INTRODUCTION

This book epitomises an emerging ‘megatrend’ of international interest and active experimentation in the use of new and extremely varied forms of e-simulations in the service of education, professional development and training. It also signals for Australasia and Europe, as examples, an emerging ‘foresight’ network of higher education institutions, keen to participate in knowledge networking in order to more quickly advance the theoretical conceptualisations, constructs and ‘evidence-based’ practices in the use of e-simulations. Trends identified and insights gained from this book are due to the authors reflecting and reporting on the underlying strategic projects of their individual institutions and in some cases those flowing from relatively early examples of the dissemination of sound teaching practices locally and further afield. This merits some reflection on the dynamics at play and the, often fragile, potentials for those dynamics to deliver returns on investment (ROI) for the actors and educational enterprises supporting them. While computer simulations have been explored for decades, we puzzle at the immediate future of e-simulations for education in the professions, particularly in the light of the most recent network technologies. What is the hype? What are the trends? Who needs to lead? What organisational capacities are required?

Hype

For Gartner Inc., Zastrocky, Lowendahl, and Harris, (2007) examined technology adoption and use in higher education institutions and identified three functional areas as emerging, defined by their level of risk tolerance: the Chaotic Sandpit (high risk), the Healthy Hothouse (moderate risk), and the Disciplined Engine Room (low risk). While the cutting edge research function, the ‘chaotic sandpit’, pioneered new and emerging technologies, the ‘disciplined engine room’ delivered the mainstreamed technologies supporting teaching business as usual and the administrative functions. Between these two is the teaching and learning function; the ‘healthy hothouse’. Actively seeking opportunities to explore new technologies ‘faculty should engage in experimentation and “learn by playing” (p.6). The chapters in this book variously reflect positions taken by the e-simulation technologies and strategies within this model of educational technology adoption, in their respective organisational contexts and broader contexts of blended learning for education in the professions.

A useful and associated model, for which Gartner is well known, is the technology ‘Hype Cycle’. In this cycle, it is hoped a ‘plateau of productivity’ is reached to provide the elusive evidence of a return on investment. It is comforting to note that educational digital simulations, as a set of relatively mature technologies, in general, may be placed in the later phases of a technology’s life cycle, but the transfor-
nimate potential of e-simulations for professional education and training, is not yet in evidence through wide dissemination of quality teaching and learning designs and practices. And we would contend that as the range and sophistication of the e-simulation technologies increases, its potential for significant, positive impacts on blended teaching and flexible education is threatened by a lack of strategic capacity-building individually and collectively by organisations. In a real sense, as networked and mobile technologies increase their influence as disruptive technologies in educational settings, new constructs for e-simulations place them once more in the earlier phases of the ‘Hype Cycle’, which Gartner (2010) describes in the following manner:

• **Technology Trigger**: A potential technology breakthrough kicks things off. Early proof-of-concept stories and media interest trigger significant publicity. Often no usable products exist and commercial viability is unproven.

• **Peak of Inflated Expectations**: Early publicity produces a number of success stories—often accompanied by scores of failures. Some companies take action; many do not.

• **Trough of Disillusionment**: Interest wanes as experiments and implementations fail to deliver. Producers of the technology shake out or fail. Investments continue only if the surviving providers improve their products to the satisfaction of early adopters.

• **Slope of Enlightenment**: More instances of how the technology can benefit the enterprise start to crystallize and become more widely understood. Second- and third-generation products appear from technology providers. More enterprises fund pilots; conservative companies remain cautious.

• **Plateau of Productivity**: Mainstream adoption starts to take off. Criteria for assessing provider viability are more clearly defined. The technology’s broad market applicability and relevance are clearly paying off.

**FORESIGHT**

While Gartner Inc. continues to make a business of trend analysis and forecasting in 2011, the Danish physicist Niels Bohr (1885 - 1962) is reputed to have said that ‘prediction is very difficult, especially about the future’. Yet various approaches to futurology (futures studies or foresight), particularly corporate-friendly concepts like ‘trend sensing and analysis’ are growing in popularity today. Indeed horizon scanning in the field of educational technologies has been made famous for teaching and learning across the sectors through the annual ‘Horizon Report’. This emanates from the ‘New Media Consortium’ (NMC), an initiative of EDUCAUSE. In 2009, the NMC conducted a ‘Symposium for the future’ in Second Life (Linden Lab Inc.), which, along with other 3D immersive worlds and other Multi-User Virtual Environments (MUVES) have for several years been grappling with the ‘Trough of Disillusionment’. Regardless, the evidence in this book and in other recent literature (Gregory, Lee, & Ellis, 2010; Kirriemuir, 2009) shows that Second Life continues to flourish through maturing and newly emerging applications for educational purposes.

