Maintain personal and organisational data security and integrity Manage voice, text, data, video, location information Develop and deploy high level expertise: ongoing self-development and re-invention Assess and address environmental concerns Manage work/life balance Be informed ICT consumer and user Participate in and understand dynamics of social networks
European Project on Learning 2.0: opportunities/features of Learning 2.0	
Building on distributed knowledge Enabling peer learning Supporting the development of interest groups, communities of practice, and learning communities Creating innovative collaborative tools and dynamics Allowing learners to generate new learning contexts (and not only content) Providing tools that enhance self-organisation and autonomy and 'just-in–time' learning Undermining the importance of curricula and syllabi in favour of learning pathways Enhancing the importance of identity construction within the learning path Lowering the barriers between formal and informal/non-formal learning, school, home and work	Collaborative knowledge-building Learn from others and support others' learning Group participation and facilitation Generating new learning contexts and dynamics Self-organisation, autonomy Identify own learning needs and develop learning pathways Construct and reflect identities Manage work-life balance
Educause Connect Report 2008: Significant Trends	
The way we work, collaborate, and communicate is evolving as boundaries become more fluid and globalization increases Access to—and portability of—content is increasing as smaller, more powerful devices are introduced Data mashups will transform the way we relate to and share information Social operating systems will support whole new categories of applications that organize our work and our thinking around the people we know. Educational applications will make explicit and implicit use of collective intelligence Mass amateurisation will change/challenge forms of scholarship Megatrends (beyond 5 years): Collective generation of knowledge Connecting people through the internet Moving computing into 3 dimensions	Communicate and collaborate across boundaries Marketable high-level skills for global knowledge networks Digital scholarship, digital research Access content anywhere, anyhow, and repurpose/reaggregate on the fly Develop networks, project reputation, manage identity Participate in networks of knowledge and expertise incorporating non-human actors

<table>
<tr><td colspan="2">OECD Schools of the Future</td></tr>
<tr><td>2a 'The focus of learning broadens with more explicit attention given to non-cognitive outcomes, values and citizenship. '
2b 'widespread development of specialisms ... Flourishing research on pedagogy and the science of learning'
3a 'learning for different cultures and values through networks of community interests. Small group, home schooling and individualised arrangements become widespread'
3b 'learning is importantly determined by choices and demands ... strong focus on non-cognitive outcomes and values'</td><td>The OECD scenarios are intended as alternative future paradigms but it is interesting that non-cognitive outcomes, cultural awareness, values and citizenship are key attributes that emerge across several of them.</td></tr>
<tr><td colspan="2">Both OECD and BCH envisage different literacies and learning practices being required in different political and social scenarios, e.g.:
1. Competitive, market-led education system (outcomes-led, economic models of accountability)
2. Personalised, humanist model of education (process-led, discourse of personal development)
3. Socialised, collective model of education (values-led, collective responsibility)
It is easy to imagine that technologies as well as social practices would develop differently in these three scenarios.</td></tr>
</table>

Table 2.2 Future scenarios

Common capabilities that may be required to cope with a range of future scenarios:

- Manage work/life balance, particularly as technologies erode the boundaries between work, leisure and learning, between home, school and workplace.
- Social entrepreneurlaism – the capacity to understand how social systems work, innovate within systems, and adopt roles flexibly and strategically
- Develop and project identities, manage reputation (cf Owens et al 2007)
- Communicate and collaborate across national and cultural boundaries, using a variety of technologies and media
- Contribute to knowledge and understanding in hybrid networks of people and non-human cognitive agents
- Manage career path, learning path and professional development
- Exercise judgement and expertise, bring knowledge to bear
- Act safely, ethically and responsibly in environments where public and private are being redefined
- Reflect, plan, seek support, learn from situations and from others
- Assess and address threats to health and to the environment
- Exercise multiple modes of meaning making (cf. Kress, 2003)

Some future scenarios may prove to be **paradigm-breaking** for literacy provision and formal education more generally. For example:

- 'Study skills' and 'academic practices' acquired through formal learning may become (perceived to be) less and less relevant to the just-in-time, self-directed learning demanded in high-pressure working environments
- Academic knowledge and ways of knowing, e.g. peer review, acknowledged authorship, and methods associated with specific disciplinary traditions, may also become (perceived to be) irrelevant in a society focused on the use-value of knowledge in immediate contexts
- Ubiquitous digital image and voice capture devices, high quality voice recognition and means of analyzing sound and video files, may make the text-based practices of formal learning obsolete, and challenge the values of a largely text-based accreditation system
- Online reputation may become more valuable to the individual than formal qualifications or accreditation
- ICT skills may become so general in society, and digital tools so intuitive to use (highly wearable, interoperable, customizable) that the idea of 'learning' or accrediting such skills beyond the kindergarten becomes untenable
- Like other cultural resources, digital resources may become so differentially available to individuals and families, at so early an age, that formal education can to little to redress the inequalities

None of the studies cited consider these paradigm breaking scenarios likely. They are included as tools for thinking about the directions education might or could take, in the area of digital literacies provision.

2.4 Recent studies into learning and digital literacies

The **REVEEL project**[7] was funded to consider "How compelling is the evidence for the effectiveness of Post-16 e-learning?" It concluded that '*we are now learning in technology-rich societies and need to remodel education as lifelong learning.*' Learners therefore need to develop a 'learning literacy' defined as:

- The ability to self-manage the learning process,
- The capability of negotiating learning outcomes,
- Time to review and reflect on the learning process whilst learning,
- Finding and evaluating the use of a wide-range of digital and non-digital resources,
- The ability to share and develop this learning literacy with others

Technology, and particularly engagement with social technologies for informal learning purposes, was seen as contributing to the development of this literacy.

Literacies for Learning in Further Education[8] looked at the literacy practices of learners' everyday lives, and concluded that these were generally:

- *Multi-modal.* On the whole, students reading and writing combines the use of symbols, pictures, colour, music, etc.
- *Multi-media.* Students' uses of literacy combine the uses of paper-based and electronic media.
- *Shared.* For example, they tend to be interactive, participatory and collaborative.
- *Non-linear.* For example, different reading paths are taken through a text - dipping in to sections, flicking through, finding relevant bits - rather than following a linear route from the beginning to the end of the text.
- *Agentic.* Students tend to have responsibility within these practices.
- *Purposeful* to the student.
- Have a *clear sense of audience.*
- *Generative* - involving sense-making and creativity.
- *Self-determined* in terms of activity, time and place

The strong implication was that support for the development of more formal literacies for learning should be designed along similar lines. A formal paper published from these findings (Mannion et al., 2009) concludes that: '*contexts and their associated literacies are co-emergent and co-determined by each other, [therefore] literacy skills do not simply 'transfer' between contexts'.* An effective, 'critical' literacy pedagogy should '*pay respect to students' everyday literacies as a valuable resource base in formal coursework'.*

Next Generation User Skills: Working, Learning and Living Online in 2013[9] asked whether new 'web 2.0' methods of communicating, collaborating and contributing would become the core skills for 2013. Arguing that this may well be the case, the study then considered whether the current education system and its qualification frameworks were fit for purpose, assuming the purpose to be 'harness[ing] the native ICT capabilities of young learners' and turning these to lifelong learning and workplace skills. It concluded that this would depend on several factors:

- Do the behaviours of digital natives fit the purposes of education and employment?
- Are teachers and lecturers across subject areas capable of supporting and adding value to such ways of working?
- Are they compatible with curriculum design and assessment methods?
- Will the risks be surmountable in terms of safety, quality and other ethical issues?

This report can thus be seen as paralleling our own study process, albeit in a schools context and with a clearer commitment to employability as the main purpose of education. It usefully highlights the difficulty of anticipating future requirements, since tools and services, general (non educational) socio-technical practices, demand for different kinds of qualification, and changing social/economic values are all complex and interdependent systems.

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[7] http://www.reveel.sussex.ac.uk/
[8] http://www.lancs.ac.uk/lflfe/description/index.htm
[9] http://www.sqa.org.uk/sqa/files_ccc/HNComputing_NGUSReport_NextGenerationUserSkills.pdf

A key challenge identified in the current situation is that qualifications and awards are almost always structured into silos, and focus on short-term, measurable outcomes. What this report calls 'workflows' around technology, and what we might call technical practices, are highly interdependent and may evolve over a long timeframe. So, for example, a capacity to choose between social, media and business software to solve a particular problem is a capacity that evolves with experience across multiple contexts.

OfCom's Media Literacy Audit (2008)[10] found that:

- Enthusiastic take-up of new media by young people was not necessarily accompanied by an understanding of how new media content is produced, i.e. by a capacity to read it critically, or play a role in collaborative co-creation.
- Their confidence in using the internet is similarly not complemented by critical thinking or appropriate care in use of web sites, potentially exposing them to risks relating to unsuitable material or abuse of their personal information.

This study noted an increase in use of multiple devices for accessing media content, again with young people at the forefront.

The UK Government's Draft *Digital Britain Report* (Jan 2009) notes the contested nature of the term 'media literacies' but includes and values the concepts of critical 'reading' and creative (co) production. The report identifies a wide range of agencies with a potential role to play in fostering media literacies, of which educational institutions are only one. The media itself, the arts, libraries, museums and galleries, and local communities are also important actors in this arena.

The key elements identified by the government as fostering 'digital engagement' are digital inclusion, digital life skills, and digital media literacy. These are placed in a continuum with the clear implication that media literacy is a higher-level capability, built on access and skills.

Digital Literacies in the Lives of Undergraduate Students: *Exploring Personal and Curricular Spheres of Practice*[11] *w*orking in the 'literacies as social practice' area of the research landscape, reports on ethnographic findings from 45 undergraduates. Jones and Lea found:

- A tendency to segregate personal and curricular 'texts' (though the separation was not absolute and students showed different personal preferences in this regard)
- Institutions forced to forward communications from VLE (institutional, curricular technology) to personal email addresses because students did not check the former, or not frequently.
- Wrt group work '*participants have to engage with a range of literacy practices. Their communication can be as informal as the Instant Messenger communication suggests, but the group reports they produce have to comply with institutional and disciplinary conventions, engaging in a range of practices common to the production of academic texts. Participants described their textual activities as drafting, critiquing, developing further text, inserting diagrams and doing research*'

The *DigEuLit* project, as summarised in Martin and Grudziecki's paper *Concepts and Tools for Digital Literacy Development* (2006)[12] provides a useful model for thinking about levels of literacy:

Level one: digital competence(skills, concepts, approaches, attitudes, etc.)
Level two: digital usage (professional/discipline application)
Level three: digital transformation (innovation/creativity)

Working with the JISC-funded *Learners' Experiences of e-Learning* programme[13], Beetham and Sharpe have espoused a pyramid model of developing digital competence which, like Martin and Grudziecki, builds on basic access and skills, through practices and strategies, to 'creative appropriation' of technologies for personal development, personal styles of participation in learning, and the achievement of personal learning goals.

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[10]   http://www.ofcom.org.uk/advice/media_literacy/media_lit_digital_britain/
[11]   Jones S. and Lea M.R. (2008),*EJEL* 6 (3) 207-216: http://www.ejel.org/Volume-6/v6-i3/JonesandLea.pdf
[12]   www.ics.heacademy.ac.uk/italics/vol5iss4/martin-grudziecki.pdf
[13]   https://mw.brookes.ac.uk/display/JISCle2/Home

This programme has just completed its second phase and reports many findings of relevance to this study, based on research among HE and FE students in the UK. Among them:

- Technology is integral to learners' lives: all learning is potentially supported by technology and the term e-learning means little to them
- In their use of technology, students are led by tutor recommendations and course requirements. They expect tutors' use of technology for learning to be pedagogically appropriate and skillful.
- Quality academic digital content is regarded by learners as a significant benefit of F/HE: they become significantly more adept at using it as they mature in their studies
- Learners want meaningful choices about how they learn, with and without ICT
- Many learners use technology to multi-task while some find being online a distraction from study
- Among novice learners at least, only a small minority actively explore and investigate the potential of software or technologies
- (However) some learners, including many disabled learners, are agile adopters and explorers of technology
- Learners are attached to their technologies, emotionally and in terms of personal organisation and practice: they benefit from being able to use personal technologies and access personalised services in institutional contexts
- Learners are creating their own learning spaces, blending virtual with face-to-face, and formal with social. Informal collaboration is widespread, often facilitated by technology that is under learners' ownership and control
- Learners have different attitudes to learning in the public/private spaces of social networks
- Despite their facility with personal technologies, learners often lack skills in using technology to support learning. This can be true even after considerable time at college.
- The Internet is the first port of call for information: sites such as Google and Wikipedia are typically referred to before academically approved resources.
- Students value ICT-based activities that support reflection, meta-learning, practice and revision
- Learners display enormous differences in past educational experiences, needs, and motivations. These have a profound influence over their preferred strategies for using technologies
- Many learners, particularly proficient e-learners, are used to learning and accessing knowledge via images and video.

This programme has also produced a range of more detailed findings about how learners 'mature' in their studies, and in particular their use of technologies for learning, and about strategies of 'effective' e-learners. The **JISC/British Library 'Google Generation' report** (2008)[14] highlighted that:

- although young people demonstrate an ease and familiarity with computers, they rely on the most basic search tools and do not possess the critical and analytical skills to asses the information that they find
- research-behaviour traits that are commonly associated with younger users – impatience in search and navigation, and zero tolerance for any delay in satisfying their information needs – are now the norm for all age-groups

It called on the Government to urgently consider its findings: '*well-funded information literacy programmes are needed if the UK is to remain as a leading knowledge economy with a strongly-skilled next generation of researchers.*

Learning from Digital Natives (Gcal) largely confirmed Bennet et al's (2008) work in Australia and findings of the Learners' Experience programme in its second phase, that:

- the phrase 'digital natives' does not do justice to the complexity of learners' diverse experiences with technology and study
- different approaches and attitudes to digital research are not strongly generational but are correlated with factors such as social background and context of study
- learners are conservative in their attitude to adoption of new technologies. They are highly influenced by their tutors and courses and expect the use of digital technologies in course contexts to have an educational rationale

Since 2007, ***Becta*** has undertaken a range of activities (research, evidence-gathering and opinion-forming) aimed at characterising the ***'e-maturity'*** of individuals and organisations. A synopsis of work under the

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14   http://www.jisc.ac.uk/whatwedo/programmes/resourcediscovery/googlegen.aspx

individual strand[15] suggests that the e-mature learner demonstrates:

- Experience: sufficient experience with effective uses of technology and with problem-solving.
- Confidence: either faith that the technology can't be broken (naïve) or the confidence that it can be fixed. A 'can do' attitude that is willing to explore what is possible, what doesn't work and why. This confidence will be based on previous successful use of technologies to achieve their goals.
- Self-direction: the ability to be pro-active, to use trial and error, to experiment, establishing what works and what doesn't.
- Creativity: the ability to imagine new, innovative and/or valuable uses for technologies.
- Discernment: the ability to choose which technology is appropriate and when it is not appropriate to use a particular technology. Additionally an e-mature learner understands that everyone potentially has a voice, but not everyone is honest or wise. Ideally, there is also an understanding of how beliefs are forged, giving the ability to evaluate claims and attitudes.
- Emotional maturity: for example, responsiveness to the needs of others and the ability to see the big picture.

In addition, the report characterises progression in e-maturity as the development of self-confidence, self-reliance and independence in learning. It concludes that the role of the e-mature teacher is critical in facilitating this development.

In 2005 the European Centre for the Development of Vocational Training produced a prototype **Typology of knowledge, skills and competences**[16] for use across the EU. The accompanying report – credited to CEDEFOP - traces the rise in outcomes-based conceptions of learning and assessment, particularly in the vocational/work-based learning sectors but also in FE and HE, and the associated progress towards standardisation of competence definitions across the EC. In HE this has culminated in the Bologna accord, which promotes a single framework for describing higher qualifications. The focus on competence both allows transferability of credit across national boundaries, and allows individuals to integrate their formal and informal learning experiences.

This report distinguishes 'functional' accounts of competence, emphasising separate attributes and skills, with 'interpretative' accounts, emphasising how individuals understand and approach a task. It also summarises evidence that skills and competences are not highly generalisable or transferable across contexts. In a review of policy and provision across the EU, it reports that the UK government has adopted a functional approach with a focus on individual skills/capabilities, though employers and professional bodies tend to favour a more behavioural approach, i.e. the demonstration of (a particular standard of) performance on work-based tasks.

JISC projects **SPLASH** and **Isthmus** have highlighted the value in students having access to personal and social technologies, and creating their own personal learning blends, in institutional contexts.

Project Information Literacy (US) has produced a number of research reports including Head and Eisenberg (2009) Students find academic research challenging: '*Finding contexts for "backgrounding" topics and for figuring out how to traverse complex information landscapes may be the most difficult parts of the research process.*'

2.5 Implications: 'pinch points' for learning literacy provision

There is evidence from some of these projects that current institutional provision is under stress, though it must be emphasised that most of the studies reviewed in this chapter do not provide detailed evidence about different kinds and outcomes of provision. Points of actual or potential stress include the following:

Information skills, evaluative skills, critical skills (Google Generation, LXP, PIL, Learning from Digital Natives, ReVEEL, Digital Britain)
Strong and credible evidence that learners require support for online research skills and critical/evaluative approaches to information; also that they over-estimate their own capabilities and are naïve about the provenance and purpose of messages in digital media.

