



**ICT Strategic Framework for Education:
2006-07 Consultation Feedback Summary**

Version 1.0

TABLE OF CONTENTS

EXECUTIVE SUMMARY	5
1 GOALS.....	9
1.1 Do you agree with the goals? Are there any that should be added or excluded?	9
1.2 How would you rank the goals in terms of priority?	10
1.3 Do you think the goals are achievable?	11
1.4 Will the achievement of the goals be sufficient for realising the strategic vision? ..	12
1.5 Comments on Goal 1	14
1.5.1 Meaning of Goal	14
1.5.2 Which part takes priority?	14
1.5.3 Learning versus teaching	14
1.5.4 Research capability and global connectivity.....	14
1.6 Comments on Goal 2	16
1.6.1 Meaning/Wording of Goal.....	16
1.6.2 Requirement for support and direction	16
1.7 Comments on Goal 3	17
1.7.1 About the Goal / Wording of Goal	17
1.7.2 Comments on access	17
1.7.3 Compliance costs	17
1.8 Comments on Goal 4	19
1.8.1 Wording of Goal.....	19
1.8.2 About the Goal.....	19
1.8.3 Potential positive outcomes of goal	19
1.9 Comments on Goal 5	20
1.9.1 Implications of this goal for education organisations.....	20
1.9.2 Use of goal as performance measure	20
1.10 Comments on Goal 6	21
1.10.1 Investment	21
1.10.2 Need for leadership and incentives	21
1.10.3 Efficiency and Effectiveness.....	21
1.10.4 Technical issues	21
1.11 Other comments on the goals	22
1.11.1 Are the goals really goals?	22
1.11.2 Achievability of the goals	22
1.11.3 Interdependencies of goals	22
1.11.4 Relationship of goals to other strategies	22
1.11.5 Implication of goals for the education organisations	22
1.11.6 Ownership of goals by sector	23
1.11.7 Misguided emphasis on infrastructure.....	23
1.11.8 Call for simplification/clarification.....	23
2 TARGETS	24
2.1 What are the most important areas in which to monitor the progress of the Strategic Framework?.....	24
2.1.1 Practical suggestions about monitoring.....	24
2.1.2 Concerns about monitoring	25
2.2 Comments on monitoring target areas.....	26
2.2.1 Connectivity	26
2.2.2 Content	27
2.2.3 Confidence & Capability	28
2.3 Specific comments on each of the targets	29
2.3.1 Target 1 – Improved Access.....	29
2.3.2 Target 2 – Shared Resources	29
2.3.3 General comments about the Connectivity targets:	30
2.3.4 Target 3 – Discoverable content in digital repositories	31
2.3.5 Target 4 – Information and knowledge management.....	33

2.3.6	Target 5 – Lifelong learning.....	34
2.3.7	Target 6 – Information literacy skills and competencies	35
2.3.8	Target 7 – Effective, efficient systems.....	35
2.3.9	Target 8 – Learners, teachers, researchers, administrators working together and sharing resources	35
2.3.10	Target 9 – Agencies delivering value-for-money.....	36
2.4	General comments on the targets.....	37
2.4.1	Targets are unachievable	37
2.4.2	Impact on learning outcomes	37
2.4.3	No target for research.....	37
2.4.4	Relationship to Kiwi Advanced Research and Education Network (KAREN).....	38
2.4.5	Areas as proxies for the implementation of the Strategic Framework.....	38
3	APPROACHES	39
3.1	Do you agree with these approaches?.....	39
3.1.1	Learner-centred approach	39
3.1.2	Sector wide collaboration	40
3.1.3	Services oriented.....	43
3.1.4	International endorsed practice	44
3.1.5	End-user perspective.....	45
3.1.6	Exhibiting key characteristics	46
3.2	General comments about the approaches	47
3.2.1	Ascribing/determining priority of approach	47
3.2.2	Relationship of approaches to wider framework and strategies.....	47
3.2.3	Base Approaches on actual experiences	48
3.2.4	Matters for resolution.....	48
3.3	Are there other approaches that should be considered?	49
3.3.1	Other approaches to be considered	49
3.4	Are these approaches suitable to achieving the strategic vision?	50
4	GENERAL COMMENTS AND REFLECTIONS.....	51
4.1	Does the Strategic Framework achieve its purpose?	51
4.2	Will it guide you in making choices about your organisation’s investment in ICT?.	52
4.2.1	Comments about investment.....	53
4.3	Have you any other feedback to offer about the Strategic Framework?.....	54
4.3.1	The Consultation Process	54
4.3.2	The Strategic Framework as a document	55
4.3.3	Strategic Linkages	59
4.3.4	Implementation of the Framework.....	64
4.3.5	The Framework as “a good start”	67
4.3.6	The Framework’s whole-of-sector approach.....	69
4.3.7	Praise for the ICT Strategic Framework for Education.....	70
5	SUB-SECTOR SPECIFIC FEEDBACK.....	71
5.1	Sub-sector Responses to the Framework’s Goals.....	71
5.1.1	Agreement with Goals	71
5.1.2	Goal ranking	71
5.1.3	Achievability of Goals	72
5.1.4	Achievement of Goals = Realisation of Vision?	72
5.1.5	Additional comments about the goals	73
5.2	Sub-sector Responses to the Framework’s Targets.....	75
5.2.1	Target rankings.....	75
5.2.2	Comments about the Targets	76
5.3	Sub-sector Responses to the Framework’s Approaches.....	80
5.3.1	Agreement with the approaches.....	80
5.3.2	Comments about the approaches	80
5.3.3	Other approaches to consider	85
5.3.4	Suitability of approaches to achieving strategic vision	85
5.4	Other sub-sector specific observations	86
5.4.1	Early Childhood Education	86

5.4.2	Compulsory Sector	88
5.4.3	Tertiary Education	91
5.4.4	Alternative Education.....	93
6	GLOSSARY	94
	APPENDIX A – Respondents to the ICT Strategic Framework Consultation	96

EXECUTIVE SUMMARY

Introduction

This document is a collation of the feedback arising from the ICT Strategic Framework for Education consultation. Submissions on the ICT Strategic Framework for Education were received from across the New Zealand Education Sector, from government agencies, peak bodies, education organisations, and individual education practitioners.¹

Consultation Process

Approximately 5,500 copies of the ICT Strategic Framework for Education and the accompanying questionnaire were posted out in the third week of December 2006, to the:

- Head Teacher of every EC, Primary, and Secondary institution;
- VC/CEO of every University, Polytechnic, PTE and ITO;
- Head Librarian of every public library;
- Chairperson of the EC, Schools and Tertiary peak bodies;
- CEO and representatives of the education agencies and the State Services Commission; and
- Members of advisory groups, e.g. eLAB (eLearning Advisory Board) and Tertiary eLearning Reference Group.

Feedback on the framework was requested, with a closing date for submissions of 16 March 2007.

The documentation was also emailed to

- Members of the NZVCC and ITPNZ IT sub-committees; and
- Select international experts from organisations such as JISC (Joint Information Systems Committee, UK) and DEST (Department of Education, Science and Training, Australia).

With the December mail-out and subsequent requests for hard copies of the Framework, plus downloads of the consultation documents (about 350) from the Framework's designated page on the Ministry of Education's main web-site (www.minedu.govt.nz/goto/ictframework), the estimated total distribution of the Framework for consultation was about 6500 copies.

85 submissions were received, a response rate of around 1.3%.²

About this document

The purpose of this document is to make the feedback on the ICT Strategic Framework for Education readily available for integration into the next iteration of the Framework. It is not intended as an analysis of the feedback, and, except in a very few instances, this summary is a verbatim recording of the views of the respondents.

This document follows the structure of both the Strategic Framework and the

¹ See Appendix A for the graph showing from where across the sector the submissions came and in what proportion.

² The ratio of submissions received to documents distributed and downloaded can be usefully compared to that of the draft New Zealand Digital Content Strategy consultation. In that case, there were 17 workshops held, and more than 10,000 downloads of the document; 91 written submissions were received, exceeding expectation by about 40 – the total response was approximately 1.1%. It should be noted that the draft Digital Content Strategy was up for nation-wide consultation and not just limited to one sector, unlike the ICT Strategic Framework consultation.

consultation questionnaire, dealing with specific questions about the goals, targets and approaches. It also includes sections containing general comments on the Framework and sub-sector specific feedback.

The sector feedback is recorded as individual bullet points under headings. For the most part, the information is quoted directly from the submissions; in some instances, where multiple submissions record similar views, the feedback has been conflated.

Some rudimentary statistics have been included to demonstrate the level of engagement and strength of feeling on particular issues.

Goals

78% of respondents agree with the Framework's goals, but they assign different priority to the order of the goals. Additional goals are recommended, most of which are to do with government funding to ensure a more level playing field for institutions (equity of access and a minimum standard of technology and equipment) and appropriate professional development and technical support for teachers. The Universities feel that there should be a goal for research.

In general, the respondents deem the goals achievable, especially if certain conditions are met: again, the provision of funding, technical support and professional development. Without these, neither the goals nor the strategic vision will be realised. In addition, respondents assert that the success of the strategic vision is dependent on New Zealand having a broadband infrastructure with sufficient bandwidth and available access to everyone in the education sector. There is some concern about how the success of the goals will be measured, and about how realistic the target date of 2010 is.

Specific comments on each of the goals are listed in Part One of this document.

Targets

80% of respondents addressed the question of what are the most important areas in which to monitor the progress of the ICT Strategic Framework. The broad area of Connectivity is given top priority, over Confidence & Capability and Content. The three most important targets for monitoring were (1) improved access, (2) information literacy skills and competencies, and (3) shared resources.

There are a number of practical suggestions for monitoring, such as the use of survey and management of monitoring by the Education Review Office. More specificity of the targets' descriptions and robust key performance indicators are recommended as means to ensuring greater clarity of the targets and their achievement, e.g. to state how much bandwidth would be the ideal, rather than just everyone having access to high-speed internet.

Respondents were doubtful about the likelihood of organisations achieving the targets by 2010 (if ever), especially given funding and technical constraints, and about the prospect of monitoring targets impeding the daily business of the education organisations.

Specific comments on each of the targets and the broader areas are collated in Part Two of this document.

Approaches

There is a good degree of agreement with the approaches, and general agreement that the approaches are appropriate to achieving the strategic vision, provided certain

other approaches are added (such as, capability building in ICT in all areas, greater alignment with wider education strategy and policy, and an explicit demonstration of the (financial) benefits to organisations of collaboration).

The “sector-wide collaboration” approach generated a lot of comment. Most respondents agree that it is good in theory, but feel that it is difficult to achieve in practice. There is a definite tension between collaboration and competition in the tertiary sector. It is suggested that the Framework should identify the areas in which providers might be expected to collaborate.

Several respondents identify the need to prioritise certain of the approaches, and they recommend that the approaches be based in “real world” experiences from across the sector, to ensure their applicability and usefulness.

Specific comments on each of the approaches are detailed in Part Three of this document.

Comments and Reflections

The general feeling of respondents is that the Strategic Framework does provide some guidance for education organisations but greater detail is required to direct investment and implementation of ICT. The Framework in its current form is deemed to be too high level and strategic, too theoretical. More information on the operational aspects and the implementation of the Framework is needed. Examples/anecdotes from actual educational experiences could be included to illustrate some of the Framework’s aims and its impact on pedagogy. There needs to be greater articulation of the benefits to organisations and more emphasis on what the practical implications of implementation are. Respondents would like to see a coordinated and central planning process for implementation, backed by substantial government funding.

There is some dissatisfaction about the timing and method of engagement with the sector for this consultation. The consultation documents were “unfriendly” and too complex for use in isolation; facilitated discussion groups or workshops may have elicited more confident feedback. The Framework itself is considered by many to be too jargon-filled and complex, rendering its message inaccessible.

Sub-sector specific feedback

The Framework’s attempt to use broad principles which apply to the whole sector is commendable but it is at the expense of recognising the disparate requirements of each of the sub-sectors. Each of the sub-sectors feels that the Framework is not really aimed at them, but is more applicable to the other sub-sectors. For the Early Childhood sub-sector, the primary concerns are the lack of information about the benefits of ICT in early childhood education and the scarcity of resources to implement ICT. The Schools sector would like to see more emphasis on technical support and professional development for teachers. The tertiary sector, the Universities in particular, is troubled by the absence of specific reference to the role and impact of ICT on research, and the associated costs.

Common themes

A number of recurring themes emerged from the feedback. For example, it is very strongly felt across the education sector that the Framework could better elucidate the link between ICT investment and improved **education outcomes**. The perception is that the Framework is less about learning than about the movement of data, or that it implies that greater investment in ICT at an institutional level will automatically produced improved learner achievement. Evidence-based

demonstration of the relevance of the Framework to improved educational outcomes and the benefits to learners is essential to obtain the buy-in of the education sector to the aims of the Strategic Framework.

The **funding** required to implement the aims of the Framework is another aspect which requires greater explication. What will the cost be, and where will the funding come from? Likewise, what provision will be made for **technical support** and **professional development** for education practitioners? The commitment to getting front-line staff and teachers up to speed, engaged and properly supported is identified as a gap in the Framework.

While there is support for the goal of cross-sector **collaboration**, there is doubt that it is achievable in the current competitive educational climate. The Framework needs to provide evidence or illustration of how collaboration can be achieved, and in which areas in particular.

The prevailing impression of respondents is that the ICT Strategic Framework for Education in its current form is a “**good start**”, but that there is much more to be done to create a national context for ICT development in education. The Framework is seen as more a statement of aspiration than a mechanism for making change. It needs to be better connected to the needs and priorities of the end user (taking into account the different requirements of learning needs across the sub-sectors), and more reference to the development of minimum technology standards, greater resourcing, and operational guidance will be necessary to make the Framework a tool for ICT strategic planning in the New Zealand education sector.

In general, there is **praise** for the education agencies for developing a sector ICT strategy. The respondents acknowledge the magnitude of the task, and believe it to be necessary to the cohesive utilisation of and investment in ICT in New Zealand's education sector.

1 GOALS

The Strategic Framework proposes six goals through which to deliver its vision of “improv[ing] learner achievement in an innovative education sector, fully connected and supported by the smart use of ICT”.

The goals include:

1. a more learner-centred education system;
2. more informed decision-making by all participants in the education system;
3. increased access and reduced compliance costs for all participants;
4. increased capacity through ICT use for all participants;
5. greater opportunities for generating, applying and sharing ideas and technologies; and
6. more effective and efficient investment in ICT by education sector government agencies.

Stakeholders were asked to give their views on the goals, using the questions below to guide their responses.

1.1 Do you agree with the goals? Are there any that should be added or excluded?

71% of the total respondents addressed this question.

78% clearly **agree** with the goals.

Additions

- Ensure equity of access for all learners, regardless of socioeconomic status;
- A minimum standard of technology should be established for schools (to reduce disparity between schools);
- There should be something about user education and professional development for teachers;
- There should be a goal reflecting the importance of research to universities;
- There should be a goal that addresses the provision of appropriate resources to help ensure the success of other goals;
- Emphasis should be placed on funding support for all schools to purchase equipment and provide technical support.

Exclusions

- *Goal 2. More informed decision-making by all participants in the education system:* it could be argued that this is a generic goal that sits alongside all that practitioners do (i.e. evidence-based practice) and as such is unnecessary.

1.2 How would you rank the goals in terms of priority?

64% of the total respondents addressed this question.

The goals were assigned points according to ranking (1st place = 6 points, 2nd place = 5 points, etc) and then ranked according to the total points scored.

In this way, the overall ranking for the goals came out as follows:

1. increased access and reduced compliance costs for all participants;
2. more effective and efficient investment in ICT by education sector government agencies;
3. a more learner-centred education system;
4. more informed decision-making by all participants in the education system;
5. increased capacity through ICT use for all participants; and
6. greater opportunities for generating, applying and sharing ideas and technologies.

1.3 Do you think the goals are achievable?

51% of the total respondents addressed this question. Of those who responded:

19% agree absolutely that the goals are achievable;

72% agree that the goals are achievable, **with certain conditions imposed:**

- 53% if appropriate funding, professional development and technical support is provided;
- 9%, if institutions get support and direction from government;
- 5%, if given institutional priority and support by senior management; and
- 5%, if other conditions met (e.g. open standards technologies, recognition of international trends and best practice, cooperative culture).

2% agree that the goals are achievable, because “none of the goals are truly measurable”.

5% disagree that the goals are achievable in the timeframe stated (by 2010):

- Achieving the goals by 2010 will be challenging. The ‘ground work’ (i.e. key infrastructure, protocols and standards) is achievable. The translation of this work into the development of an innovative education sector seems likely to be ongoing past 2010 due to the scale of the desired change. There are significant hurdles to achieving the vision of an innovative education sector in the timeframe (e.g. compare to Secondary Futures’ timeframe 20 years out), e.g. staffing formula and school structures such as timetabling and classrooms.

2% express doubt that the goals are achievable (unless equity of access is overcome with reduced costs).

1.4 Will the achievement of the goals be sufficient for realising the strategic vision?

36% of the total respondents addressed this question. Of those who responded:

50% agree absolutely that the achievement of the goals would be sufficient for realising the strategic vision;

13% agree, with certain conditions imposed:

- 3%, if they are focussed on the practical application of the technology to improve learning;
- 10%, if backed with appropriate levels of funding and government support (to improve bandwidth, equity of hardware).

3% agree, because the vision is narrower in scope than the purpose of the Framework:

- The stated purpose of “improved educational outcomes” is more aspirational (visionary) than the Vision “improving learner achievement” since the former implies wider societal goals. In that sense, the vision is too limited. However, these goals will meet the vision as all that is required is “an improvement in learning outcomes”.

16% disagree that the achievement of the goals would be sufficient for realising the strategic vision, stating reasons including:

- that the dynamic nature of ICT ensures that once goals are met, the goal-posts naturally must shift;
- because the goals don't directly link to the vision which is to improve learner achievement;
- because learner achievement is dependant on more than ICT connectivity (such as digitally and information literate workforce and student body, confidence of family, whanau and community, repositioning of teachers as facilitators, and quality of teaching).

3% deem the answer **difficult to determine**, because the vision is not objectively measurable.

The **remaining 15%** chose to comment around the question, rather than answer it directly. Their feedback includes observations such as:

- The achievement of the goals and realisation of the vision will require a culture shift which can only be achieved through investment and leadership;
- The goals will help support the realisation of the vision, but there are other areas that also impact upon vision's realisation [not specified];
- There needs to be equity of investment in hardware across all institutions to realise the vision;
- Regular reviews of the goals should be undertaken to ensure that the vision remains current;

- Implementation should be managed, monitored and reported well, and include performance accountability from the top;
- If the KAREN and MUSH networks are to be taken as examples, then it is unlikely that “fully connected” will occur in the near future. Specific and targeted funding by central government may achieve it, but the models to date are too expensive and too cumbersome to attract all but large institutions and innovative local government participation;
- Success is dependent on New Zealand having a broadband infrastructure with sufficient bandwidth and available access to everyone in the education sector. Government support for municipal networks is commendable, but these are reliant on local government initiatives, which will be limited by the available local resources, or lack of, e.g. fibre links;
- The terms “fully connected and supported” presume that the major national suppliers of communications can deliver an infrastructure capable of servicing the education element of the national project. There is enough current evidence to suggest that it cannot meet any goal like this at this time. In other words, in the absence of suitable broadband, many of the education sector’s needs will not be met even perhaps by 2010.

