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Claiming spaces FOR quality assessment**

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CHAPTER EIGHT

Valued Knowledges AND Core Capacities FOR Digital Learners: Claiming Spaces FOR Quality Assessment

KAY KIMBER AND CLAIRE WYATT-SMITH

INTRODUCTION

For many young people today, immersion in a digital culture is part of everyday life. Increasing numbers of online youth have become creators of web content from blogs to social network pages (Lenhart, Madden, Rankin Macgill, & Smith, 2007). Many delight in building online identities, characters and avatars for their online games, blogs and social network sites. Almost as a consequence, public attention varies from amazement to fear whenever young people, new technologies and especially the Internet are considered in tandem.

Carers are often flummoxed by their children's facility with multiple media, frequent multitasking (Prensky, 2001; Wallis, 2006), and use of new media technologies. Research into young people's leisure time social practices with digital media has revealed: the scale and ease of their adoption of new media (Roberts, Foehr, & Rideout, 2005); the significance of mobile phone usage to their lives (Stald, 2008); and the relationship between social networking sites, identity representation and sense of connectivity (Boyd, 2008; Stern, 2008), and the wide popularity of online computer games (Beavis, 2002; Gee, 2003; Sefton-Green, 2003). In each of these instances, young people have developed skills, capabilities and technology-mediated social practices that have often been extended by their peers, not the classroom teacher (Drotner, 2008; Gee, 2004; Jenkins, 2006; Stern,

2008). Other instances have shown young people in pursuit of knowledge about subjects of interest from community experts, not their classroom teachers (Gee, 2004; Jenkins, 2006). Technology-mediated social practices like those outlined here have implications for school curriculum, the envisioning of next-practice pedagogy and the framing of appropriate assessment tools. So, too, do findings from several large-scale studies of young people's technology use in the home.

Valentine, Marsh, and Pattie (2005) identified English children's preference for using home computers rather than those available in school. Interestingly, while home usage was primarily leisure-oriented, the faster speeds of home equipment and the relative freedom of access enjoyed at home, compared with school constraints, were also cited as reasons. An Australian study linked high technological skill and confidence levels with higher levels of home resources, particularly personal ownership of computers (Meredyth et al., 1999). However, a more recent national study (Ministerial Council on Education, Employment, Training and Youth Affairs, 2007), devised an *ICT Literacy Scale* (p. x) to gauge the technological performative levels of 7,500 young people in Grades 6 and 10 drawn from a national sample. Many gendered and state-differentiated analyses were provided, a key insight being that despite the extent of young people's leisure uses of technology, young people were using technology in a limited way. Formal education had not adequately equipped them for critical or imaginative usage. This limitation has also been noted by other writers. Drawing on research studies from several countries into young people's everyday uses of technology, David Buckingham (2007) observed that banality and superficiality rather than critical discrimination characterised much of their technological usage. Amongst findings from the British Educational Communications and Technology Agency (2001) ImpaCT2 study, three observations have direct relevance for this discussion:

1. Evidence from observed lessons in secondary schools suggests that some teachers focus on teaching skills that most pupils already possess.
2. Relatively few teachers are integrating ICT into subject teaching in a way that motivates pupils and enriches learning or stimulates higher-level thinking and reasoning.
3. Classroom observations indicate that when teachers use ICT in lessons (such as English, science or history) they often focus on basic rather than higher-order thinking and reasoning skills (pp. 13–14).

The points raised above suggest that educational/technology debates need to focus on *how* young people are already using technology in and out of school, and more particularly, on *how* teachers can assist in extending this development. It is no longer just the case of integrating technology at a base level of

utility. More pressing is the need to develop pedagogical learning goals and strategies designed to extend young people's critical and creative capacities with new technologies. With clearly articulated capacity priorities, young people's performance within and beyond school settings could be improved and assured greater portability.

In this chapter we explore possibilities for rethinking knowledge boundaries and identify priorities for capacity-building in young people's use of ICTs, whether at home or at school. In Part One, we lay the foundation for our case for moving beyond traditional binaries associated with in- and out-of-school learning. Further we identify four related knowledges that provide a foundation for expanded learning opportunities. In Part Two, we build on this foundation to present a new conceptual framing of *Essential Digital Learnings* (EDLs) and consider their implications for classroom practice and assessment.

PART ONE: IN- AND OUT-OF-SCHOOL LEARNING

In the body of writing on learning and—more specifically—curricular learning, there are long-standing dualisms that centre on the context in which learning occurs. In-school learning has been distinguished traditionally from out-of-school learning, the former tagged as “formal” and given higher value, with the latter tagged as “informal” and accorded lesser value. Qualifying and compartmentalising in these ways cloak the complexities that complicate both spheres. In their *Shared Spaces: Informal Learning and Digital Cultures* report, Buckingham, Sefton-Green and Willett (2003) observed the problematic nature of regarding both formal and informal learning as discrete, given increased child autonomy in informal learning situations. Sefton-Green (2003) suggested that both forms of learning share many characteristics—purposeful learning experiences with external intervention, promoting particular values and expressed in subject-specific language. Accepting that both sites can offer scope for meaningful learning offers a way forward for rethinking the relationship between learning locales, curriculum structure, pedagogy and assessment.