Induction and ongoing support for use of technologies for learning, use of personal

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[15] http://e-maturity.wetpaint.com/page/E-maturity+Library+-+Learner
[16] www.ecotec.com/europeaninventory/publications/method/CEDEFOP_typology.pdf

technologies for learning (LXP, Learning from Digital Natives at Gcal)
Strong evidence from UK-based programmes that learners require support in migrating to more ICT-based study practices in HE and FE, and in using subject-appropriate technologies for deep learning.
Evidence that learners benefit from being able to use their own technologies for learning, including software and services, and that in some institutions this is problematic
Indications that support for learners ICT skills needs to move from 'training' on institutionally provided technologies to more tailored support for the technologies learners choose or are constrained to use – which can be peer-led (e.g. student help desks, study 'buddies')

Induction and pre-induction (TESEP, LXP)
Evidence that technologies can be used to extend the process and period of induction well before students actually arrive at college/university, and help to ease social transition. This is also a critical window in which expectations about study practice can be communicated.

Research skills (Google Generation, PIL)
Evidence from the US but born out in UK studies that learners lack general research skills, that moving to third year and postgraduate study can be a source of difficulty, and that 'digital scholarship' should continue to be an element of the curriculum throughout study and not confined to first year modules.

Tutor skills (Becta, LXP, Digital Natives)
Learners are still strongly led by tutors in choosing and using technologies for learning: course practices become personal norms
Learners expect digital technologies to be used consistently in their programmes of study, and with a clear educational rationale. They will vote with their feet if course provision does not meet their expectations
Tutors skills and confidence with technology are therefore critical to learners' development

Plagiarism, originality and authority, intellectual property
Indications that there is a clash of knowledge cultures, emerging particularly around issues of plagiarism and originality in student writing.

Confidence, criticality and curiosity about technology (LXP, Digital Natives)
Evidence that despite an apparent facility with technology, most learners use only basic functionality and are reluctant to explore the capabilities of technology, take risks with their study practices, or make critical and reflective choices about technology use.

Feedback and assessment (REAP)
Evidence that students are often dissatisfied with the feedback and assessment process, which may indicate a lack of understanding of academic expectations, and again a contest over knowledge values. Little evidence of feedback being used as a mechanism for learning development.

Integration/interpretive approach to literacies (DigEULit, CEDEFOP)
Evidence that HEIs, under the influence of the UK Gov's transferable skills agenda, have taken a functional approach to literacies under the assumption that individual skills are highly transferable across contexts. Either a more behavioural/professional approach (i.e. focus on deployment of personal capabilities in specific task contexts) or an interpretive approach (i.e. focus on how individuals understand tasks and how social contexts support that understanding) – or (CEDEFOP) an approach drawing on the strengths of both - would be more effective.

Practice in UK HEIs and progress in European standardisation, including the Bologna accord (CEDEFOP)
The Berlin Communique of 2004 (Bologna working group on Qualifications Frameworks) requires member states to move towards defining higher qualifications in terms of 'workload, level, learning outcomes, competences and profile'. However, most UK HEIs define their degree programmes (for the purposes of credit transfer) primarily in terms of workload, level, and knowledge.

3. Conceptual and competency frameworks relevant to learning literacies in UK HE and FE

Given the complexity of this area and the critical importance of the practices involved, it is unsurprising that we find a large number of competing frameworks for describing literacies of the digital age. They have been developed to meet different purposes, out of different theoretical and political perspectives, and using a wide range of terminologies from systems thinking to social science and critical theory. In this section we are interested in pragmatic frameworks designed to be of use to those implementing institutional strategies, policies and practices, in support of learning for the digital age.

Frameworks offer a structure for outlining concepts, values, and practices that constitute a particular area of activity. They usually reflect the worldview of the author(s)/producer(s) which in turn affects how readily people will accept, value and use them. Imposed frameworks, such as the school sector national curriculum, are often supported by checks, testing, training and resources to ensure they are being implemented appropriately. Other frameworks operate more as a guide and have less supporting resources. It has been difficult to identify which frameworks are informing current practice as they are not always acknowledged in a formal sense. The number of overlapping frameworks that exist to support various sectors in education actually reflects the complexities of educational institutions and the various interest groups both within and supporting those. Evidence from the audits and case studies shows that institutions often take a pick-and-mix approach to developing a framework that is appropriate for their own context.
In this section we:

> 3.1 Outline several illustrative frameworks for understanding digital and learning literacies. Our selection criteria for these frameworks are that they:
> - are relevant to the needs of learners in UK HE/FE, even where they have originated outside of this sector
> - are relatively well used or referenced
> - refer to, or can easily be adapted to refer to, both LEARNING as the overall goal, and the DIGITAL context in which learning takes place
>
> 3.2 Present a framework of frameworks, designed to support institutions and individuals within institutions as they consider mapping their own practices against this emerging agenda.

3.1 Review of frameworks

The LLiDA Wiki Frameworks page offers a more comprehensive list of frameworks considered for the study. The selected frameworks have been developed by many different bodies and reflect their viewpoints which clearly impacts on use, adaptation, acceptance and longevity. The frameworks are:

- international (such as)
  i-curriculum - a European framework for defining information skills and a curriculum appropriate for living and learning in the digital age (Primary, Secondary and vocational education)
  http://promitheas.iacm.forth.gr/i-curriculum/overview.html
- national (such as)
  Learning and Teaching Scotland. Curriculum for excellence
  http://www.ltscotland.org.uk/curriculumforexcellence/
- institutional (such as)
  Glasgow Caledonian Academy. I-Learn Framework
  http://www.caledonian.ac.uk/quality/strategy/documents/GCU_LTAS_APPX1_i-LearnFramework.doc.
- Sectoral (such as)
  Quality Assurance Agency for Higher Education. The framework for higher education qualifications in England, Wales and Northern Ireland 2007
  http://www.qaa.ac.uk/academicinfrastructure/FHEQ/EWNI/default.asp#framework
- professional (such as)
  General Medical Council. Tomorrows Doctors UK policy document to support medical Schools includes curriculum framework
  http://www.gmc-uk.org/education/undergraduate/undergraduate_policy/tomorrows_doctors.asp

From the previous conceptual review we have identified the following categories of literacy as most closely reflecting the current literature and discourse:

Learning to learn:
It is a key feature of the context for this study that 'learning literacy' or 'learning to learn', however contested these terms, mean something clearly different from academic literacy or study skills. This widening gap may be understood as the difference between formal and informal learning.

- Owned/defined by: the learner
- Learners addressed as: informal learner, self regulated learner
- Change dependent on learner perception of their own progression, differing needs at
- Owned/defined by: the academy, especially academic development, learning development, study skills
- Learners addressed as: students, prospective graduates in specific subjects
- Slow changing due to cultural values being embedded in institutional, disciplinary/professional/vocational, and wider social practices and expectations
- Ideologically not bound to any particular forms of representation (qualities of mind, habits of study etc) but in practice largely text-based.
- Challenged by school-based education practices which tend to value study differently (bite sized vs extended tasks, bounded problems and information spaces, interdisciplinary project work
- Challenged by popular practices around knowledge and representation e.g. cut and paste, sharing, informal spelling, essay banks, interdisciplinarity of applied knowledge practice

Information literacies
- Owned/defined by: the library
- Learners addressed as: researchers, information users
- Consciously slow-changing skills in a rapidly changing context.
- Assert cultural values (evaluation, reflection and judgement, critical awareness, provenance of sources, evidence, method) against rapidly changing technical capabilities e.g. search engines, cataloguing and curatorial technologies, data mining and other research capabilities, textual analysis, semantic search capabilities etc)
- Challenged by popular practices around knowledge and searching for knowledge, e.g. Google, Wikipedia as first ports of call. Also by open content.

Media literacies
- Owned by: contested (some located in specialist subject areas e.g. film, photography, cultural studies, media studies etc)
- Learners addressed as: consumers and producers of messages in a range of media
- Moderately fast-changing to keep pace with emergence of new media, e.g. gaming, media sharing sites. But like information literacies, assert value of some traditional academic practices e.g. critique, review, scepticism, originality and creativity, as well as some new values - currency, cool, reputation, point of view, audience, montage, cross-cut perspectives
- Challenged by popular practices of editing, re-editing, distributed creativity; supported by popular practices of rating, reviewing, democratisation of creative productivity, illegal content

Communication literacies/skills
- Owned by: contested (some professions require particular forms of communication; some overlap with use of digital tools below)
- Learners addressed as: communicators, social participants
- Fairly rapidly changing to keep pace with emerging new technologies, networks, devices and forms of tele-presence. Again some values are asserted across communicational media, e.g. in acceptable use policies, netiquette etc: listening, turn-taking, facilitation, mediation, respect.
- Challenged by popular practices of highly informal communication including flaming, dissing, etc. Also challenged by proliferation of communication channels - making it difficult for institutions/tutors to control communications around study.

ICT/digital skills
- Owned by: technology developers, designers and support staff
- Learners addressed as: technology users
- Very rapidly changing skill-set, requiring constant updating. Skills often acquired from more competent peers, though sometimes through institutional provision. Agile adopters will use help menus, online discussion forums and user groups, trial and error.
- Different times of their lives – may have periods of re-learning, new learning
- Challenged by teachers expectations of learner understanding and perceptions of their own learning capacity

- ▪ Challenged by learner expectations of need and capacity to adapt to re-learning or new learning

Employability

Employability is a complex term and deserves some untangling here. On the one hand, it denotes a generic set of skills around planning, reflecting, self-analysis and self-presentation which are typically introduced to students towards the end of their study time, sometimes by a careers service or guidance team, to support progression into work. On the other hand, it denotes a potentially narrower requirement to be responsive to the needs of graduate employers, and to embed the Government's skills agenda into subject-based provision.

The latest figures from the CBI show that only 20% of posts in the average company (median) require graduate level skills, but that less than 30% of employers feel confident of being able to meet that skills requirement. Using figures for STEM graduates only, there is an indication that employers are more concerned about the quality than the quantity of graduates. http://www.cbi.org.uk/pdf/cbi-SteppingHigher.pdf. It would seem, then, that employers could play an important role in redefining the qualities of graduates from post-compulsory education.

But what qualities do employers look for when employing graduates? A recent survey of 500 company directors suggests that general personal qualities were uppermost in their minds*: honesty and integrity, reliability, being hardworking, a positive attitude, punctuality, meeting deadlines* and *team working.* The only competences cited in this list were basic literacy, numeracy, and communication skills, which are covered in our spectrum. (Communication, literacy and ICT skills are also three of the Government's key skill sets.)

Looking at the evidence of what skills employers are actually prepared to pay for, however, graduates command higher salaries if their subject-specialist skills are in demand, and job adverts/person specs almost always specify technical skills very carefully (programming languages, databases, specific development systems and methods). Employers will pay directly for training on the job if it leads to improved productivity and/or enables the business to respond to an immediate challenge or opportunity. http://www.culture.gov.uk/reference_library/media_releases/5548.aspx

So neither the stated nor the underlying values of graduate employers seem a good guide to the lifelong, lifewide needs of learners to remain in productive work. Indeed, one of the most striking trends in employment over the last 20 years has been the rising number of different jobs a person can expect to have over the life course, with periods of self-employment, consultancy, unemployment, unpaid caring for others, community/voluntary work etc taking up significant parts of the average working life. Flexibility, adaptability, and a willingness to move between employers and alternatives to employment, would seem to be more valuable to learners than the capacity to secure that first graduate job[17]. Also, as people spend a lower proportion of their life course in paid employment, other qualities than those valued by employers may be prioritized by society e.g. active citizenship, caring for others, being creative, being a (conscientious) consumer.

This is not to deny that both individual learners and educational institutions are highly motivated to ensure curricula equip graduates for work. Terms for this which are not readily accommodated under other literacies are employed here, for example:

- managing career and CPD
- managing reputation and professional identity
- business skills, enterprise, entrepreneurialism

Citizenship

Like employability this category is problematic in that it represent a lens through which a wide range of other literacies can be viewed, rather than a separate literacy in its own right. Components of 'citizenship' which do not appear in other literacies of the digital are referenced here, for example:

- social and political participation
- acting ethically, responsibly and safely
- addressing sustainability

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[17] One of the main reasons consistently cited by employers for investing poorly in training and workforce development is that workers will use their new skills to change jobs or demand higher wages.

Framework	Date	Producer/Creator	Audience	Main focus	Commentary
European Charter for Media Literacy http://www.euromedialiteracy.eu/index.php and **UK Charter for Media Literacy** http://www.medialiteracy.org.uk/	2006

2007 | EU

Media Literacy Task Force including representatives from UK Film Council, Channel 4, BFI , BBC, ITV, Skillset, Media Education Association , British Board of Film Classification International, Sectoral (Schools, Colleges), National | Broad audience including educational institutions, companies, government bodies, public | Media Literacy | Common European Charter with a highly visible UK arm. Charter provides definitions of media literacy and a list of competencies providing a framework for a range of agencies. Aims to develop a common understanding and vision for media literacy.

Two sets of signatories on both websites. UK signatories include a range of media bodies, schools and colleges. Recent initiative so too early to assess impact. |
| **i-curriculum - a European framework for defining information skills and a curriculum appropriate for living and learning in the digital age** (Primary, Secondary and vocational education) http://promitheas.iacm.forth.gr/i-curriculum/overview.html | 2004 | Futurelab was UK partner

International, Sectoral (Schools), National | Primary, secondary and vocational education sectors

policy makers, teachers and other educators and the producers of digital resources. | Digital literacy Information Literacy | Outcomes of a European project including Germany, Greece, Romania, Spain and the UK. Outputs include a review of each country's existing curricular frameworks, case studies, the framework and mapping of concepts of digital literacy onto the current and projected school practices.

Interesting for its attention to Street's (2004) 'social literacies' work and the development of a matrix which had three elements for each literacy/skill identified:
  ▪ operational curriculum (learning to use the tools effectively)
  ▪ integrating curriculum (technologies applied within the curriculum)
  ▪ transformational curriculum(changes to what we know)
which is similar to the framework developed for this study.

Although a project that ended in 2005 the website still exists and the matrix is highly relevant to digital literacy discourse today for both its definitions, mapping and matrix. What is not evident though is evidence |

					that people have taken on this framework and used it, either in a national context or by schools at an individual level.
Typology of knowledge, skills and competences: clarification of the concept and prototype http://www.ecotec.com/europeaninventory/publications/method/CEDEFOP_typology.pdf	2005	Centre for European Research on Employment and Human Resources Groupe European Commission and CEDEFOP	Broad audience including educational institutions, companies, government bodies, public	Employability, Credit transfer, qualifications and competences	Research report which examined existing classifications and typologies of knowledge, skills and competencies across Europe and developed a prototype typology within the framework of European qualifications frameworks. Provides a very useful literature review and useful examples of framework use in different sectors in various countries. Describes the UK approach as functional
Seven pillars of information literacy http://www.sconul.ac.uk/groups/information_literacy/papers/Seven_pillars.html	2003	SCONUL Working Group on Information Literacy National, Professional, Sectoral (HE)	Librarians	Information literacy	Established information literacy framework which was developed from earlier information skills work (1999) and updated in 2003. The framework is widely accepted by the UK academic library community and is used as the basis for many HE institutional approaches to support information literacy. The framework is very similar to other national frameworks, including: **The Seven Faces of Information Literacy** (Australia) Bruce, C. (1997) http://sky.fit.qut.edu.au/~bruce/inflit/faces/faces1.ph **Australian and New Zealand Information Literacy Framework: principles, standards and practice** Bundy (2004) http://www.anziil.org/resources/Info%20lit%202nd%20edition.pdf **Big six: Information & Technology Skills for Student Achievement** (US) Eisenberg (2001) http://www.big6.com/2001/11/19/a-big6%e2%84%a2-skills-overview/ In 2006 a JISC funded project examined information skills frameworks in relation to the UK key skills framework and developed a further model for the post 16 sector. **The Big Blue information literacy model** (UK) 2006 http://www.library.mmu.ac.uk/bigblue/index.html Information literacy frameworks such as the seven pillars model are often viewed and implemented in a generic way and applied across a range of learning contexts by librarians. This has generally kept

					ownership in the hands of librarians and kept information literacy support outside of the subject curricula, although several librarians have made efforts to work with academic teams and embed the literacies covered by this framework. Information literacy frameworks have sometimes been marginalised in discussions around digital literacy, or academic literacy because they are viewed as being about library skills and not relevant to the subject curriculum, raising issues around understandings and perceptions amongst different practitioners. Many journal articles fail to acknowledge the rich literature and practice from the information literacy sector which reflects the divisions within institutions around planning and provision.
Tomorrows Doctors http://www.gmc-uk.org/education/undergraduate/undergraduate_policy/tomorrows_doctors.asp	2003	General Medical Council Professional, National	Medical schools	Academic literacy Professional literacy	UK policy document to support medical Schools which includes a curriculum framework. This is an example of an imposed framework with supporting mechanisms to encourage adoption, testing and compliance. Medical graduates must meet the 'principles of professional practice' Good Medical Practice (2001) to ensure that the public receives an appropriate standard of practice. Vocational and professional qualification frameworks will be the key driver for curriculum development and delivery, with the incorporation of other broader generic frameworks (such as information literacy, digital literacies) likely to be a secondary consideration. For subjects without imposed standards of professional or vocational practice the supporting frameworks are likely to include a range of sources, such as professional bodies, institutional/school frameworks and other generic frameworks. It is difficult to find evidence of these frameworks and how they are used in practice as much of this activity is hidden within academic departments.
I-Learn Framework http://www.caledonian.ac.uk/quality/strategy/documents/GCU_LTAS_APPX1_i-	2008	Glasgow Caledonian Academy Institutional	Learners and staff from central services and academic	Academic literacy Information literacy Digital Literacy	Several institutions are in the process of developing frameworks for academic, information and digital literacies. A significant issue in implementing such a framework is the extent to which the approach is collegiate or imposed. In order to be effective at an institution-wide level