However, senior organisational managers are constantly demanding optimal ‘returns on investment’ (ROI) and the minimisation of risk. This is understandable as in higher education we are finding that mainstreaming and sustainability of new educational technologies is becoming an increasing challenge.
In 2008, a European ‘Megatrend project’ sought to ‘identify major/significant trends and discover rules that should be followed for achieving critical mass in e-learning as well as for moving from a small-scale, fragile e-learning provider to a large-scale, permanent and successful e-learning institution.’ (Learnovation Consortium, 2008, p.12). This reflects the real challenge faced by many educational institutions in this age of rapidly emerging new media.

**DESIGN PRAXIS**

In the second section of this book, ‘E-Simulation Learning Designs in Action’, evidence is presented about the work of authors quite possibly situated in one of the Chaotic Sandpit, the Healthy Hothouse, or the Disciplined Engine Room. Regardless of those circumstances, ‘design’ as a praxis, is described by Voitohfer, (2005, p.8) as ‘planning, creation, reflection, and adjustment for the construction of research, media, and knowledge’. He goes on to propose that the:

*use of these available resources is never a simple matter of mimicry. Employing conventions is an unpredictable and dynamic process that always involves some degree of transformation of those conventions. . . (and that) . . . if the earlier observation is correct and this is a time of epistemological and ontological transition influenced by the widespread diffusion of Information, Media, and Communication Technologies, the divisions between design resources are unclear and open for experimentation and debate across shifting disciplinary borders. (p.8)*

Various chapters have tackled the challenge of describing the theoretical and practical underpinnings of their endeavours. Chapter 21 of this book describes these conditions in the higher education context through the lens of Design-based Research (DBR). The chapter also reflects the long-term challenges for a single institution to build its internal staff and organisational capacity for e-simulation development and mainstreaming.

It is therefore argued that a ‘strategic education design’ is required for building staff capacities through action learning in collaborative projects (internal/external, local/global) as a proactive form of professional development and capacity-building expectantly leading to the renewal of curriculum and teaching practices. As proposed by Corbitt, Holt and Segrave (2006, p.16):

*This strategic education design requires an expansive view of the ‘system of interest’ – while focusing on teaching and learning it should boldly embrace multiple disciplines, faculties and institutions. A systems-based education design approach is the key to help unlock the teaching and learning value of new technologies for universities. Both in philosophy and process, it is a critical orientation for the university as a learning organization wishing to continuously improve its collective learning and performance in the new digital knowledge era.*

They further suggest that benefits may be derived from new approaches to co-operative, staff ‘capacity-building’ facilitated by a form of collaboration on new e-learning design projects. This requires strategic action, while at the same time enabling teachers as agents to continue to design and work in reflexive ways. Through enacting their ‘teacherly art of influencing’ the way the learning environment is conceptualised and functions, a more mature notion of ‘blending’ than the simple fusing of face-to-
face and online, will incorporate a rich palette of other methods for educating. Innovative, reflexive teaching will increasingly complement practical learning in the workplace with physical and virtual role-plays and simulations in the ‘classroom’. Further to this, location-based experiences in both places may be augmented via mobile devices used to deliver the emerging learning designs and constructs for new types of e-simulations.

BUILDING ORGANISATIONAL CAPACITY FOR E-SIMULATION DEVELOPMENT

The successful mainstreaming of e-simulations is an educational, technical and organisational challenge that needs a well and comprehensively conceived basis for success.

Organisational capacity is defined as resources, opportunities and expertise required to achieve cost-effective performance. Expertise would cover all of the facets of ‘knowledge’ as defined below. As Southwell, Gannaway, Orrell, Chalmers and Abraham (2005) observe:

*Capacity building is more than training programmes. Capacity building is based on needs analysis and audits of capability and potential. It requires the design of strategic interventions that employ and challenge the enhancement of strengths, exploit opportunities, confront constraints and supplement gaps and limitations.* (p.23)

When asked in surveys, organisations identify people as their most important asset. The ‘expertise’ of the people in an organisation is ranked highly and the expertise of senior leadership not only sets the strategic directions of the organisation, but it also creates the supportive culture for its people.

When considering the alchemy of ‘capacity-building’ in the area of innovation and change, strategic leadership and operational leadership need to be viewed in concert as ‘foundational’ – forging the energies and alignments of the spheres and forces at its disposal. Foundational leadership needs to be attuned to innovation and be responsive while maintaining and reflecting back to the total organisation, a cohesive and congruent vision from which it drives its strategic action. But this needs to take explicit and tangible form. There must not be gross inconsistencies when one examines the operational leadership and the manner in which supposed strategic projects are structured and funded. We propose a model that places both strategic and operational leadership at the feet of the spheres and forces that create the more local capacities – where the ‘rubber hits the road’.