Brown (2002), for example, recognised the co-existence of on-campus and virtual learning communities and consequently advocated the framing of a “new knowledge architecture” to facilitate what he termed “a learning ecology” for university students:

A framework, or architecture, that unifies these traditionally separate infospheres to produce a new form of a learning ecology—an active place where the virtual and the physical seamlessly and synergistically coexist (p. 80).

In recognising the fluidity between the two spheres, he advocated

a hybrid model of learning—one that combines the power of passion-based participation in niche communities of practice with a limited core curriculum for teaching the rigorous thinking and argumentation specific to that field (Brown 2006, p. 19).

These concepts resonate with earlier work by Beavis, Nixon and Atkinson (2005), who argued that “the overall ecology of learning” is constituted within the “flows between formal and informal sites and practices” (p. 41). In similar vein, and even earlier still, Macdonald (2003) noted that educators needed to widen their curricular perspectives to embrace those new learning locales of young people: “educators need to recruit and recognise new spaces and places for learning that are effective and engaging, but are beyond formal curriculum planning and reform projects” (p. 145). Here, informal sites are synonymous with community-based learning.

Community-based learning has been described as “passion-based learning” (Brown, 2006, 22) or “affinity spaces” (Gee, 2004, 77) with the power to generate more active, involved learning across time, cultural and age boundaries. Many young people already engage with *community knowledges* through online, special interest networks. Jenkins (2006) deemed such involvement as “a participatory culture” (p. 3) where membership and participation are frequently voluntary, and collegial mentoring assists with individual growth within the community. With greater youth agency and opportunities for involvement, Jenkins believed that participants become empowered and interconnected. He cited several examples of young people whose life and careers as politicians, computer programmers, authors and even film producers have been sparked through online community memberships. Jenkins observed that the kinds of skills acquired by young people, “learning how to campaign and govern; how to read, write, edit, and defend civil liberties; how to program computers and run a business; how to make a movie and get it distributed” (p. 5), have been developed in their fan and/or gaming communities, but not in their schools.

If, as Jenkins (2006) has argued, participatory culture values and fosters peer-to-peer learning, changed attitudes “toward intellectual property, the diversification of cultural expression, the development of skills valued in the modern workplace, and a more empowered conception of citizenship” (p. 3), then it is imperative that ways be found to draw these into the educational discourse and to legitimate them within assessment frameworks. At this point, the discussion is extended from recognising *community knowledges* in school curriculum to consideration of how assessment practices might also include both formal and informal contexts.

Assessment has traditionally been associated with teacher authority, especially as this relates to judgments of quality. We argue that it is timely to call into

question the traditional notion of connoisseurship (Sadler, 1989) in assessment as residing with the teacher. This notion hinges on the assumption that the teacher, by virtue of discipline knowledge and evaluative experience, is best placed to recognise characteristics of quality in performance and assess these against standards. Given the widely reported generational gaps in technological know-how between teachers and students, a rethinking of holders of expertise and what counts as quality performance is warranted.

Throughout history and in all cultures, experts in their field are revered for their substantive knowledge, respected quality of their work and demonstrated skills. By their own executive control of the myriad of dimensions shaping their creation, using, adapting or breaking those dimensions for particular effects, experts reflect the spirit of their time, or even challenge traditional boundaries to the discipline with originality and creativity. Connoisseurs, or those who claim expertise in appreciation of all those fine qualities that distinguish the work, stand as the vanguard of evaluative action. Those individuals who aspire to emulate the expert, usually need to be inducted into the guild or insider knowledge (Sadler, 1989) so they might understand and act with assurance within that guild.

Eisner (1985) and Sadler (1985, 1989, 1998) linked connoisseurship to education, positioning teachers as the custodians of substantive subject discipline knowledge and connoisseurs of knowledge of criteria¹ of quality in performance or production. Sadler also posited that the role of the teacher extended to procedural knowledge for inducting student novices into knowledge of (1) assessment criteria (expected features of quality) by which to judge performance and (2) the rules for applying them. Sadler's interest in assessment and learning led to the key insight that explicit provision of defined criteria played a key role in informing students about expectations of quality and the features of performance against which their work would be assessed. The assumption here is that the teacher has the insider knowledge of what counts as quality. The role of the teacher is to download evaluative experience to the student by making explicit knowledge of relevant criteria and their uses for informing improvement. By construing evaluation "as an agent in learning" (1989, p. 138), Sadler extended teacher expertise to include the ability and willingness not just to induct learners into guild knowledge, but also to facilitate their empowerment, positioning them as would-be experts. But do these constructs still hold true for digital learning?