LearnFramework.doc.			schools	Employability skills	frameworks need to be embedded within key institutional strategies and requires a commitment to curriculum re-design and development. The I-Learn Framework at Glasgow Caledonian University (GCU) is an example of this approach and faces challenges incorporating existing traditional practices with the newly articulated vision. A collegiate approach is central to the GCU strategy to ensure 'buy-in' and engagement with the framework. Pilots are currently under way to identify appropriate strategies for incorporating the framework into the curriculum. The framework is informed by a range of existing frameworks both from within the UK, such as the SCONUL Seven pillars framework and the Skills for Scotland strategy, and also a range of GCU initiatives around self-regulated learning, employability and work-based learning. This pick and mix approach allows institutions to develop frameworks that are appropriate to their own contexts. The GCU has employability as a significant driver and the framework reflects this.
The framework for higher education qualifications in England, Wales and Northern Ireland http://www.qaa.ac.uk/academicinfrastructure/FHEQ/EWNI/default.asp#framework	2007	Quality Assurance Agency for Higher Education National, Sectoral (HE)	Academic staff, Managers	Academic Literacy	A broad qualifications framework, based on defined outcomes, not a credit framework. Institutions have choice in how to achieve the outcomes, but must be able to demonstrate how their curricula supports learner progression. Links to other frameworks – such as Higher education credit framework for England: guidance on academic credit arrangements in higher education in England
QAA subject benchmark statements http://www.qaa.ac.uk/academicinfrastructure/benchmark/default.asp	Varied	Quality Assurance Agency for Higher Education National, Sectoral (HE), Professional, Subject	Academic staff	Academic Literacy Professional Literacy	In practice professional and vocational subject benchmarks identify literacies more specifically and are of key importance to academic practitioners in the field. See also the Tomorrows Doctors entry. The QAA offers a range benchmarks according to level and specific needs: Honours degree subject benchmark statements Master's level subject benchmark statements NHS/Department of Health subject benchmark statements Scottish subject benchmark statements The Communications, Media and Film and Cultural Studies benchmark,

					for example, provides very specific skills framework and outlines expectations of students studying an honours degree in this discipline. Not all of these benchmarks will have been updated to take account of the need to incorporate or acknowledge the need for different/new skills for a digital age.
Curriculum for excellence http://www.ltscotland.org.uk/ curriculumforexcellence/	2007	Learning and Teaching Scotland National, Sectoral (Schools)	School teachers, Managers	Academic Literacy Communication skills	Curriculum for Excellence is a significant reform in Scottish education which describes the purposes of learning from 3 to 18 and entitlements for all learners.

This is another example of an imposed framework and there are significant supporting mechanisms to implement the initiative. Support includes training, guidance, curriculum development tools, and a range of resources. The framework acknowledges the extent of transformational change that institutions will need to undergo to implement this curriculum effectively and acknowledges the long term nature of such an undertaking.

CfE was developed through a long process involving teachers to ensure engagement and buy-in, and aims to build on and acknowledge good practice.

There are also moves to transform the national curriculum in England and Wales with hints of this acknowledging the impact of web.2 technologies and the skills required to utilise these effectively in a school context. http://www.guardian.co.uk/education/2009/mar/25/primary-schools-twitter-curriculum |

Table 3.1 Academic Literacies. Review of key frameworks illustrating the scope, various owners, literacies and factors affecting use.

3.2 Framework of Frameworks

Top-level terms, framing ideas	Component competences, capabilities, literacies	Practices – what competent learners do	Digital practices – what competent *digitally enabled* learners do
Learning to learn, metacognition [18 19 20 21]	Reflection Strategic planning Self-evaluation, self-analysis Organisation (time etc)	Manage time and study commitments Balance learning and life Know where and how to access support Construct strategies for learning, articulate goals Reflect on own learning and progression	*Use digital tools to manage time and commitments* *Use digital networks and online resources to fit learning into life* *Access support online including learning communities* *Diagnose learning needs* *Choose appropriate learning tools (see below)* *Use digital tools to record and reflect on progress*
Academic practice, study skills [22 23 24 25 26]	Comprehension Reading/apprehension Organisation (knowledge) Synthesis Argumentation Problem-solving Research skills Academic writing Specific subject discipline skills as appropriate	Understand subject-relevant academic material Synthesise academic discourse and knowledge Identify or collect relevant evidence Critically evaluate arguments and evidence Scope, investigate and solve problems typical of the subject Construct reasoned argument Cite sources appropriately Break down/analyse research question	*Apprehend academic ideas using a variety of media* *Organise academic ideas using digital tools* *Present academic ideas using a variety of media* *Use digital argumentation and analysis tools* *Use digital tools to gather or identify evidence* *Use digital bibliographic tools* *Analyse data tools* *Use specific subject discipline related tools (e.g. CAD)*

18 Cartwright, Kelly B. (Ed.) (2008). Literacy Processes: Cognitive Flexibility in Learning and Teaching. NY: The Guilford Press Cartwright, Kelly B. (Ed.) (2008). Literacy Processes: Cognitive Flexibility in Learning and Teaching. NY: The Guilford Press http://edrev.asu.edu/reviews/rev731.htm

19 Quintana, C et al. (2005) A Framework for Supporting Metacognitive Aspects of Online Inquiry Through Software-Based Scaffolding in Educational Psychologist, V4, N4. pp 235-244 http://www.informaworld.com/smpp/content~content=a784751538~db=all

20 McGuinness, C (1999) From thinking skills to thinking classrooms, DfeS, 1999 http://www.dcsf.gov.uk/research/data/uploadfiles/RB115.doc.

21 Hoskins, B and Deakin Crick, R (2008) Learning to Learn and Civic Competences: different currencies or two sides of the same coin? Centre for Research on Lifelong Learning http://active-citizenship.jrc.it/Documents/learning%20to%20learn/Learning%20to%20Learn%20and%20Civic%20Competences%20FINAL%20final.pdf

22 i-curriculum - a European framework for defining information skills and a curriculum appropriate for living and learning in the digital age (Primary, Secondary and vocational education) http://promitheas.iacm.forth.gr/i-curriculum/overview.html

23 The framework for higher education qualifications in England, Wales and Northern Ireland 2007 Quality Assurance Agency for Higher Education http://www.qaa.ac.uk/academicinfrastructure/FHEQ/EWNI/default.asp#framework

24 Undergraduate levels framework (OU, UK) 2005 - Centre for Outcomes-Based Education http://www.open.ac.uk/cobe/docs/KnowAbout/FS4-LevelsFramework.pdf

25 OU Open Learn Learning framework http://openlearn.open.ac.uk/mod/resource/view.php?id=188602

26 General Medical Council (2003) Tomorrows Doctors UK policy document to support medical Schools includes curriculum framework http://www.gmc-uk.org/education/undergraduate/undergraduate_policy/tomorrows_doctors.asp

Information literacy[27 28 29 30 31 32]	identification accession organisation evaluation interpretation analysis synthesis application	Recognise/identify need for information Locate and obtain the required information resources Assess the objectivity, accuracy, reliability and relevance of resources Organise, set out and manage resources Analyse, reinterpret, compare, apply etc information e.g. using models, frameworks, protocols Produce new combinations or interpretations of information	*Use search engines, academic databases and journals, repositories etc* *Aggregate and reaggregate information on task/topic basis* *Evaluate online resources* *Rate, comment on, review resources online* *Use digital data analysis tools and protocols* *Use digital tools to manage information locally and remotely* *Share, repurpose, enrich information resources in online communities*
Communication and collaboration skills[33 34 35]	Teamwork Networking 'Speaking' and 'listening' skills (see below for different media)	Find, join and build communication networks Facilitate groups Share ideas Build knowledge collaboratively Project identity	*use digital technologies to participate in/manage networks* *use digital technologies to share and co-build knowledge* *maintain appropriate levels of privacy* *manage digital identity and reputation* *(Computer Supported Collaborative Work) CSCW*

27 i-curriculum - a European framework for defining information skills and a curriculum appropriate for living and learning in the digital age (Primary, Secondary and vocational education) http://promitheas.iacm.forth.gr/i-curriculum/overview.html

28 Seven pillars of information literacy (UK) SCONUL 2003 http://www.sconul.ac.uk/groups/information_literacy/papers/Seven_pillars.html

29 The Big Blue information literacy model (UK) 2006 http://www.library.mmu.ac.uk/bigblue/ppt/themodel4.ppt http://www.library.mmu.ac.uk/bigblue/index.html

30 Australian and New Zealand Information Literacy Framework: principles, standards and practice 2004 http://www.anziil.org/resources/Info%20lit%202nd%20edition.pdf

31 Eisenberg (2001) Big six: Information & Technology Skills for Student Achievement (US) http://www.big6.com/2001/11/19/a-big6%e2%84%a2-skills-overview/

32 Bruce, C. (1997)The Seven Faces of Information Literacy (Australia) Bruce 1997 http://sky.fit.qut.edu.au/~bruce/inflit/faces/faces1.php

33 CSCW matrix http://en.wikipedia.org/wiki/CSCW

34 i-curriculum - a European framework for defining information skills and a curriculum appropriate for living and learning in the digital age (Primary, Secondary and vocational education) http://promitheas.iacm.forth.gr/i-curriculum/overview.html

35 The NHS Knowledge and Skills Framework (NHS KSF) (2004) Dept. of Health. Appendix 2 Core Dimension 1 : Communication http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_4090843?IdcService=GET_FILE&dID=5786&Rendition=Web

Media literacy (also 'visual' and 'audio' and 'video' literacies)[36][37]	Critical 'reading' Creative production	Understand notions of audience, viewpoint and persuasion Understand how media messages are designed Critically explore meanings Produce messages in a range of media Develop personal style	*Understand how digital media work in terms of audience, viewpoint, design* *Produce messages in a range of digital media* *Link across media and communicate hypertextually*
ICT/digital/computer literacy[38][39][40]	Keyboard skills Use of capture technologies Use of analysis tools Use of presentation tools General navigation/UI skills Adaptivity Agility Confidence/exploration	*Readily adopt new tools and explore their functionality* *Choose and use a range of different tools as appropriate to the situation* *Capture information and evidence digitally* *Present information and evidence digitally in a range of media* *Use help menus and other intrinsic support to build new skills*	
Employability Employability encompasses all or many of the other skills but is included here as a distinctive framework for theorising about and organising these skills, i.e. the production of the learner as a competent worker/employee. Component skills are those distinctive to this framework: the CBI is also concerned with literacy, numeracy, communication, ICT[41][42][43][44][45]	Self-management Teamworking Problem solving Business and customer awareness Innovation/enterprise	Negotiate a position Find and present solutions tailored to needs Produce innovative solutions Present oneself and ones capabilities to prospective employers/clients Manage risk appropriately Continually update skills	*Use digital technology to present self and manage reputation* *Use digital technology to manage CPD*

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36 UK Charter for Media Literacy (2006) http://www.medialiteracy.org.uk/

37 Media literacy (Ofcom - UK) 2007 - Office of Communications http://www.ofcom.org.uk/advice/media_literacy/

38 i-curriculum - a European framework for defining information skills and a curriculum appropriate for living and learning in the digital age (Primary, Secondary and vocational education) http://promitheas.iacm.forth.gr/i-curriculum/overview.html

39 Digital transformation: a framework for ITC literacy 2002 - International ICT Literacy Panel http://www.ets.org/Media/Tests/Information_and_Communication_Technology_Literacy/ictreport.pdf

40 i2010 - (EU) 2007 initiative equipping people with ICT skills looking at eCompetancy and a pending Digital Literacy Review http://ec.europa.eu/information_society/activities/einclusion/policy/competences/index_en.htm

41 Employability encompasses all or many of the other skills but is included here as a distinctive framework for theorising about and organising these skills, i.e. the production of the learner as

Citizenship Digital citizenship encompasses many other skills but is included as a distinctive framework for theorising about and organising these skills, i.e. the production of the learner as a competent citizen or member of wider society[46 47 48 49 50]	Participation and engagement Ethicality/responsibility Political, social, personal responsibility	Participate in social groups in a range of roles Behave ethically in professional and personal situations Be safe when interacting with groups and individuals	*Understand digital rights and responsibilities* *Manage digital identities* *Manage issues of privacy and data ownership* *Understand moral and human rights in a digital context* *Understand issues around safety and protection in a digital context*

a competent worker/employee. Component skills are those distinctive to this framework: the CBI is also concerned with literacy, numeracy, communication, ICT.

42 Student Employability Profiles, 2004/5, Higher Education Academy, ESECT and Council for Industry and Higher Education Includes a glossary of competencies http://www.heacademy.ac.uk/resources/detail/Employability/employability542

43 UK Commission for Employability and Skills (2009) The employability challenge: full report, Appendix C http://www.ukces.org.uk/pdf/8080-UKCES-Employability%20ChallengeFinal.pdf

44 Employability skills map, University of Kent. http://www.kent.ac.uk/careers/sk/skillsmap.htm (2008)

45 Winterton, J et al. (2005) Typology of knowledge, skills and competences: clarification of the concept and prototype. Centre for European Research on Employment and Human Resources Groupe http://www.ecotec.com/europeaninventory/publications/method/CEDEFOP_typology.pdf

46 Again, digital citizenship encompasses many other skills but is included as a distinctive framework for theorising about and organising these skills, i.e. the production of the learner as a competent citizen or member of wider society

47 Citizenship For 16-19 Year Olds In Education And Training, FEFC, 2000 http://www.qca.org.uk/qca_4858.aspx

48 Hoskins, B and Deakin Crick, R (2008) Learning to Learn and Civic Competences: different currencies or two sides of the same coin? Centre for Research on Lifelong Learning http://active-citizenship.jrc.it/Documents/learning%20to%20learn/Learning%20to%20Learn%20and%20Civic%20Competences%20FINAL%20final.pdf

49 Mainguet, C and Baye, A. (2006) Defining a framework of indicators to measure the social outcomes of learning in Measuring the effects of education on health and civic engagement: proceedings of the Copenhagen Symposium OECD 2006 http://www.oecd.org/dataoecd/15/20/37425733.pdf

50 de Weerd, M et al. (2005) Indicators for active citizenship and citizenship education: final report. European Commission Research report.

4. Learning literacy provision in UK HE and FE institutions

This section reports on the two major data collection exercises carried out as part of the LLiDA project. In collecting institutional data and snapshots of practice, our intention was to gain insights into how 'digital literacies' are currently interpreted and supported in UK HE and FE. We actively sought contributions from central services staff across the range of services potentially involved, from specialist projects or centres, and from those in academic departments working to embed literacies into the curriculum. We expected this last group of people to be much harder to reach, and this proved to be the case. Also very difficult to identify were examples of informal learner-led practices. We were, however, optimistic of finding multi-disciplinary work taking place across these groups, for example where central services staff have taken a pro-active role in supporting curriculum interventions or in setting up mentoring schemes.

The format of this section is to present the method and summary findings for the two investigations, then to present more detailed findings from both under the headings: strategies; central services provision: support in the curriculum; learner-led support; and reflections.

4.1 Audit: Method

The audit process and guidance notes were developed after an initial review of the literature and issues likely to arise at institutional level. They were further refined through an intensive piloting at Glasgow Caledonian University, and through feedback and discussion at 3 workshops with potential auditors and interested staff. Institutional auditors were recruited from these workshops, from personal contacts and partner agencies.

We were not looking for a representative sample of UK HE and FE but to record the current state of play in colleges and universities where 'digital literacies' were already perceived as an issue or agenda. Once identified and briefed, auditors were given a copy of the final audit tool and guidance notes, and made aware of the support available to them via email and the project wiki. In practice auditors made little use of this support: the guidance notes seem to have been clear, though the audit process was often described as 'difficult' or 'challenging' at institutional level.

Auditors were paid for the equivalent of two days' work to collect the data from their institution, which they were advised to do through a combination of desk review of documentation and consultation with colleagues. A number ran focus groups to address specific areas of the audit, particularly the reflective questions in section 7. Confidentiality was assured to all auditors and audit institutions: those with examples of excellent practice to report were encouraged also to submit snapshots (see below) which are publicly available on the project wiki.

4.2 Audit: Summary findings

Fifteen institutions completed the full audit of which 2 were FE colleges. Of the 13 Universities, the mix of pre- and post-1992, and of Scottish and English institutions was reasonably representative. There were no Welsh institutions represented. Where responses from FE were significantly different from responses from HE they have been treated separately. The point was not to take a representative sample but to look in detail at how *a range of different* institutions are responding to the challenges outlined thus far in the report.

Of those carrying out the audit, 6 (40%) were staff in a subject department, and 9 (60%) worked in central services. 5 of the 6 subject staff were involved in a special digital literacies project, while only 4 of the services staff were so involved, suggesting that most of the subject staff had a personal interest in digital literacies outside of their day-to-day role, while services staff may have become involved out of personal *or* professional interest.

Comments in the audit notes and by email have indicated that the process of auditing has in itself contributed to strategic change:

- An immediate outcome from this audit is a request (from two faculties) to bring the tool to Faculty Learning and Teaching Committee for wider discussions.
- The audit has clearly woken up a number of people about the need to address the issues.
- I think we've really benefited from doing this, and it's helped us consolidate what's happening across the University
- Already the outputs of our internal audit are making changes to what we do and how we do it, so thank you for involving us in the project and giving us an impetuous for change.