The core capacities in the spheres of: Teaching and Learning Design; Discipline / Professions; IT Infrastructure; and Media Technology Production must be properly aligned and cooperatively supported by the following leadership elements:

- Rational structures
- Rational funding
- Collaborative projects
- Joint investment
- Evaluation and improvement
- Staff development.

An alignment of the spheres and forces of capacity is required.
Our experience has shown that improvements, of a satisfactory kind and speed, can only occur with SYNERGISTIC ALIGNMENTS of the four capacities facilitated by a conscious and concerted effort by management: Leading by building the capacity from the foundations: ‘The internal organization of educational institutes, the academic structure of disciplines and the lack of long term funding of these innovations in education are for various reasons the big problem. Those are the key issues.’ (Personal correspondence – Jan Klabbers Oct, 2010.) A model is proposed (See Figure 1) as a window into capacity building.

Capacity building has been conceptualised and expressed in this ‘abstract’ model of ‘spheres and forces’. Several assertions underpin the messages highlighted for communication through the model:

- Functions and activities are portrayed rather than organisational entities or groups.
- The bird’s eye view depicts two spheres of leadership (strategic and operational) that are considered ‘foundational’ – underpinning capacity in the spheres that execute action.
- The six leadership elements (above) within the strategic and operational leadership must be aligned for congruent action to be possible in the spheres of capacity.
- The four spheres of capacity in key functional areas require strong collaborative/communicative bonds and the support of leadership if they are to be drawn into active capacity-building to reach synergistic, productive alignments.

*Figure 1. Organisational capacity for e-Simulation development*
In each of the four spheres of capacity, several vital activities are non-exclusively foregrounded to highlight the activities involved in creating digital, Web-based simulations in blended learning environments.

If organisations are to reap the benefits of e-simulations supporting their variously defined education and training missions, from management, there must be nurtured an accepted ‘congruent strategic vision’ that forges the alignments. If organisations providing education and development for the professions remain ‘stuck’ in last century concepts of delivery online, on campus and at a distance, e-simulations won’t receive the strategic traction. Equally, if the four spheres of capacity fail to share a new vision – fail to cooperate in making joint investments – the capacity for innovation and progress is undermined.

The building of congruent capacity creates the conditions for lively, competitive advancement in know-how and results when pursuing mature and sophisticated blended learning environments that use e-simulations for education in the professions.

CONDITIONS AND INGREDIENTS FOR SUCCESS
(LEADING INTO THE FUTURE)

We have long since experienced the convergence of the array of analogue technologies to the digital platform, and almost immediately the convergence of design endeavours such as instructional design, curriculum design, multimedia design, message design, graphic design, interface design, etc. as the digital exploded, giving birth to new media forms with new design requirements and opportunities. In one sense, this explosion drove us toward a new form of ‘Education Design Science’, premised on new theories of knowledge and of the ‘coming to know’ and being ‘able to do!’ With the advent of the ubiquitous Internet and new fields like universal design, experience design, interaction design, game design, there is a pervading sense of ‘can’t see the wood for the trees’. There is an urgent need for major collaborative efforts to assemble national and international expertise and funding streams to address these challenges.

The following brief list foregrounds high priority areas for attention if building capacity at local, national and international levels:

- Authoring processes and tools: ‘smart’, low-threshold technologies to facilitate the creation and rapid prototyping of e-simulations by teachers and teams
- Networked e-simulations, facilitated by ubiquitous computing featuring mobile devices: new factors in ‘blending learning’
- Dissemination and ‘scaling up’: best-practice concepts and models including where possible, open-source approaches
- Dissemination to other professions from professions leading in the use of e-simulations: Inter-disciplinary, inter-professional e-simulation developments
- Expanding teams and their expertise and expanding the funding for e-simulations: National and international funding bids to government and private enterprises
- Strategic alliances linking diverse organisations: inter-institutional and inter-regional collaborations and partnerships
CONCLUSION

We leave readers to reflect on two quotations from Clark Aldrich who has written the Foreword to the book:

‘Books and their ability to let people “learn to know” had their role in creating the modern concepts of freedom and democracy. What will Sims and “learning-to-do” next bring?’ (Aldrich 2009, p.507)

‘Seeing the world (and modelling it and presenting it) through the approximation of a simulation rather than a book will require new tools and even a new syntax and corresponding style guide, but will mint a new generation of scholars – and a new generation of leaders.’ (Aldrich, 2009, p.xxxiv)

These views point the way to the emerging opportunities for using e-simulations in educating the professions through blended learning designs.

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REFERENCES