In their social communities, adolescents typically are already insiders, fully aware of their own norms and values, frequently proficient with new technologies and ready to make judgments of quality. Sadler (1989) noted that "children (certainly in their hours out of school) continually engage in evaluative activity and, if asked, can often produce rudimentary but reasonably sound rationales for

their judgments” (p. 141). While Sadler was not referring to digital activities, evidence of self-inquiry and self-assessment in digital worlds has begun to emerge. For example, young people already have tacit knowledge about what makes them cohere as a group and what constitutes a high quality digital creation (Walsh, 2007). They can already identify their own high performers in digital worlds as in online games (Gee, 2003), set their own goals and seek out more knowledgeable others to help improve their own performance, as in web design (Stern, 2008). In all these ways, the types of shared digital experiences constitute a youth guild where young people are the insiders, if not already the experts and as such, they induct others into their digital practices.

In regard to such digital practices, there has been relatively little research or development of opportunities to explore how traditional authority structures in teacher-student interactions, especially in assessment, might be impacted in the changed relations where the student is recognised as the expert or connoisseur. Some early work exploring the complementarity of out-of-school technology practices and curricular learning has emerged. For example, Walsh (2007) reported how the adolescents worked collaboratively, forming expert teams, with the teacher as novice. Walsh observed that

teachers can significantly alter their classroom habitus, not in deterministic ways, by allowing students to engage in multimodal design. This in turn offers the possibility of generating a wider repertoire of possible creative design practices and actions, perhaps unavailable in the habitus of progressive workshop classroom (p. 34).

In this study, the young people’s involvement extended to entering and winning a *Thinkquest* competition, illustrating their agency not just in the act of creation, but also in initiating their entry, reflecting their confidence in its content, digital proficiency and self-ascertained evidence of quality.

From this discussion, it is possible to visualise a gradation between teacher and youth guild knowledges whereby legitimated instances of young people’s out-of-school community learnings could be given high status. Such learnings characteristically draw from knowledges that students have in their communities, both physical and online. The deliberate combining of teacher and youth knowledges could induct teachers into more expert appraisal of digital literacy practices, and learners into more expert appraisal of performance criteria. In these ways the roles and identities of both teacher and learners could be extended, made more robust and less reliant on the pre-existing notion of teacher expertise as all-knowing authority. This revised view of expertise is therefore organic, dynamic and more inclusive of the novice in the field when that field is populated with rapidly changing new technologies.

To this point, our discussion of the desired complementarity of school and community learning introduced the notion that teacher, learner and community expertise might be productively shared. In recognising that “knowledge is inextricably *situated* in the physical and social context of its acquisition and use” (Brown, 2002, p. 65, emphasis in the original), we take up the notion of *curricular* and *community knowledges* as central to student learning in digital contexts. The latter can no longer be ignored or have its significance reduced in the core business of a school in building capacity for students to work in a range of ways to both use and produce knowledge. Additionally, two other forms of knowledge are vital: *curriculum literacies* and *critical knowledge*. As discussed below, both relate to how students come to understand content and processes. Both require the teacher’s explicit articulation of tacit (unstated) features and perceptions of quality.

Australian research on the literacy demands of curriculum in senior schooling has teased out the subtle but important distinction between “curricular knowledges” and “curriculum literacies” in the examination of the literacy-curriculum interface (Cumming & Wyatt-Smith, 2001; Wyatt-Smith & Cumming, 2003). The noun “curriculum” foregrounds the interface between a specific subject curriculum (for example, agricultural studies, design and technology, mathematics) and its subject-specific literacies. The Australian researchers made clear that literacies in the curriculum, or *curriculum literacies*, are those literate capabilities needed to learn in the curriculum. These include the knowledges and capabilities necessary to access and use meaning systems in using and producing knowledge. They made the case that literacy, defined to include reading, writing, listening, speaking, viewing and critical thinking, is a major determinant of success in education. Further, they argued the need for exploring the coherence of literacy demands that students encounter in managing their learning in different contexts and for incorporating these demands explicitly in instruction and assessment. Their conceptualization of curriculum literacies, expanded to include curricular knowledge and epistemological domains, provides an opening for considering multimodal communication online and the mix of modes and channels of communication that are routinely involved in digital technologies. Further, they argue that the concern with making curriculum literacies explicit extends to assessment. As Wyatt-Smith and Cumming (2003) explain that

our recurrent theme is that to be successful, students need to be able to identify and engage with these curriculum literacies within each subject, not just for learning, but also for successful negotiation of assessment within each subject... Overall student academic success in meeting expected appropriate demonstrations of performance will depend very much on how well the student can manage to understand, participate in and respond to the created intersection of the curriculum-literate environment (pp. 49–50).

The study highlighted the need to make the features of quality performance, framed by curriculum literacies, more explicit. Further, they pointed to the need for teachers “to assist students to understand those expectations so that they can use such knowledge to self-assess and monitor learning over time” (p. 54). The researchers concluded that the literacy environment of school curriculum places highly complex demands on students and reiterated that

some students succeed in negotiating these, apparently drawing on resources other than those that teachers provide. Others may spend their compulsory years [of schooling] in an environment that is essentially conducted in a foreign language in which they never gain sufficient proficiency. And students need to be fluent, to negotiate the even more demanding literacy-bound assessment requirements successfully.

...the role and nature of the curriculum-literacies that are in-built in assessment activities, and which impact upon the students’ performances, should be more explicit... Assumptions of student’s curriculum literacies is not sufficient. These need to be incorporated in direct instruction (Wyatt-Smith & Cumming, 2003, p. 58).