4.3 Snapshots: Method

The snapshot pro-forma and guidelines (available from project web site) were distributed widely through a variety of mailing lists (lis-infoliteracy, elesig, JISC programmes, HE Academy and subject centres, key agencies) with a request for 'best practice' in learning and digital literacies support. Those who emailed to check criteria for submission were generally encouraged to submit. Snapshots were quickly added to the project wiki to provide examples and encourage further submissions, and a second mailshot was carried out about a month after the first. A small number of projects known to the authors were also approached directly.

4.4 Snapshots: summary findings

We received examples from a range of contributors including academics, librarians, and educational developers, with a few from teams working across these disciplines. Some of the exemplars were the result of project funding but the majority were institutionally funded and represented established practice or new approaches within established services and courses.

There are currently 41 unique snapshots in the database (http://www.caledonianacademy.net/spaces/LLiDA/index.php?n=Main.BestPracticeExamples), highlighting provision for a variety of learners:

- school students (4)
- undergraduate students (31)
- postgraduate students (17)
- remote students (4)
- staff development (8)

It is worth noting that these tags/categories reflected the specific target group of the intervention/activity, and that many of these resources and activities could be appropriate and useful to other groups of learners. Seven of the snapshots were specifically focused on learner transitions.

Total number of snapshots 41				
Category	**Number**		**Category**	**Number**
Exemplar type			**Technologies cited**	
Policy or strategy	2		E-portfolio system	3
Central services provision	15		PDAs	1
Provision in curriculum – separate module	6		Reference Management systems	1
Provision in curriculum – in topic module	11		PLEs	1
Learner led provision	3		Podcasts	4
Literacy & competency testing	1		Video	6

Educational context		VLEs	12
Adult learners	6	Virtual worlds	1
Further Education	6	Searchable database	2
Higher education	34	Social software/web 2.0	6
Foundation degree	2	Wiki	4
Literacies addressed		Approaches to student support	
ICT literacies	19	Assessed	9
Information literacies	22	Competence testing	1
Academic literacies	22	Interviews	1
Employment skills	2	Online tutorials	9
Media literacies	1	Peer mentoring	5
Literacy frameworks	8	PDP	2
Subject discipline (where relevant)		Printed resources	3
Art & Design	2	Self Regulated Learning	4
Computer Science	1	Student induction	4
Environmental studies	1	Workshops	5
Health	5		
Humanities	2		
Landscape & Garden Design	1		
Management	1		
Mathematics	1		
Psychology	1		
Research skills	1		
Sciences	1		
Social Sciences	2		
Statistics	1		
Teaching	5		

Table 4.1: various categorisations of snapshots submitted

The spread across literacies was fairly even, though these figures hide some interesting variations:

- ICT literacies (19)
- Information literacies (22)
- Academic literacies (22)

Many snapshots supported more than one of these literacies: in fact good practice seems often to involve working at the interface between high-level terms, between competence frameworks, and between institutional roles. A very few contributors refer to frameworks but none had been implemented or integrated directly into practice, highlighting the trend for institutions to create bespoke frameworks that are right for their needs (NB this is almost certainly more available as a practise and value in HE than in FE). Oxford Brookes2, LSE and Edinburgh are all good examples of this. The Oxford Brookes institutional strategy was mapped retrospectively to the Sconul 7 Pillars framework, and the ease with which this was done reinforces our impression that the framework – or the terms it uses - are already part of the discourse of staff working in this area.

Other literacies identified explicitly included

- Employment skills (2)
- Media Literacies (1)

It is worth noting that many of the exemplars in practice did support the use of different media, including two of the most radically embedded into their respective curricula (see discussion under 4.7 below). The term 'media literacies', and the idea of paying critical attention to media as supporting different social and communicative practices, are perhaps not in general currency. The exemplar that included this term explicitly was for a module entitled 'Media and Information Literacy Course Unit' within a Masters course in Digital Technologies, Communication and Education, a subject area in which 'media' is already a key locus of pedagogic effort and a central interpretive term.

Employability is also notable by its near absence from these snapshots, despite its prevalence in institutional strategies (see 4.5 below).

The terminology used in the snapshots is variable, reflecting that our methodology emphasised practical provision and directed contributors to use the terminology they were most familiar with. Nine of the snapshots used the terms '*digital literacies'* or '*digital literacy',* usually in the context of ICT skills, 11 mentioned communication skills and 9 mentioned critical skills or literacy. We are concerned to note from workshops that the language of literacy, even among those who identified most closely with our study, is still unfamiliar or very contested. It seems certain that we missed valuable work, particularly among practitioners in departments, whose professional role and language would not have exposed them to the terms we were using.

Where exemplars concerned activities within the curriculum, the subject heading tags show a very strong bias towards applied subjects (i.e. vocational/professional): health related (5) social care (2) and teaching/education (5), along with two others (garden design and management). Two other exemplars are allied with cross-disciplinary skills (statistics, research skills) rather than a specific discipline. The clear conclusion is that literacies are more prominently or more self-consciously addressed by teachers of applied subjects and applied skills, though again these may the only practitioners with whom the terms of our invitation had any resonance.

The education exemplars in particular are concerned with ensuring that teachers are able to utilise the range of technologies available to them to support learning. There are also a significant number of snapshots that describe staff development interventions, particularly in the use of web 2.0 technologies. Other work (e.g. Sharpe et al., 2005) has highlighted the difficulty of bringing learners to the centre of attention in investigating e-learning practices., as was our intention here However, there is increasing evidence that even digitally confident learners still look to their tutors for guidance on use of ICT to support their learning[51], and this understanding may be reflected in the number of interventions that focus support on tutors' skills.

One surprise to us was the number of interventions based around the virtual learning environment. It may be that this is simply the most effective means of reaching learners: recent research[52] does indicate that learners place great value on having one location from which they can access everything of relevance to their studies. However, we expected a much higher number of interventions based around e-portfolio systems (which we tried hard to distinguish from VLEs with an e-portfolio function) where learners have greater ownership of the processes involved. This imbalance may reflect a lack of depth in the embedding of literacies, with resources available but with no requirement on learners to diagnose their needs, reflect on their identities as learners, or integrate literacies into their learning goals.

The snapshots include a fairly wide range of interventions with online tutorials (8) and workshops (5) being the most significant. Seven snapshots included assessed activities whilst only two described competence testing or skills auditing as a first step in providing support. A few of the snapshots refer to online resources developed to support learners acting independently, but many focus on the value

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[51]   This is one finding of the JISC Learners' Experiences of e-Learning programme: see
    https://mw.brookes.ac.uk/display/JISCle2f/Beliefs+and+expectations and
    https://mw.brookes.ac.uk/display/JISCle2f/Course+level+practices
[52]   Also from the JISC LEX programme: see 'what learners value' at https://mw.brookes.ac.uk/display/JISCle2f/Preferences

of tutors and other learners to support the development of literacies. In practice most resources, whether online or print-based, are designed for delivery in a supportive context whether that is based around workshops, one-to-one support, or embedded into programmes of study. Once again, though, PDP (2) is not widely used as a means of addressing literacy needs.

4.5 Findings: Institutional strategy and policy

Eleven of the auditors described at least 4 institutional documents which made strategic statements about learning and digital literacies, 5 (33%) described 6 or more, the mode being 5. At the very least this indicates that the issue has widespread strategic significance. It may also indicate a lack of joined-up thinking.

Sixty separate institutional strategy documents were described to us by auditors. Of these, 19 were classified as learning and teaching strategies, some including faculty/school LTA strategies in the set of fully described strategies and others indicating that faculty/department LTA strategies also presented opportunities for literacy issues to be raised. Unsurprisingly, given directives from HEFCE and SHEFC, this can be seen as the institutional norm. Four documents were directed at course and module development teams or provided general curriculum/academic frameworks, and 5 further documents were classified as e-learning strategies, giving 28 of the total devoted directly to learning, teaching and assessment.

Four institutions had explicit information literacy or skills strategies, two of which also had an e-learning strategy.

Six strategies were classified as learner development, learning development, learner guidance or PDP.

Two strategies were concerned with 'quality' while 6 were whole-institution strategic plans, indicating that more than half of audited institutions were addressing learning and digital literacies at the highest level of institutional planning. However, strategy documents were particularly likely to be 'unclear' about the mechanisms for supporting literacies or embedding their support into programmes of study. Employability was mentioned frequently in these high-level strategies: one committed the university to supporting '*digital literacies in order to enhance* employability'. More typical was a commitment to '*the use of digital tools to solve the challenges inherent in mass higher education*' i.e. to solve institutional problems, rather than to help learners thrive in a digitally-enabled society and economy.

Six were classified as ICT or IS strategies, though this included 2 (information management, and information strategy) which took a broader approach to managing information across the institution. Only 2 of the 6 made reference to learners' ICT/digital skills. Of the 15 institutions audited, then, only 2 brought forward strategies which considered learners' skills in the context of ICT strategy and planning, despite our direction to auditors that they should consider ICT/IS strategies and look for ICT skills as a term.

The remaining strategies were concerned with a range of issues: retention, progression, transition, internationalism, employability (2), employer engagement, CPD and widening participation. These issues can all be seen as concerning the curriculum in specific aspects.

Within the 60 strategic documents we asked auditors which literacies were mentioned. We then analysed the raw text provided by auditors against our framework. Our scores are as follows:

Learning to learn	12
Academic literacies	27
Information literacies	11
Communication and collaboration skills	12
Media Literacy	2

ICT/digital literacies	15
Employability	25
Citizenship	4
Other terms	
Key skills/core skills	5
Numeracy	3
Disposition and potential	4
PDP (incl. in employability)	6
Subject specific skills (incl. in academic)	3
Lifelong learning (incl. in learning to learn)	6

Table 4.2: literacies addressed in strategic documents

Most strategies addressed several literacies from our framework (mean = 2.25) [NB factor analysis could determine whether there is any pattern to how these are grouped]. There is a lack of strategic concern with media literacy, either in the context of information literacy or as a separate issue, though 'communication' is a relatively widely used term which embraces some of the same capabilities. Employability is widely referenced as a concept but without any coherent terminology or clear link to more specific literacies from our framework.

Terms we had difficulty accommodating were *key skills/core skills*, which in practice included *numeracy* ând read/write *literacy*, defined as 'basic skills' in the Leitch Review (Leitch, 2006). *Disposition and potential* covers a small number of items which would have been difficult to accommodate within a practices framework, e.g. *honesty, reliability,* though we note that a recent CBI survey of employers' ideal graduate attributes produced more dispositional terms than skills or competences (CBI/EdExcel, 2008).

We undertook analysis of *who* the strategies identified as responsible for supporting literacies, and of *how* they saw such support being provided.

Students (implied in statements about shared responsibility)	1
Academic staff in depts	23
Academic leaders (Deans, Heads of School/Faculty etc)	5
Module leaders	1
(Guidance) tutors	3
Teaching fellows	1
Faculty total	**33**
Learning/study/skills support	14
Library	9
Subject librarians	4
Educational development/Academic practice	5
e-learning	5
Careers	1
Computing services	1
Student Services	2
Learning technologists	3
Central services total	**44**

Specialist support centres (writing, maths)	1
Student Union	1
Specialist projects (internal)	1
Externally funded projects (CETLs)	4
Employers	1
Community organisations	11
Outreach staff	1

Table 4.3: Who is responsible for developing literacies?

Organisational:	
New framework(s) or requirements in course/module documentation	3
Review induction process	2
Support transition from schools and partner colleges	1
New partnerships within institution	3
Identify and embed institutional best practice	1
Technical:	
Use VLE to integrate support	4
Use of web 2.0 techs	3
Use of mobile techs	1
Use of eportfolios	2
Central services staff:	
Workshops	14
Online resources	14
Printed resources	7
Induction activities	5
Drop-in sessions	5
One to one sessions	5
Learning and teaching materials	2
Help-desk	1
Summer schools	1
One-off sessions for programmes	1
Academic staff:	
Staff development	10
Curriculum innovation	3
Enhance scholarship (of learning and teaching)	2
Programmes of study:	
Embed specific literacies	10
Work based/vocational courses	4
Skills modules	3
Embed PDP	1
Students:	
Engage in PDP	12

Undertake/record work experience	2
Undertake/record volunteering	1
Engage with consultations about curriculum ('student voice')	2
Engage with feedback/assessment	3
Students (new modes of support, unspecified responsibility):	
Diagnose learning needs/preferences	3
Diagnose skills requirements	1
Regular skills review	1
Support for independent and collaborative working	3
Support for remote and distributed learners	3
Support for exams	1
Pastoral support	1
Referral to other agencies	1

Table 4.4: How will literacy development be supported?

Strategies apportioned responsibility for students' developing literacies fairly evenly between academic staff and central services. Students themselves were scarcely mentioned as having responsibility in this area, though appear more clearly as actors when the means of intervention are considered. There was a surprisingly strong showing for CETLs, at the four Universities where these were already involved in literacy work (our sample possibly skewed towards these?), and for community organisations of various kinds. Although citizenship is far less prominent than employability in the literacies to be developed, then, community groups are far more prominent than employers among the resources available for supporting students' emerging literacies.

As means of enhancing literacy development, central services staff were most likely to be called upon to develop workshops and online materials for students: academic staff were most likely to be called upon to develop their own skills. In five strategies, the terms *scholarship* (of teaching) or (curriculum) *innovation* were used to lend weight and credibility to this expectation. It can be assumed that course teams i.e. (typically) both central services staff and academic staff would be involved in the embedding of literacies into programmes of study. In the FE colleges the focus was more strongly on diagnosis and support of individual learners' skills.

Students were rarely addressed as responsible actors in these strategies and yet many of the activities mandated would not make sense, or be successful, without active student engagement: provision for PDP and recording of work/voluntary experience; student representation on curriculum bodies; diagnosis, review and feedback on skills development. Given comments about the unpopularity of some literacy approaches, student engagement can be seen as a missing factor in strategic thinking about this issue. It is also striking how many strategies expect students to undertake PDP in relation to the rather small number of practical examples we received in this area.

Further analysis of these strategies was difficult as the language used was idiosyncratic and often very general. Information strategies tended to be most clearly focused on a finite set of learner skills. Terminology showed the influence of the SCONUL 7 pillars of information literacy, though this framework was referenced only once, and staff responsible always included library / learning resources, though often with implicit or explicit involvement of academic staff. The strategies broadly concerned with learning and teaching tended also to focus on the skills and capabilities of learners, but ranged much more widely in the terminology used to describe these and in the people and interventions seen as appropriate in supporting them.

Qualitative analysis of snapshots
Two snapshots related to institutional strategies which were integrating the development of students' digital and learning literacies at a high level. These - from Glasgow Caledonian University and Oxford Brookes University – are well worth reading in detail.

Common features of both strategies are:

- institution-wide changes to policy, clearly linked to main institutional drivers and priorities
- actions cascaded through a range of institutional strategies e.g. quality, ICT, and practices, e.g. course documentation
- an incremental approach, spearheaded by pilot projects/initiatives, some with external funding
- collaboration between central services and academic staff, principally around...
- course development and review, involving multi-disciplinary development teams, with intensive resourcing
- large central unit (e-learning PLUS academic development) driving policy forward: in both cases with substantial national profile and hybrid teaching/development/research agenda
- ongoing research, evaluation and evidence-gathering about students' experiences with technology and learning
- commitment to understanding the learning experience in a holistic way: 'learning takes place in a technology-rich world'
- building on previous work, treating transformation as a long-term project
- moving people out of their silos, for example by creating hybrid and/or 'roving' roles

Key terms from the Gcal *i-learn* framework	Key terms from OxBrookes' *Mapping Graduate Attributes for a Digital Age*

* Critical understanding
  * Informed by current developments in the subject
  * An awareness of the provisional nature of knowledge, how knowledge is created, advanced and renewed, and the excitement of developing knowledge.
  * The ability to identify and analyse problems and issues and to formulate, evaluate and apply evidence based solutions and arguments
  * An ability to apply a systematic and critical assessment of complex problems and issues
  * An ability to deploy techniques of analysis and enquiry
  * Familiarity with appropriate techniques and skills, including presentation and communication skills
  * Originality and creativity in formulating, evaluating and applying evidence-based solutions and arguments
  * An understanding of the need for a high level of ethical, social, cultural, environmental and wider professional conduct.
	* self-regulating citizens in a globally connected society,
	  * able to handle multiple, diverse information sources and media,
	  * proficiently mediating their interactions with social and professional groups using an ever-changing and expanding range of technologies and
	  * able confidently to use digital technologies to reflect on, record and manage their lifelong learning.

Table 4.5 Key terms from institutional frameworks

4.6 Findings: Central services

Thirteen auditors described at least four central service teams with responsibilities for learning and digital literacies: seven described at least six. As with strategies, this may indicate the breadth of concern with literacies, and/or a fragmentary approach to implementation. In all, 71 different central service teams were described to us across the 15 institutions. Four were excluded from the following analysis on the grounds that they provided support solely to academic staff (though more on this later). Many supported several high-level literacies, and this overlap is reflected in the raw score below.

Academic practice	15
Learning to learn	12
Information literacy	20

Media literacy	1
Communication skills	2
ICT	20
Employability	11
Citizenship	4
Access	8
English	2
Maths	1

Table 4.6: Literacies supported by central services

We have added a new category of access which included widening participation and outreach work (e.g. 'Get Ready for University Study') along with disability support. We found eight examples, five in combination with another high level literacy term. English and Maths might be included under the same umbrella. These are highly learner-centred services, designed to help individuals overcome barriers to study. We could therefore tentatively bracket them with the 'learning to learn' services described below.