1.5 Comments on Goal 1

<i>Goal 1: a more learner-centred education system transcending organisational boundaries</i>
--

1.5.1 Meaning of Goal

- This goal is rather vague in terms of knowing where we are at and what we want to achieve. The needs of students are already the focus of learning.
- This goal needs to be more specific. A learning-centred education system needs to facilitate a learner's lifelong learning, with the aim of improving knowledge, skills and competence.
- What does “learner-centred” mean when placed with “across organisational boundaries”? What is meant by a learner-centred approach within a) current school environment, b) staffing regime, c) provision of access, d) provision of resourcing both hardware and personnel, and e) the cost of funding these?
- Use of the term “learner-centred” implies a particular pedagogy – an accidental implication, perhaps? There is a risk that the focus on learning is lost in the apparent focus on resources needed to implement a learner-centred pedagogy.

1.5.2 Which part takes priority?

- There appear to be two goals conflated here – learner centred versus borderless/seamless education systems – this is an international issue as well as a national one. Articulation within New Zealand is a narrow objective and is not sufficient in an evolving global labour market.
- This could be better stated by just focussing on the second part of the goal – the role of ICT to transcend organisational boundaries. The first part is just part of the overall vision.

1.5.3 Learning versus teaching

- We agree with this goal provided it is focussed on how, where and what students learn, i.e. e-learning not just e-teaching. Both learners and teachers must be able to independently locate, access, evaluate and use information (content) – in the context of this strategy, this means digital content.
- While we appreciate that the focus is on outcomes not inputs, we would like to see a more specific mention of teaching.
- More learner-centred ICT education systems should not be at the expense or in place of quality classroom teachers. Online and self-paced teaching materials are very limited in the depth of knowledge available to the students.
- This goal is particularly important in work-based training where there are increased numbers of “non-traditional” learners.

1.5.4 Research capability and global connectivity

- Research capability is integral to education at all levels and is notable by its absence from Goal 1.

- Additional emphasis could be usefully given to research and global connectivity, as the emphasis in this goal is entirely intra-national at present while education and related research are globalised activities.
- The framework must look outwards as well as inwards. From the perspective of universities, much of the content for a learner-centred system will be international and this has a significant cost.

1.6 Comments on Goal 2

Goal 2: more informed decision-making by all participants in the education system

1.6.1 Meaning/Wording of Goal

- What does “informed” mean? Empowerment, engagement and ownership of decisions?
- What (who) is meant by “participants”?
- It was noted that the education-providing institutions (e.g. Universities) were not listed as having a role in the list of stakeholders.

1.6.2 Requirement for support and direction

- This goal is critical to the success of the ICT Strategic Framework. Discussions across education confirm wide variations in board and management capability and competence in understanding the importance and fit of ICT in a blend of delivery methods. This in turn impacts on the institution or organisation’s ability to make appropriate strategic and investment decisions.
- This goal requires a high level of understanding by boards and staff to make decisions and this requires professional learning opportunities. Access to high quality advice and clearly stated Ministry standards around systems infrastructure, hardware, software and usage intentions across the sector will assist schools to make sensible and sustainable development plans. Access to funding for development is critical to the ability of a school to make sensible decisions.
- Centralisation of all aspects of education is taking decisions away from the local level.
- This goal requires leadership backed with appropriate resources.

1.7 Comments on Goal 3

Goal 3: increased access and reduced compliance costs for all participants

1.7.1 About the Goal / Wording of Goal

- “Increased ease and opportunity of access” and “reduced compliance costs” seem to be two different goals.
- The phrase “reduced compliance costs” should be changed to “more cost-effective compliance costs”.
- This should be a measured and reported aspect of MoE investment in ICT.

1.7.2 Comments on access

- Does access include “access to recorded knowledge”?
- This is an equity issue, as it emphasises the divide between the haves and have-nots. Schools and centres should be adequately equipped to provide access to ICT regardless of a student’s socioeconomic circumstances or geographical location.
- Hardware, software and broadband access are key challenges in supporting students in remote areas. How is the achievement of this goal envisaged for students that are time or location shifted from their lead education provider?
- Increased access to reliable systems cannot occur in the absence of better decision-making and more effective investment. These two issues are being discussed as part of the school sector Operations Review, and we can anticipate support and improvement in this area.
- The high costs of hardware, software, ongoing licences, connection, insurance (theft), and training mean many schools are hugely in debt; this forms a large part of schools’ ongoing budget and fundraising.
- A significant compliance cost is the “rights and permissions” to gain clearance from copyright holders. Standard licensing schemes are inadequate to cover a range of media, especially digital, and to allow for access by students. Consideration should be given to the support that will be required to allow individual schools, teachers and students to comply with copyright and privacy laws. In addition, provision should be made for access to content that is excluded from licensing schemes, nor restrict content to creative commons and “copyleft” licensing.

1.7.3 Compliance costs

- There is a natural tension between increased ease and opportunity of access and reduced compliance costs. It is vital that compliance costs are reduced for students, institutions and stakeholders and by doing this, opportunities for enhancing access provisions will increase. However, the implication is that there will need to be greater investment by Government.
- It is not clear how a strategy that introduces protocols can reduce compliance costs. It is questionable whether or not “connectivity” will reduce compliance costs.

- It is not clear why compliance requirements, time-consuming as they are, should be included as a significant barrier to access; perhaps this is a reflection of the differing perspectives of large and small education organisations? For secondary teachers, access to a fully functioning, well maintained and reliable school network along with the appropriate hardware (not just computers) and software is the critical barrier that is undermining effective use. There has been no consistency around the acquisition of ICT in the school sector, so there are now significant disparities between those secondary schools exploring the potential of fibre optic loops and those that cannot keep the school network functioning on a daily basis. This disparity translates into reduced educational opportunity for students so this needs to be addressed with some urgency.

1.8 Comments on Goal 4

Goal 4: increased capacity through ICT use for all participants

1.8.1 Wording of Goal

- This goal needs to be rephrased ... ‘confidence ... from the use of ICT...’ etc.
- What does “increased capacity” mean? It implies increased access for all and the corollary is equitable funding to ensure “all” have opportunities to gain knowledge and skills through ICT. All staff need to have professional learning opportunities, e.g. payroll, school transfers and enrolments, e-enrol. Teachers and support staff say that moving to computerised systems and work environments increases the time they spend on planning, data processing, reporting as well as accessing and incorporating materials as teaching resources. Staff who provide ICT support and guidance in schools include support staff, librarians, administrative assistants and teachers’ aides. They also need the recognition, support and professional development that this strategy should provide. The imposition of e-enrol has already created new capability demands on school administrative staff.
- There is a fundamental question that needs to be answered to ground this goal. Increased confidence, capability and capacity for what? What will increase? Educational outcomes? Access to ICT? How does this relate to strategic educational objectives?
- What is meant by “all participants”? Examples should be provided, e.g. students, teachers, administrative staff, education agencies, ICT support staff, system and content developers, etc. Does it include parents and other community members?

1.8.2 About the Goal

- This is more of an outcome of Goal 5 than a goal in itself.
- This goal should mention equity, e.g. issues with respect to availability and portability of resources need to be considered as well as the needs of Maori, Pasifika, special needs and “at risk” students.
- We are still learning what the actual impact of ICT on learning is and building a credible evidence base around this. Goal 4 begs a lot of questions.
- Identifying clearly the purposes of ICT is the key to achieving this goal. Different parts of the sector will have different requirements for use. In order to meet this goal, a coherent developmental framework is required to ensure that **all** participants are included appropriately.

1.8.3 Potential positive outcomes of goal

- This goal will create the momentum for development, and its achievement will ensure the achievement of the remaining goals.
- The achievement of this goal might result in robust authentication, easy navigation and retrieval, capacity for all participants to create and manage digital content.

1.9 Comments on Goal 5

<i>Goal 5: greater opportunities for generating, applying and sharing ideas and technologies</i>

1.9.1 Implications of this goal for education organisations

- There is a key issue underpinning investment in ICT to which this goal alludes. There is an assumption that ICT will empower and will be good for education, but the introduction of technology does not necessarily result in effective use in an educational context. The commitment to getting people on the ground up to speed, engaged and properly supported is an explicit gap in this Framework.
- A clear strategy, direction and coordination of activities across all sectors need to be developed. Perhaps the greatest challenge will be in achieving this in the tertiary sector, which may require incentivisation. It will also need a clear focus on supporting research and staff development relevant to the overall goals.
- There is value in sharing information such as to track students' movements between schools; however, it becomes the school's responsibility. Few schools are resourced to put in the amount of time needed; e.g. the data from the numeracy project is very useful but extremely time-consuming to input. In some instances, the lead teacher needs a whole day to collate the data. Team leaders and middle leadership in primary schools have very limited release time and the use of an ever stronger evidence base is requiring more time spent in analysis and feedback. It is essential that all middle leaders have the skills to create useful tables, graphs and spreadsheets with which to work. Whilst the computer collates the evidence, it still requires brain power to consider "so what does this mean?" and translate it into action. How is that going to be resourced if there is an increase in requirements for sharing data? Schools are finding it difficult to cope now.

1.9.2 Use of goal as performance measure

- This is a function of good strategy and investment, and could also be a performance measure at least at an inter-sector level, i.e. ITO to ITO, or ITO to Provider etc.

1.10 Comments on Goal 6

Goal 6: more effective and efficient investment in ICT by education sector government agencies.

1.10.1 Investment

- Will this include greater investment, in financial terms?
- This goal would be strengthened if an increased level of investment, not just efficiency and effectiveness, was included.
- With goal 6 as priority – this is a pragmatic flow from funding, which is seen as a government’s responsibility, then the flow-on to learner-centred programmes follows as a priority.

1.10.2 Need for leadership and incentives

- Sound planning, tight management and cost control are important factors in ensuring that investment in ICT is both effective and efficient. Too often ICT investment has been ill-conceived and poorly managed.
- This is difficult to achieve without leadership and incentives. It is frequently possible for an institution to strike a “deal” to its own benefit, which may not be available across the sector, or, if it is, it is immediately undercut by competitors. The mGovernment cellular contract was a case in point: Telecom and Telstra immediately modified their pricing when Government agencies began signing up with Vodafone.
- This goal requires leadership backed with appropriate resources. Institutions must feel supported by Government directions and be able to respond appropriately.

1.10.3 Efficiency and Effectiveness

- What are the efficiency and effectiveness criteria?
- Efficiency and effectiveness are important, especially in an environment where it is necessary to “strive” for resources. From the perspective of tertiary institutions, if achieving this goal means doing more with less, then it is unlikely to be attained.

1.10.4 Technical issues

- There are issues of the software capability for platforms to talk to one another. The importance of this is for the seamless transportation of data. E.g., the Teachers’ Council should be able to access payroll data to see who was employed in schools; Immigration Service will be able to find links to international students.

1.11 Other comments on the goals

1.11.1 Are the goals really goals?

- Are the goals in fact targets? They are directional rather than end-points.
- Goals 2, 4, and 5 are more guiding principles, which make their achievement less practicable.
- Like all goals, they are dependent upon our understanding of what they mean. What is the specific intention behind them? The statements on page 2 below the goals don't assure me that we have ourselves well connected to the experiences of students and teachers in learning settings around schools.

1.11.2 Achievability of the goals

- Can the goals realistically be achieved by 2010?
- More emphasis could be placed on making the goals specific and achievable, i.e. Goal 1 and 4: what does this mean and how will it be measured?

1.11.3 Interdependencies of goals

- Achievement of Goals 1 to 5 is restricted by the application of Goal 6.
- It is difficult to prioritise or treat individually as all goals are interlinked and interdependent.
- The issue of prudent investment in IT development across the sector must be addressed first. There needs to be a more coordinated and collaborative approach to avoid duplication of effort and inefficient use of resourcing endemic in the tertiary sector.

1.11.4 Relationship of goals to other strategies

- The goals do not discuss coherence across the system. There needs to be a plan not just another strategy. Schools are awash with strategies at the moment – links/interrelationships should be made with the other strategies to give the “big picture”.
- The document has not demonstrated how the six goals are related to government goals, the education priorities, and the Early Childhood, Schooling, and Tertiary education strategies.

1.11.5 Implication of goals for the education organisations

- The goals will be extremely challenging and will require significant cultural and operational changes within the tertiary sector, not only as far as investment is concerned, but also changes in knowledge and capability of teaching and administrative staff.
- At their current high level, the goals are worthwhile, but the emphasis of each and the penetration of implementation may vary between the education sub-sectors.

1.11.6 Ownership of goals by sector

- Associated with the clarification and acceptance of the goals, there needs to be discussion/debate to identify the priorities of the sector and to encourage engagement and ownership of the process and direction. Clarification is needed as to whether the goals will be implemented by the stakeholders or the Ministry. Underlying everything is the question of resourcing.
- The goals need to have some substance to indicate how we will know when they are achieved. The notion of “an education system transcending organisational boundaries” must reflect this reality. Compliance costs need to be considered; the example of the SDR is instructive in this regard as changes made by MoE/TEC do not take into account the compliance costs of making changes. The current education boundaries do not encourage or reward staircasing between institutions.

1.11.7 Misguided emphasis on infrastructure

- On page 1 of the Framework, it states that ‘The Framework ... provides the foundation for effective (e)learning practices to be integrated into New Zealand educational practices’. The goals as stated do not do this effectively; they are heavily weighted towards the physical infrastructure of ICT and its administration, with insufficient emphasis given to pedagogical and professional development issues. This is likely to result in a missed opportunity to really “make a difference” through improved learning and learner capability. Experience worldwide shows that without greater regard to pedagogical issues, investment in ICT in education is often wasted and does not provide the claimed benefits.
- The goals are dependent on the underpinning technology infrastructure being transparent because it operates in a reliable and unobtrusive manner.

1.11.8 Call for simplification/clarification

- Some respondents thought the goals were worded in such a way as to be too broad and open to interpretation, and therefore it will be hard to measure the achievement of them.
- It was felt that the use of qualifiers, such as “more”, “greater” and “increased” may create difficulties in measuring outcomes, unless “more than what” or “capacity of what” can be specified.

2 TARGETS

In this section of the Strategic Framework, the tables show what the potential outcomes would be for goal achievement.

Stakeholders were asked to give their views on what are the most important areas in which to monitor the progress of the Strategic Framework.

2.1 What are the most important areas in which to monitor the progress of the Strategic Framework?

80% of the total respondents addressed this question.

The broad target headings of Connectivity, Content and Confidence & Capability were ranked in order of importance for monitoring as follows:

- 1st – Connectivity
- 2nd – Confidence & Capability
- 3rd – Content

The specific targets were ranked in importance as follows:

- 1 Improved access (Connectivity)
- 2 Information literacy skills and competencies (Confidence & Capability)
- 3 Shared resources (Connectivity)
- 4 Lifelong learning (Content)
- 5 Information & knowledge management (Content)
- 6= Effective, efficient systems (Confidence & Capability);
Agencies delivering value-for-money (Confidence & Capability)
- 8 Learners, teachers, researchers, administrators working together and sharing resources (Confidence & Capability)
- 9 Discoverable content (Content)

2.1.1 Practical suggestions about monitoring

Use of Survey

- Get feedback from schools about the success of their network upgrades and how it is impacting on the students, teachers and support staff.
- Practical use in an education organisation for all users requires high-speed internet (easily monitored – yes/no survey).
- Actual use by each education organisation of MoE, other government agencies and other education services could be monitored by ERO as a statement from a school or by annual survey.

Measures

- Each area of implementation needs either quantitative targets, or robust key performance indicators (KPIs) that are objective, measurable and can be applied equitably across the sector.
- The targets are quite broad, and it would be helpful if there were more specific statements around these targets; e.g. what constitutes a “reliable, high-speed internet connection”? What is the scope of “information and knowledge held

across the sector”? How much bandwidth? Authentication for what? (an example of a clearer target appears in the Office of Science and Innovation e-Infrastructure Working Group report, *Developing the UK's e-infrastructure for science and innovation*, namely “access to the systems, services, networks and resources that they need at the point that they need them” (<http://www.nesc.ac.uk/documents/OSI/report.pdf>)

2.1.2 Concerns about monitoring

- All areas will have to be monitored to some degree. It is important that the monitoring does not become all-consuming and drive the actual process.
- In order to achieve (by 2010) the targets stated in the Confidence & Capability section, each education provider (from ECE to Tertiary) must:
 - Provide intensive ICT training for all learners, teachers, researchers, administrators and support staff and ensure that they can utilise their ICT tools and services effectively and efficiently;
 - Redevelop/enhance administrative and learning management systems (in particular, student management system, course management system and knowledge management system) and ensure that best practice and open standards (if any) are followed; and
 - Ensure that proprietary systems and open sources systems work together collaboratively.
- Meeting targets will require a clear development and investment strategy to ensure that connectivity, access to repositories, and information literacy all conform to nationally agreed standards.
- Targets should be monitored to ensure systems are effective/efficient and meet the needs of the majority, i.e. not very high quality for a few, but good quality for all.

2.2 Comments on monitoring target areas

2.2.1 Connectivity

- Connectivity is the most important area to monitor as schools without networks or broadband connections will never be able to progress.
- The success of the [Framework's objectives] will be difficult to measure if the consistent and timely implementation of the enabling infrastructure is left solely to the discretion of the schools. As network connectivity is the more persistent of the technology and application areas to be considered, it is essential that this be treated separately to ensure a stable foundation is available for common services and to support continuously changing end-user applications and interactions.
- The delivery of the interconnection objective requires, as a minimum, the following:
 - An agreed target architecture at all levels of connection, including those to and within schools, before there can be any confidence of achieving transparent interconnection from an informed supplier market;
 - A centrally managed approach to the market to ensure that best commercial terms are enjoyed and consistent technical performance is achieved with different suppliers;
 - A unified (national or regional) approach to funding for network services, school network equipment and infrastructure required to provide connectivity.

Improved access

- The measure for monitoring progress for this target: that every education organisation has access to a reliable high-speed internet connection.
- To measure targets, the outcome to be measured is not just access by institutions but also access by home and learners.

Shared resources

- "Appropriate security" is a most important area for monitoring. This must be in place from the beginning, rather than tacked on at the end.
- Four considerations relating to common services:
 1. ICT support – local solutions exploring support economies between high schools and their satellite primary and early childhood centres reinforcing their longitudinal relationships;
 2. Access management – keeping authorisation and personal data protection accountabilities at the institutional level by using federated rather than monolithic solutions;
 3. Internet services including filtering - taking a national or syndicated procurement approach to Internet transit and filtering services
 4. Open standards – data standards and architectures that have been developed by Government agencies should be discussed with the vendor community to allow early acquaintance and feedback.