This conceptualization of curriculum literacies and its contribution to academic success through to assessment points to how students benefit from clearly defined expectations of quality including *crieterial knowledge*.

Explicit articulation of *crieterial knowledge* has gained increasing recognition as being critically important for learners’ academic success. Sadler’s (1989) seminal work advocating the deliberate unpacking of criteria and standards for a learner’s more clear understanding of the various elements that constitute quality in a piece of work has become an important thread in the assessment for learning literature (Black & Wiliam, 1989; Gibbs & Simpson, 2004; Wyatt-Smith & Cumming, 2003). According to Sadler, when learners are able to identify the specific dimensions of criteria and engage with evidence (or lack thereof) in their own and others’ work, criteria play a role in self-monitoring and improvement. As previously discussed, *crieterial knowledge* needs to be a collaborative, negotiated process where expertise is shared between teachers and students.

We recognise that designing and sharing assessment criteria can be problematic when teachers regard assessment as being exclusively their responsibility and, in particular, where assessment is tied to a traditional notion of teacher as sole authority in the classroom. With deliberate focus, however, the acquisition of *crieterial knowledge* promises to generate greater discrimination in learning—or discerning learning. This is particularly relevant where such knowledge is further illustrated in carefully chosen exemplars with annotations showing evidence of how the criteria requirements are met. From this background, we contend that *crieterial knowledge* offers a rich dimension for improving the quality of student learning. Yet few examples of criteria designed to complement multimodal texts are in the literature.

One large Australian study has developed key criteria as indicators of quality in students' digital creations (Wyatt-Smith & Kimber, 2005). E-proficiency, cohesion, content and design were devised as a way of talking about and determining the quality in students' multimodal text creations. "Transmodal operation" was posed to capture the synergistic dynamic of border-crossing between visual, verbal and kinaesthetic modes, and different software applications. It sought to articulate the essence of learners moving within and across different modes as they negotiated meaning and constructed some digital representation of their knowledge. Further development and teacher-student negotiation of these criteria could help inform learner agency, as whenever criteria are openly accessible, students and teachers alike are able to scrutinize and interrogate features of quality in ways that offer great potential for value-adding to the learning experience.

Criterial knowledge is foundational to learner success and integral to informed decision-making in the construction of digital knowledge products. To be able to apply criteria (Sadler, 1985) effectively to one's own production, one needs to be able to develop expertise over time and with regular practice. These understandings are supported by writing on formative assessment with a focus on the provision of timely, pertinent feedback (Black & Wiliam, 1998; Gibbs & Simpson, 2004). Feedback can help to stimulate deeper understanding of assessment criteria as indicators of desired features of performance. In our framing, formative assessment with a focus on student agency in using criteria offers ways to engage students in self-monitoring and improvement strategies.

Thus we propose that *community*, *curricular* and *criterial knowledges*, and *curriculum literacies* (see Figure 8.1) are jointly foundational to a learner's ability to construct quality performances and products, such knowledge being portable across in- and out-of-school. While these four components are shown as discrete, they are understood to be dynamically interrelated, one with the other.

Currently schools have responsibilities in relation to the presentation of *curricular knowledges*, whatever disciplines are selected in their curriculum offerings. The research discussed above, however, opens the possibility for considering how student learning can be enhanced when explicit provision is made for the teacher and student to engage with the other three elements. Differently, where these

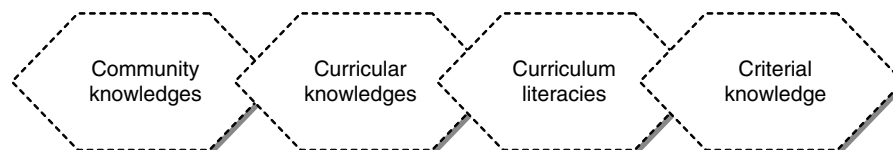


Figure 8.1. Foundational knowledges

knowledges remain implicit in pedagogy and assessment, they can present powerful barriers to student academic success (Wyatt-Smith & Cumming, 2003). In the proposed learning ecology, the challenge for teachers and students alike is to make the knowledges explicit, raising them to consciousness for deeper learning. In what follows we build on the notion of foundational knowledges to discuss what we have previously referred to as *Essential Digital Learnings* (EDLs).

