

# Emerging Educational Institutional Decision-Making Matrix

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The “emerging educational institutional decision-making matrix” is developed to allow educational institutions to adopt a rigorous and consistent methodology of determining which of the myriad of emerging educational technologies will be the most compelling for the institution, particularly ensuring that it is the educational or pedagogical but not the technological imperative that drives the technology integration agenda. The matrix is designed to be used after some initial research into an emerging technology. Once a technology is put through the matrix, a number of options are available: (1) shelving the technology; (2) putting the technology on hold and maintaining a watching brief until the technology matures in the market; and (3) researching the product further by conducting a trial or placing in testing sandpit. After further research, the technology can be tested as a pilot to determine how well or otherwise, the technology works within the institution. If an emerging technology has more than one product associated with it, a second and third step in the matrix has been developed, and the second step assigns a rating to each of the categories within the matrix. With many products containing similar features, a third step has been developed to compare products on a feature level.

*Keywords:* collaborative technology assessment, emergent educational technology, curriculum design, procedural framework, leadership, decision-making matrix

## Rationale

The selection of appropriate and effective educational technologies, which will further enhance curriculum, education and assessment design and delivery, and at the same time, continue to meet the evolving expectations of the learner, has become a matter of critical importance within a higher education sector that seeks to ensure that it remains both client-focused and relevant in its provision of the higher education experience.

However, within this environment, there is a range of, often-competing, factors that must be considered when deciding where and upon which technologies to invest. There is also an ever-increasing need to acknowledge the role of business drivers in making strategic change across the sector. Factors such as the institutions defined strategic direction and visions, the increasingly accountable financial framework within which universities must operate, as well as the understanding of current and planned future enterprise-wide technical infrastructure. Any rationale for the determination of expenditure on educational technology should also be informed by knowledge of the students and their level of technological literacy, as well as the on-going need to ensure the provision of an educational product acceptable to an information-age student, whilst ensuring the continuation of good educational practice. All of this means that the margin for error in selection

and implementation of future educational technologies is ever-decreasing. Therefore, it is vital to ensure that the quality of the students' learning and teaching experience and the integrity of the curriculum design process remain the prerogatives in the selection and application of appropriate educational delivery technologies.

The modern-day universities must select from an array of increasingly complex educational technology solutions, each of which requires significant commitment to their implementation. In both financial and human resource terms, this means an ever-increasing implementation risk. In addition, an increasing technology-literate student community is searching an evermore international marketplace, looking for universities that will provide them with the learning systems that work like they do by using tools that they both like and understand. Within this context, it is important to ensure that the processes and models that are applied to inform decisions regarding educational technology investment, as well as being strategic, must be measurable, robust, rigorous and reliable. They must also be capable of standing-up to future scrutiny and audit, and furthermore, be able to inform future vision and policy. As Fenn, Linden and Fairchok (2003) asserted, in the context of the broader business world, the creation of a "strategic technology planning function with a defined process for prioritizing and transferring potentially high-impact technologies will enable your company to avoid the potential disasters of personality driven investment decisions" (p. 1).

This notion was reinforced in the Education.Au (2005) report *Emerging Technologies: A Framework for Thinking*, where the idea of a "decision-making matrix" was raised as one mechanism which may assist an organization to "think about emerging technologies". Against this idea, a series of eight distinct areas for further assessment were highlighted. These distinct areas included teaching and learning outcomes, teacher acceptance, student acceptance and parental support, leadership in use and take-up, relevant, available and cost effective content, sustainability, resourcing, risk, extensibility, interoperability and integration, and applicability.

As this ever-increasing range of products and technologies becomes available, there exists an ever greater risk of significant investment in inappropriate technology, thus, there also exists a demand for a decision-making framework, and a means to apply it to the process of determining the degree to which a given technology will enhance the particular educational delivery paradigm of a specific institution. An important factor in enhancing technology acquisition then, is the importance of recognizing and seeking to determine within any decision-making matrix the unique and individual nature of the institution itself. It is by acknowledging these factors and ensuring that they are appropriately weighted within such a framework, that institutions can seek to ensure that the educational, cultural and social factors that mark their faculties, school and departments as being unique are accounted for in the acquisition of educational technologies that will support them in addressing the range of learning domains for which they must account.

### **Aims**

Whilst it is acknowledged that the idea of more formally reviewing the potential impact of a given technology is not a new one, and examples of such similar tools exist, including Gartner Inc.'s annual *Hype Cycle for Higher Education* (2007) or Bates *Actions Framework* (2006). What is increasingly clear is that there is a need for tools that are applicable within the context of a given institution, and thus, seek to address those factors critical to enhancing the institution's learning, teaching and research experience, and ensuring that it is the enhanced quality of this experience that becomes the determinant and driver for technology acquisition.

Besides, it is through the informed selection of new (and evaluation of existing) technologies, universities and educational institutions that will more broadly have an opportunity to enhance students' retention rates and improve the quality of the learning experience, both on and off campus. In particular, by means of ensuring better application of more appropriate technologies to the processes of curriculum, education and assessment designs and development. It is by means of the application of such a framework that educational tools can be selected to reflect the multiple forms of technology literacy of current student cohorts, thus providing them with learning environments that are both engaging and relevant. Innovative teaching techniques can be further supported through the use of cutting edge technologies as well as applying existing tools in new ways. The matrix can provide a framework to support these outcomes.

