ICT in Teacher Education: Some Common Misunderstandings and Dilemmas

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Introduction
Information and Communication Technologies (ICTs) exemplified by the internet and interactive multimedia are obviously an important focus for future education and need to be effectively integrated into formal teaching and learning – especially in a teacher education institution. Yet ICT integration is not as easy in practice as it sometimes appears in theory or policy – hence an adequate recognition and support of relevant needs is crucial. The overview below condenses the points of two distinct ‘discussion papers’ developed out of discussions with colleagues [see links below to access full copies of these – Richards, 2003a; 2003b] which aimed to productively encourage further discussion about requirements, possibilities and implications of ICT integration in education not only at the Hong Kong Institute of Education (HKIIEd) but also worldwide. The first part identifies common misunderstandings often held externally by students, management and colleagues in other departments. The second part focuses on the common dilemmas faced internally by those of us trying to achieve an effective integration of ICT in teaching and learning. At issue here is the question of how ICT represents an important key to the harnessing the powerful implications of new learning models and opportunities (and vice versa). ‘ICTs in education’ is a specialized discipline in its own right, but it also represents an across-the-curriculum medium and every-day ‘literacy’ needing to be embraced by all teachers and their students. In short, a convergent model needs to be recognized and adequately supported to harness the powerful educational implications of ICTs.

Common misunderstandings about the role of ICT in teaching and learning
Typical misunderstandings or ‘myths’ about the role of ICT in teaching and learning are often informed by the following assumptions:

- that mere skill acquisition is a sufficient basis for being able to effectively teach and learn with ICT;
- that our students are developing such a sufficient skills basis (and by extension an applied focus on teaching and learning with ICT) before or outside their teacher education courses at HKIEd;
- that all kinds of ICT-related modules (i.e. elective or foundation, skills-focused or more generic and applied) are ‘easy’ in comparison to teaching regular content courses;
- that modules with a focus on applied teaching and learning strategies, across-the-curriculum applications or ‘generic’ (and not just specific) skill acquisition are irrelevant and not needed; and
- that advanced, ‘cutting edge’ ICT skills acquisition alone will somehow translate into effective ICT integration in teaching and learning.
a) The myth that a mere ‘skills’ focus is sufficient for teaching and learning with ICT
There are still influential and engrained notions that the acquisition of ICT skills is sufficient by itself for teaching and learning with ICT, and that students today typically acquire this assumed competency for ICT integration either before or outside their teacher education course. On this basis lies the argument or view that that teacher education ICT courses should therefore focus primarily on additional or advanced skill acquisition – rather than actually teaching or learning with ICT as a new media as well as tool of both functional literacy and applied knowledge learning.

b) The myth that top-down theories and policies are sufficient for proactive change
As well as how ICT has been outlined as a ‘key learning area’ in innovative curriculum reform, there have been proactive goal-setting to achieve ICT integration targets such as: (a) 25% of learning and teaching activities at schools should be using IT (Education Manpower Bureau, 1998); and (b) all pre-service (as well as in-service) teachers to achieve a significant level of ICT competency standards. However, unless such policies and goals are connected to correspondingly effective bottom-up and practical contexts of resourcing, change, and new approaches, then like elsewhere there is potential for counter-productive responses – such as teacher technophobia or resistance to ICT, a fear of change, and a resentment of top-down imperatives.

c) The myth that ICT in education is merely a subject or ‘easier’ than content teaching
Despite the key message of a report such as Information Technology Learning Targets for HK Schools (Cf. also Curriculum Development Council, 2001) – that is, ICT as a generic skill to be applied - it is often assumed that ICT in education is merely a subject or that teaching about ICT is somehow equivalent to teaching a curriculum or disciplinary area of content specialization (e.g. when it comes to departmental staff appointments or student evaluation of teaching). Yet conversely, ICT in teacher education is often assumed to be ‘easier’ to teach because of an ostensible lack of ‘content’ – especially when equated with ‘mere skills’ learning. Ironically such perceptions also often assume that ICT in education (e-learning, etc) is merely about new ways to package or transmit ‘content’ – as distinct from encouraging the process of learning.