Four included the term 'digital literacies' in the text describing service function, and of these we analysed 2 as supporting 'information literacies' and two as supporting 'information/ICT' in combination.

Unlike the strategies section, auditors had little difficulty identifying and expressing which literacies were supported by which services. One would expect a better understanding of and focus on practical needs among staff directly involved in provision, but there is the potential for the clearer differentiation of roles, functions and terminology at services level to get in the way of joined up thinking.

'learning support' and 'academic practice'
We identified 15 services that were providing academic practice support, and 12 that were providing 'learning' support. Only one service did we struggle to differentiate, as it was described simply as providing the 'whole range of academic/learning literacies'. Therefore either a 'real' differentiation exists, or there is a divergence of terminology which mirrors our analytical framework. (We have not yet analysed whether the academic/learning divide falls along pre-1992/post-1992 lines.)

Some support for a real world differentiation of functions is given in the data, so for example 'learning support' is more likely to be provided through workshops and IAG, and much less likely to be provided in collaboration with academics through input to specific modules or courses. It is also slightly more likely to be provided by email or telephone (learner-centred technologies?) and less likely to be provided at drop-in sessions.

Learning support is also more likely than academic practice to be supported by services with a hybrid remit, so for example 4 of the 12 were providing learning support in conjunction with ICT and two in conjunction with employability. Where academic practice is supported in hybrid contexts, there is much less clarity about its affiliation: 2 for information literacies, 1 each for access and communication, and one very generalised service supporting academic practices (to include) access, information and ICT capabilities. While the sample size is small, it gives some support to the existence of two discrete discourses around learning literacy, and two different models for supporting learners:

Learning support	Academic practice
Summary: student centred, focused on students' own practices (at best – can also focus on students' individual needs or deficits). Rationale: learners need practical strategies for fitting learning into their lives Recognises learners have existing practices and	Summary: often subject centred, typified by work in collaboration with academics, focused on practices of the university and its component disciplines e.g. research skills, methods, academic writing. Rationale: learners need explicit guidance on what is expected of them in academic context(s)

other commitments: learning as lifepath and personal development	Recognises that the practices of the academy, including its information and communication practices, can be challenging: learning as apprenticeship
Example from audit: 'General help and guidance with learning issues (often underlying emotional issues)'	Example from audit: 'Research skills for referencing, sourcing and evaluating literature/materials for subject discipline work'
More likely to be supported through: Workshops Information, advice and guidance Telephone/email (learner-owned technologies?)	More likely to be supported through Collaboration with academics on modules and programmes Drop-in support
Likely to be hybridised with: employability, ICT	Less likely to be hybridised: no clear pattern
Asks: 'who is this learner and what are their personal barriers to learning more effectively'?	Asks: how can academic practises be made clearer and more accessible to learners?

Table 4.7 A comparison of 'learning support' and 'academic practice'

ICT and information literacy
We found 20 instances of each term – showing that in at least some institutions there is more than one service supporting information literacy, and more than one service supporting ICT – but 8 instances of overlap i.e. information literacies and ICT skills being supported by a common service. Information literacy was more likely to be associated with academic practice, and ICT with learning to learn (significance not tested). All services supporting information literacy in isolation were based in the library, while all services supporting ICT in isolation were ICT/IT services, central or devolved. Where the two were supported in tandem, the service titles reveal some interesting relationships and trajectories:

Bringing ICT/info services together to provide more joined-up *support to learners* (4)
- Learner Support Centre
- Customer services
- Learning Support Services (Library-based)
- Learning Development

Understanding '*information*' in a more joined-up way (3)
- Information & Research Development
- Learning Information Services
- Information Services (Computing/ Learning Technologies)

e-learning or *learning technology* as unifying concept (2)
- Centre for Learning Technology (CLT)
- Information Services (Computing/Learning technologies) (again)

This last trajectory is also supported by the observation that the four e-learning or LT services cited in the study all supported a hybrid info/ICT or learning/ICT agenda.

Employability and citizenship
There were 12 services described as supporting employability, of which 2 also served access requirements, 2 supported learning generally, and 1 supported ICT skills. In four instances 'citizenship' skills were also supported (but see below): there were no examples of citizenship being supported separately from employability. In most cases, employability was a secondary term to some other term. In all three cases where employability was supported in isolation, the service was described as careers. The number of instances of citizenship were skewed by three entries from one institution (indeed from one school of the one institution) and the one other instance occurred in a 'guidance and support' service offering a unique blend of 'citizenship, self-employment, and enterprise skills, finance, SAAS and UCAS training', suggesting that the term is in limited use.

Media and Communications Literacy
The very low level of support for media or communications literacies is borne out by analysis of the snapshots (see next section). The term 'communication' appears 6 times overall in the text of

responses about central services, three times in the context of a concern with employability – including the one time 'communication skills' are given as a separate category – and three times in the context of academic practice, i.e. scholarly or academic communication. It also appears, of course, in the 'C' of 'ICT'. It may be that the idea of communication is so embedded in these other literacies that it is of limited value to insist on it as a separate area of development. The same may be true of 'collaboration', completely absent as a term from this list, despite the number of strategic statements (12) which expressed a commitment to learners' communication/collaboration skills.

Media literacies as a term would appear to have an even more limited and specialist meaning. It appears once, where it is used to mean *'Use of equipment and facilities [cameras, audio and video editing facilities] for all students and those specific to departments such as creative media'* The term 'critical' appears twice, in 'critical thinking' (general academic literacy component) and 'critical understanding' (of information). It is difficult to interpret either use as implying the critical approach to media production practice that is usually meant by the term 'media literacies'. We conclude that this is a discourse that has not entered into service provision, and/or that there is a gap in provision such that only learners on highly specialised media courses receive support in understanding issues surrounding critical 'reading' of media texts, and creative production.

Modes of provision and support – overall
The overall modes of literacy support are listed in descending order of frequency: with the exception of those issues already explored there were no immediately apparent differences across the different literacy types, and few surprises.

Information, advice and guidance	52
Online resources	48
Workshop(s)	48
Staff development (support for staff supporting students)	43
Email or telephone support	41
Induction session(s)	36
Drop-in services	36
One-to-one tutorials	33
(Input to) specialist module(s)	31
Assessment/diagnostic service	24
Other	20

Table 4.8: How central services staff support learning literacy development

The 'other' modes of provision included:

- Printed resources (x5) - we had omitted this essential and widespread form of self-study from our list
- (Small) group briefings (4, all from one institution) – perhaps something between a drop-in service and a workshop, with support tailored to the needs of a (self selecting?) group.
- Specific support for users identified as having disabilities (x2)
- Peer mentoring (x2): student mentors who work with new and less experienced students to support their literacies development.
- Virtual/online/web resources – included in our list but augmented with several more specific examples: resource sharing and 'best practice sites' (we need to clarify that these were aimed at learners and not staff!), online chat, model Cvs and application forms, web pages, digital learning objects, self study materials, wiki's, blogs, podcasts. Also a number of specialised portals and web sites were cited e.g. 'Information literacy online resource – this is designed to help students to locate, access and evaluate information' 'A web portal gives links to opportunities within the university to develop skills.'
- Access/outreach/induction – Recruitment and induction are proving key points in the learning

lifecycle for literacy interventions. Examples included:

- *mentoring schemes of current students visitng their past college to raise aspirations of college based students*
- *an intensive 7-week Preparation for Higher Education programme*
- *pre-orientation courses*
- *All first years* are *required to undertake a key skills diagnositc test during induction week. They are then advised as to which sessions might be useful in supporting their literacy/numeracy key skill development*
- Personal/wellbeing service – one example of a 'wellbeing service' integrating counselling support with support for learning and study skills

Support for academic staff in departments is also clearly a significant part of these services' work. In addition to the 31 services providing input to specialist modules, auditors used the 'other' category to tell us about consultancy to departments, input to curriculum design and teaching, collaborations with teaching teams, and staff development. This focus on support for staff suggests it is seen as prerequisite for effective support of student literacies, particularly in taught programmes, as dealt with in the following sub-section.

Qualitative analysis of snapshots
Of the 15 examples submitted in the 'Central services' category, 9 concerned information literacy, 1 info/ICT, 1 numeracy, 2 academic skills (same university), and 2 general learning skills (same university). The information literacy examples help to confirm that the discourse and component skill-sets for information literacies are well established, detailed, sensitive to context, and widely recognised. Staff are confident enough to experiment with different forms of provision and generally have good communication with academic staff. The snapshots confirm feedback from the audit that practice in the area of information literacy support is well established and well regarded.

Four themes emerged from these examples:

Modular provision: 'bite-sized', 'pocket-sized' resources on different aspects of information literacy are non-intimidating to students, and can be studied flexibly as required. They are also highly flexible and repurposable by different staff and in different teaching/learning contexts (Edinburgh, Napier, Leeds Met)

Multiple media, including e.g. podcasts, videos and interactive tutorials (Kingston College) to suit different learners, and playing to the different strengths of print and screen delivery (Leeds Met)

Outreach: whether into faculties (City of Bristol College, Coventry) or into the wider community (Bedfordshire), information specialists need to act as ambassadors, target local needs, and be prepared to tailor their offering to different demands. Being on the spot really helps, as do student ambassadors

Integrated: Cornwall College outlined some key lessons from delivering a fully integrated ICT and learning skills programme: Regular and mandatory tutorials, offered in a medium convenient to the learner; small study groups with regular face to face meetings for motivation and support.

In this category, the LSE example showed central services staff sharing expertise with 'mixed ability' academic staff and PhD students, defining 'digital literacy' as proficiency in finding and using information using a variety of tools and services including web 2.0 applications.. This approach recognises that the relevant expertise is unevenly distributed in the academic population, and offers an interesting counterpart to the peer-mentoring approach taken by several of the learner-led exemplars.

No snapshots of practice were concerned with employability, which suggests either that our communications failed to reach the departments most closely associated with this area (careers), and/or that there is a problem in joining up institutional strategies with practical interventions to support learners.

4.7 Findings: Support for literacies in courses and curricula

Developing literate curricula
From the audit, typical practice for course review, (re)validation and approval[53] offers several opportunities for literacies to be considered:

- Multi-role teams involved in review: individuals likely to have different expertise in subject-specific and generic literacies
- A pro-forma for each stage of the development process and review process, which typically includes question(s) about generic skills and attributes
- approval by internal (school/faculty/dept) committee and by a higher committee or body of the institution e.g. quality, academic standards

Staff involved in the development and validation process usually include:

- Programme/module leader
- Other teaching staff
- Subject librarian
- Learning/teaching expert
- One member of academic staff from another faculty and
- One external member

Also sometimes included:

- employers, professional bodies (consultative role) (4)
- student reps (3)
- guidance and support staff (3)
- e-learning/technology staff (3)
- teaching fellows (2)
- senior admin staff (registry, academic affairs, programmes manager)
- core skills staff

We collected the following good practice indicators from our audit responses:

- specific skills, such as library and information skills, are typically being taught at the stage in a course when students need to use them
- earlier input [i.e. before mandatory approval] into curriculum design from outside the department is often sought by course teams on an ad hoc basis and often where good individual relations exist between academic staff and central services
- The Guidance and Support Manager advises on the guidance and support implications for the programme.... the Core Skills staff advise on the core skills for the programme.

However, problems were also identified:

- *the espoused view is a course team consisting of subject specialists plus some pedagogic input and instructional design. In use however is ... largely down to module leader.*
- *Typical feedback on a module design is "Yes". Just a single word, so no real engagement with the process.*
- Can encouarge tick-box approach though the '*central services [staff on course teams] try to get academics to... not treat it as tick-box exercise*'
- Getting literacies and skills into programme documentation is only the first step to embedding them in learning, teaching and assessment

Opportunities and challenges at the level of individual programmes are explored in more detail in relation to the exemplars of practice (below).

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[53] The JISC Covarm project has produced a technical process model of a typical (canonical) course validation process: see http://www.jisc.org.uk/media/documents/programmes/elearningframework/covarm_final_report_v1.pdf

Asked what learning skills and literacies needed to be considered by course teams at their institution, the auditors revealed an extraordinary diversity of practice. Several indicated that no skills or literacies were required, though one thought this might actually be an incentive to interesting discussions at module level. Others were cynical about the degree to which mandated requirements were discussed in any depth (see 'tick-box exercise' above).

Among those institutions that did lay down requirements (typically via the relevant pro-forma), there was almost no consensus as to what should be mandated, aside from the relative prominence of employability (1 in 3). The skills mentioned were:

Scholarship study skills (2) research skills (2) independent learning/lifelong learning (3)
writing (2) communication (2) reading
Numeracy core skills problem solving working with others creative thinking critical and analytical skills
IT skills (3) information literacies (2) skills for 'blended learning' or 'e-learning' (2)
sustainable development citizenship
subject specific skills (2)

Table 4.9 Skills and literacies required to be considered during course/module development

Prominent features of this list from the perspective of our study are:
- diversity – only employability mandated for consideration in more than 3 institutions
- continued influence of govt key skills agenda on the terms and language in use

A complete re-modularisation process was the driver for change at one institution: *[As part of the revalidation process] module descriptors ... had to clearly articulate how the module would embed the development of specific learning skills and literacies... Similarly, programme documentation (e.g. definitive course document, programme specification; validation documents) must clearly articulate the learning skills and literacies that are relevant to the design and content of the programme, and must also map them to specific modules within the programme.*

Another university had adopted the SEEC level descriptors and QCA key skills framework (since 2002) with which every programme and module must comply. This can be compared with the two institutional strategies described above, where frameworks were developed specifically to meet the specific mission, vision and culture of the institution.

In most cases, however, responsibility was devolved much more locally to departments. Subject benchmark statements and professional or statutory body requirements were heavily relied on in several institutions, while in others literacy issues were addressed around assessment requirements *'which are usually based on past practices'*: transferable skills were '*only included in course documentation where they are explicitly assessed'*. Three mentioned 'minimum' VLE or MLE requirements as having an impact on how courses are described: a case of standardisation of practice coming about through use of an ICT-based system to support delivery.

Approaches to provision in the curriculum

In practice there appear to be 3 broad approaches to literacy provision in the curriculum:

1. Institution-wide or curriculum-wide programme (usually portfolio-based) covering e.g. study skills and research skills (FE), 'information literacy, referencing, written communication, and research and evaluation skills' (HE) with relevant skills being practised within modules. Portfolio typically not assessed – though elements of it may be used for assessment in participating modules – but seen as part of employability agenda for graduates. Benefits from - and can be driver for - joined-up thinking across the institution.

2. Programme-specific modules, or module components, addressing e.g. core/key skills, subject-specific skills, study skills, research methods, employability, personal and professional development. Within a modular programme, tailored components and even individualised pathways can be built around these elements. Delivery is typically by central services staff, so assessment and motivation can be issues: effective tailoring to the curriculum depends on good relationships with academic staff.

3. Literacy provision fully integrated into modules and/or programmes of study. Usually assessed, e.g. by portfolio or simply by incorporating literacies into assessment criteria for module assignments. Depends on highly engaged and committed academic staff, prepared to rethink their own practice around changing literacy requirements. Easier to bring off in professional/vocational programmes that are already competence-based.

There is not enough information in the audit data to assess the pros and cons of the different approaches, and nor are institutions necessarily choosing one approach over another on a rational basis. Some auditors noted that different schools were pulling in different directions, making it *'difficult for people to know what's going on'.*

These different approaches do place different requirements on central services staff, whose attention needs to be balanced between:

- direct generic provision (to all students on a referral or self-referral basis)
- direct provision within programme contexts (may be largely generic or adapted in consultation with academic staff)
- supporting provision in modules and programmes (providing generic expertise to a subject-specific learning experience)
- building capacity of academic staff to support literacies in their own teaching and tutorial work

They also entail different approaches by academic staff. In one institution, departments develop skills-based modules in areas in which they have particular expertise, then make them available across the institution:

The School of Computing offers an option Introduction to the Web that has a strong focus on developing digital literacy skills including basic web page design, evaluating content credibility, and using web 2.0 tools including social networking. This specific module is a one of a suite of co-curricular modules that can be taken by students across the University. Other co-curricular modules offered from across a range of Faculties and Schools include Creativity, Innovation and Enterprise, Effective Learning & Career Development, and Information, Communication and Society.

At another, 'contextualised technology skills' are taught by course tutors with the support of specialists, ensuring staff and students alike build their confidence: '*Course Tutors introduce learners to the VLE at the start of their course and introduce them to Personal Learning Plans, Induction materials, and use of Blogs, Wikis, Voicethread, Bebo, Facebook, Youtube'.*

Asked about delivery and assessment of learning literacies in the curriculum, 3 out of 14 respondents knew of instances where central services staff were involved on an equal or nearly equal footing with subject-specialist staff, though not involved in assessment. In the remaining cases their role was supportive.

Asked about whether academic staff had support to integrate literacies effectively, the overwhelming answer was 'yes, in principle'. This came through input to certificated learning and teaching programmes, workshops, e-materials, exemplars of good practice, mentoring, drop-in sessions, briefings and consultancy to curriculum teams, and peer support. Where more detail was given, the staff development often had an ICT tools focus, suggesting the trojan mouse strategy is alive and well.