To address this, Griffith University has devised and developed the "emerging educational technology decision-making matrix" (see Appendix A) and "emerging educational technology decision-making process" (see Appendix B), to seek to assist the process of ensuring that it is the educational, not the technological or prerogative that drives the acquisition of appropriate emergent educational technology. This paper briefly outlines the approach that Griffith University took to address this by means of describing the decision-making matrix and framework for implementation in a format that can be easily re-configured to the educational delivery models and practices of each of the unique learning and teaching environments within which it might be applied.

### **Outcomes**

It is noted that the matrix itself can also enhance the ability of both academic and professional staff within the university to better determine those emerging educational technologies that will be most appropriate to the enhanced delivery of teaching, learning and curriculum design within their own institutional educational context, and provide a series of procedural steps and supporting tools that will support the more focused and rigorous determination and integration of selected and appropriate emerging educational technologies. The aim of the matrix and the process that supports it is to seek to embed good practice in determining the emergent educational technologies best suited to the unique environmental, cultural, philosophical and social factors of curriculum design and delivery within a given institution, in this instance, Griffith University.

The adoption of the decision-making matrix and its associated "emerging educational technology decision-making process" also allows for increased involvement of academic staff in the determination as to the technologies that will best enable and enhance their professional practice, and at the same time, encourage them to further explore new learning and teaching methods. It also seeks to promote a focus on a learner-centered pedagogy that has the potential to build on the multiple forms of literacy of staff and students alike. Furthermore, the processes associated with its use should engender more collaboration between academic and professional staff within the institution.

### **Method**

The Griffith University matrix has been designed, developed and applied in the following five stages: (1) initial development; (2) trial and initial evaluation; (3) initial collaboration; (4) implementation; and (5) final collaboration and roll-out.

**Initial Development**

The matrix as designed and developed for Griffith University takes into consideration the factors that are unique to the Griffith University educational experience, including current means and methods of educational delivery and curriculum design, their underpinning theoretical framework and any limitations posed by the current or known future, technical infrastructure, as well as the consideration of the underlying levels and types of literacy that will be presented by current and potential future learners of Griffith University.

**Trial and Initial Evaluation**

A limited trial and evaluation of the matrix, in a draft form, within the context of Griffith University, was conducted to further refine it in accordance with the feedback of the trial community.

**Initial Collaboration**

On the completion of this initial trial and evaluation activity, collaboration was sought with the colleagues from other Australian universities. This occurred by means of the initial circulation of the draft matrix for their analysis and feedback upon the detail of its design. The next stage of this activity will be a trial that is about to commence with a partnering Australian university who will apply the matrix within their own institution.

**Implementation**

The feedback provided at this third stage will be used to further refine the matrix and to develop the web-enabled tool that has been designed and developed to enable this project. The second part of the stage will also include the refinement of the “emerging educational technology decision-making process” that will provide the model for the application of the matrix within the context of each institution.

**Final Collaboration and Roll-out**

Once both of these stages have been completed, the final stage will be the provision of both the matrix and the procedural framework to the partner institutions for its trialing within their institutions. The completion of the current activity will see the collation of data to further refine and develop both the matrix and the “emerging educational technology decision-making process”, and then the further publication of both elements.

**The Future**

This next collaborative phase will offer an opportunity to apply the decision-making matrix in a completely different higher educational environment within the Australian Higher Education sector, to be able to determine the degree of generality implicit within the conclusions reached. In the future, it is intended that by recruitment of additional partners from both within as well as external to Australia, that further factors can be considered, some of which will be concerned with the broader application of the matrix perhaps even beyond the field of education. For now, though the decision-making matrix will be trialed and evaluated within the context of Griffith University and current Australians.

**Measurable Outcome**

It is hoped that the final and measurable outcome of this work will be the development of a sector-wide and web-enabled heuristic, in the form of a decision-making matrix and a generic procedural framework, which can be applied by both academic and professional staff within higher education institutions, or more broadly, can be used to better determine those emerging educational technologies that will be the most appropriate to the

enhanced delivery of teaching, learning and curriculum design within the context of the specific institution. In addition, a series of procedural steps and supporting tools to enable the focused and rigorous determination and integration of selected and appropriate emerging educational technologies will also be developed.

### References

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 Education.Au. (2005). *Emerging technologies: A framework for thinking*.  
 Fenn, J., Linden, A., & Fairchok, S. (2003). *Strategic analysis report 2009 July 2003*. Gartner Research Inc.  
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### Appendix A

#### The emerging educational technology decision-making matrix



:: EMERGING TECHNOLOGIES: DECISION MATRIX::					
Technology:					
	Yes +1	No -1	Unsure	N/A	Comments
<b>Teaching and Learning Outcomes</b>					
Will the use of this technology support the teaching and learning outcomes you want students to achieve?					<i>If yes insert teaching and learning outcomes to be achieved here</i>
Will the technology help to overcome any specific identified learning issue?					<i>Which learning problems</i>
Can the technology be effectively implemented for teaching and learning purposes?					
Does the technology support on-campus, distance and ESL learners?					
Does the technology allow for a range of learning experiences?					
If the technology supports multimedia, does the technology allow for a best design for learning?					
	No +1	Yes -1	Unsure	N/A	
Might the technology create new learning problems?					
<b>Total</b>					
<b>Scope</b>					
Can the technology apply be applied across all Griffith Courses/Programs?					
Does the technology have more than one educational application in a range of setting?					<i>Provide examples of settings</i>
<b>Total</b>					
<b>Staff Acceptance</b>					
Will the technology be easy for the academic staff to adopt?					
Is the technology easily managed by novice users?					
Is there content available for the technology to use? (content refers to content already created)					
Does the technology support academic skill development?					

### Appendix B

#### The emerging educational technology decision-making process