d) The myth that teacher education ICT foundation or core modules are unnecessary
A combination of related misunderstandings above seem to be behind a move to do away with foundation or core ICT modules in HKIEd teacher education programmes. As well as seeming to assume that more applied, generic and pedagogical approaches to ICT in education are unnecessary, such moves also appear to be a response to ostensibly negative student feedback about such courses. Another is an influential but ultimately misguided notion that students will be more effective at ICT integration if they learn ICT competencies merely and directly in relation to a particular subject (i.e. overseen by curriculum or disciplinary specialists). Whatever the case we need to understand: (a) why such a move is a backward step in many ways, as a basis for (b) coming up with more effective and strategic designs for such courses. Instead of doing away with such courses, teacher education needs to extend and more effectively develop a generic as well as across-the-curriculum focus on teaching and learning with ICT as both a medium and set of practical skills (Au, W. K., Kong, S. C., Leung, K. P., Ng, M. W. E., & Pun, S. W., 1999; Lee, 2002).
**Common dilemmas to be confronted when trying to effectively integrate ICT in education**

If practice is not the starting point – or if theory/policy is but as a top-down imperative only - then ICT in education will tend to be approached as an ‘add-on’ rather than effectively integrated. An integrated approach begins with a related set of desired learning outcomes rather than a list of discrete top-down teaching objectives. It serves to provide a focus for reconciling a range of oppositions and their associated dilemmas for educators – for instance, skill and information acquisition vs. applied outcomes or performance, theory vs. practice, competency vs. higher-order learning, formative vs. summative assessment, teacher-centred vs. student-centred learning (including various notions of learning as project-based, inquiry-based, problem-solving, authentic, life-long, independent, collaborative, performance-based, etc.). Likewise, an integrated approach should represent a process of grounding skill or information acquisition in an initial practical context and extending this as applied and innovative knowledge in practice. Hands-on’ practice is needed as a basis for developing applied approaches and innovative practices in education which go beyond the mere transmission of ‘content’ or skills in a vacuum. In other words, effective contexts of learning with ICT are needed to encourage students to bridge the gulf between ‘thinking’ and ‘doing’. Many teachers around the world are perpetually expectant and subsequently disappointed by the latest cutting edge program or technology as they wait in hope that one day the perfect program and technology will come along and integrate IT in education for them.

a) **Teacher education ICT foundation subjects: Typical dilemmas or obstacles to be confronted**

An add-on as distinct from an integrated approach will tend to reinforce rather than proactively respond to the following kinds of dilemmas faced by tutors, teachers and coordinators attempting to promote effective IT integration in education:

- The extra effort required to integrate IT more effectively now will make life easier for teachers in the long run. (short-term vs long-term dilemma)
- Whilst the transition to an integrated approach can be gradual in terms of the specific details, it does perhaps require a ‘jump’ or ‘shift’ in approach. (evolution vs revolution dilemma)
- Why would teachers volunteer the extra time or effort needed to integrate IT effectively if this is not sufficiently recognized, encouraged or rewarded? (the easy path vs vocational commitment dilemma)
- An alternative variation of the above: We ourselves might be prepared to volunteer to go the extra mile for our students or professionally, but how can we (or any coordinator especially) also expect other colleagues to do the same? (self-interest vs student interest dilemma)
- Effective IT integration in foundation courses or introductory contexts actually often require more hands-on practice and face-to-face interaction whilst making available the tools of ‘distant delivery’ (rarified vs applied learning dilemma)
- The use of program and activity templates (especially if fixed rather than open-ended) can be counter-productive if they serve to avoid rather than promote the ‘process’ of learning [similarly the posting of mere ‘content’ on the web as a mode of e-learning’]. Moreover teachers need to also respond to the facility of the internet and computer programs and templates for student plagiarism. (learning vs assessment dilemma #1)
- Course theory, content/information and even skill acquisition need to be grounded in applied practice and process. (theory vs practice dilemma)
• Unless grounded in practice, student-centred methods and theories may inadvertently reinforce the very transmission, hierarchical models of learning which they are supposed to be an alternative to. In any case, teachers remain the crucial factor in the effective construction of learning environments and activities as well as modeling of knowledge (student-centred vs teacher-centred dilemma).
• The add-on’ use of some new method or tool will not be sufficient by itself to achieve an integrated framework – indeed may serve as a distraction and obstacle (piecemeal or ad hoc vs integrated dilemma).

b) **Requirements for an integrated approach to ICT foundation course design.**

*General requirements:* If students in any large ICT teacher foundation course are going to walk away at the end with the skills, attitudes, and knowledge to effectively integrate ICT in their own practices, then they require an appropriate learning context and framework to guide, support, and inform their participation.