Provisos and problems included:

- *but do they know about it*? (all provision for staff except PGCerts tends to be voluntary)
- not clear who identifies and articulates need
- cultural issues (clearly identified by one respondent as differences of knowledge, vocabulary, approach, and institutional status between academic and central services staff)
- unfamiliarity of learning development and learning literacies, as concepts and practices
- (related) issues of institutional power and recognition:'*some colleagues who are still locked into the "possession of knowledge as power" syndrome and won't share toys or know-how*'
- time-poor staff
- perception that '*it's not their job to get [learners] ready for learning – should come with learning skills*'

Our questions about different approaches to delivery did not produce any clear account of benefits but highlighted issues such as:

- Assessment – when, how, and by whom are literacies assessed? What weight is attached to them?
- Compulsory vs elective modules – some evidence that compulsory skills modules are disliked by learners and can create problems of retention and motivation
- Cohort-based provision, or support for learners as/when they need it?
- Timing – some evidence that front-loading skills and literacies is less effective than introducing and revisiting them over a course of study
- Going native: Subject librarians are now commonplace, and faculty/school based e-learning advisors and study skills advisers are becoming more so. Do central services staff need to acquire subject specialism, and do academic staff need to be seconded to build capacity for literacy development in their 'home' context?
- New models? Access, foundation and work-based learning programmes were particularly likely to be cited as examples of good practice in embedding skills for learning, e.g.: *The Access to HE course has 90 minutes/week study skills, tutorial and IT (each). [This year we plan to] embed digital literacies such as online research and collaborative learning using Web 2.0 techologies as part of a revised course.* Could these models become catalysts for a broader awareness and understanding of literacy issues?
- Feedback – not one auditor mentioned feedback to students, or general assessment, as mechanisms for supporting literacy development, suggesting that the model of provision within courses (unlike student-centred services) may be somewhat instructivist. Academic staff may be used to giving feedback around course content, but not around an individual learning development agenda.
- Academic staff engagement, commitment and resources: rethinking programmes of study around the competences learners need, particularly where those competences are changing (e.g. in response to new digital opportunities) places large demands on academic staff. The rewards need to be clear: a discourse of scholarship, innovation and reflective practice may be more productive than a skills and literacies agenda.

Finally we asked auditors why departments were successful/motivated, or unsuccessful and unmotivated, in relation to embedding literacies into the curriculum.

Opportunities and motivators	Risks and disincentives
Institutional initiatives and commitments: ▪ Retention ▪ Employability ▪ transferable skills ▪ widening access ▪ use of ICT in the curriculum ▪ 'flexibility' in the curriculum ▪ learning experience External bodies ▪ Standards set by professional bodies ▪ requirement for evidence-based practice in the professions Culture/attitudes ▪ recognition of the changing way in which knowledge is being created and shared, and in how people are communicating, socialising and learning ▪ scholarship of teaching (well recognised MA course in L&T) changing attitudes Staff ▪ graduates of PCCert L&T courses changing attitudes in departments ▪ champions in depts, especially academic leaders/directors of study ▪ a genuine and widely held view that it is the responsibility of subject groups as part of their academic teaching ▪ right mix of new and experienced staff (in a unit or dept) ▪ staff with a personal interest in literacies, pedagogy, new technologies ▪ support from teaching fellows Students ▪ low scores for teaching quality in NSS ▪ high failure rates ▪ higher expectations e.g. as a result of fees ▪ students with an obvious need for literacies to be included in their programmes ▪ challenging or demotivated students ▪ larger numbers of international students/disabled students/direct entry students with explicit skills requirements ▪ needing to open up (postgraduate) market ▪ need to help students find good work/life/study balance	Institutional practices ▪ Reduced contact time means less time for practise and coaching External bodies ▪ Qualification Authorities requirements have prevented integration of learning literacies into some areas Culture/attitudes ▪ General discipline knowledge prioritised over skills/literacies ▪ intertia, desire to maintain comfort zone ▪ distrust of staff from outside dept lack of respect for staff from central services Staff ▪ Time and resource pressures ▪ Student numbers ▪ Perception that students should not be admitted until/unless they have certain skills ▪ Perception that students already have these skills Study skills seen as low status ▪ Lack of confidence in own capabilities (e.g. ICT in HE and general literacy in FE) • Unaware of support available to them Students ▪ Dislike of skills-based modules ▪ Unaware of support available

Table 4.10 Opportunities and barriers to embedding literacies into the curriculum

Qualitative review of snapshot data
The snapshots of literacy practice in curriculum contexts were more varied than those provided by central services staff. Only 3 dealt with information literacies, and these confirmed findings above, e.g. the need for continued embedding and revision throughout the programme (Bedfordshire), and the importance of assessment. Motivation of students was much higher at Edge Hill, for example, where timetabling of literacy sessions and assessment of literacy tasks helped students to see them as '*a*

key part of the curriculum'. Relying on students to self-assess their own information literacy requirements is risky: *'It was a little depressing to discover that many students even at level 2 are still relying on Google for their information and that many of them do not see the relevance of information literacy to their studies.'* (Bedfordshire) Research confirms that students are complacent about their own information skills, and that this is one area where their confidence is usually misplaced.

The remaining snapshots cover some interesting literacies and hybrids:

> Learning to learn /ICT 2 (1 PLE/PDP, 1 blogs)
> Academic practice 3 (1 international)
> Acad/ICT 1 (wiki)
> Acad/info 1 (referencing)
> Media/information 1
> Communication skills 1
> Digital literacies (teachers' professional development, in both cases quite ICT focused) 2
> Digital/media 2 (both fully embedded)

We did not find many type 1 (portfolio building) examples of embedded provision, though the Leicester Personal Learning Environment fell into this category and is interesting for being based in a scientific curriculum.

Most of the examples fell into the second category of embedding, i.e. central services provision around specific skills/literacies being added into existing programmes, usually with some tailoring to context.
Those that fell into the third category (rethinking of programmes of study) were in fact of two slightly different types.

(3.1) digital literacies provision represented a move towards the 'digital' within a programme already strongly based around professional competences (e.g.).

(3.2) the underpinning academic knowledge and knowledge practices being rethought in the context of new digital opportunities (though in practice there was a fairly direct link between programme content and professional practice in all of these cases as well).

We are particularly interested in this third type of embedding, not only because it seems to be the most challenging but because it represents the most radical impact on the curriculum and the practice of learners and academic staff. So we have looked at these examples in particular detail.

Oxford Brookes' 'Communicating Architectural Understanding in Video' describes how their use of digital video became '*essential to students synthesising their understanding of a building and conveying the sense of a building in 3D*'. The affordances of the video medium in relation to the conceptual challenges of the subject were clearly grasped by the tutor, and in the revised module the digital tools, the knowledge medium (video) and the conceptual task were fully integrated from induction through to assessment. Students were able to see the value of the digital artefacts they had produced in terms of their professional portfolios, as the use of video also reflected a shift in professional practice.

At Warwick, Theatre Studies students explored different theatrical spaces through the medium of second life. 'Virtual presence and embodiment are digital literacies' also shows commitment to rethinking curriculum knowledge in terms of broader changes in the media landscape. In this case, however, students' engagement with the 'new' medium was less extensive, and the medium itself was more tenuously linked with their final professional practice. Perhaps because of this, students spent most of their time engaged in 'playful' activities as they became accustomed to the affordances of SL itself, rather than addressing the questions they had been posed. Proficiency and confidence in the medium were explicit learning outcomes here, but the snapshot highlights several dangers: tutors cannot assume that students will arrive with virtual skills, or will be able to transfer such skills from leisure environments to academic environments, or will have a critical enough understanding of different environments to appreciate their different affordances for sense-making.

'Ducktectives' at Writtle College (also categorised as learner-led) was a learning experience on several levels. A collaboration between a landscape design tutor and a new media designer, who

clearly learned much from each others' design practices, it involved students of landscape design engaging with school children to develop a shared understanding of a playground site. Digital technologies in the form of GPS and PDAs were used, but only as part of a game that the students devised to help children express their ideas and engage with the design process. Students' proficient use of the technologies were a prerequisite but the task focused on their creativity, client-facing communication skills and problem-solving capabilities.

All three of these examples involve disciplines of physical space, and begin from an awareness that the meanings of physical spaces are changing as the 'real' and 'virtual' intersect. The implications of this awareness are so radical that the arising curriculum and learning activities are also radically changed: digital technologies become embedded aspects of the learning context, content and medium.

Further lessons about embedding came from the TVU example: 'We get it wrong: this helps us fix it'. The snapshot describes a structured approach to the development of advanced academic skills at years 3 /4 (UG), which includes:

- '*students being supported in recognising they are becoming members of an academic community with expectations of them*'.
- Taught sessions on critical skills, with intensive tutor and peer support
- A follow-up with practical tasks in the context of students' core discipline. '*Previous findings indicated that while students understood these critical skills at the time of explanation, they faced challenges in subsequent independent applications.*
- Use of self-study materials (RLOs [Re-usable Learning Objects]) during the practice phase, these materials being carefully structured at a small level of granularity, so they can easily be incorporated into the personal development process.

Several snapshots not included in this category in fact represent the first type of 'embedding' we identified, i.e. a whole-institution approach. Bradford ('DevelopMe!') and Hertfordshire ('University Rocks!') engage students in thinking about their learning skills from the outset of their studies – in the case of Bradford before they have even arrived on campus. As the exclamation marks underline (!), both have focused on motivating and engaging students first, and on specific skills only once students are involved in the self-assessment process and excited about the opportunities of study. Key lessons include:

- use young staff and student mentors to engage new students
- keep it relevant to students' real lives
- use technologies that will be familiar from students' leisure use of digital networks
- allow learners to identify their own concerns and expectations
- embed the learners' voice into every aspect of literacy provision – keep listening to what learners expect, fear, hope and need from their experience of learning

4.8 Findings: Personal and peer support for learning literacies

PDP
Asked about support for learners' personal literacy development, all but one respondent interpreted this in terms of PDP. In FE this was structured around Individual Learning Plans while in HE the e-portfolio system was typically the focus. In many universities the ICT system was the only institution-level provision, with learner support being completely devolved to course or department level.

Good practice in supporting PDP included:
- Introduced at induction and forming a core element of the induction process
- (FE particularly strong on) initial skills assessment or self-assessment
- Linked to personal tutorials (i.e. tutors make active use of the e-portfolio system)
- Involvement of careers and linked to CV building and employability (again FE particularly strong)
- Integrated into courses/modules (highly variable in practice) e.g. through
    - learning contracts
    - tailored modules or sessions on personal/professional development
    - reflective diaries, logs, videos

Problems that can arise:

- Unpopular with students (several mentions: 'hated' in one case)
- Variable expertise and commitment in schools and departments – all departments cited as committed to PDP were vocational/professional (health, business, education)
- Where tutorial model is strong, skills and time resources of individual staff members can be an issue (though most auditors were extremely positive about this aspect of support)

Delivery of PDP often involves central services staff either as additional resources for learners to access at need, or to help deliver sessions: academic (learning) support and careers staff are most likely to be drawn upon. Most institutions also offer tutorial support, via subject tutors (typical in HE) or personal development and guidance tutors (typical in FE). Where this relationship works well, learners' needs can be assessed and addressed in a holistic way: '*beneath the formal processes (which are often unpopular), there is a rich level of support from individual tutors which is often where the transformative stuff happens*'. At the one institution where PDP was not a formal process, this was because the tutorial system has a very strong tradition, and is intensively resourced through top-up fees: '*tutors are closely involved in the progress of each of their undergraduates throughout the whole of their period [of study], and support and foster their intellectual and personal development*'

Student mentors were mentioned by only one audit institution as a resource to support learners' reflection and planning. There were also vanishingly few examples in practice (see snapshots review below) of PDP processes being effectively linked in with curriculum processes, such that teaching and learner support could be made more responsive to the prior experience of individual learners or a particular cohort.

Expectations of learners' prior skills and literacies
FE institutions take a far more proactive approach to assessment of prior skills, with comprehensive initial screening and guidance to learners on appropriate courses and support services. With the exception of English language requirements for overseas students, few HE institutions seem prepared to set out generic entry standards, devolving responsibility to departments through the course requirements and admissions system. From a widening participation perspective this reluctance is understandable, but at the same time there is recognition that learners are being failed, with consequences for retention further down the line.

- *'entry criteria are only a crude measure of skill, and teachers often express astonishment at "what their learners can't do"'*
- *Anecdotally, there is an expectation that students will arrive with a certain level of academic study and IT skills, although it is being recognised that this is not the case and measures related to the impact of this assumption on retention have been introduced*
- *we are beginning to recognise that significant numbers of our home students may not have English as their first language and therefore need additional support*

Learning contracts were mentioned several times in this context. Although these focus on learners' responsibilities rather than their capabilities, where they are used they do foreground expectations around study and provide an opportunity for learning literacies to be discussed.

The following are therefore 'assumptions' or 'expectations' rather than formal requirements – a situation which in itself is not conducive to learners' development! ICT and information skills were among the most frequently mentioned, suggesting that there is a widespread assumption that students entering HE will have a reasonable level of competence in these areas.

- the *ability* to learn and develop skills
- general academic skills (3): writing; self- and time-management; an understanding of *'what HE is all about'*
- IT/ICT skills (4)
- Info/digital/ICT (2): '*There is an assumption that they are able to engage with Information literacy, Digital literacy, Critical literacy, ICT skills, Information skills, Communication skills, Technology practice: at a level commensurate with entry to HE'. 'to utilise digital and information resources appropriate to their subject discipline*'

Several auditors were frank about the lack of support for learners who failed to live up to these expectations. Resources most mentioned were:

- academic staff in lectures and assignment briefings (again, feedback not mentioned)
  There were attempts to look at service level provision by academics – but it was one way – and the academics were blamed publicly if the students didn't work.
- informal opportunities to access central services e.g. drop-ins, self-study materials
  There is a learning agreement for students who access one to one support for skills... which encourages them to be proactive in terms of their own development

Informal and peer-supported literacy development

Asked about informal opportunities for learners to develop their literacies, half the auditors listed the resources that could be accessed from central services. The other half offered reflections on how, in practice, learners gain confidence and capability. These reflections are of course speculative – this would be a whole research programme in itself – but they do tie in with findings from the JISC Learners' experiences of e-learning programme, that there is an extensive informal curriculum of shared resources, peer support and individual work-arounds by which learners meet the requirements of the formal curriculum (Creanor et al., 2006). They are so central to this study that they are reproduced here:

- friends, peers, other students (7)
- tutors (informally e.g. by observation and modelling, 'chatting')(3)
- trial and error, practice (3)
- web (Google) (3)
- Facebook (2)
- Family (3)
- Print resources (1)
- Work colleagues (1)
- *' or just ignore it in case of English language ...though buying course work is also a solution we see used to attempt to overcome this'.*
- *reading manuals for software and hardware operation ...*
- *I'm not sure anyone felt that they did develop these skills and literacies. They use the basic resources via Google and teach each other if they discover something useful.*
- *According to our 2008 Freshers survey 95% of our students use social networking tools e.g. Facebook but we do not know that they use it for developing skills and literacies.*

Some institutions, noting the value of peer support, are trying to encourage this more formally, and we asked about this.

None/just considering	4
Student ICT support/helpdesk	4 (one 'in development')
Within-programme buddies/mentors (some programmes only)	7
General student buddies/mentors	3
Students Union involved in support	3
Social networks	4
Other (Disability Circles of Support, Alumni involved in support)	2

Table 4.10: Types of peer support (existing or under consideration)

Comments in this and other sections of the audit indicate that Facebook is being widely used by students to discuss and share resources for study. Colleges and Universities now recognise this situation, and some are using Facebook pro-actively to support learners during work placements and in the process of transition. At most universities, members of teaching staff are free to set up social software groups to support course activities outside of the institutional learning environment, though there are issues around ownership of data and perceived encroachment on learners' 'private' online spaces. The picture is more contested in FE.

Personal technology and literacies
Both the Learning from Digital Natives (LDN) project and the JISC-funded Learner Experience of e-Learning programme have highlighted the pervasive nature of technology in learners' lives, and the potential benefits of using familiar communication, information and networking, ideally on personal devices such as mobile phones, i-pods and laptops. We therefore asked auditors about provision for learners to use personal technologies in institutional contexts.

FE colleges are in a particularly constrained situation because of their status *in loco parentis* to learners under the age of 18. However, at one of the two colleges in our audit, wireless access and social software were available for students to use across the campus.

On the evidence of this audit, most universities now provide wireless access for learners using their own laptops or other wireless-enabled devices on campus, and support to help them do so. Wireless coverage may be patchy and is often not available in student accommodation.

Many offer social and web 2.0 applications on institutional PCs, and/or allow staff and students to instal and use such software over the network, with limitations (see below). Second to student expectations, the main driver for change in this area seemed to be the practice of forward-thinking staff:

> *An ever increasing number of teaching staff, and also staff in support areas including the library as detailed in Section 3, are using blogs, wikis, podcasts and other tools and applications to extend and enrich the learning and support experience in ways that are not possible working solely within classroom spaces and the VLE.*

Restrictions were noted on the use of video streaming, peer-to-peer networks, support for Macs, and downloading of external services and applications onto institutional machines. Also, software support continues to be limited to institutionally-hosted systems such as email and the VLE. Given the value of social networks and online services, particularly in supporting transition and peer learning, it is encouraging that ICT support policies are under review at many of the participating institutions.