2.2.2 Content

- Monitoring the progress of Content will be difficult. Individual institutions will vary enormously. Measuring tools could be developed.
- Content should be the priority for monitoring, as this is where measurable statistics could be compiled on what is being delivered.

Discoverable content in digital repositories

- Access to digital content would be more useful to monitor than use of open source repositories.
- The measure for monitoring the progress of this target: that communities of interest are able to easily locate, access and share relevant content hosted in disparate national and international repositories.
- Content providers should have flexibility in the way in which they are able to make resources available. The Education Sector agencies (and others) mainly choose to provide content in several ways:
 - Centrally host certain content material;
 - Contract a commercial operator to host certain content;
 - Procure national licenses from certain content providers;
 - Allow content providers to connect to the national network and have both ad hoc and syndicated procurement based multiple end-user commercial relationships.

Lifelong learning

- Lifelong learning is very important but obviously difficult to monitor in terms of the Framework's goal of 2010.
- We need to ensure that all learners will be provided with the ICT capabilities they require to be successful in the next stage of their learning.

2.2.3 Confidence & Capability

- Monitoring the progress of Confidence & Capability will be difficult. Individual institutions will vary enormously. Measuring tools could be developed.
- Measures may include:
 - Staff training provided to enhance abilities;
 - Ongoing opportunity to implement and practise skills learned;
 - Demand for access by teachers to use ICT as a teaching tool; and
 - Expectation by students and parents that ICT provides a safe means of communication and access to vast knowledge base to enhance learning across all ages.
- Confidence & Capability is the most important area in which to monitor progress, as without effective systems and confident, competent users who know where to access relevant information much of the Connectivity and Content outcomes will not be effectively utilised.
- End-user capability building is an important part of the implementation and operational phases of an enhanced Education Sector ICT environment. This should not be subservient to infrastructure and service development plans.
- Providing an ICT environment for learning requires an ongoing programme to ensure users, and potential users, have the ability to exploit and enhance the available functionality. This process may need to start with an early phase outreach initiative to inform the sector about objectives and tangible benefits, and to seek feedback that will improve the introduction process. Thought needs to be given to what common services should be introduced at an early stage to provide immediate worthwhile benefits to users as this will accelerate the capability building.
- Building capability both in the learning environment and supplier environment is important for different reasons. The most valuable capability can and should be developed in the services and applications area rather than in the lower network layers.

Information literacy skills and competencies

- Measure for monitoring progress for this target: all learners, teachers, researchers, administrators and support staff can utilise their ICT tools and services effectively, efficiently and collaboratively. (This should also take into account the technical support and ongoing professional development offered to teachers.)

Agencies delivering value-for-money

- How can ICT be measured in regards to value-for-money? How would the processes and criteria be decided?
- To monitor value-for-money: \$1 for ICT or \$1 for sports, books, teachers, buildings. We need to show and know that the ICT dollar is the one best spent.
- The measure for monitoring progress for this target: that all annual ICT investment is measured against agreed standards for value-for-money.

2.3 Specific comments on each of the targets

2.3.1 Target 1 – Improved Access

- Access for all educational organisations is vital, not only for high-speed internet connection, but for hardware, software and technical support to ensure everything works.
- A key area of concern is broadband internet uptake by educational institutions, as an educational delivery and collaboration vehicle. Connected networks will enable collaboration.
- Providing every education organisation with access to reliable high-speed internet connection, i.e. a transparent broadband network infrastructure, is the key to implementing the other goals and realising all aspects of collaboration between these organisations.
- Having a very high level of high-speed internet connection within the sector brings with it certain security risks, which do not appear to be discussed in the strategy. Current initiatives are already improving access, so if connected networks are to develop, then the security of individual sites is paramount. It might be worth dealing with security and safety of the online learning environment rather more explicitly, at a non-technical level, given the risks that could arise.
- How will Telecom keep up with this?

2.3.2 Target 2 – Shared Resources

- Where shared services are required, similar services in the wider government and public sector should be reviewed for applicability. Where appropriate, these existing services or initiatives can be adopted in whole or in part. In other words, we should seek to re-use where possible and not reinvent unless really necessary.
- It is critical that interoperability and ease of access to systems and information is a priority area. It is vital that we establish and maintain a co-operative culture and communities that support and nurture innovation, creativity and sharing of ideas and practices. Availability of choice should also be a priority.
- “Meeting defined education sector standards” – this must be high quality so as not to expose learning communities to compromise through the use of sub-standard, unsupported technologies.
- Shared data: At the summary level this would seem perfectly reasonable, i.e. academic record, enrolment history etc. However, at micro-level the wide variation in information requirements and standards would prevent this in the timeframes being suggested. It would be unlikely a standardised Student Management System could be rolled out in three years, let alone getting agreement from the tertiary institutions to adopt it. It should also be recognised that Universities, Polytechnics and PTEs all have different methods of operating and therefore different information needs.

2.3.3 General comments about the Connectivity targets:

- In the supporting actions, the Framework expresses these targets in terms of organisational interaction. The real value from connectivity must come from increasing the connections between learners studying at different institutions and their teachers. A stronger expression of technology supporting educational activities and outcomes is needed here. Specific quantitative targets and a definite statement regarding schools' use of KAREN are required here.
- *Connected networks*: the importance of international connectivity (vital for e-research) is not reflected here.
- Interoperability and a standardised security architecture would seem to be one of the lowest level building blocks towards the vision, and should therefore be a first priority. Discoverability, while listed under "Content", would seem to us to be more closely related to Connectivity, in the sense that it is about 'connecting' users to content rather than about content itself.
- One fundamental element required for the provision of ICT services is a robust identity management, authentication and authorisation infrastructure with sound supporting processes. The Education Sector Authentication Authorisation (ESAA) initiative apparently aims to provide a single sign-on and identity management service for the education sector (including universities). It is not clear exactly what the implications of this initiative are – is it intended that ESAA will provide logon credentials to all users of education agencies services? While this might be appropriate for small schools, we are not convinced that the approach would be generally sustainable in the context of larger institutions. We believe the use of an electronic trust federation that would permit staff and students in institutions to employ their own electronic credentials to access education agency resources would be a more sustainable approach.

The New Zealand universities have already made a commitment in principal to work with their Australian counterparts to support an Australasian ICT trust federation. They have made this commitment because there is a strongly held view that there will be very significant advantages for both staff and students of universities to be in a position to easily access resources and services at other Australasian research and education institutions. We see a lower level of requirement for universities to communicate with New Zealand government education agencies, although we recognise the importance of good and easy communications with those agencies also.

- The Framework's thrust is an appropriate one for the sector but the machinery by way of high quality connectivity and reward mechanisms for sharing and collaboration are not apparent. The proposed changes to the Copyright Act, the technology protection measures being included in commercial software (such as the new MS Windows Vista), as well as the digital rights management (DRM) technologies will each act to slow down the ability to copy, format shift and share digital information. Additional likely cost increases faced by Universities for licences to access commercial databases will be a major disincentive to sharing, and thus it is recommended that the framework should be considered in the context of all the relevant legislation.

2.3.4 Target 3 – Discoverable content in digital repositories

- *Open standards-based digital repositories:*
 - The Framework should actively encourage the creation of open digital content, whether this be directly through funding for digitisation or indirectly through revised TEC PBRF policy, encouraging academics to submit copies of their work to institutional repositories. It is not clear what “targeted resources” means, nor why standards-based repositories only at a national level contribute to this outcome: surely local and international repositories have a role to play?
 - Although we fully support the emphasis on open access, we note that the use of the word “resources” would not necessarily be understood by many organisations to encompass research data. Open access to data will probably become increasingly mandated in future by national and international agencies (e.g. MoRST, OECD), and the inclusion of primary research outputs (e.g. datasets) in any discussion of repositories would be very helpful in ensuring these do not remain in their current policy ‘black hole’.
 - There should be a caution on the possible negative impact of digital rights management (DRM) technologies.
- The need to co-ordinate the adoption and promotion of appropriate open-source standards, allowing for improved access, interoperability and shared services, should be stressed. Open standards are only useful when embraced by the community, and there is a need to promote and demonstrate the usefulness and appropriateness of open-sourced standards to the New Zealand education community through “seed” activities and projects by recognised cultural bodies and organisations.
- The strategy does not reflect the importance of non-New Zealand content within education, and could benefit from clear direction with regards to international, licensed or aggregated content. Two particular areas of note are:
 - National and/or consortial approaches to purchasing of licensed content should be encouraged (e.g. the very successful EPIC project for New Zealand libraries).
 - Local mirroring should be encouraged. (This would be particularly helpful for several areas of high value research, e.g. biotechnology, where access to large datasets held overseas is currently required.)
- The Framework should address the need to ensure that digital content is accessible in perpetuity, and tie this into preservation requirements expressed in the National Digital Strategy, through the adoption of open standards which promote ease of access and the ability to re-purpose material in this age of fast-changing digital technology.
- There is a presumption in these actions that the relevant content is available to be lodged in these repositories. In the university sector there are two significant obstacles to this:
 - With regard to teaching materials, the copyright in those materials is often held by the individual academics. A mix of ownership provisions applies throughout New Zealand regarding institutional rights, but in general these would not allow such materials to be automatically lodged in an open repository. Significant changes in this area would require some form of encouragement and reward structure for the academics involved. This is

not a simple issue as many academics bring materials for teaching use with them from previous employment, and those materials are also often restricted in terms of distribution by agreements with previous employers. Experience with repositories overseas suggests that while this may work for schools and polytechnics, where the curricula are standardised, success in the university sector has been much less apparent.

- Research publications are also a significant challenge; many high status publishing venues require that the authors surrender copyright in the publication. Academics are promoted and rewarded for having published in such venues, and the PBRF process provides institutional incentives encouraging the practice. Deposit of academic work in a national repository would require the cooperation of publishers and significant variation in standard contracts, especially for books and similar works.

The focus on a national repository avoids somewhat directly addressing the more significant issue that even now much of the material used for teaching is sourced electronically and this can only grow as electronic publishing continues to replace paper distribution. Under current and proposed changes to the Copyright Act this material cannot be provided to students and no license is available for material publicly provided via the Internet. For this strategy to be relevant it must be coordinated with the legislative developments elsewhere.

- The Framework should point out the role of relevant copyright models such as Creative Commons.
- The focus on technical targets is important. Underlying this, however, should not be a debate between open source and proprietary systems. Rather the focus must be on full interoperability and adherence to appropriate and relevant standards.
- There is significant discussion of the importance of discoverability - being able to find and access online resources. That presumes a good understanding and use of metadata, which might also merit a mention.

2.3.5 Target 4 – Information and knowledge management

- There are financial barriers to achieving this. International content such as e-journals are provided by US and UK publishers, are expensive and often not relevant to the wider sector. The vendor licences also often have restrictions. Administrative information sharing will entail issues around security, privacy and confidentiality.
- It is important to reduce the amount of duplication of information that is held by the various education sector agencies. There are already work streams looking at how there can be more effective information and knowledge management practices between the key government agencies. This work needs to continue and be extended to include the same sharing amongst all education organisations.
- It is important that best practice regarding information management is able to be shared easily. This will help to ensure that secure practices are being followed.
- Information and knowledge management practices would seem a lower-order priority in so far as a virtual, electronic world with powerful search technology, the problem would seem not so much to be making content easier to find, but whether content can be made easily available and accessed by users once it is found, which goes back to Connectivity. A distributed, as opposed to centralised, knowledge management strategy would seem more consistent with the way knowledge grows and is used more organically now, with IP-based (as opposed to physical) content increasingly becoming core to public and private domain knowledge. The power of the internet as a knowledge capture and access medium is in its flexibility and distributed control – the internet has been enormously successful as a knowledge phenomenon but has not been ‘organised’ or ‘managed’ in any material sense.
- Terms such as “digital content”, “information”, “knowledge”, “resources” and “data” are used throughout the document without being defined or placed in context. This is of particular concern since the archiving and curation of research data is emerging as a huge issue for researchers. This has fallen through the cracks of other strategies (e.g. National Digital Strategy and Digital Content Strategy) and will not necessarily be addressed by the development of digital repositories as they are currently scoped.
- The stated outcomes should reflect data management and data management practices as well.

2.3.6 Target 5 – Lifelong learning

- Lifelong learning in relation to ICT is possible only if opportunities are created and maintained for learners to have easy and regular access to digital equipment and learning opportunities. Those involved in education can build confidence, skills and knowledge when the digital resources are readily available in conjunction with opportunities, challenges and support.
- Learners need to have on-going access to digital resources. People in formal education have good or even excellent access to electronic materials while studying, but once they have left the institution they often find that access is not possible (or affordable) from the workplace or privately. Continued access encourages lifelong learning and sustains online learning communities after the formal events cease. Such access also supports learners who do not want the qualification, just the knowledge and expertise.
- The Framework should acknowledge current library structures (public, school, tertiary) as a support mechanism for formal and informal learning.
- The updating of abilities etc seems a different sort of objective from the others. It is not clear how this target is relevant to the vision. It seems axiomatic that connectivity should be blind to age, life stage etc, so the ability to update abilities and have portability of records of education experience through life would fall out naturally of a well-designed and flexible connectivity strategy.
- The lifelong learning target is of particular interest to DIA (Identity Services), in that it presumes that a student can work with the sector through life and build a personal learning / qualifications record - which requires good identity management. That should be based on the Evidence of Identity (EOI) standard as a matter of good practice. DIA would welcome working closely with the MoE on the formulation and development of good practices for educational institutions to identify students, as well as the design of shared services to do with sector-wide identity management. This is for two reasons:
 - 1) to support the successful implementation of the EOI Standard in the sector, noting that the coverage of the population where an active EOI process is carried out will be extremely high over time; and
 - 2) it is highly likely that documentation and database records produced as a result of people's participation in the education sector (e.g. NZQA record of learning) will be a rich source of EOI Standard Objective E evidence, and we have a vested interest in the integrity of that information. (Objective E is about establishing that a person has used the identity they are claiming in the community).

2.3.7 Target 6 – Information literacy skills and competencies

- While we support this target, we consider that as stated, i.e. “using ICT tools and services”, it does not fully capture the scope of the outcome of information literacy skills and competencies.
- For “Monitoring and compliance”, ICT literacy skills should be based on broad capability learning and, where possible, not on specific products. This helps to ensure the long term viability of the learned skills in a rapidly changing environment.
- Information literacy skills and competencies rely as much on the content as on the tools and require analytical skills (part of information literacy) to judge the reliability and quality of a range of information. It is not just about ICT “tools and services” but skills in finding, using and evaluating information.
- We need to ensure that all learners, tutors, researchers, administrators and support staff have a core level of information literacy skills and competencies to enable them to utilise ICT tools and services effectively (this will come through training). We also need to ensure that there is an appropriate range of ICT tools available and that they are reliable and accessible.
- Information[-system] literacy is obviously a key building block between physical connectivity and the needs of end users.

2.3.8 Target 7 – Effective, efficient systems

- We suggest redeployment of ICT across the sector, to maximise resource usage, e.g. trickle down of hardware as it becomes obsolete in one area to areas requiring less state-of-the-art technology.
- This target is axiomatic and does not add anything as an outcome worth monitoring. It should be de-emphasised to give prominence to other targets.

2.3.9 Target 8 – Learners, teachers, researchers, administrators working together and sharing resources

- Online learning communities are important as they are the incentive to become engaged.
- Online communities are developing as needs arise, but there are costs involved.
- This must include families, students and supporting agencies also.

2.3.10 Target 9 – Agencies delivering value-for-money

- This will benefit organisations through more bargaining power, reduction of reporting and other compliance costs, and not reinventing the wheel when building systems.
- One set of standards is implied here. This raises the issue of balancing local and national choice and direction (*ICT Strategic Framework*, pg2), and assumes a homogeneous education sector, which is not the case. This mirrors the notion that there is a single effective pedagogy focused on “learner centred” education.
- This target is axiomatic and does not add anything as an outcome worth monitoring. It should be de-emphasised to give prominence to other targets.

General comments on this target:

- The concerns that were raised tended to be at a strategic level. The “what” expressed in each of the targets appears to be focused at the operational level in institutions. The risk in this is ill-informed strategising and decision-making by Boards and Senior Management. Based on two simple principles of “if it ticks at the top, it ticks at the bottom” and “what gets measured is what gets done”, it is suggested that the MoE’s accountability might need to ensure that funding in education includes performance measurement of institutions (schools, preschools, Polytechnics, ITOs, PTEs and Universities) of leadership and management capability to demonstrate knowledge of
 - where ICT fits in their sector, in their market as a part of blended learning and delivery strategy – blended provision cannot remain optional any longer;
 - how to develop planning and an implementation strategy accordingly aligned with the outcome of the final version of the ICT strategy; and
 - how to monitor and report on how action and investment has promoted the goals of the ICT and wider education strategy.

2.4 General comments on the targets

2.4.1 Targets are unachievable

- Given the resource, funding, time and technical constraints, few organisations can achieve the targets.

2.4.2 Impact on learning outcomes

- The target most important to achieve should be “positive learning outcomes for children”.
- The link between the targets and the “learner-centred” goal are not obvious. Is ICT being used to change the pedagogy or support (automate) existing pedagogy, e.g. are the needs determined by the learner, the teacher or society? More specific learner-centred targets could be drawn from the principles and actions of the World Summit on the Information Society (WSIS). (See <http://www.itu.int/wsis/documents> and LIAC position statement on WSIS at <http://www.liac.org.nz/cms/imagelibrary/100039.pdf>)
- What does effective use of ICT look like? How does ICT impact on learning? What are the evidence sources we already have about actual student achievement that incorporates ICT? Are we building on this body of knowledge?
- Monitoring and reviewing that each institution has sufficient organisational capability and funding to meet the present and future education needs of their learners will be part of ensuring that the education system becomes more learner-centred. We also want to avoid an education system marked by the “haves” and “have nots”. If there are institutions with a deficient ICT infrastructure and poor systems and processes to support it, this will impact negatively on learners. They are potentially being put in a situation where they are disadvantaged/marginalised or have limited choices as to how and where they study.

2.4.3 No target for research

- It is not clear whether the vision is also aimed at research and therefore whether there should be specific targets for research; possibly this is a consequence of the Framework covering all sectors from ECE to higher education. If it is to be relevant to higher education, the research targets need to be more specific.
- The role of research, knowledge creation and wealth creation is not well covered in this document.

