teacher
online learning, secret
learner's view
secret online learning
learner's view . teacher
online learning
The secret is the teacher
learner's view
online learning

'The secret is the teacher'

The learner's view of online learning

online
LEARNING

Joan Cashion

Phoebe Palmieri

Background

In August 1999, the Australian National Training Authority Chief Executive Officers (ANTA CEOs) endorsed the *Australian Flexible Learning Framework for the National Vocational Education and Training System 2000–2004 (AFL Framework).* The AFL Framework has been developed by the Flexible Learning Advisory Group (FLAG) and represents a strategic plan for the five-year national project allocation for flexible learning.

The AFL Framework is supported by an annual implementation plan, and the plan for 2002, *Strategy 2002,* was endorsed by the ANTA CEOs in September 2001. It identifies specific initiatives and allocates resources within each of the five goals in the framework.

Role of the Flexible Learning Advisory Group

In broad terms, FLAG is a strategically focussed group of senior VET personnel advising ANTA CEOs, the ANTA Board, the Department of Education, Science and Training (DEST), and the Australian Information and Communication Technology Education Committee (AICTEC—formerly known as the EdNA Reference Committee), on national issues relating to the directions and priorities for flexible learning in VET, with particular reference to online technologies.[1]

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1 The New Economy Index, Progressive Policy Institute, http://www.ppionline.org

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Executive summary

The aim of this research was to investigate the meaning of 'quality learning' from the perspective of vocational education and training (VET) online learners. The study used a mixture of qualitative and quantitative methods to elicit the views of students and VET organisations on what constitutes a quality online learning experience. This report describes the factors which emerged as important, and provides some suggestions for organisations wishing to provide quality online learning for their students.

Six different methods have been used to understand what constitutes good quality in online learning. Three methods involved the online questionnaire which provided open-ended questions, a Likert-type scale of responses ranging from 'strongly agree' to 'strongly disagree' and a Gap analysis which determined the importance of various aspects of online learning to students, including a rating of their experience. The other three methods involved the collection of data through focus groups, interviews and case studies.

Quality of online learning

Seventy-one per cent of all students responded that they believed they were receiving a high-quality online learning experience.

The positive attributes of online learning can be summarised as follows and are given in descending order of importance in terms of responses by students:

✧ flexibility (24%)

✧ responsive teachers (15%)

✧ materials and course design (14%)

✧ access to resources (9%)

✧ online assessment and feedback (7%)

✧ increase in information technology (IT) skills (6%)

✧ learning style (6%)

✧ interaction with other students (5%)

✧ communication (5%)

✧ ease of use (3%)

✧ hybrid mix of face-to-face and online learning (3%).

The positive aspects of online learning far outweighed those the respondents considered to be its negative attributes which were, again in descending order of significance in terms of responses:

✧ access and technology (25%)

- ✧ self—related to their motivation levels, lack of time, self-discipline and problems with the learning approach (9%)
- ✧ assessment (9%)
- ✧ lack of teacher responses (8%)
- ✧ confusion (5%)
- ✧ resources (5%)
- ✧ lack of support (4%)
- ✧ need for a help desk (4%).

Learning online

The students were very positive about the flexibility, freedom and convenience of the online environment, but quite clear that they did not prefer it to face-to-face classes. There was no consistent opinion from students concerning which form of education took the most time; for educators however, online education is considerably more time-consuming than face-to-face teaching. Students indicated that they were not studying online merely because they could not get to class; the online model in many instances presented a much more convenient option for them. While students did not miss the discipline of getting to class, they recognised that they needed to be more organised to study online than in class. Hybrid or blended delivery was seen very positively, offering flexibility together with the benefits of both face-to-face teacher-supported instruction and online learning.

Students appreciated the other skills gained while studying online: their IT skills and ability to use the internet were enhanced. They noted that they needed strong personal skills, especially motivation and time-management skills.

Flexibility

Flexibility was the most important and significant factor in high-quality, online learning, being the most common indicator of quality as defined by the students. Students strongly indicated that they relished the freedom of learning online and that online learning was more convenient than having to attend classes.

Good teachers, good teaching

The importance of good teachers, facilitators and tutors cannot be underestimated. The essence of good-quality online learning lies with the teacher. Online education is not concerned with replacing teachers with online content. Quality online learning relies on the work of good teachers. Responsive, helpful, knowledgeable teachers facilitate an effective online learning experience. However, without clear standards and expectations regarding the level and nature of teacher interaction online, the workload for teachers is untenable. A crucial aspect of this issue is the expectation of prompt responses from the teacher. Just what is 'prompt', and when and how often can a teacher be expected to be at the end of the line? Student expectations online are very different from those in face-to-face situations: they want responses the moment they request it, having no concept of waiting their turn as they would in class.

Communication

From the students' perspective online communication is not a strong feature of online learning at present. They saw email contact with their teacher as fast and efficient, but they did not interact more with other students online than they did in class. There was no indication that learning communities were developing online. The principal relationship for students was with their teacher, whom they wanted to be accessible and available to help them as needed. These responses would indicate that the community-building aspect of online communication is in its infancy in the VET sector and certainly has not reached its potential.

Online resources

Online interactive materials were very important to students and they accessed more learning resources online than when studying in class. Print-based materials presented online were assessed as not appropriate, but the provision of well-designed course materials which were interesting and stimulating received very positive responses. Students generally found their materials easy to follow, easy to understand and more up to date than class materials. In some cases, however, lack of adequate instructions was an issue. The wealth of resources accessible online was a very positive factor as were the links to other sites. One of the students noted that one of the very positive aspects of studying online was the high quality of course material online with hyperlinks to other sites.

Assessment

Online assessment was important to students. They appreciated computer-generated feedback, but wanted a more rapid turnaround from teachers. The greatest problems with assessment related to understanding what was expected of them. Furthermore, many students noted the technical difficulties encountered when downloading assignments and submitting work. Validity of assessment and cheating online were not raised as issues for either students or educators.

Support

Students did not indicate that they needed a lot of support to study online. They believed that induction was important, but reported that no one had checked their skills before they started. Since they did not have ready access to online help they wanted a real person to help them, rather than a computer screen. This was one of the greatest areas of difference between students and teachers. Teachers thought students would need more support than the students acknowledged they needed. An online help desk was one area of common agreement—preferably offering support 24 hours per day, 7 days per week.

Induction and instructions

The technology, the course materials and the requirements for assessment often confused students in the study. Induction and clear instructions are essential. Organisations must build into their online provision, a gentle but comprehensive introduction to the technology, to the online course structure and to studying online. They must also be clear about what they expect of students and what students can expect of the organisation.

Technology

Somewhat surprisingly, students' attitudes to the technology were predominantly positive. While respondents experienced problems with technology, only 25% reported these difficulties. While these complaints were loud and clear, it is worth remembering that the other 75% of the sample were accepting if not enthusiastic about the technology.

Respondents overall were positive rather than negative about their access to the internet and the associated technology. Access, speed and reliability are essential and are crucial to the success of online education. Students did not find getting into the system so difficult as to deter them from online learning nor were they annoyed with the length of time taken for web pages to download. The technology was not confusing. Online links did not always fail. They had easy access to the hardware and software and satisfactory access to the internet. However, clear instructions on how to use the technology and, in particular, how to download and submit assignments and other activities are critical to successful online study. When the technology does not work well, the quality of the learning experience suffers. When it is working, it is invisible.

Structure of report

The first chapter provides an introduction to the report, a brief outline of the methodology and an overview of the key findings from the research. A literature review surveys the current literature relevant to this research project and explores its contribution to the project. The literature review examines both the VET and higher education sectors. The following chapter describes in detail the methodologies adopted for this project while the subsequent chapter examines the demographic span of data utilised in the research project. The results of the national survey and outcomes from the focus groups and case studies are presented in the following chapters of this report while the concluding chapter summarises the principal messages emerging from the research. The appendices provide details of the questionnaire analysis, the results of the national survey and information relating to the case studies.

Introduction and key findings from the research

Background to the study

Various forms of flexible learning are proliferating in Australia and around the world. Quality is espoused as an aim, with benchmarking studies and frameworks being devised in the attempt to achieve it.

The nature of 'quality' and the ways in which learning takes place are viewed differently by different sectors of education and by different organisations within any sector. Many aspects of these subjects have been researched, but the scope of such studies has rarely included the online environment, and has virtually never considered quality in online learning in the vocational education and training (VET) sector, nor considered the perspective of online learners.

Purpose and methodology of the study

This research project explored what comprises high quality in online learning for VET students in Australia. The study used a mixture of qualitative and quantitative methods to elicit the views of students and VET organisations to determine what constitutes a high-quality online learning experience. This report describes the factors that emerged as important, and provides some suggestions for organisations wishing to provide quality online learning for their students.