- **Teacher designs for ICT-supported learning environments** – setting an effective context for learning
- **A hands-on approach to active learning with ICT** – grounding learning and thinking in ‘doing’
- **An ‘across-the-curriculum’ integration of ICT** – ICT not just tools, but a mode of literacy/learning which needs to be integrated across-the-curriculum
- **Appropriate support and access issues** – includes awareness of needs, fears and potentials of learner
- **Applied and not just skills-based ICT standards** – skills/information learnt in a vacuum re-produce passive learners, but learnt in context of application become powerful techniques and possibilities

*Specific requirements:* Other elements and requirements related to overall course design include:

- **A balance between holistic or process and specific learning objectives** - holistic/process objectives represent ‘deep learning’ strategies for transforming ‘content’ into applied/innovative performance
- **Grounding the learning process with ICT in assessment** – just as the use of ICT in learning should be a performative process, so the tools of ICT lend themselves to assessment strategies, frameworks and repositories which encourage as well as gauge the process of learning in any subject or discipline
- **Connecting merely competent and higher-order modes of active student learning with ICT** – effective higher-order learning needs to be grounded in practice to achieve applied and innovative knowledge (effective use of ICT learning tools encourages this)
- **Learning as activity-reflection cycle or transformative stages** – instead of a hierarchical view of learning as lower-order practice vs. higher-order thinking opposition, applied and innovative learning as a transformation grounded in practice but effectively linked to thinking, reflection and theory
• **Reconciling pedagogical and technological principles for ‘ICT-supported learning environments’** – as well as the common ICT educational implications of *information access* and *communication*, pedagogy and technology should also converge and complement around a common strategy of *interactive learning*.

In conclusion, an integrated use of ICT in education (Roblyer, & Edwards, 2000; Jonassen, Peck & Wilson, 2001; Laurillard, 2002) presupposes: that students are provided with a context for viewing ICT as an extended *media* of their literacy and an everyday *tool* of their learning; that teachers model flexible, adaptable and transferable *attitudes* about the use of ICT in education as well as the process of learning across the curriculum; and that strategic rather than *ad hoc* consideration be given to the relation between *resources, curriculum and pedagogy*, and *learning and assessment* (Light & Cox, 2001; Richards, 2002).

**Conclusion**

In summary, it is clear that an effective strategic approach to ICT integration in teacher education is required. If the challenge of effective ICT integration is not adequately embraced, then there is potential for: (a) counter-productive effects; and (b) an opportunity lost (which cannot afford to be lost). As outlined above the *challenge of ICT integration in teacher education is important* for many reasons but in particular because it represents not only a *key to a transition between old and new learning*, but a potential focus for conflict between different theoretical, policy and practical perspectives. In short, a *balanced perspective is needed by all concerned* – especially as a basis for implementing new policy and theories – and this *can only be achieved by adequate dialogue which is ultimately grounded in actual practice*. Unrealistic expectations and misinformed decisions will inevitably reflect the ad hoc disposition of “not knowing what we don’t know” – which is why it is important to locate the need respond effectively to the challenge of ICT integration in the context of a conflict or transition between old and new models of learning. An effectively strategic response to the challenge will serve to lead education across a ‘temporary threshold of transitional frustration’ that is naturally inherent to both ICT literacy/competency development and also effective educational change. Finally, ICT integration in teacher education is already difficult and often misunderstood work which is very important for the future of schooling. It needs to be supported effectively, flexibly and strategically in order to sustain the momentum and good progress made so far. HKIEd needs to continue to engage all staff and students in the process of change in bringing about the required shift in pedagogical practice. For this we require a collective enterprise amongst all of the HKIEd community.
References

http://iatstaff.ied.edu.hk/richards/papers/ictfoundation.htm
http://iatstaff.ied.edu.hk/richards/papers/ictmisunder.htm