2.4.4 Relationship to Kiwi Advanced Research and Education Network (KAREN)

- The less concrete aspects of ICT encompassing “Shared Software and Security” provide the Middleware link between the content and the user through the network. It can easily be forgotten, with the result that the content and shared resources become inaccessible or insecure. We are pleased to see that this area is being addressed through ESAF, ESAA, ESIS, ESFS, and ESMS projects. It is worth mentioning that this is one component that the REANNZ KAREN network is lacking to become a fully functioning, useful and accessible network. It would make sense to work on this jointly with REANNZ so that the same standards and technology can be used.
- The key is connectivity. All Government tertiary institutions should be interconnected by 1Gb internet mesh network. This immediately opens up affordable opportunities for collaboration which could not be achieved using commercial communications systems. The current operating rules of KAREN specifically preclude its use for anything other than research. And the cost of it to most tertiary institutions is prohibitive.
- Several initiatives at present are focused around provision of broadband, the advanced research network and linking clusters of schools. Expanding and integrating these initiatives to link schools, EC centres, TEIs, libraries and education agencies on a national basis in an effective and affordable way is the overall challenging goal.

2.4.5 Areas as proxies for the implementation of the Strategic Framework

- Timetable for direct engagement with end-users on execution details.
- Network access penetration timetable to target institutions.
- Minimum symmetrical network access speeds (xDSL, wireless and fibre) and maximum contention ratios at aggregation networks to allow compelling operation of videoconferencing and other bandwidth-hungry applications.
- Objective economic benefits through consolidated or syndicated procurement.
- Traffic volumes carried (various application and transaction types, international, inter-regional, intra-regional and local, per schools’ decile group, per seat per decile group etc).

3 APPROACHES

The Strategic Framework identifies six approaches to inform decision-making regarding the implementation and use of ICT initiatives in the education sector. They are:

- Learner centred
- Sector wide collaboration
- Services oriented
- International endorsed practice
- End-use perspective
- Exhibiting key characteristics (as listed)

Stakeholders were asked to give their views on the approaches, using the questions below to guide their responses.

3.1 Do you agree with these approaches?

66% of the total respondents addressed this question.

89% agree with the approaches

2% disagree

9% position unclear – comment “around” different aspects of approaches

3.1.1 Learner-centred approach

The diagram (p7)

- Under *Resources*: add ‘Best practice communities’ and “‘moderated’ resources’.
- Under *Community*: we suggest the addition of ‘family and whanau’.
- Under *Providers*: it was noted with some concern the absence of teachers. Obviously it has been necessary to use catch-all terms such as “providers”, but since teachers play a critical role in guiding students’ learning decisions, it seems unfortunate that they are invisible in the diagram.
- Universities are a key resource in delivering a quality learner-centred tertiary education.
- Regarding the use of ‘such as’ in the *Resources* box: either use that term in all the boxes or eliminate it. Add ‘others’ to the list.

Relationships within the approach

- This approach needs to be closely matched with staff competency. It cannot stand alone in the EC sector.
- Learner-centred fits in well with best practice teaching and supports the Key Competencies in the draft curriculum very well.

- *Resources*: Establishing uncontrolled connections between learners and a wide range of public and private bodies such as Libraries, On-line training agencies (e.g. overseas on-line Universities), museums and educational institutions could result in a fragmented educational experience for the learner.
- *Community*: Inclusion in the learning process of stakeholders such as parents, iwi, employers (as appropriate) could produce benefits to the learning experience, though the involvement of parents is less likely to be appropriate at tertiary level.

As an approach

- General agreement with learner-centred approach (one respondent deems the approach “crucial”), but there are issues to resolve, such as access by all learners to ICT facilities, integrity of data, security etc which would require wider funding.
- Request for more justification for this approach, e.g. “to participate actively in, and benefit fully from, the Information Society and the knowledge economy” (http://www.itu.int/wsis/documents/doc_multi.asp?lang=en&id=1161|0).
- Learner-centred and end-user perspective are the two key approaches to concentrate on to ensure affordable, equitable access to ICT at work, at school, and at home.
- There are resource consequences embedded in the approach. The word ‘strive’ underscores that there is a resource implication which can not be met. Efficiency around a ‘one size fits all’ approach contrasts with the notion of a learner-centred approach. It should be noted that it is inefficient to attempt to offer learner-centred education generally; there is considerable difficulty around the efficiency and effectiveness objective generally.
- Research into effectiveness of ICT in learner-centred activity is necessary to create evidenced-based practice.
- The key to this approach prevailing is to ensure project planning, communication and implementation aim to improve the learner’s experience by promoting this above the auxiliary housekeeping benefits being sought in compliance, reporting and management.

3.1.2 Sector wide collaboration

Suggestions for greater elaboration of terminology

- Collaboration should include “shared pedagogical practice”.
- “Sector” is a broad term that needs definition and clarification to assist wider understanding.
- It is important that “infrastructure” be added to “strategies, plans, ambitions, aspirations and information” as something that can be shared. KAREN offers worldwide potential in this respect, including integration of education and research connectivity. “Data” can also be added to this list as distinct from “information”.

- It is essential that in thinking about the approaches to inform decision-making the wider interests of the State Services are taken into account. Collaboration will extend beyond the Education Sector, e.g. with the Ministry of Economic Development, the Department of Labour, ACC, the Ministry of Social Development and many others. As such, we propose that a further approach is added under “Sector wide collaboration”, e.g. working across the broader State Services.

Limitations/Implications of approach for sub-sectors

- The current funding model in the tertiary sector may not encourage the level of collaboration that the framework articulates. Whilst the current funding model might be replaced partially by completions funding, any institution finding a better formula or set of strategies to raise completion rates is unlikely to share with others if the funding outcome is at risk. There must be recognition that institutions are not going to make all information available.
- We agree with this approach provided it does not inhibit addressing the specific needs of higher education and research.
- There needs to be a clear perspective that many other factors in EC centres need to be working effectively before ICT collaboration, in relation to statements that follow the text “collaboration includes ...”.
- Early Childhood needs to be fully included in the sector wide approach.
- Early communication of objectives, end-user benefits, and proposed approaches will encourage buy-in from the learners and educationalists. Involvement of the supplier community and other constituents will enable feedback to policy and funding processes on the approach. These may reveal worthwhile modifications to the method of execution, and either utilise existing or promote new areas of collaboration.

Overall, an early engagement process provides the best method of moving the execution from the “clean sheet” to the “real world”, or pragmatic, by reflecting the local issues and arrangement that must be accommodated in the execution and operational phases.

Collaboration versus Competition

- There is a continuing tension between competition and collaboration for education providers. While ‘sector wide collaboration’ is being achieved in some areas, the competition to attract students and good staff can limit cooperation between provider institutions. It may be helpful to identify those areas where provider institutions are expected to collaborate.
- It is unlikely that effective sector-wide collaboration will be achieved in the current nationally and internationally competitive education environment.
- There is support for the focus on sector wide collaboration as competition between schools has sometimes resulted in poor decision-making, reinvention of the wheel and low quality spending. There is evidence of sound collaborative

practice in the sector in the 22 e-learning clusters which share subject delivery via video conferencing and more recently, the evolution of the various loops. These uniquely New Zealand initiatives are at risk because of the lack of certainty around funding.

- There are many collaborative projects underway already, but very little coordination or cross-fertilisation between sectors. Collaboration is an excellent goal, but hard to achieve in a climate of competition. The TAFE sector in Australia manages it though. Can we borrow from their structure? i.e. shared resources, reusable resources, flexibility, all available.
- We have to be more flexible, easily accessed and student-centred, and we can do this with good IT supported endeavours, but we cannot do that for students out of our region. Wouldn't it be better to decide regions on expertise and rationalise that way, making use of IT to deliver collaboratively? Collaboration across sectors within regions should be encouraged. Lifting educational levels of the regional population is often a stated (strategic) concern of local authorities.

Practical implications of shared infrastructure

- The development of a shared infrastructure would be beneficial as long as the standards (for ICT and in other areas such as Metadata) implemented in institutions align with the standards on which the shared infrastructure is built. Currently, institutions use a combination of standards-based ICT and proprietary solutions where standards-based solutions could not be found to meet requirements. It is a common scenario to fix a mix of conflicting standards in institutions for pragmatic reasons.

A good example is that of Identity Management systems (ESAA project) whereby students and staff gain access to IT resources provided by institutions. At the moment each University is looking for standards-based identity management systems and schemas which will allow their students and staff to authenticate to their own IT resources and to other trusted IT resources both in New Zealand and overseas, such as those on Research and Education networks like KAREN. To provide students with a single trusted identity would enable them to authenticate to enrolment and other IT appropriate resources across campuses, removing the need for separate identities at each institution. There are clearly benefits for Universities, staff and students in a shared approach, but for this to happen institutions need to know when such projects are scheduled and what they should be doing to get to the starting point.

- Australia has a system for using Federated Identity that allows students to mix and match course modules from a variety of tertiary providers. Clearly for this to work there has to be some similarities with systems used and quite a bit of collaboration. We could imagine this type of thing working within TANZ (MIT, UCOL, CPIT, Otago Polytechnic) for example, and the qualification being TANZ-certified. Interestingly, the government has purchased the same identity management system that we have (they came and asked us some question a year or two ago) so this idea of Federated Identity is not that far-fetched.

3.1.3 Services oriented

Relevance to sub-sectors

- I do not see how this can be utilised in EC, when we base our daily programme on an emergent curriculum.
- This approach lacks sufficient detail to usefully provide direction to primary education providers.

Further clarification about the approach required

- If the services oriented approach meets the learner-centred model, it would work well.
- It is not clear what is meant by “services oriented”.
- We agree with this approach as outlined in the e-Framework (<http://www.e-framework.org/>).
- This whole sentence is unintelligible. We suggest that the point could be made more simply.
- A focus on service delivery is important – it should not be confused with a service oriented architecture (SOA) which is a methodology used in application design and which should be invisible to the end users.

Technical implications of services oriented approach

- This technical approach is inherently logical for resource investment but may be out of place in the educational strategic context.
- The early agreement and publication of information exchange requirements should allow for the quickest and most effective implementation of the framework by utilising the existing information systems investment of those organisations that already have good information governance and architectures in place. Central shared services could be introduced to help those with a low level of current capability to deliver the Framework. The forced introduction of central shared services across the whole sector would probably not produce the benefits anticipated because of the lost opportunity costs.
- The implementation of software modules using Web Services is currently the ‘right’ direction to be following, though considerable work will be needed in some cases to enable existing systems to use these web services.
- Caution should be exercised here, as while a services oriented approach sounds good now, these “approaches” or methodologies are subject to change and change whenever the “next big thing” comes along. Similarly, avoid mentioning or recommending (where possible) specific technologies.
- Data standards and architectures that have been developed by Government agencies should continue to be discussed with the vendor community to allow early acquaintance and feedback.

3.1.4 International endorsed practice

- Collaboration with JISC is to be encouraged, although the Universities need to be involved in selecting and 'fitting' JISC sector-wide initiatives into their institutions. Other forums include CAUDIT in Australia and the global EDUCAUSE.
- It is important we have access to best practice from around the world as well as what is happening here and that, in turn, we contribute to international organisations.
- The benefits of establishing alignment through awareness of Higher Education initiatives in the UK, Europe and Australia are to be applauded. The Universities are operating in an international context already and there are opportunities for alignment in that context which are able to be taken up as well.
- Which countries will be chosen to assess 'international endorsed practice'? Will there be a number of them and how will you select countries that are supposedly heading in the right direction?
- REANNZ has seen well documented approaches from many countries. Our current preference is to adopt or adapt the JISC/UKERNA/BECTA activity in the UK.

3.1.5 End-user perspective

Importance of approach

- Focus on learner-centred and end-user perspective approaches to ensure affordable, equitable access to ICT at work, at school, and at home.
- An end-user perspective approach is essential if the initiatives are to be used once implemented. It is important that this is 'designed in' rather than just considered at the implementation stage. There is a danger of creating 'ivory tower' systems both within institutions and at a sector level.
- Society perspective is also important.
- In addition to testing initiatives with end-users, it would be appropriate to test the priority of these initiatives. It is possible that the end-users see a different set of priorities as they are either accountable for learning outcomes or are the learners. If not tested, the rollout is not likely to align with the operational areas that could deliver early and important benefits. The engagement process provides the mechanism for the buy-in needed to reduce the implementation risk and should be started early in the decision-making process. This, in turn, will give more comfort that both implementation and anticipated benefits will be achieved.

Monitoring

- How can an end user perspective be accurate when there can be no clear framework to measure against?
- There are a range of challenges here around credibility. Careful attention to quality criteria and the thoroughness of the survey mechanisms and their output will be required.
- The initiatives must be tested against the end-users' point of view in order to provide assurance of the quality of the outcomes and services.

3.1.6 Exhibiting key characteristics

About the approach

- These appear to be more of a “vision” and therefore cannot be measured; in turn, their achievement cannot be measured / rated with any real meaning.
- Who are the ‘key characteristics’ for? Children? Adults? Programme?
- What expectations and support are there going to be to ensure all schools are exhibiting the key characteristics?
- It is encouraging to see Integrity, Privacy (confidentiality) and Secure Access mentioned as key characteristics. These **must** be at the forefront of developers’ minds when developing these initiatives.
- There is also the strong possibility that the key characteristics identified will not be universally understood or accepted. To ensure ownership of these concepts by the sector, it is important that they be subject to discussion and debate.
- As the characteristics interact with each other, it may help to have these prioritised by the end-users so that appropriate weighting is established.

Modifications to / clarifications of definitions

- The definitions for these characteristics are interesting and show an obvious bent towards ICT. All look to be worthwhile and, with a little thought, could be ‘matched’ to the five Key Competencies.
- There is concern that, as defined here, this is an entirely technically-oriented series of terms which appear to specify particular technologies which in turn means that they are not enduring characteristics. It is recommended that references to specific technologies such as XML are removed and replaced with “internationally recognised standard technologies”.
- *Diversity* and *Inclusiveness* are used in ways that do not seem to align well with other strategies that use these terms in contexts of equity issues regarding gender, ethnicity, socio-economic factors and so on. Custodianship, Reuse, Privacy, and Secure Access all use “data” to refer to what seems to be personal data held by agencies: this should be clarified.
- *Inclusiveness*: While this is an important end characteristic, it will be some time before the internet will be the dominant medium. The use of the term “inclusive” in conjunction with the words “use the internet as the dominant medium” therefore jarred slightly. The level of uptake of the internet, although relatively high in New Zealand, would still indicate the necessity of using other channels in equal proportion to the internet to deliver information and services for quite some time to come if inclusiveness is to be achieved.
- Under *Integrity*: Respondents noted their preference for the word “user” to “customer”. The word “customer” does not capture the full range of relationships across the sector, and seems inappropriate for a learner-centred education document.

3.2 General comments about the approaches

3.2.1 Ascribing/determining priority of approach

- We particularly support the approach of international endorsed practice and the importance of building on and using evidence-based research/practice in all development.
- We agree with the approaches as identified to inform decision-making generally and imagine that some approaches would have more significance than others for particular developments and investments (i.e. there may be some tensions/tradeoffs with some initiatives).
- The six approaches are diverse. A pragmatist might suggest prioritising sector-wide cost reduction in tandem with systems improvements, as galvanising priorities in ICT transformation in the motivation exists and means are at hand.
- Although we would agree all six are relevant, and that they are probably a complete list, we would probably emphasise “end-user perspective” and “services oriented” ahead of the others. “International endorsed practice”, even if it exists in any meaningful or useful way, may not necessarily fit the needs of New Zealand or of the special and diverse character of education institutions in this country. The advantage of more heavy emphasis on end-user perspective and the modular approach alluded to in “services oriented” is that it promotes flexibility and adaptability, which is important for a diverse and changing sector, and diverse and changing ICT capability.
- Sector wide collaboration and international endorsed practice are essential in not only developing agreed best practices but also to ensure consistency of message to the consumers.

3.2.2 Relationship of approaches to wider framework and governmental strategies

- The Approaches are probably the most negotiable areas of this Framework.
- These approaches seem reasonable and link neatly with the vision, goals and stated outcomes. They are consistent with the work the Government has already commenced in ensuring that digital technologies become a key tool for 21st century teaching and learning.
- We agree with the goals, but conceptually it is difficult to see the immediate link between the vision and goals and the approaches, and therefore this is a difficult question to answer. Perhaps some worked examples of how the approaches will facilitate the goals would be useful.
- These approaches are generally useful principles at a high level. However, a pedagogical vision is not adequately captured here. The education philosophy is not explicitly stated but the philosophy implicit in the chosen outcomes and targets is out of date and will not lead to the educational outcomes our society needs.
- They are all sound statements but what are the links to actual student achievement and the evidence bases for these?

- The notion of creating an innovative and thriving knowledge economy has been one that has been promoted extensively by this government and the approaches outlined in this section will go a long way to realizing that vision.

3.2.3 Base Approaches on actual experiences

- I am assuming this is an evaluation by those who are involved in ICT in their learning. It is important that these people have a 'loud' voice to ensure they are heard by policy and decision-makers and what works well for them in order to develop as life long learners.
- From our experience of ICTPD (2002 – 2004) and ongoing development involving ICT in our school-based curriculum design, we would emphasise that the achievement of effective use of ICT and sustaining that is not straight forward or rapid. Actual changes in teacher practice and student learning outcomes take some time and reflective practice and evidence. So, the big goals and the strategic approaches must be soundly based in actually experience or they are somewhat unhelpful.
- Don't drive by the few high flyers – we need to bring all on board even if they are at different speeds.
- What is actually working in our schools to date? Schools over the past decade have been forced to be inventive in the IT field because they have lacked adequate resources, programmes and vision. Through trial and error, they have managed to create an IT environment that, while obviously pioneer in flavour, suits their needs.

3.2.4 Matters for resolution

- We agree with approaches but appreciate that there are many issues to resolve, e.g. integrity of data, security, funding etc.
- These approaches are valid, but the framework is dependent on the tertiary community's acceptance of a knowledge management agenda, agreement on suitable metadata standards and a willingness to share information. Some universities participate in the agenda to a limited extent, sometimes because there is no EFTs competition. However, there remains no reward mechanism for co-operative activity. The approaches should not inhibit addressing the specific needs of higher education and research.
- Interoperability is key; shared services may not always be appropriate, given that the needs of organisations covering all sectors from early childhood to higher education are quite different. A shared service model has been tried in the Health Sector, and it is not clear that it has delivered all of the expected benefits.

3.3 Are there other approaches that should be considered?

8% of total respondents answered this question.

86% Yes

14% No

3.3.1 Other approaches to be considered

- Under Key Characteristics, add “Viability”: Promotes New Zealand and opportunities to leverage research and development, and New Zealand’s creative/innovation when new product, systems or consulting (New Zealand Brains Trust). Leverages investment on a national, regional and local basis as appropriate. Protects genuine intellectual property.
- Strategic alignment with wider Education and ICT strategy and policy. For example, one respondent noted the themes from a previous STEP (i.e. excellence, relevance, access and capability) which still have currency in the ongoing development of the tertiary sector, and which are considered critical factors in enabling education organisations to achieve the vision and goals of the Strategic Framework.
- Capability building in ICT at all levels.
- Custodianship.
- Organisation Benefit: At some level the initiatives have to provide sufficient benefit to the various organisations in the sector vis-à-vis the cost to be picked up by those organisations. An explicit link/relationship between the collaborative benefits between organisations and the direct benefits to the individual organisations will have to be spelled out, otherwise the implementation of this ‘vision’ may stall due to costs.