PART TWO: ESSENTIAL DIGITAL LEARNINGS

Taking account of the many claims in published research that young people are “growing up digital” (Tapscott, 1998), there is an urgent need to shift the goal for learners from acquiring facts and content knowledge to becoming more digitally proficient, critical evaluators, creative producers and ethical users of new technologies. With this shift, the focus for learning becomes not so much what subject content is selected, but how to develop the learner’s cognitive, metacognitive, performative and transformative capabilities. Traditionally valued literacy skills of reading, writing, communication, comprehension and problem-solving remain important, but other essential learnings are called for. As indicated above, we have named these as *Essential Digital Learnings* (EDLs) which include *e-proficiency*, *e-credibility* and *e-designing*, extending to *metalearning* (see Figure 8.2). These are especially relevant for using and creating knowledge in digital environments.

e-proficiency

Our initial use of the term “*e-proficiency*” reflects the learner’s capabilities and repertoires of practice to utilise a variety of digital media in communicating with others. On an operational level, these include basic navigation across the Internet and a variety of software programs as in technological competence. E-proficiency extends well beyond this, however, to being able to choose and use appropriate software applications for particular tasks, competently deploying its associated logics and grammars. Findings from a 2003 to 2007 Griffith University study (Castleton & Wyatt-Smith, 2005; Wyatt-Smith & Elkins, 2008; Wyatt-Smith & Kimber, 2005) indicate that demonstrated levels of student e-proficiency are not as high as would be expected from techno-savvy young people. With e-proficiency as a goal, opportunities are presented for improving learners’ facility with software protocols and fine functions. Here e-proficiency involves the notion of “trans-modal operation” (Wyatt-Smith & Kimber, 2005) discussed earlier. All these skills enable production as distinct from consumption of digital products and are foundational to any creative design possibilities using digital media.

E-proficiency extends to the selection and informed use of search engines. Being net-savvy begins with the ability to search and locate relevant information. Far too frequently young people launch into their search for information via one search engine only and using basic search terms. Harris (2008) advocated explicit teaching about the resources of the invisible Web, arguing that “[d]igital natives are not necessarily skilled or critical consumers of digital information. Many are still novices when it comes to searching, selecting and assessing the meaning and value of the information they find” (p. 155). A more systematic teaching focus on better search strategies and more critical selection of sources is warranted. Armed with the knowledge of multiple search engines and strategies for mounting discriminating searches, young people can improve their e-proficiency and the quality of their learning process and outcomes. Tandem to a proficient use of search engines is an invaluable cognitive capacity with personal, social and ideological ramifications: *e-credibility*.

e-credibility

Early concern for the way that the Internet raised credibility issues (Brown, 2000; Bruce, 2000; Burbules, 1997a, 1997b, 2001) has shifted to explorations of the parameters, logistics and essentials of credibility evaluation in digital contexts. For some authors, credibility issues have been identified as perhaps the greatest challenge facing a networked society (see Metzger and Flanagin, 2008). People’s capacity to evaluate the credibility (or believability) of a source or person has always been integral to human relationships, so it is not surprising to contemplate how the complexity of the Internet has compounded the difficulty of being able to discern indicators of trustworthiness. Digital media developments have magnified the need for more frequent and more astute use of credibility evaluative skills. For these reasons, we prefer to use the term *e-credibility*, drawing on Haas and Wearden’s (2003) point that e-credibility entails deliberately and critically discerning “the qualities of trustworthiness, accuracy, completeness and timeliness that entail a sense of ‘believability’” (p. 170). We believe that this term foregrounds the potentially powerful impact of digital environments on young people’s abilities to make credibility judgments as they negotiate their online worlds.

Trustworthiness and expertise, the two key dimensions of credibility identified by Flanagin and Metzger (2008), both rely on the receiver’s ability to decode, discern or accept the reliability of the source in question. Harris (2008) argued that some young people’s level of cognitive development, naiveté, lack of real world experience and tendency to “satisfice” (p. 162), or settle for “good enough” rather than optimise their decisions, sets them at a disadvantage when working with information on the Web. The reading and interpretation of informational cues in digital texts

require the reader to locate, organise, consider logically and apply abstract reasoning, all of which are directly linked to developmental changes in cognition (Eastin, 2008). Given the amount of erroneous, misleading and potentially harmful information that sits in the same virtual space as rich, accurate, powerful multimedia texts, young people need to learn to discriminate in more powerful ways. Educators can and must assist young people to develop their capacities and meta-strategies for interrogating texts, seeking corroboration and arriving at informed decisions. Drotner (2008) has argued that young people cannot develop the kinds of evaluation and reflection needed in online environments without explicit instruction.

Some suggestions for helping young people develop their evaluative strategies include “hyperreading”, particularly of hyperlinks, to develop a more critical facility for identifying and distinguishing between “misinformation, malinformation, messed-up and mostly useless information” (Burbules, 1997a, 1997b). Harris (2008) recommended going beyond checklists “because evaluation of information is subjective, relative and situational rather than objective, absolute, and universally recognizable” (p. 166). Sundar (2008) offered the MAIN (Modality, Agency, Interactivity and Navigability) model of heuristics to assist students to achieve greater evaluative discrimination of credibility when working with digital texts. When one considers the extent of young people’s immersion in their digital lives and how their mobility often means that their point of contact with a range of technological tools and interaction opportunities becomes routinised, then their ability to apply appropriate heuristics for validating, corroborating, using and constructing knowledge in ethical ways becomes even more important.

To achieve valid, discerning, credibility judgments, young people should be able to deploy effective meta-strategies suitable for learning in a digital environment. Consistent and appropriate use could help young people to add their own critical lens to offset reportedly current corroborative practice—almost instantaneous seeking of clarification and support from social networks and recommended sites (Harris, 2008). Flanagin and Metzger (2008) cast this kind of networked corroboration as the new “coin of credibility” which should be challenged by building young people’s personal evaluative skills to such a degree that they become “architects of credibility” (p. 18).