The report will be of use to those organisations wishing to aim for best-practice delivery, and will provide a foundation for benchmarking online learning.

Methodological techniques utilised comprised an online questionnaire with open-ended questions, a Likert-type scale of responses from 'strongly agree' to 'strongly disagree' and a Gap analysis which determined the importance of various aspects of online learning to students and how their experience rated. Data were also collected through case studies, focus groups and interviews. All of these techniques produced a consistent view of online learning.

Definition of online learning

At the outset of this project, the researchers debated whether to include only learning which took place purely online, or whether to include hybrid delivery; that is, a mixture of online and other delivery modes. It was concluded that the combination of modes might in itself be a factor relevant to views on quality, whether positive or negative. Online learning, for the purposes of this study was therefore defined as learning that occurs when the delivery of education or training is carried out via an intranet or the internet. It includes whole courses, single subjects and parts of subjects. It includes mixed or hybrid modes, as long as the online component is integral to the learning.

Limitations of the study

The researchers were keen to utilise online techniques in carrying out this study of online learning. The online questionnaires proved appealing to many respondents, and a good instrument in terms of data analysis. It is important, however, to be aware of the limitations as well as the strengths of this technique.

It became apparent during the project that, in order to get a full picture of student views on quality in online learning, it would be necessary to survey learners who had discontinued their study. However, this aspect had not been included in the scope of the research proposed. Difficulties in obtaining participation (discussed in more detail later in this report) meant that it was not possible to alter the research design to reach such learners. The respondents to the online survey must therefore be recognised as those students who have been successful at least to the extent of enrolling and making a start on their study program, and who have sufficient access to online technology to be able to do so. The study is unable to report on potential learners who have been unable to enrol, or learners who have dropped out of their program. The researchers consider that these groups could usefully form the subject of a further study.

Research questions

A set of questions informed the research project and were designed to elicit the learner's perspective on online learning. Each of these questions is examined in the following sections.

What is a quality online learning experience?

A quality online learning experience is one that provides flexibility and reliable technology. The heart of high-quality, online learning is flexibility. Flexibility not only includes the choice of time and place, but it should include options for face-to-face interaction. There is also the added flexibility of pace—choosing to go fast or slow, tackling a lot or just a small segment at any one time. Some students were very aware of what they needed to learn, and for some, the online mode provided an environment in which they could undertake the learning they wished.

Reliable technology that works at an acceptable speed is essential to ensure satisfactory and effective online learning experiences.

Teachers contribute enormously to the quality of online education and are crucial in the whole process. Quality online learning includes supportive, responsive teachers who provide clear instruction and answer queries promptly and constructively. Teacher interaction with students is a key ingredient. When students received individual, speedy feedback they were delighted with the experience. When the teacher did not provide feedback or took too long to respond, then they felt that quality was lacking.

Quality is achieved when there is a match between the learning experience and the learner's expectations. While the online medium provides the potential for high-quality learning experiences, standards are necessary to ensure this, including those relating to assessment and timely feedback.

Figure 1:   Factors comprising high-quality online learning reported by students

Teacher
✦ interactive
✦ responsive
✦ available

Self
✦ motivated
✦ managing time
✦ learning style
✦ ease of use
✦ gaining computer and internet skills
✦ interacting with others
✦ communicating

ONLINE LEARNING
TECHNOLOGY
FLEXIBILITY
✦ time
✦ place
✦ pace

Online material
✦ well-designed, interactive, up-to-date
✦ access to online resources
✦ functioning links

Assessment and feedback
✦ responsive, speedy
✦ easy to download and submit

Hybrid
Online ⟷ Face-to-face

What are the factors contributing to a 'high-quality online learning experience' as defined by online students?

The critical factors for the provision of quality online learning in priority order are:
✧ flexibility
✧ responsive teachers
✧ quality of materials and course design
✧ access to resources
✧ online assessment and feedback
✧ increase in information technology (IT) skills
✧ learning style
✧ interaction with other students
✧ communication
✧ ease of use
✧ hybrid mix of face-to-face and online learning.

The deterrents to quality are:
✧ problems with technology and access to the internet
✧ self-motivation, time etc.
✧ unsatisfactory assessment
✧ lack of teacher responses
✧ confusion
✧ poor or inadequate resource materials
✧ lack of support
✧ lack of help desk services.

Figure 2:   Factors contributing to high-quality online learning, by percentage of responses

Blended delivery
3%

Ease of use
3%

Communication
5%

Interaction with other students
5%

Learning style
6%

Increase in IT skills
6%

On-line assessment and feedback
7%

Access to resources
9%

Materials and course design
15%

Flexibility
25%

Responsive teachers
16%
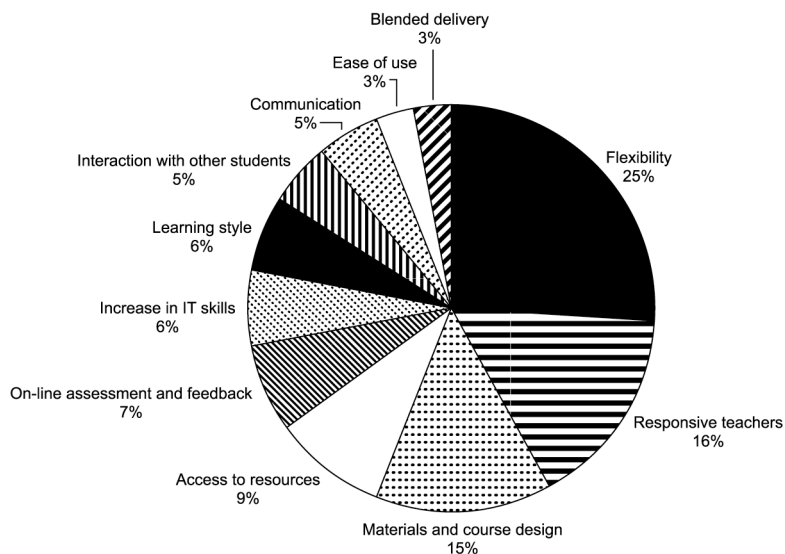
Note:
Due to rounding, figures do not add up to 100%.

Figure 3:   Factors militating against high-quality online learning, by percentage of responses

Need for
help desk
4%

Lack of
support
4%

Resources
5%

Confusion
5%

Lack of teacher responses
8%

Assessment
9%

Self
9%

Access and technology
25%

No negative factor
specified
31%
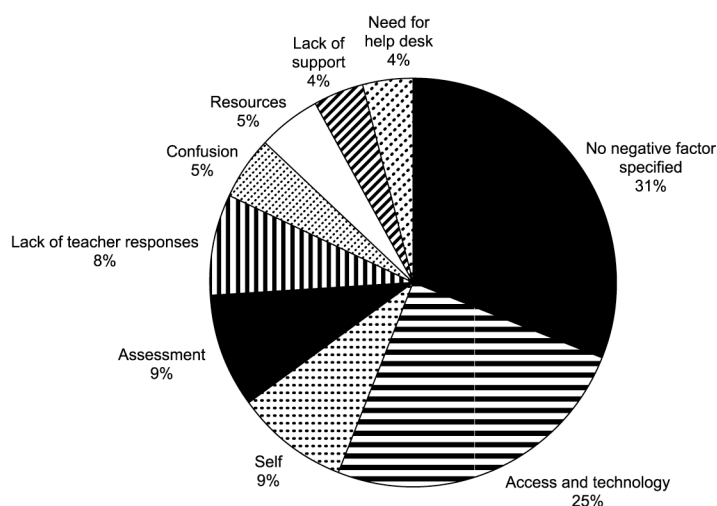
How do organisations define quality online learning?

There was no clear organisational definition of high-quality in online learning, although a variety of perspectives were provided by staff. Figure 4 gives a collated picture of high-quality, online learning as described by educators.

In the context of the organisation, the factors comprising high-quality online learning included:

✧ preparation for and induction into online study, especially in relation to the use of technology

✧ technical and learning support

✧ online learning materials (including assessment materials) that are clear, accurate, accessible and suitable for the needs of the learners

✧ a general preference for hybrid modes, with a note that the suitability of online delivery could vary with the subject matter as well as with the needs of learners

Figure 4:   Factors promoting high-quality online learning as proposed by educators

Flexibility

Technology
- ✦ fast
- ✦ reliable
- ✦ easy, user-friendly
- ✦ makes a difference
- ✦ learner expectations
- ✦ learner readiness

Teachers
- ✦ responsive, knowledgeable
- ✦ good facilitator 'guide on the side'
- ✦ professional development
- ✦ appropriate workload

Support
- ✦ academic and administrative
- ✦ services – library, counselling
- ✦ technical
- ✦ induction

Online education

Online content
- ✦ interactive, stimulating and challenging
- ✦ easy-to-read, appropriate

Communication
- ✦ collaboration
- ✦ student–student
- ✦ student–facilitator
- ✦ learning community

Assessment
- ✦ valid, fair, reliable
- ✦ formative and summative

Online ⟷ Face-to-face
Hybrid mix

✧ the importance of communication between students and teachers and between students and students, and especially suitability of the medium, skills of the teacher and the setting of behavioural norms for online interaction

✧ flexibility of time and place, balanced by the need of some learners for structure and external discipline

✧ the necessity for workable and accessible technology, and for the skills for utilising it.