3.4 Are these approaches suitable to achieving the strategic vision?

9% of total respondents answered this question

88% Yes (of which 14% yes, if additional approaches included: Strategic alignment with wider Education and ICT strategy and policy; and Capability building in ICT at all levels.)

12% No (Concern is expressed that the approaches might actually inhibit the achievement of the strategic vision, because they are “broad, unspecific and encompass too many goals and aspirations”.)

Other comments

- The vision needs to be kept active, i.e. it needs to be reviewed regularly to ensure it is still appropriate and that we are on track. As ICT develops so should our vision along with our goals to match this evolution.
- This is a difficult question to answer without a more explicit link demonstrated back to the goals and vision.
- The key to achieving the strategic vision is the provision of a robust broadband network having a bandwidth that provides transparent access to the internet.
- As with the rest of the document, there are considerable resource implications underpinning ‘approaches’. As noted earlier, the word ‘strive’ suggests that these resource requirements are unlikely to be met.
- Because Universities currently operate in an international environment, enhanced Ministry/Government support and incentives are critical.
- A major question underlying the approaches being considered is whether the ICT standards being considered will constrain or promote development and innovation. Innovation must continue to be enabled and fostered. Any approach needs to take this into account.

4 GENERAL COMMENTS AND REFLECTIONS

The purpose of the Strategic Framework is to 'provide the mechanism to guide and co-ordinate ICT investment towards the government's vision of improved education outcomes'.

Stakeholders were asked to give their views on the success and organisational impact of the Framework, using the questions below to guide their responses.

4.1 Does the Strategic Framework achieve its purpose?

21% of total respondents answered this question.

44% Yes, the Strategic Framework achieves its purpose

33% No, the Strategic Framework does not achieve its purpose

17% "more a **statement of aspiration** than providing true direction for implementation"

6% Don't know

4.2 Will it guide you in making choices about your organisation's investment in ICT?

26% of total respondents answered this question.

64% Yes:

- It does give some guidance in making choices about investment. However, heavy investment at a higher level is needed to achieve any consistency and to prevent the need for every school to “invent the wheel”. Some direction and guidance is needed if uniform standards are to be met.

23% No:

- This document does not contain sufficient detail for it to be useful to schools. It is a theoretical document which needs the next steps, i.e. the practical “how” part, built into it for greater depth. It does, however, open up the subject for discussion.
- If schools are to use this document as a guide to ICT investment, it needs to be developed collaboratively with education organisations.
- The Strategic Framework does not provide a clear direction one way or another regarding our own investment in ICT. The relevant choice dimensions for us are how much to spend on ICT equipment, how much we should use to facilitate our management of the external environment (including compliance with regulatory obligations), and how much we should rely on the ICT/electronic channel (as opposed to physical) to obtain educational content. Knowing that there will be public interest in improving the ICT infrastructure relevant to our sector is interesting, but the Framework does not really influence our decision-making, without more detail about what additional capability will be provided by the infrastructure that is not there now. We are already “over the hurdle” that we need to have computers, an internet connection, a decent amount of bandwidth and a website – so our decisions are about how much to spend to make it faster and more reliable. The Framework in its current form is not informative for that purpose. By contrast, were the Framework to announce, for example, that certain secure information would be provided to education institutions only if they have particular secure access technology, then we would need to look at whether we should invest in that particular technology.
- Its usefulness in guiding our choices around ICT investment depends upon what we can afford.

13% comment around the question

4.2.1 Comments about investment

- Ultimately investment decisions are made on the basis of individual organisational needs and resources. Decisions are more likely to be coordinated if there are:
 - Clear guidelines;
 - Obvious financial or other benefits;
 - Timely and accurate communication between participants.The really big investments appear to be in information systems, be they administration or learning. There does not appear to be any centralised guidelines, strategy or funding for these, so there is some question over how they will be achieved particularly in the current funding environment.
- Investment in ICT is a bottomless pit. Redundancy in systems is very rapid and to keep up with the change needs more money.
- Implementation of an ICT Strategic Framework for Education is an admirable goal. Clearly, there needs to be a coordinated and central planning process that oversees the funding/investment that the government will have to commit to if the vision is to be realised.
- TEOs are already planning and making strategic ICT investment decisions that will impact on their operational status for the next 5 to 7 years. The implementation of the Strategic Framework will presumably need to influence/modify the decisions that are currently being made now, which will be an interesting challenge!
- As part of the drive to make investment in ICT more efficient, the Framework should seriously examine the role open source software and comparable intellectual property schemes could have (e.g. creative commons: <http://creativecommons.org>). Open source software comes in many guises and differing licenses, and it may be appropriate that the government create and/or maintain a collection of software for anyone in the state sector to use and re-use as needs require. This will lead to the promotion and sharing of ideas and solutions, resulting in better quality, greater capabilities, more innovation, shorter delivery times, etc. The exact type of open source license would need to be carefully considered and the recommendation of a preferred or default license model would be useful.
- There should be some comment regarding the use of proprietary file formats, and the encouragement to use internationally recognised open file formats. Open file formats can help ensure future compatibility & access.
- It is important to ensure there is some mechanism in place that will aid the government and education sector in longer term planning. For example, if the course structures being taken by students entering secondary school are largely based on the arts, and few are taking science subjects, this may indicate a future shortage in (say) engineers or researchers.

4.3 Have you any other feedback to offer about the Strategic Framework?

4.3.1 The Consultation Process

Timing

- “I would have appreciated more time to adequately digest the material; the start of a school year is a very busy time.”

Manner – Consultation by questionnaire

- The survey is “unfriendly ... and not at all easy to use”.
- School sector stated a preference for focus groups, workshops, or roadshows rather than questionnaires, especially given the complexity of the topic.
- We did not feel competent or confident about responding to this questionnaire. ICT is ahead of our knowledge and understanding as teachers not specialist in this subject and with little training or study.
- Without a supporting forum / facilitator it is difficult to understand some of the Framework’s proposals or their implications. We are limited by our own understanding.
- It is our experience that end-users and decision-makers in most cases do not feel inclined or able to analyse highly technical documents in order to provide feedback – they prefer to understand the benefits that are being promoted. Low levels of end-user feedback on technical and data standards, and frameworks, should not be taken as acquiescence or understanding.

4.3.2 The Strategic Framework as a document

Terminology / Jargon

- If the strategy is to be useful to staff in schools, then the language should also be simple rather than the jargon found in the Framework. Terms such as “discoverable content”, “user focused approach”, “coherence through open standards rather than standardisation”, “digital repository” are not commonly used in school and centre environments. We question whether the general public would understand these terms too.
- The Framework is quite “wordy” and full of policy jargon. This is one of the reasons the current New Zealand curriculum is being rewritten. Though this document suits half of its intended audience, it will miss its mark in many EC, primary and secondary areas, especially if they already feel uncomfortable about ICT demands.
- “Innovation” (p2) and “agility” (p8) are great terms, but it is not reflected in pages 3-7 that we are supporting them.
- Some jargon used in the document does not make easy reading, e.g. page 7 “Establishing agency and sector facing hosting of key ...” - what does this actually mean?
- This document is too full of jargon and we suggest that a more concise and user-friendly document would better suit the purposes of informing and consulting those with an interest and stake in education.
- There should be a glossary entry on Open Standards (p9): applying only open standards endorsed within the New Zealand e-GIF will not always be practical or appropriate within specific e-research environments, e.g. emerging international standards for structural mark-up of chemical and biological information, and for documenting the provenance of data obtained from scientific instruments, may be required.

Complexity

- This could be a very good guide, but it is very difficult to assimilate all the facets of it. I believe it should be easier to understand.
- This document is very complex and has raised more questions than it answers. Many technical terms are used and it is a sea of complex ideas.
- The Framework operates on a number of untested strategic assumptions and mixes fundamental operational principles with technology action points.
- It is difficult to unpick. It needs to be made more user-friendly and involve clearly identifiable steps. Many of us would put this in the too hard basket and not read it carefully. We do agree with what the government has done so far to make broadband and internet security accessible to schools. We would welcome further guidance and clearly thought out goals. The document needs to be re-edited to suits its very busy audience.
- The ICT Strategic Framework is a high level document with little detail. While we generally support the Framework, there is a concern that for some of the

matters covered, the lack of detail could provide too much room for individual interpretation and lead to a situation where the desired outcomes are not actually achieved. We suggest that in some areas more detail should be included to provide necessary guidance.

- We believe this strategic framework will not achieve its goals, as schools will deem this document too difficult to interpret and implement.

Insufficient detail, not enough “how to”

- The Framework is too theoretical and does not meet the needs of its target audience.
- Too broad. More specific information regarding network services, computer compatibilities and capabilities required.
- The Framework document makes many general statements of principle with which it would be hard to disagree, but lacks any specific detail of how these principles should be put into practice, responsibility for delivery, quanta against which performance can be objectively measured, and allocation of resources.
- The drivers for the Framework not clearly enunciated; i.e. lack of “why we should bother” factor.

Recommendation for use of narrative in next iteration

- Stakeholders, including parents, community, and private enterprise, should easily be able to grasp the Framework’s intention (perhaps using a narrative and visual approach to connect stakeholders).
- The Framework should include stories (pictures of the preferred future) to frame the document, to get people enthused and to take it seriously.

Definitions and Inclusions/Exclusions

- The Framework talks about “learners, teachers, researchers, administrators” but does not identify support staff. Many school libraries would not function without the work of this group of people. Many teacher aides working with special needs students are required to use computer programmes as part of the IEP plan.
- The Framework’s focus and definition of ICT should be broadened to include not just computers but also telephones, facsimiles, tele- and audio-visual conferencing, scanning and digital imaging, video and television, internet and email, library catalogues, online search engines and MPEGs. ICT is no longer individual pieces of technology but an integrated system of information storage and communications. Learning environments that have linked these technologies in this way are now referred to as digital classrooms.
- The Framework uses terms loosely borrowed and in the absence of a shared understanding of the derivation of the terms, e.g. the European Commission term ‘Lifelong learning’. This illustrates the need for a debate to deepen the meaning and understanding around such concepts.

- I wholeheartedly endorse the concept of “smart use of ICT” but I do not think the document provides enough detail on how this will be achieved. For example, statements like “agencies delivering value-for-money” explain very little.
- There are a lot of terms used in the document which are too open to individual interpretation e.g. “appropriate security”, and groups need to agree on what they understand these to mean.
- There is no mention of the commercial world/ business/ industry anywhere in these documents. Surely these stakeholders are an integral part of the wider educational community?
- There is no mention of the private/public interrelationship. The Framework is not just for the public education sector but also for private enterprise.
- There is no reference to access management. REANNZ recommends that providers should be required to adopt the emerging management standards and federation frameworks based on SAML2 and Shibboleth. This will ensure that for everyday trust requirements, fine grained access control can be scaled more easily and will also position New Zealand content providers to deliver their content into federated environments internationally. Such frameworks support the participation of schools and other education institutions as publishers or content providers while protecting personal user data in an increasingly complex user environment. Overseas experience suggests such an approach is more likely to accelerate the adoption of any access management framework (see www.ukfederation.org.uk).

The Framework’s purpose

- This data carries an assumption of “rightness” rather than involving the sector in dialogue with supporting documentation. The end reaction for me is that this document is a subtle “directive” and I would like to think and be shown respect of the attitudes and ideas that I currently hold by this agency, i.e. I would like to be shown a discussion document, not a glossy, costly printed document that allows no room for my thought or opinion.
- Confusion about the document – who is it by and who is it for? How are we to understand “education sector”? This document is really about increased collaboration between the central government agencies and how this would help the wider education community. There seems to be no input from outside the seven agencies.

“My contention would be that the widest possible education sector should be truly engaged in the process of setting the central government agencies goals and strategies. The document and information supplied seems to be as a result of a partnership between the various groups in a learner-centred approach. If a learner-centred approach was to be taken then there should be tangible engagement by the 4 groups identified in the diagram on page 7.”

- This document seems to be a ‘doing it to the education sector’ rather than about ‘assisting learners’.

- Is this a guide for individual organisations to consider when making decisions about ICT purchase/use or is a government initiative with support to ensure goals are met?
- The key benefit of the Framework is that it is a holding strategy in an immature policy landscape. It is important that its function is recognised as one of 'trying to round up cats' and that the opportunity to engage the Framework more soundly in the wider strategic context is not lost.
- It is an articulated vision with no back-up data to support its value. It seems to be written to influence and direct, not to encourage dialogue; i.e. it is a 'top-down' approach.

Usefulness

- This document reinforces how hard it is for schools to implement ICT successfully. The targets highlight the difficulties schools are having in such areas as internet connections, and how ICT should be implemented. It is unclear how much practical help this will be for schools at each end of the spectrum. Successful schools will continue to develop their own systems and programmes, while those struggling continue to need sustained and consistent guidance and support.
- The initiatives appear to be focussed from the top down, i.e. ideals and visions to improve management/ administrative goals and targets. There seems to be a lack of "hows" to lead changes of pedagogy in schools which is where the goals of lifelong learning and learner achievement begin.
- This is a good theoretical document. Systems need to be put in place that objectively measure what happens in practice.
- Out of the whole document, the "Approaches" segment is the area that is the clearest and that I could use not only to make choices but also when asked to, or asking others, to justify their decisions and approaches.
- The Framework should accurately reflect the anticipated degree of change required. Change should be customer driven.

4.3.3 Strategic Linkages

Alignment with other Strategies

- It is unclear how this document relates to
 - National Digital Strategy
 - E-learning Framework for Schools
 - Draft New Zealand Curriculum

Whilst there is some commonality in goals, there isn't a direct correlation – e.g. the goal on “community” from the e-Learning Framework seems missing in this document. We note these documents are referenced in the supporting documentation, but not in the Framework itself.

- It appears that the areas of activity within the Framework map to the e-Government strategy work streams. However, how well the two map will become clearer once the Strategic Framework work programme is further developed.

This ICT Strategic Framework is placed within the Government's goals and the education priorities and strategies. These are clearly of critical importance and will drive the Strategy and the work programme coming from this.

However, the Development Goals for the State Service are not placed as one of the drivers of the ICT Strategic Framework. The document comments that “the education organisations and government agencies need to work together if we are to deliver improved education outcomes.” However, because education outcomes must be achieved within the context of the overall government goals, these outcomes are inextricably linked to other outcomes such as those around economic transformation, employment, children and young people to name but a few.

When Development Goals are achieved, the State Services will be experienced differently. In relation to the ICT Strategic Framework, all services for New Zealanders, including education services, will need to be networked, co-ordinated, accessible, and trusted. While there is comment that the Framework is aligned with, and supports, the government's e-Government Strategy and National Digital Strategy, it would be helpful if this were more clearly/specifically articulated.

The Framework needs to be more outwardly focused. Without a focus on the Development Goals there is a risk that the ICT Strategic Framework for Education will focus only on the education outcomes. It is not clear from the Framework if this is widely understood within the sector.

We appreciate that the Framework must deliver for the Education Sector. However, framing it in the broader State Services context will be a starting point in minimising the risk identified above and will be a vital measure and a check as the Strategy is implemented.

- The ICT Strategic Framework needs to be visibly in close alignment with wider government strategies, including the National Digital Strategy and the National Content Strategy. For example, the Framework should address the need to ensure that digital content is accessible in perpetuity, and tie this into preservation requirements expressed in the National Digital Strategy through

the adoption of open standards which promote ease of access and the ability to re-purpose material in this age of fast-changing digital technology.³

- There is little in the goals, targets and approaches that could be disputed. However, a more ambitious approach to improving educational outcomes to create a better society has not been fully articulated. There is an opportunity to take advantage of new and emerging ICT for education in the broadest sense i.e. e-learning, e-research and e-administration as identified by the JISC e-Framework initiative (<http://www.e-framework.org/>). The Ministry of Education is to be commended for involving New Zealand as a partner in this initiative. The ICT Strategic framework would benefit from having a clearer alignment with it.

³ The Digital Strategy is due to be re-launched in October 2007; the next iteration of the ICT Strategic Framework should be aligned with it.

Relevance to educational outcomes

- There is no evidence that this is a learning strategy. There is a pedagogy needed for 21st century learning and this Framework establishes protocols. It must include, however, a genuine design of skills, resourcing and ongoing support. It is crucial that people know when not to use a computer and the pedagogical reasons for that decision. All of the goals are about data movement and not about learning. There is a false assumption that once schools are connected and sharing that learning will increase or improve.
- How much does learning benefit from ICT?
- In some areas the Framework appears to conclude that ICT competency is an end to itself. In these areas, the Framework could be clearer in linking ICT to the underlying educational purpose.
- We acknowledge that the Framework was put together by experts looking at the big picture but we feel that we are unable to prioritise the goals, approaches etc because we don't know what each entails. We are therefore not able to indicate which direction is important. What we do believe is that ICT is a tool that can be used to assist children's learning. The key to improving outcomes for children is the up-skilling of teacher expertise and the accessibility of resources.
- I don't believe the Framework will provide effective guidance to organisations on pedagogical aspects of ICT in education and (e)learning. Its emphasis on standards and interoperability may lead to greater 'connectedness' at a physical level, but conversely could stifle innovation through decreased flexibility. Overall, it lacks the educational / pedagogical vision to lead to effective transformation in the sector.
- The ICT Strategic Framework for Education provides a mechanism to guide and coordinate ICT investment towards the government's vision of improved education outcomes. It would be useful to have some expansion of the statements relating to outcomes and targets to strengthen the focus on learning.
- ICT is not understood as part of a learner-centred strategic response to delivering quality outcomes to learners in their sector in the Industry Training market.
- There needs to be a national conversation around the overarching educational objectives in which ICT investment can be properly aligned, such as the gap in terms of distance education and the lack of a clear strategic plan for how government wants to respond to the particular challenges in this area.
- We must not lose sight of the fact that ICT is only a means to an end. It is a tool that we must use more effectively and efficiently to enhance education outcomes, create a connected innovative education sector and to maintain global linkages and international credibility.
- The Framework provides broad general principles which are useful, but its desire to apply to the whole sector is at the expense of recognising specific needs of different areas. This is particularly evident at the research end of 'improved education outcomes'. The importance of using ICT for both knowledge creation and wealth creation at a societal level is not explicit.

- There is little in the goals, targets and approach that could be disputed. However, a more ambitious approach to improving educational outcomes to create a better society has not been fully articulated. There is an opportunity to take advantage of new and emerging ICT for education in the broadest sense, i.e. e-learning, e-research and e-administration as identified by the JISC e-Framework initiative. The Ministry of Education is to be commended for involving New Zealand as a partner in this initiative. The Strategic Framework would benefit from having a clearer alignment with it.
- Costs are considerable when dealing with ICT; the benefits to learners must be a priority when allocating funding to implement the Framework's goals.
- ICT is often linked to societal issues such as students not spending enough time playing and reading, bringing negative influences into schools or not interacting with their peers. These issues all fall within the wider contextual debate about what experiences should constitute childhood.
- We need proof that ICT has a positive effect on student learning and/or that there is a link between more money, more ICT etc and improved outcomes.
- There is scepticism about the role of ICT in improving learner achievement, particularly in primary schools. Increased access to resources, professional development and other services will be a huge support to teachers, but improving student achievement in literacy and numeracy is not going to be achieved through greater emphasis on ICT.
- Learner achievement is dependant on more than ICT connectivity (e.g. digitally and information literate workforce and student body, confidence of family, whanau and community, repositioning of teachers as facilitators, and quality of teaching).
- The link of the targets to the "learner centred" goal is not obvious, and raises the question of whether ICT was being used to change the pedagogy or to support (or automate) the existing pedagogy.