This notion of e-credibility is integral to the quality of young people’s academic performance and social interactions. Its effectiveness can be identified in the products that they create through *e-designing*.

e-designing

The term, “e-designing,” invokes learner agency as the digital learner makes connections between ideas or information for transformation into a digital

representation of understanding. To some extent it offers insight into the way the mind has processed what might be a kaleidoscope of ideas. E-designing captures the active, dynamic act of traversal across mental and virtual spaces in sourcing, navigating, connecting and engaging with ideas or information, and perhaps interacting with others to create new digital artefacts. It encapsulates a blend of creativity, evaluation, e-credibility and e-proficiency. It can reflect the degree of ethical concern or cultural affiliations of the designer. Further, the act of creation could be achieved individually or in collaboration, and entails imagination, multimodal display, reflection and evaluation. When these different perspectives are taken into account, the role of e-designing in value-adding to a digital learning experience can be appreciated. Its desirability as valued learning becomes an imperative when one considers latest research findings that suggest that young people's everyday uses of new technologies are

characterized not by spectacular forms of innovation and creativity, but by relatively mundane forms of information retrieval... The technologically empowered "cyberkids" of the popular imagination may indeed exist; but even if they do, they are in a minority and they are untypical of young people as a whole (Buckingham, 2007, p. 92).

One explanation for this so-called lack of creativity could be that familiarity with the digital medium has brought complacency or an utilitarian attitude. Elsewhere Buckingham comments that most young people are more concerned with the uses they can make of technology, a view endorsed by Stald (2008) in her research with Danish youths and mobile phones. Yet various empirical studies have confirmed the academic progress and improved performances of students who act as designers of multimodal texts (Chen & McGrath, 2003; Kimber, Pillay, & Richards, 2001; Lehrer, Erickson, & Connell, 1994) including computer games (Beavis, 2002; Prensky, 2007; Watson & Johnson, 2004) and electronic concept maps (Anderson-Inman & Ditson, 1999; Kimber, Pillay, & Richards, 2007). Such studies show growing support for the notion that digital transformations and designing can enhance the process of personal agency in student learning.

Beyond these studies, recent educational and political thinking has concerned ways to foster and sustain the innovative capacities of future workforces in times of technological change. Of particular note is policy focus in the United Kingdom directed towards enhancing the creativity, imagination and futures-oriented thinking of young people. Recommendations from the *All Our Futures: Creativity, Culture and Education* report (Robinson et al., 1999) included a strong focus on the creative arts, but the notion of creativity was cast as fundamental to advancing diverse subject disciplines and the nurturing of innovative, imaginative, future citizens. The report identified four features of creative processes (imaginative thinking, purposeful activity, original creation, value of outcome), similar to The New London

Group's (2000) notions of Designing and the Redesigned. Furthermore, the report encouraged young people's experiencing creative, as distinct from technician, uses of new technologies. If this latter goal were to be achieved on a much wider basis, Buckingham's (2007) point about mundane, utilitarian uses of technology would be countered by creative, critical, aesthetic and ethical usage, as discussed in the following section. Before this, however, there is at least one critical caveat synonymous with e-designing and the reproduction of web materials.

Several writers have identified the ease with which plagiarism, whether of word, image or music, can occur online in new formulations or "remixing of content" (Keen 2007, p. 24). On this matter, the field is divided. Writers including Gibson (2005) argue that "our culture no longer bothers to use words like *appropriation* or *borrowing*," promoting the idea that "The remix is the very nature of the digital" (p. 1). This idea is mirrored by Keen (2007) who characterised the latest Web 2.0 "remixing" of content and "mashing-up of software and music" as easily accomplished (p. 24), observing that

cutting and pasting, of course, is child's play on the Web 2.0, enabling a younger generation of intellectual kleptomaniacs, who think their ability to cut or paste a well-phrased thought or opinion makes it their own (p. 25).

Countering this view is Jenkins' (2006) description of "appropriation" as "the ability to meaningfully sample and remix media content... wherein young people build on others' cultural productions through dissecting and rebuilding it in another form" (p. 32). Integral to his notion of digital e-designing is the capacity for "transmedia navigation" (p. 46) which includes not just the ability to read and think across different media, but also the facility to exploit the opportunities and affordances of those different media. But concomitantly, transmedia navigation brings the potential for plagiarism, whether intentional or unintentional. When the fluidity of production entails ease of cut and paste, remixes and mash-ups, all supposedly creating a new genre or a new digital text, then budding e-designers might be easily tempted to take the easy path towards re/production, exemplifying Keen's "intellectual kleptomaniacs" (2007, p. 25). In this situation, it is essential that young people develop a strong measure of ethical responsibility as e-designers to ensure that plagiarism is recognised as misrepresentation. In these ways, e-designing can embody ethical and discerning learning.