The focus groups also highlighted the impact of online teaching on the work of teachers. The importance of online duties within the scope of budgets and workload planning was identified. Professional development is crucial to ensure that teachers have suitable skills to teach online.

What is the congruence between the indicators of quality online learning as perceived by organisations and by students?

A difficulty in this research was the lack of alignment between organisations willing to participate as case studies, the educators' responses and the student sample. This question has therefore been answered by comparing the views of educators overall with the whole group of students. While it does not present specific pictures for different organisations, the results indicate areas of agreement and those of difference between the educator perspective and the student perspective.

In the aspects of online learning compared, there appeared to be very little difference between students and educators. The importance for students of various aspects was marginally lower in most cases (the exception being in support) than to educators. Support and administration was the lowest area of importance for both groups. In all cases experience in the study unit rated less well than the aspect rated. This was true for both students and educators for all questions. While support and administration scored the lowest value, it was also the least important aspect for both groups. Technology was the most important with mixed ratings; flexibility rated best.

Educators' perceptions of quality online learning were in general more critical than those of students: fewer educators expected that the online learning experience would be one of quality

than did the students themselves. Through the Likert scale and Gap analysis, educators' and students' responses were, however, found to be congruent within the error ranges in most areas.

Online support is the area of most difference between students and educators. Students rated support and administration as slightly more important than did educators. However, educators expected students to require more support than the students thought they needed.

As might be expected, students commented on self-attributes while teachers were concerned about the change from teaching in a classroom to that of working online. Students identified their personal attributes that contributed to quality online learning, in particular, self-motivation, time management, organisation and commitment. They also recognised that their own laziness, lack of motivation, self-discipline and boredom detracted from quality online learning.

Teachers are very willing to work online but would like the additional work recognised. Students expect teachers to be on call whenever they need help and this is a major problem for both groups. The workload must be manageable. The immediacy of email is both positive in providing almost instant feedback and responses, but also problematic in the expectation that a teacher will always be available at the end of the line, willing and able to provide feedback any time of day or night. Realistic expectations and guidelines need to be set.

Figure 5:   Students' and teachers' perspectives of online learning

Students
- ✦ Self-motivation
- ✦ Time management
- ✦ Increased IT skills
- ✦ Internet competence
- ✦ Teacher-directed learning

Quality online learning
- ✦ Flexibility
- ✦ Reliable technology
- ✦ Responsive teachers
- ✦ Clear instructions
- ✦ Communication
- ✦ Assessment
- ✦ Support for students
- ✦ Well-designed and interactive resources
- ✦ Hybrid delivery

Educators
- ✦ Online learning communities
- ✦ Induction
- ✦ Teachers' work
- ✦ Reasonable expectations

Where does the 'learning experience' start and finish in online education?

This question was included because the researchers were aware that teaching organisations, as well as state and national VET agencies, place importance on the availability of online information about institutions and programs to students, prospective students and the public. They wished to know whether students' access to enrolment and pre-enrolment processes and information was counted as part of the learning experience.

The majority of students considered the online learning experience began at enrolment or at the first lesson. The majority of educators considered this experience to start at the first lesson.

How do students rate the importance of different aspects of online learning?

Flexibility, content, technology access and communication were all very important to students as part of their online delivery. Flexibility was the prime factor in providing high quality while technology was perceived as the main deterrent. Both the technology itself and the access to the online environment caused students problems, with the access causing the greater number of difficulties and complaints.

The following ranking of factors is derived from the specific questions which determined the importance and rated the experiences of various aspects of online learning. This was done through the Gap analysis:

1 Technology

2 Assessment

3 Communication

4 Flexibility

5 Support.

The online environment is characterised by many different aspects, some of which were very important to students while others were not so important. While online learning is not perceived as preferable to face-to-face learning, students do value the flexibility it provides. Achieving the balance of flexibility, face-to-face teaching and support with the use of the online technologies is critical in providing high-quality learning.

Administration barely rated a mention. One student specified that easy online enrolment had contributed to quality online learning and another two noted that problems with administration were factors that detracted from quality of the experience.

The importance of content encompassed both the information being imparted, and the design of the online learning resources. While both rated equally in the positive side of quality, poor design was a significant factor in the responses on the negative side.

How do students rate their present online learning experience with respect to these indicators?

The majority of students indicated that they were satisfied with their online learning experience, and the positive characteristics of their experiences were, overall, congruent with the qualities they valued. The ranking of their present online experience displayed a different order from that indicating aspects of most importance. Support was least important and rated worst. Technology, assessment and communication were in the same order, but while flexibility rated as fourth on the importance scale, it was rated best on the actual performance scale.

The current online experience rated:

1 Flexibility

2 Technology

3 Assessment

4 Communication

5 Support.

What is the baseline for online education with respect to the learning experience? What are the essential elements for any online delivery?

The essential elements for effective, high-quality, online programs from the learner's point of view can be summarised as:

✧ technology that is available, affordable, reliable and easy to use

✧ the flexibility to work at the times and places of the learner's choice, and at the learner's pace

✧ teaching and other staff who respond promptly, thoughtfully and in an informed manner to requests for help or other contacts

✧ clear instructions for the study program, assessment requirements and methods and protocols for communication and submission of work

✧ accurate, up-to-date, comprehensive and well-designed learning resources, which include clear navigation structures, clear directions to students, and mechanisms to enable students to judge their progress

✧ the inclusion of links to online resources, including interesting people, and the updating of these links to maintain currency

✧ assessment mechanisms that are valid, reliable and easy to use

✧ the opportunity to use and extend IT skills

✧ online resources which cater for varied learning preferences, including synchronous/asynchronous interaction, text, visual and aural media, and others

✧ online techniques which support and promote interaction between students as well as between student and teacher

✧ communicative devices which encourage co-operative and self-directed learning as well as teacher-directed learning

✧ online programs and organisational procedures which avoid problems such as confusion, excessive download time, unclear learning structures and excessive cost

✧ the availability of multiple modes of learning so that learners may opt for all online, all face-to-face or a mixture of modes.

Educators in the focus groups supported the factors above, including an additional factor, that of induction to ensure that learners understand the program, what they can expect of the learning organisation, and the skills and equipment they will need.

Is there evidence that students make use of the flexible attributes of online learning—anywhere, anytime, any amount, or that these attributes are important to students?

Flexibility rated as the number one component for 'quality online learning' with students valuing all the aspects of flexibility.

Figure 6:   Aspects of flexibility

| Just enough | **Right time** | Right place | **Right pace** |

There was no evidence that programs are customised for different students, so that at this stage, the 'just for me' element of flexibility was missing. However, the benefit students saw in being able to determine their own pace of learning clearly emerged: some students wanted to speed through the work, while others wanted to reflect and assimilate information at a much slower pace.

Literature review

Introduction

A growing body of literature discusses the planning and pedagogy of online education while some case-study material describes the introduction of such programs. Little has been written, however, on the degree to which online programs are providing high-quality outcomes for learners undertaking them, or on what learners perceive to be the factors which constitute quality in online education.

Within quality frameworks for educational organisations, 'quality learning' is a much used expression. However both 'quality' and 'learning' have a range of different interpretations placed on them by different sectors of education and by different organisations within any sector. Educational researchers have pondered this problem and investigated the extent of meaning for many aspects of education.

The scope of such studies has rarely included the online environment, and they have rarely considered online learning in the vocational education and training sector, nor considered the perspective of online learners. Little has been written on the degree to which online programs are providing high-quality outcomes for learners undertaking them, or on what learners perceive to be the factors which constitute quality for online education.

This literature review surveys the literature germane to this project, and explores its contribution to the current research. The review considers both VET and higher education developments, since insufficient sources have been located to justify confining it to VET. Moreover, although there are differences between higher education and VET courses and students, there are, of course, many similarities.