International Relevance

- The Framework suffers from the lack of an international perspective, and the lack of visibility of alignment with international contexts and networks (including REANNZ/KAREN).
- The strategy seems very New Zealand-focused; many opportunities/barriers relating to international connectivity, content and collaboration are missing.
- The commitment made by New Zealand universities to work with their Australian counterparts in supporting an Australasian ICT trust federation for identity and access management is one example of a situation where a New Zealand focus is not necessarily the best approach.
- We are aware that the education sector is both contributing to as well as drawing on work internationally. We suggest that the sector may wish to think more about how it can take an appropriate leadership role at the international level where appropriate.

Biculturalism

- With the exception of the inclusion of iwi in the diagram on page 7, Treaty of Waitangi obligations and matauranga Maori are surprisingly absent.
- ICT should be used to stimulate and support the use of te reo Maori in centres and schools. Issues relating to Maori use of technology have not become subsumed in the larger issue of the “digital divide”.

Communication

- The importance of communication and promotion of the ICT Strategy and its links with other frameworks and developments to a wide audience and attention given to disseminating the developments/research/evidence as the Framework moves forward are both very important.
- Information about the strategy and goals will need to be publicised and understood by institutions in the education sector. Individual institutions can then align their strategic decision-making or directions. E.g. if the end aim is open-standards, then purchasing proprietary software becomes an intermediate step, not an end in itself.
- Key areas for focus are equitable access, connectivity infrastructure, models for communication and sharing information through knowledge networks, and partnerships across existing boundaries.

4.3.4 Implementation of the Framework

Funding

- The Framework neglects to explain the required financial and resourcing commitment to implement the strategy, and any incentives that link to it. What will the cost be, and where will the funding come from? A commitment from the Government is needed. The Framework needs to be seen as a “big ticket” item with the appropriate resourcing to implement it.
- The implementation of the Framework will require the targeting of additional resources in a manner similar to that taken by the Department of Education, Science and Training (DEST) in Australia.
- We are concerned about yet another vision on ICT, and question how it will be achieved when schools continue to fund their ICT requirements out of their own or through locally raised funds.
- Our vision is that the government will allocate sufficient funding for ICT in schools and centres so that
 - government expectations can be met;
 - technical support is available to schools to maintain and manage systems and infrastructure
 - support is available to teachers to improve teacher skills leading to learner achievement;
 - opportunities for professional learning and development are available to all teachers who require it, supported by time;
 - learning programmes in and through ICT are sustainable, and
 - ICT is manageable and not a workload issue.
- There must be a greater investment in basic infrastructure for schools/institutions.
- I do wonder how realistic the Strategic Framework is when one considers the financial restraint of our budgets in our schooling system. Some of us just don't have the funding necessary to acquire all of the ICT resources we would like or even the 'basics'.
- We look forward to private schools receiving more funding targeted at ICT provision, as a result of this strategy. Our own school serves a diverse population and the whole range of socio-economic levels.

Network and service implementation and operation

- Six key steps:
 1. Communicating the vision, establishing appropriate governance arrangements;
 2. Understanding the needs of the teachers and schools from a network and technology perspective;
 3. Determining network access requirements;
 4. Connecting local networks nationally;
 5. Developing professional capability; and
 6. Content & services/applications.

Centralisation of ICT provision

- There should be a baseline provision made by the state upon which individual schools and centres are able to build. This baseline will establish standards for hardware, software, technical support, building design, property matters, infrastructural developments and professional development. All schools and centres should be adequately prepared and resourced to meet new ICT requirements before they are introduced.
- The cost of maintaining effective ICT for both school systems and for student and staff is extremely prohibitive for a small school and is not value for money. If there ever was a need for centralised provision of anything in education, then ICT would be it.
- This is a worthwhile document and we agree that it is worth putting some effort into central (i.e. public) co-ordination of ICT investment strategies across the sector.

Collaboration

- The Framework will provide a sound platform for collaboration across the education sector to be undertaken successfully.
- There is a strong thread of sector-wide collaboration, which is a really nice illustration of how the State Sector Goals around connectedness, accessibility and networking can work within a sector. A key element of allowing that collaboration to happen will be appropriate levels of authentication. For example, the ESAA initiative will be able to meet the lower-risk areas of authentication need; and it is our agency's plan to work with the sector to explore ways of implementing the Identity Verification Service to meet the higher-risk or mixed-risk authentication needs.
- Even desirable professional collaboration has a cost whether it is for online chat or video conferencing. The current numeracy project in schools requires considerable time in the recording of data online.

Technical Support and Professional Development

- Many respondents raised questions such as what support, what resourcing, what is the workload and what is the backup in technical support?
- Technical support and professional development is the key to a successful ICT strategy. The TELA laptops for teachers programme has had a major impact on accessibility of laptops for teachers and has become the primary source of schools' laptops. The issue becomes who has had professional development on how to use them and how to reduce workload.
- Schools/Practitioners will require extensive professional development and support systems, and opportunities to interact with others.
- As 'SMS' becomes part of a teacher's life, more is done at home, on home PCs. Acknowledging use by teachers of home internet and printer costs will aid teachers' acceptance of this new approach.

- As with any framework, the Strategic Framework seems sound and will help in theory. However, I have little faith that the needed support and backing will be there for this vision to be fully realised for all our learners.
- Please consider assisting schools with 'minimal' hardware to "get in the game", otherwise all this will be a waste of time. A ratio of child to 'machine' could be argued/agreed upon as a basis for creating change within schools with pre-defined spending patterns.
- ICT has the potential to impact positively on schools, society and the lives of individuals. It is a big step from our current situation (in many schools poor equipment, reliability issues, capability issues) to one of strength in all areas.
- ICT Professional Development clusters are excellent but short-lived. There needs to be a supported national roll-out rather than a limited life project. There is concern that the funding alongside these clusters has allowed the employment of technical support and that if this is withdrawn as funding dries up the whole hub collapses.
- We recommend that the requirement for professional development in ICT be embedded in all TEO funding agreements to ensure that capability is built more rapidly. High quality learning opportunities for boards and management should be provided to ensure that decisions going forward are based on good information and knowledge. School principal and tertiary level executive management performance should be measured on completing this learning and developing informed investment plans.

4.3.5 The Framework as “a good start”

- The Framework is a good starting point as the sector moves forward, and, as you already are aware, the execution of the work to deliver the Framework will be the real challenge.
- We need to start from the bottom up in our planning and setting of the vision. We should not rely on ICT providers or international experts alone, but look carefully within a breadth of school settings. We know how difficult it is to evaluate actual outcomes related to the use of ICT (refer ICTPD Evaluation Reports). There is a lot of anecdotal evidence, but limited reliable, valid evidence. There are a lot of dedicated and innovative teachers/schools giving it their best shot, and we should look closely at what they are doing well or not. We should not keep going back to the same “early adopters” or flagships of ICT innovation in New Zealand.
- Our organisation endorses the general direction outlined in this document but notes that there is still much to be done to create a national context that will support ICT developments. New Zealand still has some of the highest broadband and cell phone charges in the world. Issues around the digital divide remain unresolved and it is not clear how we can ensure rural communities do not miss out on the digital revolution. In the school sector, there may need to be more deliberate leadership provided to “self-managing” schools because it is not acceptable that boards should be able to make decisions that disadvantage teachers and students by, for example, refusing to support the TELA scheme or by not providing appropriate professional learning to support ICT or by refusing a MoE network upgrade. This strategy is a beginning but if it is to be more than an artefact, it will need appropriate funding and directed implementation.
- We suggest that for the next iteration in making some progress towards the vision would be to develop an approach to polling end-users on their current practices, their needs and wish-lists, and developing proposals to address any gaps identified. For example, one area of response, which may go towards the Connectivity idea, may be that small educational institutions find it hard to fund ICT and the learning needed to use it best, or that small educational institutions would use internet-based resources more if the bandwidth needed were more affordable.
- In our view, the Strategic Framework provides good high level guidance towards ICT focus. It is also suggested that, while the Framework has clearly articulated the “what, how, and when” at a strategic level, it would benefit from more depth of analysis with specific milestones to each of the targets.
- The Framework represents a good starting point and sound logic in which to develop the approach. It is suggested that the targets are further developed perhaps with clear milestones for each, e.g. 50% achieved by 2008, 80% by 2009. It would then be possible to develop an implementation plan for the overall Framework.
- The Government’s vision is not necessarily ‘our’ vision and therefore it is incompatible to assume that there is a singular vision. There is a need to encourage conversations that will help to resolve the tensions between Government’s vision and those of tertiary, secondary and primary institutions. It is recognised that this consultation process is initiating that kind of dialogue.

- As a high level framework it is fine, but we would like to see some more detail around all the areas in order for it to be a useful tool in assisting educational organisations to make investment decisions in the future.
- We believe the Framework as proposed could achieve its purpose. However, success will depend on how the initiative is resourced and implemented.
- The Framework needs to focus at a strategic **and** operational level.
- The Framework has some way to go in providing a “mechanism”. In its current form it looks more like a statement of aspirations. It may well guide centralised and public ICT investment, but to do this well it will need to be better connected to the priorities and needs of end users (i.e. education institutions) and cohere with those users’ own ICT investment plans and strategies.
- The Strategic Framework represents a good start to achieving stronger ICT within New Zealand. If it means more money will be allocated to schools so they can upgrade, then it would be a good guide when making organisational choices about investment in ICT.
- The Strategic Framework is sound and provides a solid platform to guide and co-ordinate ICT investment, however it is the implementation that will be the critical thing. A strategic plan is only the starting point; the success or failure of this project lies in the commitment and cohesiveness of the group implementing it.
- While supportive of the intent of the Framework, the challenge for TEOs will be to integrate the approaches into their institutional ICT strategic planning processes.

4.3.6 The Framework's whole-of-sector approach

- The Framework should reflect the different requirements of the broad span of learning needs (from EC to Tertiary and beyond).
- There is an evolving framework within the New Zealand education sector and this document is attempting to coordinate all that is going on in the various parts of the sector. In doing this, it seems that the real value of the document is most likely to be realised if it leads to informed and active debate about the goals and processes involved in connecting the sector.
- The attempt to develop an overarching ICT Framework that applies to the whole education sector is commendable, providing the unique specific perspectives of the smaller parties in the sector are not overlooked. A hierarchy of influence may operate and care must be taken to ensure that the bigger players encompassed by the term “learning organisations” do not end up setting the agenda.
- The Government's vision is not necessarily ‘our’ vision and therefore it is incompatible to assume that there is a singular vision. There is a need to encourage conversations that will help to resolve the tensions between Government's vision and those of tertiary, secondary and primary institutions. It is recognised that this consultation process is initiating that kind of dialogue.
- The Framework provides broad general principles which are useful, but its desire to apply to the whole sector is at the expense of recognising specific needs of different areas. This is particularly evident at the research end of ‘improved education outcomes’.
- The Framework tries to cover too many sectors in broad statements.

4.3.7 Praise for the ICT Strategic Framework for Education

- We applaud the move to condense the Framework into a more easily digestible format. A nine-page document that clearly articulates vision, goals, targets and approaches says volumes about the approach being taken.
- Well done for getting this on the road. We have now moved out of the phase where people are learning how to use the technology, to a stage where we can consider how best to use the skills acquired to achieve best learning.
- We were impressed by the visionary scope of the Strategic Framework and its ambition to progress ICT across the whole education sector.
- We feel this document reads very well and it is good that ECE is included in the Strategic Framework. We look forward to the delivery of this Strategy.
- A national ICT strategic framework for education is important and necessary for the New Zealand education sector.
- The Education Sector is to be congratulated on the work done toward developing a sector ICT strategy. This is a significant step forward in the growing ICT maturity of the sector.
- The development of an ICT Strategic Framework for Education is an excellent contribution towards facilitating the sector working cohesively to utilise and invest in ICT. In this regard, the sector continues to demonstrated leadership. Overall the document is cohesive, clear and easy to understand. (We assume that the audience for this document is probably quite small and is not written for the teaching profession.)
- We appreciate all the help and all the hard work that you have done to provide us with such a handful of knowledge about ICT. We believe that this may guide us through our ICT concerns, not only that teachers benefit from it but the children and the community as a whole.
- Our agency is pleased to see the sector making longer-term plans and goals, and we are supportive of the overall framework. This paper has been useful as input into developing our ICT Strategic Plan.
- The Strategic Framework has followed a logical approach to the definition of its scope. First goals and then targets have been identified and then approaches to their delivery have been developed. While it is recognised that more work is required to fine tune these areas, we believe that the basic elements have been identified. We believe that the methods and models developed in the initiatives mentioned in the introduction could be tailored to suit the delivery of ICT, i.e. tailor the Distance and Flexible Delivery and Collaborative Resource Development models to suit ICT.

5 SUB-SECTOR SPECIFIC FEEDBACK

5.1 Sub-sector Responses to the Framework's Goals

5.1.1 Agreement with Goals

Of the total number of respondents to this question, 15% were from ECE, 32% from Primary, 20% from Secondary and 18% from Tertiary.

Responses to the question about agreement with goals:

- ECE:** 88% agreement
12% goals are more like "vision statements"
- Primary:** 100% agreement
- Secondary:** 75% agreement
25% have concerns about specific goals, in particular that greater investment in ICT should not be limited to technology, but should also include technicians, and that ICT should not replace classroom teaching.
- Tertiary:** 91% agreement
9% research capability should be included as a goal, and satisfaction of goals will require cultural and operation shifts in the tertiary sector.

5.1.2 Goal ranking

Overall, the respondents from the sub-sectors ranked the goals as follows:

ECE: 1, 3, 2=6, 4, 5

Primary: 1, 6, 3, 4, 2=5

Secondary: 3, 6, 1=2, 4, 5

Tertiary: 1, 6, 3, 2, 4, 5

All but Secondary ranked "a more learner-centred education system" as the most important goal. (Secondary deemed "increased access and reduced compliance costs" the most important.)

All but ECE placed "more effective investment" as second most important goal (ECE ranked "increased access and reduced compliance costs" second.)

"Greater opportunities for sharing ideas and technologies" was agreed unanimously to be the least important goal.

Primary and Tertiary ranked "increased access and reduced compliance costs for all participants" third. Secondary placed "increased access and reduced compliance costs" and "more informed decision-making" third equal, likewise ECE ranked "more informed decision-making" and "more effective investment" third equal.

“Increased capacity through ICT for all participants” was ranked fifth (second-to-last) by all sub-sectors, except Primary who assigned that position equally to “more informed decision-making” and “greater opportunities for sharing ideas and technologies”.

5.1.3 Achievability of Goals

Of the total number of respondents to this question, 16% were from ECE, 30% from Primary, 19% from Secondary and 19% from Tertiary.

- ECE:** 71% achievable
29% not achievable unless funding provided
- Primary:** 23% achievable
62% achievable with appropriate levels of support, funding and commitment
15% not achievable by 2010
- Secondary:** 88% achievable with funding, technical support, ICTPD clusters
12% not achievable because “Government will not put up enough money to make this work”
- Tertiary:** 100% achievable with appropriate funding, leadership and incentives and collective desire to work collaboratively

5.1.4 Achievement of Goals = Realisation of Vision?

Of the total number of respondents to this question, 20% were from ECE, 30% from Primary, 17% from Secondary and 23% from Tertiary.

- ECE:** 83% Yes, achievement of goals will lead to realisation of vision
17% Vision is not objectively measurable so hard to say
- Primary:** 62.5% Yes, achievement of goals will lead to realisation of vision
12.5% No, the goals are not linked to the vision
12.5% Goals will help support the vision but there are other areas that impact also
12.5% Achievement of goals will not necessarily realise the vision, as learner achievement depends on more than just ICT connectivity
- Secondary:** 40% Yes
40% Greater investment (e.g. in hardware) across all education institutions would help improve learner achievement
20% No
- Tertiary:** 14% Yes
43% Yes, provided that:
- technology, innovation and change management are also provided
 - investment and leadership make the required culture shift to pave the way
 - implementation is managed, monitored and reported

29% Both the achievement of the goals and the vision's realisation depends on New Zealand having broadband infrastructure with sufficient bandwidth, available to everyone in education sector

14% Not likely, unless specific and targeted funding by central government helps with the "fully connected" aim

5.1.5 Additional comments about the goals

ECE:

- Imposing visions or goals from a strategic framework is a top down approach. Where is the data to support this expectation? In EC, the exemplars provide evidence of support – but not for the additional ICT features of 'Broadband', system performance, relevance to stakeholders etc
- More information for all teachers as to the practical uses of ICT in EC sector. I have been to one network group in our area as to what their centres do. This was very useful to share ideas and information. I would like to see what other centres do throughout NZ.

Primary:

- As a school reading this document, I find it difficult to see how it links directly to my organisation.
- What reassurance is there that this is not "Big Brother" territory?
- How can ICT make schooling more learner centred? Does the agency know how? Schools know, but will they tell? What carrot will the agency offer them? If a school can justify IT use in the learning process, give them unlimited funds and freedom from compliance. Don't invest funds in pursuing an agency vision. It will waste money and overburden the school culture.
- Previous MoE initiatives have had limited impact in the classrooms of schools that have already realised the importance of building and acquiring strong network facilities and ICT resources and equipment. The exceptions would be teacher laptops, asTTle, MS licensing and some web-based resources. The main constraints are the continual cost of updating equipment and lack of regular, low cost PD. The reliance on maybe being included in a cluster is insufficient. Teachers are exploring ways of making learning effective through use of technologies, but exposure to pedagogical models is essential – providing leadership in this area would be beneficial.

Secondary:

- I don't consider relying on teachers to be technicians is appropriate. The "Wider Area Network Programme" in Rotorua eliminates many minor problems by remote access. The WAN support is a "smart use of ICT" but I do not see that this system is being utilised by other education centres.
- We didn't find the Schools Network Upgrade a very useful example supporting the Framework as it applied to so few schools, although it was excellent work with them. It would be good to see examples that a larger cross-section of schools could relate to.

- A big concern is that there is no discussion above about Professional Development for teachers and other professionals involved in the education sector. There is also no discussion of elearning.
- Funding never adequate. We need long term investment.
- Are we putting too much emphasis on ICT?
- Consideration of class sizes versus availability of PC labs.
- Our view of the effective and efficient use of ICT:
 - Hardware is readily available at any time;
 - The hardware and software is reliable and working all the time;
 - Problems with hardware/software are dealt with immediately;
 - As soon as hardware/software failure occurs or lack of access to hardware is apparent then the opportunity to use ICT will not be taken nor sought after; and
 - Quality technicians are available.