To this point we have suggested that *e-proficiency*, *e-credibility* and *e-designing* are significant learnings for today's young people. They interlace the critical, creative, aesthetic and ethical dimensions of learning to develop a new "knowingness" for the digital learner. A feature of such knowingness is its portability across contexts and applications for different purposes. The effectiveness of that portability

lies partly with the learner's ability to internalise and activate those EDLs in new contexts. Thus the ultimate goal for these learning processes is *metalearning*, as discussed next.

Metalearning

The term "*metalearning*" is taken to represent informed application of intentional, metacognitive principles to the learning process. It includes the ability to select from a raft of repertoires and capabilities the most appropriate method and strategy to achieve the desired goal or outcome. It also includes the ability to reflect on learning as it is occurring, especially in terms of the quality of learning and barriers impacting on progress. It encapsulates higher order thinking processes such as evaluative and creative thinking, analysis and synthesis, accomplished abstract reasoning, the ability to create an aesthetic performance and a commitment to ethical consciousness in all spheres of operation, both physical and virtual. As such it intersects with and carries forward the capabilities identified in the EDLs. Above all, *metalearning* connotes the accomplished traversal of complex virtual and real-world spaces to use and construct knowledge, most frequently with digital tools. It also connotes capacities relating to moving between print-based and digital environments, being aware of how the two can be drawn on to generate informed critical insights into the nature of knowledge and how it is represented. As such, *metalearning* is the acme of independent, active, social and strategic learning, and essential for lifelong learning in a complex, rapidly changing world.

In summary, the three EDLs operate in a dynamic, interrelated manner to enable the digital learner. All involve higher order thinking and all are underpinned by the core tenets of *ethical responsibility* and *cultural sensitivity*. Separately and cumulatively they make a significant contribution to the young person's capacity for learning and earning in a digital world. Separately and cumulatively they promise to enhance the critical, creative, aesthetic and ethical dimensions of becoming a contributing twenty-first century citizen who is sensitive to cultural differences. Separately and cumulatively, they support the notion that learning is a process, not just an assessable final product, developed and negotiated through social interactions. This last point in particular impacts on the choice of teaching and assessment to leverage these essential learning traits or goals.

FRAMING THE FOUNDATIONAL KNOWLEDGES AND EDLs

The knowledges and capabilities discussed to this point have been envisaged to match the changing media landscape of the digital world and to equip young

people for effective citizenship and participation. Figure 8.2 graphically combines the foundational knowledges previously presented in Figure 8.1 with the EDLs and related capabilities discussed above. *Metalearning* is intentionally positioned at the apex of the triangle to highlight it as the synthesising goal towards which all teaching and learning should aspire and be directed. Together, all elements are represented as discrete though they are understood to be complementary and inter-related. Together they constitute our framing for how teaching and assessment choices might help to support learning in digital environments.

The upper section and dotted boundaries to all shapes are of significance. The dotted lines partially bound the school-based learning terrains to suggest their potential for fluidity and interconnection. They represent the boundless limits of the Web and possibilities for interactions that can impact on learning and global citizenship. Also of note are the wave-shaped text boxes to represent dynamic, fluid movement and their potential for extending beyond their own space. Immediately above these text boxes, and similarly wave-like, are the ethical, critical, creative and aesthetic dimensions of learning that should underpin the framing of activities and responses. “Ethical responsibility” and “cultural sensitivity” appear as oblique