Online learning experience

It is first necessary to consider the nature of the online learning experience. What are the boundaries? Where does it begin and end? Most of the literature appears to assume that it consists of the following elements: the transmission of content material from the teacher (or the organisation) to the student; the development or acquisition of skills and knowledge by the student through independent research; formative or summative assessment of the learning acquired; and interaction between student and teacher, or between student and student, by various means including email, discussion boards and chatrooms. Few writers include the acquisition of pre-enrolment material (in order, for example, to assist in course selection), the enrolment process itself, or induction and orientation programs. This may be because all, or most of these activities are commonly done by non-electronic means. For example, Chizmar and Williams (1997) note that, among the barriers to online learning in their university, the procedures for admission and registration are extremely difficult for those who can't complete them in the traditional ways. The current project asks students to state their own views of where these boundaries are placed.

In designing the current project, another type of boundary was discussed; that is, should the study be confined to students undertaking 'pure' online study, or should hybrid-mode students be included? In some quarters the quality of online education is discussed without reference to its context, but Whitehouse (1997) suggests that:

> … electronically mediated, self-directed learning will work for some institutions and some learners but not for all in all fields. It will become increasingly important to understand where network learning is the most appropriate alternative or supplement to traditional modes of delivery, and how it can best be implemented.
>
> (Whitehouse 1997)

This proposition was a factor in designing an element of the methodology in the current research: whether it should include only students whose study was conducted solely online, or whether it should include also those studying in a hybrid (that is, online and face-to-face) mode. As noted earlier, the decision was for the latter choice, on the grounds that the mixture of modes may in itself be a quality factor (whether positive or negative) for some learners.

A number of commentators criticise the use of the world wide web as an 'alternative publishing medium' (Nowak 1998); that is, simply a way of making course materials available at little expense to the organisation (because the cost of printing and distribution is transferred to the student). Nowak (1998) suggests that 'meaningful "online" learning' must use the technology to build learning teams and to encourage global learning communities. His view of quality online learning includes independent learning, just-in-time learning, and 'interdependent' learning where students can interact with persons from around the world as well as those involved in their course. He emphasises the importance of 'personal connections' made through the electronic media to provide a comfortable and safe environment for the learner.

Another type of required connection identified is that with an adequate source of technical help:

> … technology provided without adequate technical support is at best a disappointment, and at worst a serious waste of resources … The technical support officer needs to be a skilled communicator, able to give clear instructions over the phone, because every problem that he fails to solve by phone will necessitate a further visit to the site. (Anderson 1996, p.49)

Mixed mode may include other techniques as well as personal interaction with teachers and students: 'print-based learning guides, sent out well in advance, can provide the basis for a productive online lesson' (Anderson 1996). This approach would counter the trend towards 'user-pays' distribution of materials noted above.

Pedagogical aspects of online education are necessarily of high importance. A vital part of this discussion, in a context where the move to online delivery may be prompted by organisational issues as much as by the desire of teachers and learners, is the relationship of the pedagogy to the delivery mechanism. This is well summarised in a paper which discusses teaching practice together with administrative and political issues:

> The first question that must be answered by an instructor who is contemplating teaching an Internet-only course is essentially the same question that must be addressed by an on campus classroom instructor—what pedagogy should I use? However, an Internet instructor must evaluate potential answers to this question against his/her answer to a second question—will the pedagogy work over the Internet using a variety of Internet delivery techniques, including Web documents? Furthermore, it must be understood that this second question is subordinate to the first. The pedagogy must drive the choices of instructional technology, not the other way around. (Chizmar & Williams 1997)

The purpose of pedagogy is to provide a setting in which learning can take place. In considering whether and how this occurs, a number of writers suggest generic learning outcomes, independent of discipline-specific learning. For example, Barrs et al. (1990), quoted in Syverson

(n.d.) posits five areas of student development, evidence of which is sought in assessment and evaluation processes:

- ✧ confidence and independence
- ✧ skills and strategies
- ✧ use of prior and emerging experience
- ✧ knowledge and understanding
- ✧ reflection.

Syverson (n.d.) also suggests that learning emerges from interactions within the virtual environment and between the virtual environment and the 'external environment(s) in which learners and instructors participate'. In the current study, these have not figured largely (so far) in the responses of students or educators; it will be necessary to examine the survey instruments to see whether they preclude or inhibit such responses.

The current study does not seek to differentiate between the views of students with different learning styles. In the early 1990s the thrust for flexible learning emphasised the ability of methodologies encompassed under this heading to cater for different learning needs and styles as well as different life circumstances. It may be expected that this would influence students' perceptions of online learning. Indeed, Misko (1994) states that: 'Once students, teachers and administrators have accepted the notion of customising instruction to individual styles the question of accurately identifying styles becomes a critical issue'. But this must be the subject of a different study, one which could isolate values which are aggregated in the current research.

In the following pages, literature guidelines or suggestions for good practice in online learning (which might be termed prospective views) are discussed separately from those which evaluate the views of learners and others about their online experiences (retrospective views).

Policies, planning models, frameworks and overviews

The Australian National Training Authority (ANTA) Flexible Delivery Taskforce (1996) summarises the 'user requirements' of individuals as follows:

Individual users of VET products and services require:

- ✧ training that is widely recognised and portable
- ✧ training delivered at times and in places to suit lifestyle and work demands
- ✧ appropriate and adequate learner support and tutorial assistance
- ✧ simple and streamlined administrative procedures
- ✧ easy access to information on training courses
- ✧ easy access to learning resources, and
- ✧ flexible assessment procedures. (ANTA 1996, p.55)

'Users' in this report include both individual learners and enterprises. The question therefore arises whether exploration of the views of individual learners only, and asking the question in relation specifically to online learning rather than to flexible learning in general, some five years later, will elicit a similar list.

A number of frameworks exist for planning and evaluating online learning. *From chalkface to interface* suggests that 'the main guiding force of educational projects using technology should be the needs of learners and other clients and stakeholders' (Palmieri et al. 1996). The needs of learners are grouped in categories devised in an earlier framework (Palmieri, Blanksby & Hammond 1995) under the headings of 'access considerations, desired outcomes, convenience and learning effectiveness'. Convenience in this sense includes the dimensions of flexibility, including time, place, delivery method and others. Emphasis is placed not on one particular type

of delivery, but on selecting a method which is suitable for the needs of the target group of learners.

The principles enunciated in this framework relate to the following topics:

✧ learner focus and other stakeholder interests

✧ organisational requirements and constraints

✧ evaluative framework

✧ organisation and resources

✧ teaching and learning

✧ technology and learning materials.

The flexibility of this approach would indicate that the factors identified as contributing to quality in online learning might vary considerably between the individuals surveyed. For example, some might value independence, while others might see interaction as the most important factor.

Some congruence can be seen between these principles and those recently developed by the American Distance Education Consortium (2000), which proposes the following as requirements for good practice:

✧ design for active and effective learning

✧ support the needs of learners

✧ develop and maintain the technological and human infrastructure

✧ sustain administrative and organisational commitment.

Another recent framework which has attracted some attention (Institute for Higher Education Policy 2000) provides 24 benchmarks for success in online distance education developed from case studies of six colleges and universities providing online degree programs. Those considered essential for quality internet-based distance education are categorised under the following headings:

✧ institutional support

✧ course development

✧ teaching/learning

✧ course structure

✧ student support

✧ faculty support

✧ evaluation and assessment.

Mitchell and Bluer (1997) in *A planning model for innovation: New learning technologies* suggest that:

> The use of new learning technologies, such as computer networks, personal computer conferencing and videoconferencing, should result in improved learning outcomes, broadly defined.
>
> To achieve this improvement a range of factors need to be in place:
>
> ✧ clear learning objectives
>
> ✧ common understanding of the objectives
>
> ✧ a clearly established and accepted need
>
> ✧ a clearly identified role for the technologies
>
> ✧ technologies are seen as a tool with a clearly defined role in the learning support process

- ✧ the technology assists interaction
- ✧ monitoring and evaluation of the process, including the use of performance indicators
- ✧ just-enough and just-in-time professional development available to staff
- ✧ an established and maintained technology infrastructure
- ✧ support for students in orientation and skills development is available.

(Mitchell & Bluer 1997)

While the success factors cited above appear to cover a broad range of topics, a closer reading reveals a good deal of common ground. In particular, there appears to be general agreement on the need for good quality of content material, support for interactivity between students and teachers, general support for students in various ways, flexibility of delivery, and a recognition of the diversity of students' requirements and preferences.

The students need to be 'trained' in the basic use and operation of the technology before they start and this is often best achieved by 'face-to-face' instruction at the beginning of the session.

Related to this aspect is the equity issue of student access. Some universities have dial-in access for students, but most students will need access to a private internet service provider. As a good rule of thumb, it was suggested by many that problems associated with technology are minimised by designing the web interface to the 'lowest common denominator' in terms of available technology. Some students may also require supported access to a computer, whether by loan or by access to computer labs on campus or elsewhere. But successful access to technology must include prompt and informed support. Corderoy and Lefoe (1997) assert that 'the most common suggestion for overcoming or alleviating technology based problems included ensuring that all students have access to first class technology support provided by people who know more than just what buttons to press. It was suggested that support personnel needed to have an understanding of how the technology works and how it can be best utilised in online learning environments.'