Tertiary:

- Tertiary institutions are autonomous organisations that are accountable to their council (or similar body). The goals need to have some substance to indicate how we will know when they are achieved.

The notion of “an education system transcending organisational boundaries” must reflect this reality. Compliance costs need to be considered; the example of the SDR is instructive in this regard as changes made by MoE/TEC do not take into account the compliance costs of making the changes. The current education boundaries do not encourage or reward staircasing between institutions.

- Some comments on confidence and capability:
 - Community computer courses have been subject to intense criticism in the past, but the mere fact that so many people enrolled for these courses is an indication of the demand and perceived need for computer skills in the public arena.
 - It is a common but dangerous assumption that all school leavers are competent in the electronic environment; often the “critical thinking” element is absent.
 - There is still a huge amount of work to do to raise the capability of educational practitioners and librarians in all educational sectors.

5.2 Sub-sector Responses to the Framework’s Targets

5.2.1 Target rankings

Of the total number of respondents to the question “What are the most important areas in which to monitor the progress of the Strategic Framework?”, 15% were from ECE, 29% from Primary, 22% from Secondary and 22% from Tertiary.

The broad target headings were ranked in order of importance for monitoring as follows:

ECE / Primary / Secondary:

1 st	Connectivity
2 nd	Confidence & Capability
3 rd	Content

Tertiary:

1 st	Connectivity
2 nd =	Confidence & Capability / Content

The specific targets were ranked in order of importance for monitoring as follows:

ECE:

1	Information literacy skills and competencies
2	Improved access
3=	Information and knowledge management / Effective, efficient systems
5	Agencies delivering value-for-money
6	Lifelong learning
7	Shared resources
8	Discoverable content in digital repositories
9	Learners, teachers, researchers, administrators working together and sharing resources

Primary:

1	Improved access
2	Lifelong learning
3	Agencies delivering value-for-money
4	Information literacy skills and competencies
5	Learners, teachers, researchers, administrators working together and sharing resources
6	Shared resources
7	Effective, efficient systems
8	Information and knowledge management
9	Discoverable content in digital repositories

Secondary:

1	Improved access
2	Information literacy skills and competencies
3	Shared resources
4	Lifelong learning
5	Effective, efficient systems
6	Discoverable content in digital repositories
7	Information and knowledge management
8=	Learners, teachers, researchers, administrators working together and sharing resources / Agencies delivering value-for-money

Tertiary:	1	Improved access
	2=	Shared resources / Lifelong learning / Learners, teachers, researchers, administrators working together and sharing resources
	5	Information and knowledge management
	6	Discoverable content in digital repositories
	7	Agencies delivering value-for-money
	8	Information literacy skills and competencies
	9	Effective, efficient systems

5.2.2 Comments about the Targets

ECE

- The most important target should be “positive learning outcomes for children”.
- “Agencies delivering value-for-money” and “Effective, efficient systems” are the two targets that need to be met before EC centres will use the technology.
- Connectivity is the most important area. Arguably a wealth of education content already exists; the problem is giving users access to it, which is an issue both of connectivity and capability.
- We have some concerns about outcomes, e.g. Learner information (Electronic record keeping procedures support seamless participation in learning). Will this become a compliance cost? In ECE, who will set up this system and meet the ongoing costs?

Primary

- All the targets are important. We need high quality hardware, strong networks and reliable systems. We also need capable people; one is dependent on the other.
- All areas will have to be monitored to some degree. The important thing is that the monitoring does not become all-consuming and drive the actual process.
- Content should be the priority for monitoring, as this is where measurable statistics could be compiled on what is being delivered.
- Connectivity is the most important area to monitor, as schools without networks or broadband connections will never be able to progress.
- Confidence & Capability is important, as teachers need to have a recognisable level of skill in order to teach with confidence. Children also need levels of knowledge to strive for.
- Areas to monitor: access to reliable connections, equipment, technical support, ongoing PD for teachers (funded outside of OP grant); how schools are utilising information and knowledge; funding to ensure targets are being met.
- I am sceptical about the role of ICT in improving learner achievement, especially in primary schools. Increased access to resources, professional development and other services will be a huge support to teachers, but improving student achievement in literacy and numeracy is not going to be

achieved though greater emphasis on ICT.

- Our school has been suffering from lack of knowledge of new systems that have been unsuccessfully integrated and resources outdated and underutilised through time, expertise and money constraints. We have been frustrated with difficulties incurred when using new technology – slow, breakdowns and lack of expertise.
- Funding: there should be a baseline provision made by the state upon which individual schools and centres are able to build. This baseline will establish standards for hardware, software, technical support, building design, property matters, infrastructural developments and professional development.
- All schools and centres should be adequately prepared and resourced to meet new ICT requirements before they are introduced.
- Even desirable professional collaboration has a cost whether it is for online chat or video conferencing. The current numeracy project in schools requires considerable time in the recording of data online.
- A cursory glance at these targets reveals a fixation with data gathering, processing and storing, but for whose good? Definitely not the learner. Coupled with this is the inordinate amount of time required by educators to feed this ravenous number cruncher. Where's the research to show that the learner is the primary beneficiary?
- Address young users and those directly responsible for their education **first**; nothing transforms systems like inter-generational change.

Secondary

- We need feedback from schools about the success of their network upgrades and how it is impacting on students, teachers, and support staff.
- Connectivity is needed first (and should be provided through government funding; if so, a timeline can be established). If we wait for individual schools to do it themselves, it will never happen on a national basis.
- All the targets are important, but the one most relevant to our school is ensuring data is shared between our school and contributing schools.
- Would it be helpful to measure our schools against international education providers?
- The comments about connecting seem to be focused more on schools communication with the MoE than with their students and community; i.e. the focus seems less on learning and more on systems issues. In order to meet Goal 1 (a more learner-centred system), there needs to be at least equal emphasis on their connectivity.

Tertiary

- The aim of every education organisation having the ability to share resources is commendable, but highly unlikely to be achieved in the short to medium term

given the plethora of management systems (databases) installed by tertiary education organisations (TEOs).

- It is not clear whether the vision is also aimed at research and therefore whether there should be a specific target for research; possibly this is a consequence of the Framework covering all sectors from ECE to higher education. If it is to be relevant to higher education, the research targets need to be more specific.
- National Connectivity: in the supporting actions, the Framework expresses these targets in terms of organisational interaction. The real value from connectivity must come from increasing the connections between learners studying at different institutions and their teachers. A stronger expression of technology support educational activities and outcomes is needed here.
- Shared data: At the summary level this would seem perfectly reasonable, i.e. academic record, enrolment history etc. However, at micro-level the wide variation in information requirements and standards would prevent this in the timeframes being suggested. It would be unlikely a standardised SMS could be rolled out in three years let alone getting agreement from the tertiary institutions to adopt it. It should also be recognised that Universities, Polytechnic and PTEs have different methods of operating and therefore different information needs.
- Lifelong access to New Zealand heritage material is certainly achievable for the learners and the MoE. However, from a tertiary perspective, much of the content that needs to be drawn on is international in nature and is becoming increasingly expensive. Because of this, resourcing is likely to be an impediment.
- The target on “information and knowledge management” is reliant on the success of the concept of a ‘network of delivery’. Although the topic is under discussion with TEC, the pathway is unclear for most TEOs. New Zealand could certainly benefit from the introduction of a model similar to the Australian Flexible Learning Framework, where online learning resources are shared across the sector (www.flexiblelearning.net.au/flx/go). Other barriers to sharing, such as institutional policies, copyright and IP, need also to be discussed.
- The impact of the X,Y,Z generation will be significant, as young students who are ‘digital natives’ enter the tertiary system. This generation has grown up with technology and have never known anything different. They are totally connected using mobile phones, iPods, instant messaging and mobile computing technologies. The growing expectation is that institutions will provide ‘anytime, anywhere’ mobile computing/wireless access to its students. The infrastructure is expensive and typically on top of access services that are already provided by the institution. If the government is committed to supporting this connectivity, then the funding structures for TEOs need to reflect the increased infrastructure investments.

Under the existing student loan arrangements, a student can borrow a maximum of \$1000?EFT per annum for course related expenses. Given the government’s commitment to ICT, review of the funding policy is required to ensure that students have ready access to technology and the “Digital Divide” doesn’t grow. The ability to purchase a notebook PC on a student loan or integrate the cost into course fees should be considered.

- Until “unbundling the local loop” occurs, the cost of Broadband access is still quite prohibitive for most students. Current broadband costs are also a constraint on TEOs developing online delivery capability utilising rich content resources – enabling ‘anytime, any pace, any place’.

5.3 Sub-sector Responses to the Framework's Approaches

5.3.1 Agreement with the approaches

Of the total number of respondents to this question, 16% were from ECE, 30% from Primary, 18% from Secondary and 20% from Tertiary.

Responses to the question about agreement with the approaches:

- ECE:** 89% agree
11% question relevance of “services oriented” and “end-user perspective” to ECE format
- Primary:** 94% agreement in principle
16% question relevance of “services oriented” to Primary
- Secondary:** 100% agreement, with some approaches given priority over others (e.g. “learner centred” and “sector wide collaboration” are the top two)
- Tertiary:** 73% clearly agree with the approaches
27% comment on each of the approaches

5.3.2 Comments about the approaches

ECE

- “Learner-centred” needs to be closely matched with staff competency. It cannot stand alone in the EC sector.
- “Sector wide collaboration”: there needs to be a clear perspective that many other factors in EC centres need to be working effectively before ICT collaboration can occur. Having said that, though, EC needs to be fully included in the sector wide approach.
- “Services oriented”: I do not see how this can be utilized in EC, when we base our daily programme on an emergent curriculum
- “End-user perspective”: How can this be achieved in EC in this format? How can an end user perspective be accurate when there can be no clear framework to measure against?
- We would emphasise “end-use perspective” and “services oriented” ahead of the others. “International endorsed practice”, even if it exists in any meaningful or useful way, may not necessarily fit the needs of New Zealand or of the special and diverse character of education institutions in this country. The advantage of more heavy emphasis on end-use perspective and the modular approach alluded to in “services oriented” is that it promotes flexibility and adaptability, which is important for a diverse and changing sector, and diverse and changing ICT capability.
- The learner centred approach gives EC the appropriate flexibility.

Primary

- Learner centred fits in well with best practice teaching and supports the Key Competencies in the draft curriculum very well.
- Our focus would be more on the learner centred approach as that would be appropriate for our students.
- These are all sound statements but what are the links to actual student achievement and the evidence bases for these? From our experience of ICTPD (2002 – 2004) and ongoing development involving ICT in our school based curriculum design, we would emphasise that the achievement of effective use of ICT and sustaining that is not straight forward or rapid. Actual changes in teacher practice and student learning outcomes take some time and reflective practice and evidence. So, the big goals and the strategic approaches must be soundly based in actually experience or they're somewhat unhelpful.
- These approaches are good but will schools receive sufficient funds to afford all of this?
- What expectations and support are there going to be to ensure all schools are exhibiting the key characteristics?

Secondary

- New Zealand is so small that we should develop together even though lead schools need to identify and model best practice. We cannot afford to let them float ahead and leave small rural poorly funded schools behind.
- The approaches need to be linked with clear career pathways.
- PPTA questions the assumption that we currently have a “one-size-fits-all” system in secondary schools. The whole point of the change to standards-based assessment (NCEA) was to enable learners to tailor learning to their needs. It is true that there are still barriers that prevent secondary schools providing totally personalised learning at this stage but it is neither accurate nor helpful to dismiss the efforts to date as having had no impact on learners.

At the same time, we urge caution in overselling the educational value of learner-centred education. Experience to date with NCEA has shown a predictable tendency amongst many students to select easy options rather than courses that meet their longer-term needs. It is a mistake to assume adolescents do not need guidance and, at times, direction.

- We note with some concern the total absence of teachers from the approaches diagram. Obviously it has been necessary to use catch-all terms such as “providers” but since teachers play a critical role in guiding students’ learning decisions, it seems unfortunate that they are invisible in the diagram. There is a tendency in ICT development to extol the virtues of self-interested promoters while ignoring school-based innovations and the steady efforts principals and teachers make to “joining the learning dots” between various, often under funded, central and local initiatives.

- PPTA supports the focus on sector wide collaboration as competition between schools has sometimes resulted in poor decision-making, reinvention of the wheel and low quality spending. There is evidence of sound collaborative practice in the sector in the 22 e-learning clusters which share subject delivery via video conferencing and more recently, the evolution of the various loops. These uniquely New Zealand initiatives are at risk because of the lack of certainty around funding.

Tertiary

- The approaches in general:
 - These approaches are valid, however the framework is dependent on the tertiary community's acceptance of a knowledge management agenda, agreement on suitable metadata standards and a willingness to share information. Some universities participate in the agenda to a limited extent, sometimes because there is no EFTs competition. However, there remains no reward mechanism for co-operative activity. The approaches should not inhibit addressing the specific needs of higher education and research.
- Learner centred approach:
 - In terms of student recruitment, the 'learner centred' approach could suggest an 'apply once' central admissions process as opposed to the current 'institution centred' process. This will have impacts on Universities from the following perspectives:
 - Marketing activities will need to be adjusted and marketers may lose some control.
 - Systems changes to expensive and complex Student Enrolment systems to interface with a central applications process.
 - Sector wide cost savings through removal of duplication of processes where students apply to multiple institutions in their lifetime. (eg Passport, Birth Cert, Qualification checks etc)
 - Universities are a key resource in delivering a quality learner centred tertiary education.
 - Establishing uncontrolled connections between learners and a wide range of public and private bodies such as Libraries, On-line training agencies (e.g. overseas on-line Universities), museums and educational institutions could result in a fragmented educational experience for the learner.
 - Inclusion in the learning process of stakeholders such as parents, iwi, employers (as appropriate) could produce benefits to the learning experience though the involvement of parents is less likely to be appropriate at Tertiary level.
 - There is an assumption here around the unproblematic nature of the pedagogic method. There are resource consequences embedded in the approach. The word 'strive' underscores that there is a resource implication which can not be met. Efficiency around a 'one size fits all' approach contrasts with the notion of a learner centred approach. It should be noted that it is inefficient to attempt to offer learner centred education generally – there is considerable difficulty around the efficiency and effectiveness objective generally. Research into effectiveness of ICT

in learner centred activity is necessary to create evidenced based practice.

- Sector wide collaboration approach:
 - The current funding model in the tertiary sector may not encourage the level of collaboration that the framework articulates. Whilst the current funding model might be replaced partially by completions funding, any institution finding a better formula or set of strategies to raise completion rates is unlikely to share with others if the funding outcome is at risk. There must be recognition that institutions are not going to make all information available.
 - We agree with the sector wide collaboration approach provided it does not inhibit addressing the specific needs of higher education and research.
 - It is unlikely that effective sector-wide collaboration will be achieved in a competitive environment such as the one which currently exists.
 - There is a continuing tension between competition and collaboration for education providers. While ‘Sector wide collaboration’ is being achieved in some areas the competition to attract students and good staff can limit cooperation between provider institutions. It may be helpful to identify those areas where provider institutions are expected to collaborate.
 - There are many collaborative projects in this area underway already, but very little coordination or cross-fertilisation between sectors. Collaboration is an excellent goal, but hard to achieve in a climate of competition. The TAFE sector in Australia manages it though. Can we borrow from their structure? i.e. shared resources, reusable resources, flexibility, all available.
 - Yes, we have to be more flexible, easily accessed and student-centred, and we can do this with good IT supported endeavours, but we can’t do that for students out of our region. Wouldn’t it be better to decide regions on expertise and rationalise that way, making use of IT to deliver collaboratively? Collaboration across sectors within regions should be encouraged. Lifting educational levels of the regional population is often a stated (strategic) concern of local authorities.
 - The development of a shared infrastructure would be beneficial as long as the standards (for ICT and in other areas such as Metadata) implemented in institutions align with the standards on which the shared infrastructure is built. Currently institutions use a combination of standards based ICT and proprietary solutions where standards-based solutions could not be found to meet requirements. It is a common scenario to fix a mix of conflicting standards in institutions for pragmatic reasons.

A good example is that of Identity Management systems (ESAA project) whereby students and staff gain access to IT resources provided by institutions. At the moment each University is looking for standards based identity management systems and schemas which will allow their students and staff to authenticate to their own IT resources and to other trusted IT resources both in New Zealand and overseas, such as those on Research and Education networks like KAREN. To provide students with a single trusted identity would enable them to authenticate to enrolment and other

IT appropriate resources across campuses, removing the need for separate identities at each institution. There are clearly benefits for Universities, staff and students in a shared approach, but for this to happen institutions need to know when such projects are scheduled and what they should be doing to get to the starting point.

- International endorsed practice:
 - Collaboration with JISC is to be encouraged though Universities need to be involved in selecting and 'fitting' JISC sector-wide initiatives into their institutions. Other forums include CAUDIT in Australia and the global EDUCAUSE.
 - The benefits of establishing alignment through awareness of Higher Education initiatives in the UK, Europe and Australia are to be applauded. The Universities are operating in an international context already and there are opportunities for alignment in that context which are able to be taken up as well.
- Other comments:
 - We think our focus will need to change from being one centred on our institution to one which is more national (or even global). Australia has a system for using Federated Identity that allows students to mix and match course modules from a variety of tertiary providers. Clearly for this to work there has to be some similarities with systems used and quite a bit of collaboration! We could imagine this type of thing working within TANZ (MIT, UCOL, CPIT, Otago Polytechnic) for example, and the qualification being TANZ certified.
 - A previous STEP had four connected themes which we believe still underpin the ongoing development of the tertiary sector. These were :
 - Investing in **excellence** in teaching, learning and research;
 - Increasing the **relevance** of skills and knowledge to meet national goals;
 - Enabling students and learners to **access** excellent and relevant tertiary education, and progress to higher levels of study and achievement ;and
 - Enhancing **capability** and information quality in the tertiary system to support learning, teaching and research.Excellence, relevance, access and capability are the critical factors in enabling us to achieve the vision and goals of the Framework.
 - Because Universities currently operate in an international environment, enhanced Ministry/Government support and incentives are critical.
 - A major question underlying the approaches being considered is whether the ICT standards being considered will constrain or promote development and innovation. Innovation must continue to be enabled and fostered. Any approach needs to take this view into account.

5.3.3 Other approaches to consider

Only Tertiary respondents suggested other approaches. They include:

- Strategic alignment with wider education and ICT strategy and policy
- Capability building in ICT at all levels
- Organisation Benefit: at some level, the initiatives have to provide sufficient benefit to the various organisations in the sector vis-à-vis the cost to be picked up by those organisations
- An explicit link between the collaborative benefits between organisations and the direct benefits to the individual organisations need to be spelled out, otherwise the implementation of the vision may stall due to costs.