Qualitative review of snapshot data
Two of the six examples submitted in the learner-led category were from FE colleges and one from the schools sector, where forward-thinking practice is taking place at key transitions and on the boundaries between formal and informal learning. (Birmingham Schools, Carnegie College, Writtle College). Key points of interest from these three examples:

- Technologies in the hands of learners, such as Flip cameras and PDAs which they can physically handle, and software such as social networking tools with which they are already familiar, can give learners more confidence in a learning situation (but while this lowers barriers of confidence, it is not enough to enable deep learning)
- Learners have different skills and practices, particularly when it comes to technology. Without formally identifying mentors and mentees, peer learning can take place quickly in the context of exciting and motivating group tasks.
- Mentors and mentees both experience learning benefits, though different in kind.
- All the examples focused on whole-person development with personal and interpersonal skills to the fore.
- None of these examples was formally assessed: learners defined their own goals or projects and achieved recognition for a wide variety of different outcomes.
- There were no problems of learner motivation reported in these cases: on the contrary, there were positive findings about learners' engagement and enthusiasm.

The closest University equivalent to this kind of peer-supported practice came from Bradford's DevelopMe! initiative. A ning-based site is enabling pre-induction students to meet others, begin the social transition to university, talk about their expectations, and be introduced to some of the expectations that they will have to meet as students. The success of this initiative is clear not only from the level of engagement and positive evaluation findings, but the number of other institutions taking a similar approach. This multi-layered snapshot is well worth reading in full.

Wrasse at the University of Plymouth, the LexDis 'ideas for e-learning' resource at Southampton, and STRIDE at Hertfordshire (included in the 'curriculum' category) represent a more structured approach

to peer support. Materials provided by learners are edited and collated by central services staff. The value and credibility of the materials are amplified through selection and commentary, and users are further supported with search facilities and guidance materials relating to specific aspects of study. This is very different from the web 2.0 model, not least in the effort and resources involved – all three received some form of external funding to support development – but it does send a very strong message that staff take learners' experiences seriously. All have been positively evaluated by learners.

If provision is to be credible to learners, integrated around the real challenges they face, and focused on effective practice rather than on component skills, we would expect it to look much like this. Explicit examples of practice from learners' own perspective ('this is how I did it'), are validated by the commentary from tutors ('this is why it was effective'). These learning resources then need to be coupled with opportunities for learners to review and adapt their own practices in the context of meaningful tasks.

Reflections on the audit data

In this section, auditors were asked what their institution was doing well in the area of learning and digital literacies, and what they thought were the significant gaps. They were also asked what action(s) they thought the institution should prioritise as an outcome of the audit. Most respondents canvassed opinions from a range of staff to help them complete this section, as they were advised to in the guidance notes.

Below is a summary of their responses.

Best institutional practice	Gaps and challenges	Priority actions
- Institution-wide commitment and joined-up thinking - A multi-layered approach to provision: within courses, strong central services, and peer support - Student and staff literacies addressed in tandem - Concern for literacies embedded into programme design and validation - Flexibility, personalisation and ' the situating of learning in everyday life' - Recognition of the emotional and personal aspects of literacy and of learning - Learning development as a unifying idea - assessment of study skills on entry - e-portfolio – provides integration across the learning experience - Recognition and reward for innovation in central service provision as well as academic practice Specifics: - Friendly, approachable individuals in central roles - Information literacy is 'already being done well' by libraries - Where e-learning unit is driving force there is often good provision and joined-up thinking between ICT, information and knowledge - Study skills sessions generally very popular and produce good results - Careers/employability needs to be integrated	'Scattered', 'incoherent', 'inconsistent' nature of provision: makes gaps difficult to identify - Silos – either schools are strong but ideas are not shared – or central services are individually strong but there are problems joining up at point of need - Changing student body (rising numbers, less understanding of higher education, more basic skills gaps) is creating strains in system - Financial and staffing constraints on services and/or number of students requiring support - Lack of awareness among staff and students of the provision available - Student outcomes rarely assessed in terms of learning literacies - The skills required still not well defined or exemplified - Still not embedded enough into programmes – students need to see literacies in context of subject knowledge and practice: *The 'reifying' of the skills agenda, separating it from learning and living - which is embodied most in the 'core skills' module or 'PDP module'- is a deficit-based practice which is hard to shift* - Emphasis on teaching subject content rather than how learners are gaining capability. - Continual change in strategy and priority: *'the processes and structures that should be supporting its delivery are constantly changed so the paradigm of excellence in teaching and learning is devalued. What a pity.'*	- Update module documentation to reflect more up to date thinking about literacies - Ensure literacies agenda is translated *via* programme documentation *into* learning, teaching and assessment – lecture plans and study guides useful intermediaries - Share good practice in generic educational design across schools - Audit digital literacy practices and share (especially from applied into pure academic depts; and good examples of skills and content being addressed in integrated way) - Make academic managers aware of the importance of the digital literacies agenda, in terms of the student experience and employability - Consolidate, integrate, embed - Learn from experience with key skills and PDP: danger learners won't see the point. - Start from where learners are, identify what they can do well, and situate skills development in real professional/inquiry-based activities - Bring digital literacy skills to fore in core modules - Reduce or eliminate skills modules and absorb content into other modules - Continue/enhance the 'going native' approach of learning experts in schools, and seconded academic staff - Upskill personal tutors as academic advisers - Integrate learning services with pastoral /

with other services throughout study ▪ Face-to-face support when they need it; 24/7 access to online resources when they can find out for themselves. ▪ Ensuring public and learning spaces support learners' use of personal ICT and preferred study practices ▪ Practitioners getting experience designing courses where learner needs are primary focus ▪ Digital 'champions' in depts ▪ Strong tutorial system and dedicated, well-resourced tutors	▪ Awareness and expertise are lacking among senior managers ▪ *S*pecific gaps in provision ▪ International students, distance or work-based learning students ▪ *S*kills/PDP modules are separated from the discipline knowledge: students are often poorly motivated by them ▪ IT skills in particular have not been embedded into the curriculum in a meaningful way ▪ Strategies on digital literacies explicitly, and little discussion of the issue ▪ No discourse of entitlement or student parity	welfare support (recognising emotional/whole-life context of barriers to study) ▪ Strengthen role of personal portfolio ▪ Anticipate students' needs over whole course and address literacies as/when needed, in a form relevant to immediate study goals ▪ Staff and student skills must be planned for in tandem

Table 4.11: Institutional challenges and priorities in learning literacy provision

Eleven out of the 14 who responded to this section believed it was either true or largely true that '*The vast majority of students leave the institution with enhanced levels of learning literacy*', though one of the remaining 3 auditors described students graduating '*innumerate*' and with '*appalling' levels of English usage*' which reflected badly on the institution.

Seven respondents thought it was 'true' that *Learners have support for learning development throughout their studies*, though a significant minority (5) thought it was only 'partly true' at their institutions. Respondents were also divided over whether '*Learners have opportunities to practice their skills and literacies in subject contexts*' and were much less confident that '*The institution actively identifies and intervenes to support learners who are struggling*

Asked about the issues that were driving their institutional response to the literacy agenda, respondents gave the following rank ordering

Student expectations	40
Employability agenda and employers as stakeholders*	39
Dealing with a more diverse student population	32
Changing technologies and digital practices	32
External funding and policy drivers	18
Internal leadership and special initiatives	15
Staff champions on the ground	13
Other	10
*The employability agenda is the clear winner if first priorities only are considered (6 choices, as compared to the next nearest score of 2 for student expectations, diversity and changing technologies).	

Table 4.12: Drivers for institutional action on learning literacy

These auditors clearly felt that deep structural changes in the context of education were driving the literacies agenda, rather than any short-term funding opportunities, initiatives or enthusiasms. Students and employers as stakeholders are perceived as key forces behind the agenda for change.

Finally, auditors were asked to anticipate how the situation might change at their institution over the coming 3 years. One was extremely pessimistic about the direction of change: '*resources will continue to be taken out, the role of learning and teaching will continue not to be prioritised*'. All other respondents felt that institutional policy and practice was moving in the direction of greater recognition, articulation, embedding and support for literacies of the digital, particularly in a context of economic downturn and increased competition for high-value jobs.

- Technologies in the hands of learners, such as Flip cameras and PDAs which they can physically handle, and software such as social networking tools with which they are already familiar, can give learners more confidence in a learning situation (but while this lowers barriers of confidence, it is not enough to enable deep learning)

Specific trends highlighted
Context:
- an increased focus on digital literacies, trans-literacies and multi-modal literacies, likely to be regarded as essential for employment and further study
- A growing focus on participation and citizenship within global networked society (e-citizenship, sustainable development)

Learning and teaching:
- the role of technology in supporting learning and in defining literacy/capability will be enhanced: 'technology enhanced learning' attempts to capture more explicitly the enhancing role of ICT upon learning.
- A greater focus on collaborative learning, particularly in digital networks
- A greater commitment to supporting learner-led collaborations and learner-generated content and resources

Institutions:
- expansion of part time, work-based and distance learning provision
- employability an area of increasingly urgent focus
- *the use of explicit 'rights and responsibilities' or some sort of learning contract*
- targeted support for *identifying and helping students 'at risk'*
- *knowledge management in the institution will change, making it easier to share teaching practice*
- *the skills agenda will... be subsumed into deeper issues around curriculum and learning design and flexible provision*

A final reflection on the audit process came in a comment on this section:
> *At the bottom of all this are our students, many of whom have struggled to come here, some of whom are the first in the family to do so. If we don't resource the literacies and skills they need in the difficult world of employment they face, then I feel that we really disrespect their efforts and achievements, and I wonder just how comfortable each of us would feel if we realized that to be the case.*

5. Conclusions and recommendations

5.1 Re-articulating the challenge

The challenge we outlined at the start was to transform:
- The kinds of capabilities valued, taught (for) and assessed
- The ways in which learners' capabilities are supported and assessed
- The value colleges and universities place on 'literacies of the digital' and the investment they make in staff and student skills

We can now add detail to these three challenges. New capabilities and learning goals must help students to deal with:
- economic uncertainty
- high competition for employment in the global knowledge economy
- increased levels of alternative, contract-based and self-employment
- the rise of interdisciplinarity and multi-disciplinary teams focused on specific tasks
- a networked society and communities
- multi-cultural working and living environments
- blurring boundaries of real and virtual, public and private, work and leisure
- increasingly ubiquitous and embedded digital technologies
- distribution of cognitive work into (human and non-human) networks of expertise
- rapid social and techno-social change

In supporting those capabilities, support staff and curriculum teams must:
- Design flexible learning opportunities
- Situate those learning opportunities, where possible and appropriate, in authentic contexts (workplace, community, placement)
- Design learning opportunities for highly interconnected individuals, operating in distributed networks of expertise
- Continually review how technologies are integrated into curriculum tasks
- Continually review learners' techno-social practices and the practices of professional and scholarly communities (anticipating that these will be different and that helping learners negotiate the differences will become part of the pedagogic agenda)
- Support learners to use their own technologies and to develop effective strategies for learning with technology
- Use assessment and feedback to encourage innovation in learners' approaches to study, rewarding exploration as a process: current assessment regimes often reward conservatism
- Support learners' developing self-efficacy and self-direction in learning, empowering them to navigate increasingly complex learning landscapes
- Support learners' personal reflection, progression and planning, for example by engaging with e-portfolios and learning records

In changing cultures of learning to place greater value on 'literacies of the digital', institutions must
  - engage and motivate students to develop learning literacies by"
    - monitoring, supporting and assessing digital competences across the learning experience
    - articulating the educational benefits and importance of digital literacies
    - recognising and rewarding the expertise that digitally proficient students can offer to others in the learning community
    - using rich learner-related data to support portfolio-building, personalised advice and guidance, and where appropriate personal curricula and learning environments
    - enabling learners to record a wide range of achievements and to present rich accounts of their learning history to different audiences
  - engage staff in rethinking their practice by:
    - realigning reward structures around innovation in learning and teaching
    - supporting flexibility, stakeholder-responsiveness, and innovation in curriculum design

- making learning development an explicit concern of teaching staff
- fostering digital scholarship and digital professionalism, linked to changes in teaching practice
 - engage employers and other stakeholders:
   - in meaningful dialogue, recognising that the stated needs of graduate employers are only one perspective on employability in a rapidly-changing social and economic landscape
   - in continuous review of the purposes and outcomes of the curriculum

The social and economic agendas of upskilling more of the population, widening participation, and supporting lifelong learning, mean that university and college learners are more diverse than ever before, with a wider range of educational and ICT experience. Since literacy provision ideally starts with learners' existing practices and conceptions, it needs to become more wide-ranging, more flexible, and more pro-active. It also needs to recognise that the process of development will be incremental, and challenging. Learners need scaffolding, direction and modelling in the first instance, followed by practice and personalisation, giving way to unstructured tasks through which they can learn to choose strategies and technologies to suit different situations and their own preferred ways of working.

Institutions are simply not resourced to support all the available technologies and all the individual requirements learners present. Nor would that necessarily be desirable, as it would imply a single model of digital competence rather than the multiple modes of engagement, varieties of digital scholarship, and numerous specialist applications, which characterise the academic experience.

Looking to the future, then, how do we recognise the changing contexts (new opportunities and challenges), bring them into the institution in ways that are accessible to learners, change our teaching and support practices, and help learners transform their practices to become more effective learners, workers and citizens? A new paradigm may be required, in which diverse skills of staff and students are recognised and used as a resource, in more flexible organisational structures.

The paradigm shift:

From	To
We know, we teach you	Learners' digital skills being recognised, rewarded and used as a resource for the learning community
Established methods, based in disciplines	Emerging and mixed methods, interdisciplinary problem spaces
Induction and one-off training model of literacy support	Ongoing review, progression and just-in-time support
Students become 'qualified' in specific kinds of academic knowledge practice	Students need to strategically manage a range of knowledge practices, for different contexts
Technologies are introduced according to the requirements of the curriculum	(Yes, and) the curriculum is continually modified by the impacts of technology in the environment
Disaggregated services, deployed at particular points in the learning cycle (library, ICT, study skills, careers)	Integrated support for students' learning development and different learning pathways
Stable job market, 'employability' has clear features, particularly in specific vocations and professions	Unstable job market: adaptability, resilience, multi-tasking, capacity to exercise judgement and management of multiple roles to the fore
Students typically on two-year (FE) or three-year (HE) programmes of study: ongoing relationship with institution	Students engaged in multiple forms of learning, often while employed and/or attending several institutions: relationships more flexible, short-term and contractual in nature
Modular assessment: focus on achievement within clearly defined curriculum goals	Some cross-modular assessment: focus on self-efficacy and the ability to integrate skills/know-how

Table 5.1 Features of the 'digital literacies' paradigm shift

5.2 Summarising the evidence

In response to this challenge, what is currently being provided by institutions, and what difference is it making to learners?

Institutional policy/strategy
Due to a lack of clear ownership at institutional level, learning and digital literacies are rarely the basis of an integrated institutional strategy. Effective integration can be provided where the Learning and Teaching Strategy addresses learning in the digital age directly, and there are clear lines of action/ responsibility to other strategies such as ICT, Quality, Employability, e-Learning, Learning Resources and devolved faculty/department and service-level strategies. A digital literacies champion should be capable of initiating action in both the digital and the academic/learning development area of institutional provision.

Institutions have to prepare themselves, and not just their learners, for an uncertain future. Among the paradigm-breaking scenarios considered in this study, a loss of confidence in paper qualifications is perhaps the one that should give institutions most cause for concern. Institutions must position themselves to respond quickly and flexibly to the need for new kinds of capability, and to recognise and represent graduate capabilities in new ways.

The two exemplary strategies examined in this study had the following features:
- institution-wide changes to policy, clearly linked to main institutional drivers and priorities
- actions cascaded through a range of institutional strategies e.g. quality, ICT, and practices, e.g. course documentation
- an incremental approach, spearheaded by pilot projects/initiatives, some with external funding
- collaboration between central services and academic staff, principally around...
- course development and review, involving multi-disciplinary development teams, with intensive resourcing
- large central unit (e-learning PLUS academic development) driving policy forward: in both cases with substantial national profile and hybrid teaching/development/research agenda
- ongoing research, evaluation and evidence-gathering about students' experiences with technology and learning
- commitment to understanding the learning experience in a holistic way: 'learning takes place in a technology-rich world'
- building on previous work, treating transformation as a long-term project
- moving people out of their silos, for example by creating hybrid and/or 'roving' roles

Practice in central services
Our study found consistent good practice in central provision for the three areas of academic/learning literacy, information literacy, and ICT skills. Staff in these areas have their own well established cultures, frameworks and forums for sharing professional practice. In many cases these cultures include a focus on learners as individuals, with their own preferred approaches and particular needs. The main problem is that they are still operating in relative isolation from one another, and – in many cases – from staff in departments too. Students' digital and learning literacies are not often enough being assessed and supported as they engage in academic tasks. It is also not often acknowledged that students have many sources of support, including family, friends, social networks and online resources, but that they need help to integrate these into effective personal practices.

Organisational structures, the way in which services are resourced, and service/department cultures – e.g. different modes of supporting students – are all seen as barriers to the effective integration of literacies. One symptom of this in our study was the difficult identifying people who could audit digital literacies provision across the board. Many potential auditors felt that too much relevant practice was hidden from them. It is suggested that librarians, ICT support staff, careers staff, specialist support staff such as WP and accessibility, and learning development staff are not learning effectively from one another and have limited opportunity to do so. From the background review, though not directly from our study, there is evidence that literacies transfer poorly across boundaries, a finding that makes joined-up

support all the more critical.