The literature described above is mainly intended for use in planning and organising online programs. Other writers discuss good practice more in terms of the teaching and learning process itself.

There appears to be a consensus that the educational experience should be student-centred rather than teacher-centred. Pittman, for example, suggests that 'for the university experience to be student-oriented at least four key elements need to be present—convenience and service, relevance and value' (Pittman 2000).

An aspect that recurs frequently is interactivity. Many writers assert that interaction both between students (individually and as a group) and teacher, and between student and student, is an enjoyable component of online learning and one which helps to keep students motivated to continue in their studies. For some, it takes the place of, or indeed acts as, the 'social' component of the learning experience whose importance is increasingly realised.

'Online education can assist in creating communities of inquiry capable of stimulating intellectual, moral and educational growth' says Warschauer (1998); but in order to do this, according to Cashion and Palmieri (2000a), 'it is important to build an environment where all participants feel safe to express their views and opinions and where the interaction enhances the learning' (p.3). How, then, are these social dimensions to be examined? A study of the social impact of online learning (Victoria DEET 1999) identified positive and negative aspects of online learning under the headings of Relationships, Teaching and learning, Flexibility, Fairness, Student support, Assessment and Other.

A vital aspect of the interaction aspect is that teachers respond promptly to students' communications. Interaction needs to include structured as well as spontaneous components as Corderoy and Lefoe (1997) note:

> The subject should also provide activities that will help the 'doubters' accept and use the medium, promote interdependence amongst students and convince them that a community of learners is important because they can learn from other students, not just the instructor. (Corderoy & Lefoe 1997)

Interaction comes high in the priorities of Chickering and Gamson, whose seven principles for good practice in undergraduate education include the following:

✧ Good practice encourages student-faculty contact.
✧ Good practice encourages cooperation among students.
✧ Good practice encourages active learning.
✧ Good practice gives prompt feedback.
✧ Good practice emphasizes time on task.
✧ Good practice communicates high expectations.
✧ Good practice respects diverse talents and ways of learning.

(Chickering & Gamson 1991, p.63)

Working from a course design point of view, Brown (1997) proposes three essential quality factors: hypertext; active and collaborative learning; and learner-centredness. The hypertext element gives learners the opportunity to explore for themselves among a rich array of resources. Active and collaborative learning enables students to relate their learning to their own experiences and make use of these and allows students to contribute to each other's learning. The interface design of the program is one of the critical elements for learner-centredness as it caters for the varied requirements and preferences of individuals. This combination of elements, according to Brown, fosters independent learning and allows for self-pacing.

A review of research conducted by Phillips (1998) proposes that 'the most effective way that the internet can be used in education is in a student-centred mode, which encourages communication and collaboration. The most important factor is in the design of the activities in which students engage.'

Further Phillips, referring to a DEET-funded study suggests that:

> … employers say that communication and teamwork are important, and research and best practice indicate that these characteristics can be fostered by Internet technology. However, on the other hand, the majority of online courses are based on an objectivist approach, with an emphasis on the delivery of content to passive 'learners'. In order to resolve this dichotomy, all levels of tertiary education (administrative, academic and technical) will need to reflect on and reconsider their entrenched beliefs about teaching practice. It is only by challenging paradigms that the gap between current practice and research can be bridged. (Phillips 1998)

Both Laurillard (1993) and Alexander (1995) have developed strategies which apply online learning ideas to the seven principles of Chickering and Gamson. Laurillard (1993) discusses a number of key aspects of learning that can be used in any discussion about teaching strategies. These are:

✧ Apprehending structure …
✧ Integrating parts …
✧ Acting on the world …
✧ Using feedback …
✧ Reflecting on goals—action feedback …

(Laurillard 1993, p.86)

While Alexander (1995) reports that:

> The challenge for educational developers is to use this knowledge of learning together with an understanding of the features of the WWW, to design learning experiences which promote a deep approach to learning so that 'what' students learn is a deep understanding of the subject content, the ability to analyse and synthesise data and information, and the development of creative thinking and good communication skills.   (Alexander 1995)

Evaluation of online learning experiences

Another type of literature reports on the evaluation by students of the courses in which they are enrolled, usually within an evaluative structure devised by their teachers. The majority of these are North American studies, although some Australian data are available. Although it is especially interesting for the purposes of the current research to examine students' views in contrast to those of educators, many of the studies referred to should be treated with some caution for two reasons. The first is that, necessarily, the numbers of students surveyed tend to be small; the second is that the survey instruments are, in most cases, designed to elicit views about what *is*, that is, within the scope of the particular programs in which the group was enrolled, rather than about what *might be*, if the students had a say in designing programs.

An exception to the latter statement is an interesting study (Trochim & Hover 1996), which uses a concept-mapping technique to elicit from students their views about the potential benefits of using web-based technology to support course activity and learning. Students were asked to give their general views about the ways a website could enhance or facilitate learning in an undergraduate course, and then to use their analysis of these data to develop 'maps' of their beliefs and expectations, and their relative importance. The results are depicted in the diagram below.

Figure 7:   Concept map
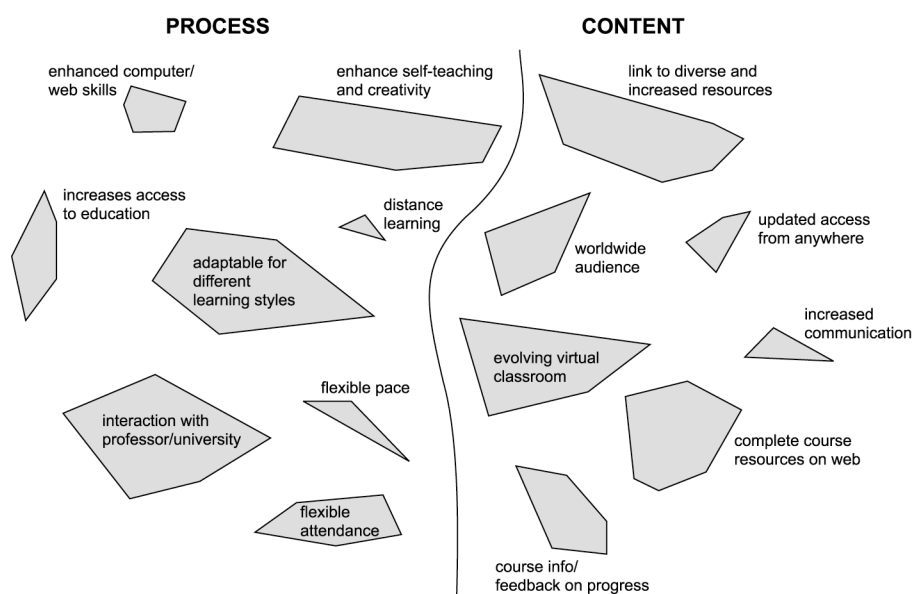
Source: Adapted from Trochim & Hover (1996)

A study conducted at the University of Sydney (Gazzard & Dalziell 1997) evaluated a web-based tutorial in philosophy. Students in the program indicated that they valued the social interaction with tutors and other students, the interactivity, the quality of the content, and the ability to apply

concepts learned in the tutorial to video clip scenarios. The web-based tutorial was undertaken in a group, in normal class time, and this factor should be remembered when considering the social aspects of the learning experience.

A study of the use of asynchronous learning networks at Penn State University evaluated student satisfaction with online learning. It provides a superficially different, but not incompatible, set of factors, assigning the responses to the following categories:

1. Enhancers
   - ✧ removal of geographic barriers to participation in higher education
   - ✧ mitigation of situational barriers
   - ✧ high quality course content
   - ✧ opportunities for career development/possibility for promotion
   - ✧ name value of Penn State
   - ✧ level of interaction with faculty and World Campus Learner Support unit
   - ✧ use of technology in the course (as an enabler, not an end in itself)
2. Detractors
   - ✧ technical difficulties (browser, ISP problems)
   - ✧ course workload (time requirements beyond expectations).

<div style="text-align:right">(Thompson & McGrath 1999)</div>

These results tended to confirm the university's initial assumptions regarding the importance of convenience, quality, and opportunities for interaction to students, and it is worthy of note that students' responses in the pilot survey of the current study support these findings. The students' views about the importance of career considerations and the reputation of the university in the workplace as factors influencing their choice to participate in world campus programs and in their satisfaction with their courses are interesting factors not encountered in other research. Also of interest, and unusual in the way it is reported, is the fact that students did not generally cite the technological features of their courses as primary enhancers of their satisfaction; rather, they viewed these features as problematic when they did not work well, but ultimately desirable secondary mechanisms for ensuring convenience and interaction. Kemshal-Bell (2001) notes the tendency of early online programs to 'focus on the technology rather than the pedagogy'. The Penn State experience supports the developing view of the researchers in the current project that technology, rather than forming a quality factor in itself, is more in the nature of a pre-condition; that is, without adequate access to technology and technological support, quality factors in online learning simply cannot operate.