5.3.4 Suitability of approaches to achieving strategic vision

All respondents to this question were from the sub-sectors: 27% were from ECE, 36% from Primary, 10% from Secondary and 27% from Tertiary:

ECE: 100% deem the approaches suitable

Primary: 50% deem the approaches suitable
50% think the approaches will inhibit the achievement of the vision (because they are too broad and unspecific)

Secondary: 100% deem the approaches suitable

Tertiary: 33% deem the approaches suitable
33% state that the provision of a robust broadband network is the key
33% cannot say without a more explicit link to the goals and vision demonstrated

5.4 Other sub-sector specific observations

5.4.1 Early Childhood Education

- There is a dearth of information about ICT in early childhood and this is reflected by the state of development of ICT within many individual centres. Although the proposed strategy makes a positive move by being inclusive of ECE, the ICT strategy does not include a place for early childhood centres and yet this is where the digital divide is widest.
- There do not seem to be many Early Childhood examples in the data that the Framework has achieved so far.
- The ECE sub-sector is not aware of the ongoing pace of change.
- Playcentres need to be involved and supported through injection of money, resources and information.
- Our learners follow the same curriculum as all other EC services but we are extremely poorly funded (much lower than other services) and yet we are expected to have children achieve the same competencies as the higher funded services. We believe our children attain higher competencies as their parents are well informed, involved and interested to support them throughout their learning life. Currently we fundraise, beg or apply for grants to fund our meagre ICT equipment, training, use and management. We have trained tutors who could deliver in-centre ICT workshops if funded through 'bulk funding'.
- From an Early Childhood perspective, we want to ensure that ECE is included in the targets as it is often excluded from ICT initiatives, software/hardware education deals. This means we are incurring higher costs.
- The Framework uses 'every educational organisation' and 'all learners, teachers...', and Goal 3 '... use of ICT by all participants in the education sector.' For this to be achieved, information and support will need to be in place. At present it is not easy to find information about ICT purchasing/support, what is available and it can be very time-consuming and not always effective. Through the New Zealand Kindergarten organisation, individual associations can ask other Kindergarten Associations for information they have but for 'Stand Alone' Early Childhood Centres this can be much more difficult.
- As a Samoan EC centre, our energies are focused on getting staff qualified. We have one second-hand PC for the children to play on. When we have more qualified staff, we may turn our attention to ICT. Will there be many programmes in the Samoan language?
- EC has not had the same access to software and hardware resulting from Ministry negotiated deals and business support as the Primary and Tertiary sectors have had to grow their ICT capacity.
- One submission calls into question the benefits of ICT in EC education. It makes the following observations:
 - In the early years of childhood, information obtained via ICT is less important and valuable than information obtained by direct experience;
 - Experiences in early childhood of slow interaction with real, rather than represented, phenomena and adequate time for 'digesting' and

- 'processing' apprehended information create the ideal foundation of skill development for future learning;
- The physical activity of using ICT reduces the sensory/motor activity to eyes, ears and hands so that valuable and critical development periods of integrated learning through full, healthy movement and interaction are lost;
- The form in which ICT materials is presented is predominantly an intellectual apprehension of information. This form is better suited to the high school years when the intellect is fully supported and ready.

The submission made the following recommendations on ICT in early learning:

- ICT is unnecessary and, in some studies, possibly harmful in the pre-school curriculum and should not be made mandatory;
- Just because the technology is available does not mean it is necessarily useful to 'all learners'. The natural function of the marketplace is to drive vendors to exhaust every possible niche for their product. Research is needed to compare early ICT and non-early ICT graduates to assess whether ICT enhances the learning of a young child, and whether it could, in fact, be detrimental.
- ICT has limited use in the primary school curriculum and must not detract from 'real' experience in the 'real' world.
- ICT is best suited as a high school tool in partnership with 'hands on' learning and the experience of direct encounter with experts and leaders in their fields.
- Educators could consider the proverb "if all you have is a hammer everything looks like a nail." It is important that ICT does not become our only tool or even our predominant tool, particularly in the pre-high school years.

5.4.2 Compulsory Sector

- Schools see the Framework as too tertiary focused.
- A minimum standard of technology should be established for schools (to reduce disparity between schools).
- There should be a goal about user education and professional development for teachers.
- Emphasis should be placed on funding support for all schools to purchase equipment and provide technical support.
- School networks and hardware are typically below the Ministry's standards for ICT infrastructure. A major finding of the BRC Marketing and Social Research report (2005) found that more than one-in-five schools mostly run computers three years or older. For these schools, the old computers account for 75 to 100% of all their computers. There is also evidence that Maori schools are less likely to have new machines. While the Ministry has paid for connecting schools in phases 1 and 2, schools are now having to go back to refund the upgrade of weak or lower capacity networks in schools. There is a great deal of resentment in schools about the inequity of the strategies used to date by the Ministry, where schools who have raised funds to finance ICT opportunities have missed out on government funding that was later made available to bring the remainder of schools into the ICT era. The government-supported schools now have the best servers and capability with the leaders and innovators left trying to manage with what they could afford.

Primary

- The reality for us as a medium size primary school is unclear. We acknowledge that the Framework was put together by experts looking at the big picture but we feel that we are unable to prioritise the goals, approaches etc because we don't know what each entails. We are therefore not able to indicate which direction is important. What we do believe is that ICT is a tool that can be used to assist children's learning. The key to improving outcomes for children is the up-skilling of teacher expertise and the accessibility of resources.
- Nearly half of New Zealand's primary schools have yet to complete an ICT PD cluster programme and many teachers are still coming to terms with how to use ICT effectively in classroom/school learning programmes. Let's get alongside these everyday experiences and build our goals and targets from these. We could be led by "industry players" who have knowledge of the potential of the technology but limited knowledge or experience of how learning is actually occurring.
- ICT should be used to stimulate and support the use of te reo Maori in centres and schools. Issues relating to Maori use of technology have not become subsumed in the larger issue of the "digital divide".

Secondary

- We acknowledge the work done to date by the MoE to support and systematise schools' ICT purchasing and operational decisions while noting that New Zealand is far from having a connected and coherent school ICT network.
- We endorse the general direction outlined in this document but noted that there is still much to be done to create a national context that will support ICT developments. New Zealand still has some of the highest broadband and cell phone charges in the world. Issues around the digital divide remain unresolved and it is not clear how we can ensure rural communities do not miss out on the digital revolution. In the school sector, there may need to be more deliberate leadership provided to “self-managing” schools because it is not acceptable that boards should be able to make decisions that disadvantage teachers and students by, for example, refusing to support the TELA scheme or by not providing appropriate professional learning to support ICT or by refusing a MoE network upgrade.
- One submission included anecdotal evidence from a secondary school on the lack of knowledge at board and management level regarding ICT in education. The main points included:
 - ICT is not understood as part of a learner-centred strategic response to delivering quality outcomes to learners in their sector.
 - Sufficient business acumen is not evident in the leadership and management who make strategic and investment decisions including ICT.
 - This has meant that a science faculty member “with a bit of an interest in ICT” has been assigned the role of network administrator.
 - The consequences of this are poor investment decisions, inefficient networks, and inappropriate applications decisions.
 - This is having down-stream effects into outcomes for learners such as a colour printer with insufficient ram to print; 10 computers between 22 students in the computer lab; regular and serious hacking into and abuse of the school network because of insufficient security from students as young as year 9.
 - Simple, low cost ICT solutions presented by a range of faculty are not evaluated or picked up.
 - The school is falling behind in its ability to deliver a blended learning experience to learners.
- For secondary teachers, access to a fully functioning, well maintained and reliable school network along with the appropriate hardware (not just computers) and software is the critical barrier that is undermining effective use. There has been no consistency around the acquisition of ICT in the school sector, so there are now significant disparities between those secondary schools exploring the potential of fibre optic loops and those that cannot keep the school network functioning on a daily basis. This disparity translates into reduced educational opportunity for students so this needs to be addressed with some urgency.
- All staff need to have professional learning opportunities, e.g. payroll, school transfers and enrolments, e-enrol. Teachers and support staff say that moving to computerised systems and work environments increases the time they spend on planning, data processing, reporting as well as accessing and incorporating materials as teaching resources. Staff who provide ICT support and guidance in

schools include support staff, librarians, administrative assistants and teachers' aides. They also need the recognition, support and professional development that this strategy should provide. The imposition of e-enrol has already created new capability demands on school administrative staff.

5.4.3 Tertiary Education

University

- This group sees the ICT Framework as focused on the compulsory sector, stating that the Framework does not address or recognise the needs of Universities, and noting the “glaring” absence of the New Zealand Vice Chancellors’ Committee from the list of key stakeholders.
- The impact on the Tertiary Sector is unclear. It appears that the initial focus is more towards the schools sector, but how will the penetration of the framework into the Tertiary sector increase over time? If this does increase, how does this ‘fit’ with existing and future University planning? We need to know up front so that we can build this into our planning.

The potential impacts on a Tertiary institution are shown in the table below. It is not clear which areas will be impacted most. E.g. will the applications impacted mainly be administrative in nature or will pedagogy within institutions be impacted?

Pedagogy	Modes of delivery Content repositories Sharing / Federation of content
Research	Information and knowledge management practices Sharing/Federation resources and content Content repositories
Library Infrastructure	Information and knowledge management practices Sharing/Federation resources and content Content repositories Metadata standards and creation
Administration Business Processes	Additional information provision requirements Interfaces with government systems Centralised record keeping Centralised verification of identity Centralised admissions processes
Marketing	Marketing through the eGovt portal, catalogues on-line Networked access to schools
IT Infrastructure	Identity management Network connectivity Digital repository standards setting Content management Security standards Programming standards

- One fundamental element required for the provision of ICT services is a robust identity management, authentication and authorisation infrastructure with sound supporting processes. The ESAA initiative apparently aims to provide a single sign-on and identity management service for the education sector (including universities). It is not clear exactly what the implications of this initiative are – is it intended that ESAA will provide logon credentials to all users of education agencies services? While this might be appropriate for small schools, we are not convinced that the approach would be generally sustainable in the context of larger institutions. We believe the use of an electronic trust federation that would permit staff and students in institutions to employ their own electronic credentials to access education agency resources would be a more sustainable approach.

The New Zealand universities have already made a commitment in principal to work with their Australian counterparts to support an Australasian ICT trust federation. They have made this commitment because there is a strongly held view that there will be very significant advantages for both staff and students of universities to be in a position to easily access resources and services at other Australasian research and education institutions. We see a lower level of requirement for universities to communicate with New Zealand government education agencies, although we recognise the importance of good and easy communications with those agencies also.

Industry Training Organisations

Main points include:

- ITOs engage in e-Learning activities across a broad spectrum. Blended approaches to learning delivery are no longer optional.
- The goals of the ICT Strategic Framework are supported as they are consistent with the need for flexible and responsive delivery mechanisms required by learners and industry.
- Building the knowledge and capability of the leadership and management of education agencies and organisations including boards of directors, about how ICT fits with their sector within a blended approach, must be a priority. This will contribute to ensuring that strategic planning supports capability-building at an operational level.
- One Industry Training practitioner was surprised when the end result of an investment in e-Learning through a Polytechnic produced little more than an electronic page turner – the worst example of e-Learning development – as a project outcome. They appeared to have no knowledge of their organisation's role in understanding the use of ICT and shaping the project brief / RFP accordingly.
- Some ITOs have well thought out e-learning strategies and have invested in innovative approaches on the basis of understanding what learning media are more appropriate than others in trade training.
- Several ITOs are starting to use digital and mobile technologies to support learner engagement and to capture examples of evidence in a record of learning.

Provision for research

- In a university setting, research is intrinsically linked to education and so our comments reflect our concern that the document, although mentioning that the “integration of learning, teaching, research ... with information and communication technologies will support the implementation and achievement [of the goals, priorities and strategies mentioned in the document]”, does not sufficiently provide for integration of research within the Framework.
- The focus throughout on learners (including in the Vision statement) means that much of the strategy sidelines the needs of researchers as a distinct group within the education sector. Other initiatives, such as the joint work with JISC and DEST on the e-Framework, make greater emphasis on research.

5.4.4 Alternative Education

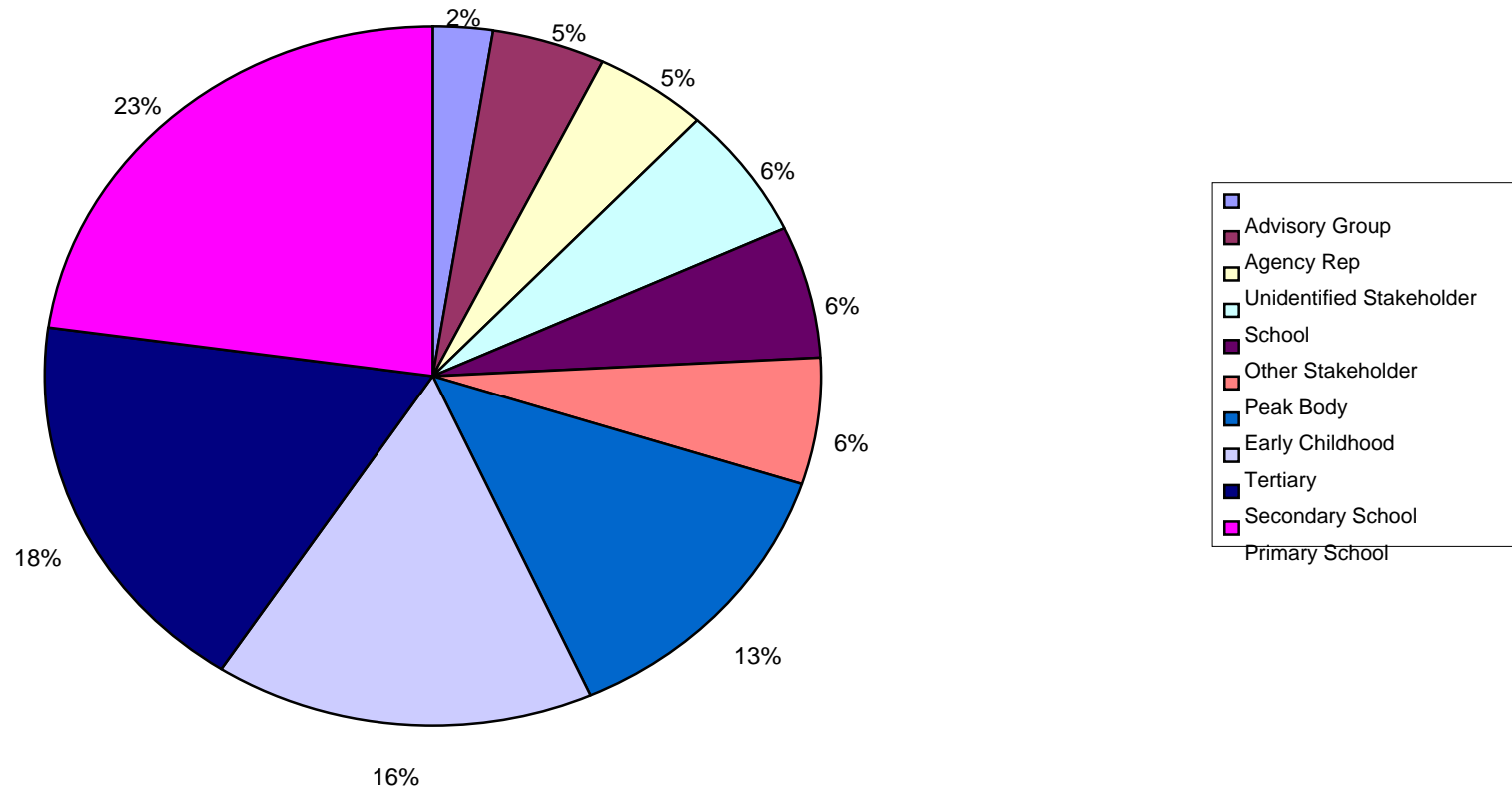
- The Framework does not appear to connect with the “alternative education” agencies (for those who dropped or were squeezed out of the formal education system). Most of these use computers – we recommend you have a conversation with these agencies.

6 GLOSSARY

ACC	Accident Compensation Corporation
BECTA	British Education Communications and Technology Agency
BRC	Research New Zealand
CAUDIT	Council of Australian University Directors of Information Technology
CPIT	Christchurch Polytechnic Institute of Technology
DEST	Department of Education, Science and Training (Australia)
DIA	Department of Internal Affairs
DRM	Digital rights management
ECE	Early Childhood Education
EDUCAUSE	A nonprofit association whose mission is <i>to advance higher education by promoting the intelligent use of information technology</i> . Membership is open to institutions of higher education, corporations serving the higher education information technology market, and other related associations and organizations.
EFTS	Equivalent Full Time Study
eGIF	e-Government Interoperability Framework
EOI	Evidence of Identity
EPIC	Electronic Purchasing in Collaboration (libraries)
ERO	Education Review Office
ESAA	Education Sector Authentication Authorisation
ESAF	Education Sector Architecture Framework
ESFS	Education Sector Federated Search
ESIS	Education Sector Integration Services
ESMS	Education Sector Metadata Schema
ICT	Information and Communications Technology
ICTPD	Information and Communications Technology Professional Development
IEP	Individual Education Programme
IP	Intellectual Property
IT	Information Technology
ITO	Industry Training Organisation
JISC	UK Joint Information Systems Committee
KAREN	Kiwi Advanced Research and Education Network
KPI	Key performance indicator
LIAC	New Zealand Library and Information Advisory Commission
MIT	Manukau Institute of Technology
MoE	Ministry of Education
MoRST	Ministry of Research and Science Technology
MPEG	Moving Picture Experts Group (working group of ISO/IEC)
MUSH	Municipal, university, school, hospital networks
NCEA	National Certificate of Educational Achievement
NZEI	New Zealand Educational Institute
NZQA	New Zealand Qualifications Authority
OECD	Organisation for Economic Cooperation and Development
PBRF	Performance Based Research Fund
PC	Personal computer
PD	Professional development
PTE	Private Training Establishment
REANNZ	Research and Education Advanced Network New Zealand
RFP	Request for Proposals
SAML2	Security Assertion Markup Language
SDR	Single Data Return
SMS	Short Message Service / Student Management System
SOA	Service oriented architecture
STEP	Statement of Tertiary Education Priorities

TAFE	Technical and Further Education institutions (Australia)
TANZ	Tertiary Accord of New Zealand
TEC	Tertiary Education Commission
TELA	Laptops for Teachers Scheme (New Zealand)
TEI	Tertiary Education Institution
TEO	Tertiary Education Organisation
UCOL	Universal College of Learning
UKERNA	United Kingdom Education and Research Network Association (now JNT or JANET)
WSIS	World Summit on the Information Society
XML	Extensible Markup Language

APPENDIX A – Respondents to the ICT Strategic Framework Consultation



Notes:

- 5% of respondents were unidentified. This may in part be due to a desire for anonymity but also to a flaw in the questionnaire design which did not insist on the identification of respondents.
- Of those classified as a Peak Body, 60% were from the tertiary sector, 20% from primary, and 20% from secondary.