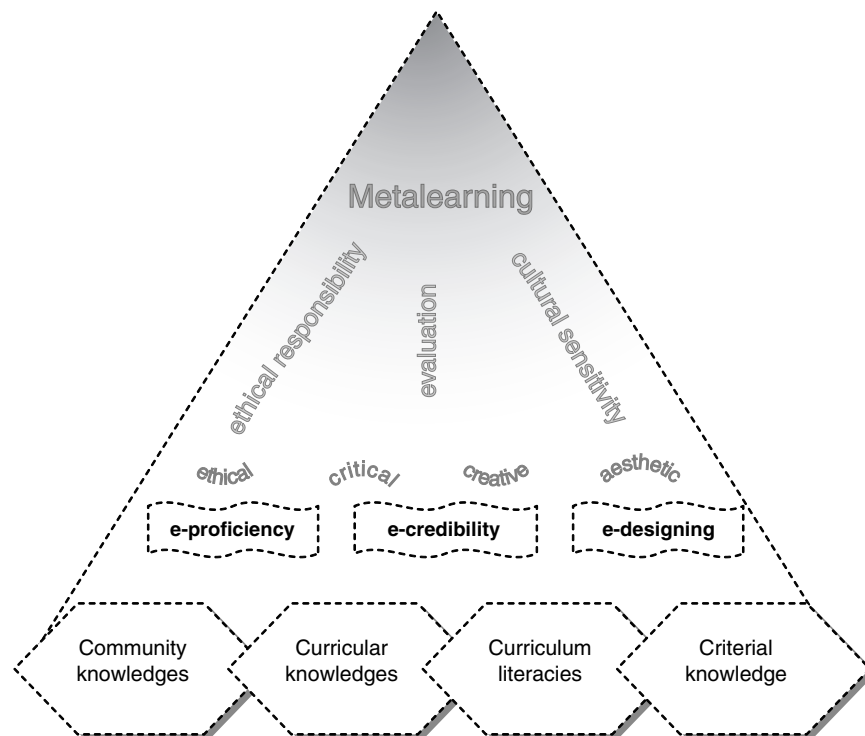


Figure 8.2. Framing foundational knowledges and EDLs

and dynamic waves, bounding the suite as all-embracing social issues that impact on personal identity formation and the scope of social interactions. “Evaluation,” the central vertical text, is a core higher-order thinking skill and central to all of the learnings in the suite. Together, these three lines of text represent how they should permeate all learning experiences, especially with digital literacies. Further the design of the figure places evaluation, ethical responsibility and cultural sensitivity as vehicles to draw up and carry forward the learnings into acts of synthesis with the greatest potential for informing problem-solving and realising productive social agency.

The empirical and epistemological literature informing the composition and design of the suite of EDLs (see Figure 8.2) has been drawn from literacy research, digital literacies and Sadler’s (1989) theorising of formative assessment. Through these different lenses, emerging and proven ideas about learning in a digital landscape are drawn together, offering scope for considering the potential of the suite for teaching, learning and assessment in the twenty-first century. Specifically we suggest that the shaping of young people as knowledgeable, productive and socially responsible citizens in a global, digital environment rests on three core tenets that could well assist in moving this suite forward into enacted practice.

Firstly, the complementarity between young people’s in- and out-of-school learning communities should be recognised as pre-requisite in developing their knowledge bases and performance capabilities. Through valuing and accepting the extent of their learning initiatives in school-based credentialing, impetus is given to the sustainability and portability of learning skills across a lifetime. Similarly, the alignment of *curriculum literacies* and *criteria knowledge* offers teachers direct focus for making explicit those core elements of discipline knowledge or markers of quality that might otherwise remain within the province of teacher guild knowledge. In these ways, positive steps forward in invigorating teaching and assessable opportunities within classroom practice can be made.

Secondly, school curriculum should not only capitalise on young people’s digital capabilities but also seek to extend and develop their digital practices in ways that prioritise evaluation, ethical responsibility and cultural sensitivity. This means that due consideration will be given to how young people can be encouraged to evaluate sources and credentials with greater discrimination, and to evaluate the potential implications of their selections, use and transformations of cultural knowledge. To this end, knowledge use and construction should be prioritised over knowledge consumption. Inherent in evaluation is its focus on critical reflection and creativity as indicators of the level of thinking involved in developing the representation of understanding. In all these ways, young people’s actions will be guided towards sustainable, portable, futures-oriented, ethical and culturally sensitive practices.

Thirdly, the goal of *metalearning* offers positive direction for teaching and learning. Classroom practices should be directed towards developing young people's metalearning capabilities through a range of activities designed to engage them metacognitively in their enactment of those essential digital learnings outlined earlier. Furthermore, the nature of assessment and assessable opportunities should be widened in scope to involve young people in evaluative consideration of their own and others' processes of working online. In these varied ways, student agency and expertise in applying assessment criteria can be realised.

Our conception of assessment for digital learning is grounded in daily, school-based and technology-mediated practices where assessment is understood as tied to learning and learning improvement. It is different from e-assessment where a multitude of innovative, technological ways of delivering personalised, diagnostic testing, engaging simulations, large scale assessment delivery and instantaneous feedback can enrich classroom experiences. Rather, our view of assessment for digital learning is responsive to learner agency in operation in online communities. It recognises both the processes and products of learning acquired virtually, informally, as well as in the classroom. It could be best activated through adopting an integrated approach that links teaching, learning and assessment via critical inquiry. In all these ways, assessment for digital learning supports and extends learners in their interactions with knowledgeable others, engaging them with feedback and deeper involvement with assessment criteria to enhance learning.

CONCLUSION

Our discussion in this chapter has aimed to claim spaces for new ways of thinking about learning and assessment opportunities in digital environments. What is new in this work is the broad conceptualisation of opportunities designed to take account of the requisite foundational knowledges and Essential Digital Learnings. Our approach has been to explore some connections in diverse fields of research writing as discussed earlier and probe their potential to inform discussions of what counts as valued learning and assessment in the twenty-first century.

The framing of foundational knowledges and Essential Digital Learnings offered in the chapter is taken as provisional, a construct on our part. Clearly it lends itself to interrogation from both theoretical and empirical perspectives. Accordingly we invite readers to consider the possible relevance of the framing to their teaching and assessment contexts. Finally, the approach that we have taken prompts much needed conversations about education futures for young people. At the heart of this matter, we believe, is the recognition that learning is intrinsically social, cultural, value-laden and historic in nature. As such, it

necessarily changes in relation to shifting developments in society, locally and globally. Due to the rapidity of change in new and emerging technologies, there is now potential for rapid change in social and communication practices and processes. The challenge for learning and assessment in schooling is to rethink the nature of knowledge and the demands of learning using technologies. In this way, schools will be able to reassert their relevance and salience for young people in a digital world.

NOTE

1. Drawing on the work of Sadler (1985), this term is taken to refer to those properties, dimensions or characteristics by which student performance is appraised.

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