Another study, discussing the experience of teaching graduate courses to teachers at a community college in Florida, finds similar positive factors to the 'top two' in the previous reference. Kubala (1998) notes that: 'When students were asked what they liked most about the courses, words like flexibility and convenience were at the head of the list'. He also found that, because of the degree of 'anonymity' in learning online, they participated more freely in discussion than they did in face-to-face classes.

Examination of the learning strategies of undergraduate students in two law-related units elicited a strong value placed on interaction in learning, which these students perceived to be absent in their online programs (Zariski & Styles 2000).

In the context of aspects of technology on which students were asked to comment, views tend to differ according to which type of technology is under discussion. A study of students undertaking a Business English course examined their views on the use of websites (for simulation and research projects and for learning contract projects), email (as used for collaborative writing), and discussion boards (for peer editing). Of these, the discussion board was by far the least popular; it was considered time-consuming, and students appeared to be unsure about how to comment on

other students' work. Websites were popular for finding information and for downloading materials, although it was pointed out that this could be slow and expensive to print. Email was popular because it was very user-friendly and convenient, although it developed an expectation of fast response from tutors (Ng 2000). The findings of this study in relation to the use of discussion boards is supported by anecdotal evidence from the researchers' own work: that discussion boards are popular with those who are confident in using them, but can be daunting for newcomers.

A study of students' views about a course delivered by audiographic conferencing took a positive view of this type of technology. The conclusions were that:

> Students perceived the technology to have a liberating effect on their learning and interaction … Despite technical problems, students surveyed seemed to be very positive about the technology and were comfortable using it … Several students mentioned that the style of learning in the electronic classroom helped them engage in independent inquiry and become more self-reliant. (McLoughlin 1998)

While many of the studies examined present a predominantly positive view of online learning, Hara and Kling (1999) found some negative responses. Their search revealed that higher education students experienced a severe frustration with certain aspects of their study, often so great that the students dropped out. Frustrations reported included technology problems, pedagogical issues (especially ambiguous instructions), insufficient or delayed feedback, difficulties associated with online chat, technical assistance unavailable at times when it was needed, and loneliness associated with the lack of face-to-face contact.

The authors expressed very serious concern that the negative aspects of online learning have received insufficient attention in the literature. It will be important in the current research to ensure that any negative aspects of online education identified are reported as well as the positives when determining critical factors for quality online education.

Another study that reported negative opinions describes an experiment where students who were expecting an onsite course were required to work online at fixed times in a computer lab. Contact with the instructor was electronic only, although a teaching assistant was available in the lab. Considerable degrees of frustration on the part of the students were reported, including poor performance in assessments. Frustrations were grouped around the themes of regretting the unavailability of face-to-face contact; wasting time because written materials or instant (face-to-face) feedback and discussion were not available; being unclear what to do (with the lesson or with technology); and communication problems (Westrom & Pankratz 1998). The question must be asked, however, whether the artificial, quasi-experimental nature of the program contributed to these frustrations.

Technical problems were again the major difficulty encountered by students in trialling the Canadian Virtual U, as reported by Harasim et al. (1995), and likewise in a longitudinal study investigating internet use in a school in Canada (Gibson & Olbert 1998).

In an ANTA-funded project documenting teaching and learning styles which facilitate online learning, participants were asked to identify problems associated with online teaching and learning. Most of the reported problems relating to the current research were technical, concerning adequate access to and reliability of technologies. An interesting comment related to '[d]ifficulties in making the online learning environments work within a wider system. When management of the technology dictates the format and design of the learning programs it can be difficult to develop effective learning environments' (Jasinski 1998).

This last point raises again the issue of the political and organisational agendas driving the adoption of online learning, which were mentioned earlier in this review. Examples of this are cited by Noble (1998), in a polemical article. According to Noble, administrators at both UCLA and the University of British Columbia pressed ahead with plans to introduce online learning

systems, in spite of recommendations against this course from students. Noble suggests that such organisations are:

> creating a market by fiat, compelling students (and faculty) to become users and hence consumers of the hardware, software, and content products as a condition of getting an education, whatever their interest or ability to pay. (Noble 1998)

While not all educational institutions intend to force their students into online learning, it is important to keep a wary eye open for such tendencies, particularly in view of the issues of access (and affordable access) to technology already noted.

Some research indicates that many students prefer face-to-face learning if it is available, and would rather have teacher-led learning. Although some educators assume that adult students are ready for independent learning, recent research indicates that many students, especially young adults, are not ready.

> At the Self-directed end of the dimension are learners who prefer to set their own learning goals and to learn independently; at the other end are learners who prefer a context that provides detail of what is to be learned and how, and where instructors provide leadership of their learning. Our sample of VET learners was heavily skewed towards the Dependent end of that dimension. (Smith 2000)

Warner, Christie and Choy (1998) report a similar state of affairs, while Crouch and Montecino (1997), suggest that:

> … the learner who does best in an on-line environment is generally used to working independently, has personal motivation to learn and knows what he/she wants to achieve. In short, it's an adult student who pursues learning regardless of circumstances. (Crouch & Montecino 1997)

In view of these findings, an argument could be made that the skills required for independent learning should form a component of online courses, although there is little or no evidence that this happens at present.

An alternative point of view would suggest that hybrid modes of delivery are generally the best. The last of six recommendations for online learning made by Zariski and Styles (2000) is to 'mix modes—the online mode should be used for what it is best at, which for these students [undergraduates in legal studies] is for linking material, for researching the literature and for (in some cases) discussion'. At a more general level:

> … the caution for educators is that they should check their target audience first before jumping in to all-on-line delivery. After all, it is well known that distance education does not suit all learners and on-line delivery is heavily dependent on distance education techniques. (Webb 1998)

In a similar vein, Carswell et al. (2000) assert that:

> The distance approach to education requires an understanding of the issues facing part-time students, including
>
> ✧ dealing with distance: ie, overcoming isolation
>
> ✧ dealing with asynchronous learning: ie, handling delays when help or feedback is not available as soon as required
>
> ✧ managing part-time study: ie, coping with job, family or other commitments as well as studying. (Carswell et al. 2000, p.30)

These are all issues that are raised in various forms earlier in this review.

Many researchers have attempted to evaluate the quality of online education by comparing the results of online learners with those of 'traditional' students studying the same course. The aims of these studies have varied from trying to prove that the online students experience the same quality of education as those who have had face-to-face instruction, to proving that the instructor really improves the quality of education for on-campus students. A book has been published

(Russell 1999) and two websites (Russell 2001a, 2001b) are devoted to evidence of results from these studies. The studies make interesting reading, but their impact on research into the quality of online education is limited. Many of the research techniques are such that any results obtained for the online education in comparison to face-to-face instruction will show that there is no significant difference. This is more a statement about the methods used than what is actually happening.

North Carolina State University has published at least three separate studies by different academics from 1997–99 that concluded that the delivery strategy made no difference in the results obtained by either online students or face-to-face students. The same university has also published two studies that 'proved' that there was a significant difference. However, in more detailed analysis of the work, one study by Dutton, Dutton and Perry (1999) is quoted both as providing results to support no significant difference and supporting the hypothesis that there is a significant difference.

Earlier studies, such as Johnstone and Kraut (1999) on the achievement and satisfaction of students in distance education, have found that there is no significant difference from this group and those in traditional classrooms. This does not mean that any particular student will perform equally well in either medium, but rather that overall, there is no statistical difference in the mathematical analysis of the scores. Various researchers have been able to pull out figures that 'prove' that a particular demographic group performs better online, but none of this work is conclusive. It seems that the outcomes are determined by the research design, rather than the data.

On the other hand, as Chin (1999) notes:

> As students now have more exposure to the use of Internet/WWW in education, where many have seen good and bad examples during their course of study, their opinion on the topic becomes more useful in providing guidance to educators who intend to embark on the route of on-line education. (Chin 1999)

In Chin's study of students over five web-based study units, a majority of the students report positive attitudes to online teaching and learning. Moreover, most of them considered that web-based teaching should be used to supplement classroom teaching rather to replace it. More searching questioning on the learning outcomes did not indicate outcomes better than those gained by class teaching.