Strategies often call for cross-departmental working, and we found examples of good integration between information and ICT support, sometimes including learning support, and in other places between academic practice and information literacy. Support is most effectively integrated where there is an institution-wide policy of assessing and progressing learners' skills. In FE this is usually delivered around guidance tutorials, while in HE the availability of an e-portfolio system can be the catalyst and focus of provision. Employability is often the stated rationale for such an approach. However, careers staff were difficult to reach in our study, and although 'employability' extends beyond careers, we draw a tentative connection between the lack of engagement with the 'literacies' agenda by careers staff and a tendency for 'employability' itself to be poorly articulated and supported.

Librarians have a long tradition of supporting literacies and working with academic departments, so there is a large literature describing their practice and well-established mechanisms for sharing it. These include the SCONUL 7 pillars of information literacy, the only framework from our study that had any recognition on the ground. One problem, though, is that where librarians have championed the digital aspects of information literacy, this is regarded as having 'solved' the problem of the digital in learning. Our study found very little central support for media literacy, including critical aspects of reading different media and creative practices of media production. There was also very little mention of communicating and sharing ideas either as an aspect of information literacy or in its own right. Effective learners require both of these, and other digital capabilities such as navigating virtual and immersive worlds, managing digital identities and reputation, and using digital technologies for reflecting, planning and making sense of their learning experiences. While librarians can be regarded as pioneers in articulating the impact of digital technologies on their area of expertise, and adapting their practices of support, digital literacies cannot be left to librarians if they are to be embedded throughout the institution.

Practice in the curriculum
Our audit institutions exhibited great diversity in the literacies mandated for consideration during the curriculum design and validation process. A small number of explicit frameworks were in use, and the language of the 'key skills' agenda remained in evidence, but the majority of institutions seem to have developed an ad hoc approach.

We identified three modes of integrating literacies:
- Institution-wide programme (usually portfolio-based) with generic processes of review and reflection, but the specific skills practised and assessed in subject modules
- Skills modules or module components, delivered alongside 'subject' teaching, typically by central services staff: may include tailored (subject-specific) tasks or examples
- Literacy provision fully integrated into modules and/or programmes of study, including learning outcomes and assessment: typically in professional/vocational programmes that are already competence-based (but in one case via the tutorial system).

More evidence of outcomes and impact from (1) is likely to come from JISC-funded e-portfolio projects.

Where skills are delivered as separate components (2), there is a danger they will not be seen as central or compulsory elements of the learning experience. Our findings confirm other research that segregating skills is demotivating. While tailored versions of central service workshops are undoubtedly better than no provision, course teams are advised to rethink learning tasks and assessment criteria to give more importance to literacies for life across the curriculum. This is particularly important in a context where fewer students can expect to get jobs that are directly related to their subject of study.

An interesting cluster of 'deeply' embedded examples (3) focused on students rethinking concepts of *space*, and working on the boundaries of real and virtual spaces to express their ideas. This is an exciting development, but we are concerned to find few other examples of radical thinking, e.g. around disrupted concepts of *knowledge, identity* or *practice*. There was also very little evidence in our study of feedback on coursework or assessment being used to support learners' development, e.g. to signpost resources the learner might access or study strategies to practice. The exception was at Oxford University, where subject-specific goals, assignments and feedback are intrinsically linked with personal academic

development through weekly tutorials. Other institutions might well struggle to replicate such a system with larger group sizes and with less self-directed students.

The great majority of our examples across all modes came from vocational and professional courses, and there is plenty of evidence that these are the subjects spearheading support for literacies in the curriculum. In work-based settings, problems are encountered in an authentic setting, their resolution is intrinsically rewarding, and 'competences' are simply aspects of task performance. In formal learning, more effort needs to be taken to ensure there are opportunities for learners to practice and evidence what they can do. This ties in with the recommendations of the Burgess report[54] and the UK Commission for Employment and Skills[55] which emphasise the need for 21st century graduate skills to be integrated into learning activities across the curriculum.

We are aware that much excellent practice in disciplines was not visible to our study methods. Many literacies are so deeply and tacitly embedded in subject teaching that academic staff do not identify their practice as literacy-based at all. Examples might be visual literacies in art, or critical media literacies in media studies. Recognising that different subjects can contribute expertise in different literacies for learning is a first step towards finding and sharing good practice.

One important strength of 'traditional' academic teaching in disciplines is that it recognises learning not as the collection of competences but as the emergence of an identity. Particularly in higher education, learning is about being able to take up a personal stance in relation to subject knowledge and expertise. In a digital age, learners need to practice and experiment with different ways of enacting their identities, and adopt subject positions through different social technologies and media. These opportunities can only be provided by academic staff that are themselves engaged in digital practice.

Learners supporting learners
Social software is now widely being used to enable peer mentoring and group support, for example around skills workshops, during induction and first-semester studies, on placement, and for group work. There is also evidence of the learner voice being captured and shared via videos, blogs and podcasts. Study buddy and student mentor initiatives rarely address digital literacies directly, but could be adapted to do so: student help-desks are common for supporting proficiency with digital devices and networks. All of these approaches are being tried by central service staff with good evidence of success.

Inevitably much peer support takes place under the academic radar, but academic staff can help by being explicit about what kinds of collaboration are appropriate, establishing peer review processes, and setting group assignments.

Problems with current provision for digital literacies include:
- institutional silos, so learners often have several places to seek help with their learning, and cultural differences can make cross-service/dept collaboration difficult
- (often) poor embedding of literacies into the curriculum, particularly at the level of feedback and assessment
- (often) poor integration of information/digital literacies with academic/learning literacies
- curriculum provision tends to be one-off and cohort-based, rather than based on an ethos of personal development: central provision is more personal and developmental but rarely reaches learners when they are actually engaged in authentic tasks
- Academic staff perceive students as being more digitally capable than is really the case
- poor self-evaluation by learners, particularly in relation to their information skills, so voluntary services are not reaching those in most need, and skills modules are not perceived as relevant or important

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54   http://www.universitiesuk.ac.uk/Publications/Documents/Burgess_final.pdf
55   http://www.ukces.org.uk/PDF/UKCES_FullReport_USB_A2020.pdf

5.3 Looking to the future: general recommendations

1.Tutors need to be proactive in helping learners to develop learning and digital literacies
The evidence is growing that despite familiarity with personal technologies, learners are generally poor at deploying their digital skills in support of learning. They lack critical media and information literacies, and struggle to translate the capabilities they do have into different contexts. Because of this they remain strongly influenced by their lecturers in the technologies and strategies they use for learning. Tutors' confidence and capacity to be innovative in their use of technologies are critical to learners' development.

2. Learning and digital literacies need to be embedded into the curriculum
Tutors and central service staff, including 'outreach' and hybrid staff such as subject librarians, must work together to embed opportunities for literacy development into the curriculum. To take information literacy as an example, while the first four 'pillars' of SCONUL's information literacy framework deal with generic skills of planning, searching and managing information, the remaining three deal with information in ways that make little sense outside of a curriculum context. 'Compare and evaluate, 'organise, apply and evaluate' and 'synthesise' are all tasks that call on disciplinary means for making and communicating meaning. It could be argued, indeed, that these disciplinary means are what elevate information into useful knowledge. Judith Peacock, a pioneer of integrating academic and information literacies in Australia, has summarised the evidence that information literacy demands *'a fusion of discipline and generic knowledge and skills, [drawing] upon the full potential of problem-based learning experiences and critical thinking development* '(Peacock, 2005).

3. Learners need to be engaged in their own development
The literature on developing effective learners highlights motivation and self-efficacy as key factors. (e.g. Zimmerman). There is now evidence to suggest that separate skills modules undermine motivation. The focus of provision in curricula should therefore be on developing understanding and practice through authentic academic tasks, in digital contexts where appropriate. Assessments must be designed to recognise learners' developing literacies, and feedback must make transparent which strategies lead to success.

Self-efficacy in development can be promoted through timely feedback and regular reviews of progress. Extra-curricular opportunities are important here, including workshops, surgeries, self-study materials and guidance sessions, though some learners will need to be reached pro-actively e.g. by student 'ambassadors' and outreach workers in departments, or on referral from tutors. A deficit model is unhelpful: learners own knowledge practices and study habits need to be acknowledged, while introducing them to a range of successful academic strategies, and the idea of academic communication as taking a stance. Learners benefit from activities such as portfolio building and PDP, which are under their control. Through reflection and practice, skills can become internalised, integrated, and more transferable.

The social aspects of literacy development also need to be acknowledged, for example through peer review, promoting opportunities for peer support, and collaborative tasks.

4. Academic staff need to be engaged in rethinking their own knowledge practices
We have already noted that there are different traditions of meaning-making, and that this might constitute the gap between information and knowledge which learners have to cross if they are to succeed in their chosen subject. The Glasgow Caledonian i-learn strategy expresses this extremely well, calling for students to develop an '*awareness of the provisional nature of knowledge, how knowledge is created, advanced and renewed, and the excitement of developing knowledge*'. But academic staff have few opportunities to reflect on the impact digital technologies are having in their field, and those opportunities which exist e.g. around curriculum (re)validation and review do not always foster an open and enquiring approach.

There are far more examples of embedded practice in professional and vocational subjects, especially where professional bodies are open to exploring how practice in their profession is changing. Less well

embedded are notions of *digital scholarship* – the changing research practices of disciplines and how these need to be reflected in learning tasks and assessments. Disciplines also have ideas to contribute to generic notions of 'digital literacy'. How do specific subject areas make meaning in digital contexts? Analyse and collate data? Innovate (ideas, products, social systems, technologies, interfaces, designs and design protocols)? Think creatively using digital tools? Solve problems of the digital economy and society?

Anecdotally, academics report that learners struggle particularly with tasks of judgement and evaluation, i.e. when they are required to take up a stance in relation to knowledge. This throws up the question of how students develop and manage different identities – including as learners, researchers, professionals, and members of a community – and how they can own their own judgments in an age of shared opinions and 'the power of the crowd'. Other potential clashes of academic and internet knowledge practice are noted below.

Academic knowledge practice	Internet knowledge practice
Individual authority	Shared ownership
The individual occupies a stance/position from which a judgement can be made	The individual is 'a node through which various kinds of message pass' (Lyotard)
Philosophy	Design
Truth value	Use value
Quality of method	Quantity of links/citations/uses
(Disciplinary) tradition of what knowledge matters, and how it comes to mean	The eternal 'now' of what technology makes possible
How I come to know	Who I know
Synthesis (in a dialectical sense)	Aggregation, re-use
Dialogue, disputation	Comment
Discipline/profession as resources (of methods, codes of practice, etc)	Multi-modality, interdisciplinarity as resources
Copyright	Digital commons
Qualification (followed by reputation)	Reputation/recognition first
Research	Problem-solving
Subject knowledge and know-how	Generic skills and aptitudes 'just in time' knowledge and how-how
Text-based communication of ideas	Multiple media used to express ideas
Sharing within scholarly communities, according to established roles and rules	Sharing without boundaries, across ephemeral and unregulated networks

Table.5.2 potential clashes of academic and internet knowledge practice

5. Information literacy needs to be broadened to include – or needs to be supplemented with - communication and media literacies
The distinction between information and communication technology is becoming less clear, thanks to practices associated with wikis, blogs, social tagging, commenting, file sharing, and online communities. Academic practice is following – and in some instances leading – this trend, so it makes little sense to support information literacies in isolation from these other practices. It is noticeable that use of the term 'digital literacies' is strongly associated with web 2.0 applications in our study, while 'information literacies' is used almost exclusively to refer to digital (content) resources.

The agenda needs to be clearly formulated around informed and *critical* use of technology for learning. SCONUL's fifth pillar, '*the ability to compare and evaluate information obtained from different sources'* seems in Moira Bent's recent review to overlap considerably with what we have called critical or media literacy: '*knowledge about the way the media operate, and certain processes which are particularly important in the academic context, such as peer review of scholarly articles'.* Different disciplines demand proficiency in different (combinations of) media, and create/share meaning in different ways: learners need to both inhabit and critique these modes.

Current information literacy models also tend to assume that academic ideas will be expressed (predominantly) in text. All the background research points to the need for learners to become proficient at creative self expression, and critical argumentation, in a range of media. This presents many challenges, not least in relation to assessment.

In relation to digital technology itself, the point is not to encourage *more technology use* but to encourage more insightful, more reflective and more critical choices about technology and its role in learning.

6. Employability needs to be more carefully and critically defined
Employability at present is very variously interpreted. It appears in many strategies but very few actual interventions in student learning. In some institutions and contexts, 'employability' seems to have given way to the '21st Century Graduate' as a concept, recognising that a college or university education is only the starting point for most graduates, and that employees in high-skill sectors will continue learning (and providing markets for FE and HE provision) throughout their careers.

There is a need for further investigation, and strategic thinking, around:

- economic futures: are we educating students for highly skilled jobs in a global knowledge economy, or are such jobs likely to be in a small minority? In which case, should the curriculum focus more broadly on using ICT critically, confidently, capably, in a wide range of different social and workplace setttings?
- entitlement and diversity: is there just one 'digital literacy' or many? How should a basic entitlement to digital technologies, networks and skills be balanced against individuals' diverse learning pathways and personal preferences?
- citizenship: how students are prepared for a digital society – issues of participation, social justice, personal safety, ethical behaviours, managing identity and reputation – are important as well as how they are prepared for the digital economy
- the role of postgraduate study: does the growth and diversity of the PG market entail a rethinking of the purposes of an undergraduate degree?
- responsiveness: how well and quickly provision can respond to changes in the needs of the digital economy and society
- accreditation: what forms of recording and recognition of achievement are relevant in a digital economy and society?

Again, curriculum teams and professional bodies need to consider what literacies and competences graduates will need, bearing in mind that they are likely to have several careers and that none may be in the field they have studied. They also need to consider what values, identities and attributes uniquely qualify graduates in their field, against a backdrop of change (technologies, learners, markets etc). These need to be reflected in the learning tasks, teaching approaches and assessment regimes of the curriculum, while continuing to be supported by specialist staff e.g. careers, and by cross-cutting processes such as portfolio building and PDP.

7. Summary: Institutional provision should encompass:
- a generic entitlement to access and skills, articulated in terms of ICT support, information literacy, learning opportunities and study skills
- recognition of, and support where appropriate for, for learners' use of personal technologies and

> social networks to support their studies
- clarity about what it means to know, to apply knowledge, to be critical and creative, in different subjects and disciplines, including the impact of digital technologies
- review, feedback and recognition (e.g. assessment) of learners' practices as they develop
- whole-institution, cross-context support for portfolio building so individual learners can integrate these elements – access and skills, subject-specific understanding, and personal practice/know-how – through reflection and planning

Integration cannot be done on behalf of learners, but learners' capacity to integrate their knowledge and skills, to become more confident and self-directed actors in their learning, can be supported:

- Learners can be supported directly through practices of reflection, planning, authentic tasks, a focus on making meaning in specific contexts, and emphasis on their self-efficacy
- Academic staff can rethink the role of the digital across their scholarly and professional practice, and rethink their teaching in light of this
- Staff in departments and services can work as ambassadors and arbitrageurs across organisational boundaries
- Institutions can develop more integrated policies and strategies for learning in a digital age
- Education as a field of study and practice can embrace its own interdisciplinarity and draw on the strengths of related professional and scholarly fields e.g. librarianship, e-learning, learning development, social theory, adult learning, studies of technology and innovation. Digital literacies need to be set against a range of theoretical backgrounds, including learning theory.

5.4 Recommendations to the JISC
- Future investigations in this area should focus on institutional and whole-curriculum approaches to embedding digital literacies, and identifying success factors for learners

- Work with HEA Subject Centres to articulate the meaning of digital literacies in different subject areas and to identify 'deeply' embedded exemplars to add to the existing database. Support subject communities to adapt curriculum frameworks and embed new practices around digital literacy, in light of increasing multidisciplinarity and the changing technological and student landscape.

- Build partnerships and channels of communication with staff involved in learning/learner development, who are often at the forefront of the clash in digital knowledge practices, and with whom JISC has little history of engagement

- Build partnerships and channels of communication with careers staff, engaging them with projects across the curriculum (e.g. around e-portfolios, learner records, employer engagement and lifelong learning), as well as CV building and job-seeking.

- Evaluate outputs of lifelong learning projects for evidence of what literacies are of long-term value to learners and other stakeholders

- Work with SCONUL to redevelop/broaden their 7 pillars and ensure JISC community is aware of them and actively embedding and adapting them to institutional need

- Further develop the materials currently available through the LLiDA wiki, particularly:
  - The framework of frameworks as a tool for modelling institutional policy, and/or as an infokit
  - The audit tools and guidance as a resource for institutions, with evidence of their effectiveness as a change process
- Further analysis of rich data from both audit and exemplars of practice
- Discussion around the conclusions and recommendations

- Consider funding pilot projects focusing on:
    - Feedback on assignments as a means of giving personalised guidance and direction learners to personalised support materials
    - Integrating e-portfolio, CV-building, learner records, advice and guidance, around issues of employability or graduate skills
    - How learning pathways e.g. as expressed in e-portfolios or learner records, can intersect with curriculum processes in ways that make the curriculum more sensitive to individual requirements
    - Use of competence-tagging (tagging of learning outcomes AND learner pathways in relation to target competences) for joining up provision across departments and services
    - Communication and media literacies , either treated as an extension of information literacies or as critical skills in their own right
    - Skills required by learners to integrate real and virtual spaces in their understanding of their subject
    - Embedding digital literacies in non-prof/vocational subjects, and/or investigating how literacies are already being deeply/tacitly embedded in these subjects
    - Projects working on boundaries of institutional and personal technologies and how learners negotiate those to create their own learning contexts

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