Many studies attempt to assess whether online learning is an effective method in terms of learning outcomes. Chang and Fisher (1999) reported on the development of an instrument to evaluate the effectiveness of web-based learning environments. In this they draw on the understanding of Laurillard (1993) and Tobin (1998) in their analysis of the processes involved in learning. Their instrument was intended to capture students' perceptions of a web-based learning environment by evaluating 'emancipatory activities; co-participatory activities; qualia [that is, qualitative judgements]; information structure and design activities'.

The pilot study looked at students enrolled in an electronic commerce unit that can be studied fully online or face to face. Data analysis was mainly utilised for assessing the quality of the questionnaire, but indicated the popularity of email for interaction, and high use of online study materials and remote library facilities.

While it was considered necessary to review these comparative studies, few, if any, conclusions can be drawn from them at this stage. It is, indeed, debatable whether it is useful to ask in such general terms whether online learning is 'better' or 'worse' than more traditional forms. However, analysing the suitability of online and other forms of delivery for various groups of learners, in demographic, discipline-based and other categories is likely to prove a valuable undertaking.

Quality factors

Sufficient common ground has been found in the literature reviewed above to enable the current researchers to compile the following list of factors identified by Cashion and Palmieri (2000b) for consideration in the project's main survey and case studies.

1 Induction
2 Support
   ◇ academic
   ◇ administrative
   ◇ technical
   ◇ services
   ◇ learner readiness
   ◇ learner expectations
3 On-line content
   ◇ interactive
   ◇ easy to read
   ◇ easy to navigate
   ◇ on-line vs hybrid
   ◇ on-line
   ◇ face to face
4 Communication
   ◇ student-student
   ◇ student-facilitator
   ◇ collaboration
5 Feedback
   ◇ prompt
   ◇ often
   ◇ incentives—on-line 'chocolate frogs'
6 Fitness for purpose
7 Technology

(Cashion & Palmieri 2000b)

Research issues

Ethical questions and ways to approach them are well understood in the context of research by conventional methods. But new problems emerge when the research itself makes use of online methodologies. Chief among these are the issues relating to identity and pseudonymity. They are well summarised by Roberts (2000):

> Whilst the Internet offers potential for extending scholarship and for exploring different ways of communicating in a radically different medium, the medium itself raises issues about the conduct of research with human subjects. For example, the Internet provides the opportunity for both researchers and their subjects to assume anonymous or pseudonymous on-line identities which obscure demographics such as gender and age, which may be of importance to the investigation. Furthermore the changing membership of Internet communities creates difficulties in obtaining informed consent from subjects, some of whom may be minors, and the uncertain distinction between the public and private domains causes confusion and possible harm for those many subjects who hold illusory and unrealistic expectations of privacy …

> Anonymity has a further impact on on-line research in respect of the validity and reliability of the data collected, for amongst the widespread geographical and diverse population of the Internet it is easy to conceal and mislead others about one's true geographical location, gender, or race. And, as Waskul and Douglass (1996) point out, the well-documented existence of a racial, economic and gender divide amongst Internet users will continue to skew and compound the issue of non-representative sampling, with the potential for misleading findings. Resolution of these sampling issues is critical to the conduct of certain categories of on-line research.
>
> (Roberts 2000)

But it is equally true that online surveys can, in certain circumstances, reduce anonymity: where surveys are returned by email, for instance, it is necessary to detach the data from the email message in order to obscure the sender's email address.

A further matter which is noted but insufficiently addressed in the literature is that of the barriers to access which the adoption of online delivery methods may present. While online learning is promoted as offering flexibility and access, there are potential participants who are unable to benefit from it. An EVAG (EdNA VET Advisory Group) project (Connelly et al. 2000) lists the following barriers: technology, especially cost, particularly for remote and isolated areas and for learners with disabilities; cultural and linguistic issues; access to technical support; access to teacher support; also the need for professional development 'for managers, teaching staff and policy makers to demystify the concept and ramifications of online learning'. This is a serious question, which the researchers in the current project can only approach in a sidelong manner, but it is one which ought to exercise the minds of researchers and policy-makers for some time to come.

Summary

In this chapter we have attempted to look at the boundaries that define the online learning experience, and have incorporated both purely online study and a variety of mixed or hybrid modes. The majority of commentators take the online experience to begin once enrolment has taken place, and to conclude upon the completion of assessment.

The various policies, planning models, frameworks and overviews examined, list many factors considered as contributing to good practice. These generally have in common, ideas related to the support of learners, catering for the varied needs of learners, skills and professional development of staff, suitable administrative procedures, interaction and communication, and evaluative activities.

Literature relating to the evaluation of online experiences reveals both positive and negative aspects. The positive aspects included an appreciation of the potential of technology to remove barriers to study and to enhance flexibility, and in some cases to add richness and depth to the learning experience. The negative aspects included frustration with technology that did not work well, and a preference among some students for learning face to face. However, few general trends could be drawn from this area of the literature, indicating that evaluative studies of particular programs do not isolate the quality factors sufficiently to draw conclusions.

Nevertheless, enough data were obtained from the literature to enable the researchers to propose a list of quality factors for use in the study.

Research methods

This research aimed to elicit learners' views into what constitutes quality in online learning and to put those views into context by comparing them with educators' views obtained by means of case studies of VET organisations. VET organisations were approached to participate in the study. The aim was to link the students from participating organisations to the online questionnaire and to offer participating organisations the option of being the subject of a case study. Case-study organisations would provide information about their organisation, and the educators and/or students from that organisation would participate in focus groups.

The educators who participated in the study included teachers, managers with responsibility for online education, technicians, librarians and developers of online resources. In the latter category some of the developers were previously teachers who may have changed roles completely or have been on secondment to work on an online project, or both teaching and developing at the same time. Some of those who responded as learners, were also educators, but were undertaking online study.

The study uses both qualitative and quantitative methods. The quantitative data have been obtained online through an online questionnaire, which can be found at http://online.tafe.swin.edu.au, while the qualitative data have been gathered at focus groups, and through interviews. A couple of questions in the questionnaire have provided open-ended responses, which have enriched the quantitative data.

Questionnaires

The survey instruments developed by the researchers were considered and accepted by the Swinburne University Ethics Committee. Demographic questions were asked with a number of direct, open-ended questions on the 'quality of online learning'. The open-ended questions have provided some very useful data in analysing what is important to students in relation to quality online learning. Forty-eight Likert-type questions (reducing to 47 after the pilot analysis) formed part of the questionnaire and were supplemented by six Gap analysis questions for the main study.

The Likert-type scale proposes a series of questions on key issues in online learning, and respondents are requested to specify whether they strongly agree, agree, disagree, or strongly disagree. These questions are useful for understanding degrees of importance of various aspects of the online environment.

The Gap questions propose a statement about online learning and the respondents identify how important that particular aspect is to them on a five-point scale, and then rate their online experience for that aspect. This provides data which give a quantitative value to the importance of various aspects of online learning, and how the unit rated against these indicators. Both the Likert and Gap questions provided a useful tool to compare student and educator opinions on set questions.

The questionnaire was tested and analysed through the pilot study which comprised 55 student returns and five educator returns. The analysis of the instrument is attached in appendix 1. The survey instruments were refined in the light of these analyses. The online questionnaire can be accessed through http://www.tafe.swin.edu.au/ncver

The survey

Questionnaire responses were received from 412 students, 55 in the pilot and 357 in the main study. The aim was to reach 5000 students in the main study with a response rate of 10%, getting 500 responses to analyse. The questionnaire site was reached more than the 5000 times but there is no way of determining how many of these were duplicate hits. The actual questionnaire was opened a total of 1852 times which is considerably lower than the hoped-for 5000, but the response rate, at 19.2%, was almost double the expected rate.

Table 1:   Summary of main survey responses to questionnaires

	Students		Educators		All	
	Number	Response rate (%)	Number	Response rate (%)	Number	Response rate (%)
Site hits	31 816	1.1	31 816	0.2	31 816	1.3
Questionnaire opened	1 852	19.2	556	11.3	2 408	17.5
Responses	356		63		419	

Data analysis

The data from the online questionnaire have been analysed to provide demographic information, information on quality online learning as well as Likert question analysis and Gap analysis of critical questions.

The main study data set can be viewed at http://online.tafe.swin.edu.au/quality/view.cfm

The total student data set of 412 responses, consisting of 55 pilot and 357 main study responses, produced 388 useable sets of data. Twenty-four sets of student data were discarded. Null responses and multiple responses were removed from the analysis. Multiple responses were defined as identical responses to all questions received from the same internet service provider (ISP) location within a time span of one minute. Only one of the multiple responses was left in the data analysed; the other copies were discarded. These multiple copies were assumed to have occurred through the vagaries of the technology.

The percentage of participants who indicated they had experienced quality online learning was calculated and analysed for the whole sample as well as for different groups of students. This provided some useful comparisons assisting the researchers to understand what constitutes quality online learning.

The open-ended questions were individually analysed and sorted into the categories comprising the total picture of quality. This was done for both students and educators.

The Likert scale questions and Gap questions provided data on the importance of different aspects of the online environment and how the actual experiences compared with the importance students placed on it.

Researching online learning online

The decision to administer the survey online was based on the appropriateness of this medium to capture learners who are studying online. At the time the research began this was a relatively new research technique and therefore of interest to the National Centre for Vocational Education Research (NCVER).

A graphic link and a pop-up box were prepared which could be attached to course materials of the participating organisations to link them with the questionnaire. This required some online expertise and technical support at the survey site, which was sometimes difficult to organise. Once the link was made, access to the questionnaire was easy. An alternative approach was to provide the students with the web address of the questionnaire for direct access. To help in the process, the research team produced thousands of cardboard bookmarks containing the web address and other contact details, which were handed to students, educators and other interested parties.

Online questionnaires have now become a common method of data collection, particularly for market research (Bez 2001). Market researchers and program evaluators are finding the online medium provides greater reach and a greater return rate. Where a paper-based questionnaire now attracts a return of 4%, an online questionnaire attracts a 12% return from direct email contact and will often get more if the participants are interested in the outcomes of the survey. This is without the provision of incentives (Bez 2001).

There are benefits to be gained using an online questionnaire. For people using the online medium, an online survey is quick and accessible, and there is an immediacy about it, an attraction for many respondents, in that it eliminates paper and postage and handling. The data are automatically fed into a database. Because data entry is thus eliminated, errors in this part of the procedure are obviated, and considerable time is saved for the research team.

The limitation of using an online questionnaire is that the student data are obtained only from students who are still studying online and who can manage the online medium with a certain degree of confidence. The scope of the research did not include students who have dropped out, nor students who might have liked to study online, but for one reason or another, did not enrol or did not start. The sample is therefore skewed not only to those students who are studying online, but also to those students who could be accessed and were then willing to participate. Almost all of the student data have been obtained by questionnaire. While considerable effort was expended into trying to set up focus groups of students, only seven students have been personally interviewed.

Accessing students

It is difficult to access students in the VET sector. The proliferation of research projects and the surveying of students through quality systems have resulted in students being both weary and wary of questionnaires. VET organisations do not have any obvious system for providing data and participating in national research. Formal requests are passed through the organisation in various ways, and in many cases it is a matter of chance whether they reach someone who is both able and willing to help. Researchers are constantly relying on favours from people who are already overworked. The research team for this study had mediocre results from official requests, and much of the data (both quantitative and qualitative) were obtained as a result of informal approaches to personal contacts. This is not to say that organisations or staff were unhelpful; more that staff and organisations are over-burdened by the number of research projects, as well as by the requirements of state and national reporting.

A pilot study of 55 students was carried out in October–December 2000 using just one organisation. The aim had been to involve more organisations at the pilot stage, but this proved impossible to achieve. The difficulties in collecting data nationally through many organisations started to become apparent at this stage. Data collection nationally began in earnest in February 2001 and continued until the end of November. It has been a difficult and slow process.

Three-hundred-and-fifty-seven students and 63 educators responded to the main survey. Students were contacted through teachers in their organisation, through distance education co-ordinators or by being presented with a pop-up-box when they logged on to their online course. The excellent response in Victoria is partly due to the pop-up-box appearing on the TAFE Virtual Campus and partly to the closeness of the researchers to the sample.

A large amount of data has been gathered, not all of which can be analysed for this study. The researchers suggest that NCVER might consider continuing data collection via the online questionnaires, as the basis for a longitudinal study which explores whether views about quality change as learners become more experienced in online learning, and as organisations become more experienced in this method of delivery.

Factors contributing to the diminished size of the data sample

✧ The method of approaching organisations was not particularly successful and was very time-consuming. It resulted in a considerable time delay and the commitment of organisations to the project became diminished with each step between them and the researchers.

✧ Organisations are so busy that requests through directors often become lost or diluted before reaching the appropriate area. This approach has not worked successfully with any organisation. In some cases, a negative response from the organisation about participation in the case-study research has resulted in as many student responses as those which have enthusiastically agreed to participate in the research.

✧ It is essential to keep close to the data collection. While online data collection is very convenient, the need or desire for students and educators to respond to the online questionnaire diminishes with the distance from the researchers. It is therefore important to establish and nurture contacts within the organisation who can provide a direct link to the students, so that they can be actively encouraged to respond to the questionnaire. This may be directly with teachers or with the distance education unit in the organisation. Often those responsible for online education within the organisation are also distant from the students who are studying online. This adds another dimension of complexity to reaching the students.

✧ Students and organisations are over-surveyed. There is a very definite reluctance to complete yet another survey. Ethics approval meant that there could be no financial incentives for students or educators to complete the questionnaire. This poses a difficulty when contrasted to market researchers who will pay up to $50 to someone to complete a survey.

✧ The introduction of training packages in some areas, especially computing, has resulted in fewer online resources being available and therefore fewer students studying online. Teachers stated that, for this reason, they have not been able to enrol as many online distance students in computing in 2001 as in the preceding years.

The researchers suggest that, in the future, research teams are represented by all the organisations which are providing the research data. This would maximise their co-operation in obtaining data, maintain researcher closeness to the sample, and achieve a common goal for researchers and their students.

Interviews and focus groups

Focus groups were organised in different states to provide in-depth data on quality online learning. These focus groups consisted of educators who willingly shared their experiences with online education, discussing aspects of online learning believed to be essential to ensure its quality.

Interviews and focus groups provided substantial qualitative data from the perspective of the educator. Educators' focus groups have been conducted at Canberra Institute of TAFE in the Australian Capital Territory, at Swinburne University TAFE Division and Acenet (a collective of nine providers of ACE located across central western Melbourne and regional Victoria) in Victoria, and at Southern On-line Institute of Technology, Toowoomba campus, and Tropical North Queensland Institute. A group of educators from different organisations formed a focus group in South Australia. Individual educators were interviewed at Southbank Institute of TAFE, Queensland and by teleconference with Mt Isa TAFE. Efforts were made to set up focus groups in Western Australia and New South Wales, but the project was not successful in achieving this.

Focus groups and interviews with educators were carried out using convergent interview techniques. The participants were in each case asked to discuss the subject of quality in online learning in general terms, and were then asked to list and rank their top five factors implying quality.

The initial questions and follow-up questions were based on the questions below.

1   Could you please describe your involvement with online education?

2   What factors do you consider critical to enable students to have a quality online learning experience?

3   Why are these factors important?

4   What do you consider the five most important factors for quality online learning?

5   List these factors in order of priority and justify your selection and ranking.

Case studies

Case studies were designed to obtain information relating to quality online learning from organisations. The organisational perspective would provide one facet of the quality picture and could be compared with the student perspective. However, the research team encountered significant difficulties identifying organisations willing to participate as case studies. There is a perception within the VET sector that organisations are at the start of their quality journey in online education and did not feel ready to participate in this project.

In many cases there was a lack of congruence between organisations willing to provide case studies and those where students actually responded to the questionnaire. This meant it was impossible to reach a correlation between organisational perspectives of quality and the student perspectives on quality online learning in those organisations.

Demographic span of data

Introduction

The pilot study ran from October to December 2000 with the main national survey taking place from February to November 2001. The pilot study received 55 responses from students and 5 from educators, while the main study received a total of 420 responses, with 357 responses from students and 63 responses from educators, giving a total of 412 student responses and 68 educator responses over both studies.

Some of the data were not useful: there were some cases of multiple identical submissions from the same person at the same time, an obvious technical hitch. There were also some null data, test cases where students were trying out the system and cases of made-up information where the courses and organisations did not exist and the responses did not pertain to online education. These data were 'removed' before the analysis was carried out. Twenty-four student responses and five educator responses were discarded.

Table 2: Summary of useability of responses

| Responses	Students		Educators	
	Actual	Useful	Actual	Useful
Pilot	55	55	5	5
Main	357	333	63	58
Total	**412**	**388**	**68**	**63**

The focus of all the questions was to determine whether students felt they were getting a quality online learning experience. The next step was to tease out exactly what constitutes quality online learning. The learners did not have to be distance online students: all students who were learning through the use of the online technologies were included.

The data spanned a range of ages, courses and discipline areas and have produced some interesting results which are displayed below. A gender analysis supports anecdotal reports that there are more female than male online students. The student numbers were decisively biased towards females, but the educators' responses are fairly evenly distributed.

Gender distribution

There were more females students responding to the questionnaire than male students and more female educators who responded over both the pilot and the main study.

Figure 8: Gender of respondents

Students
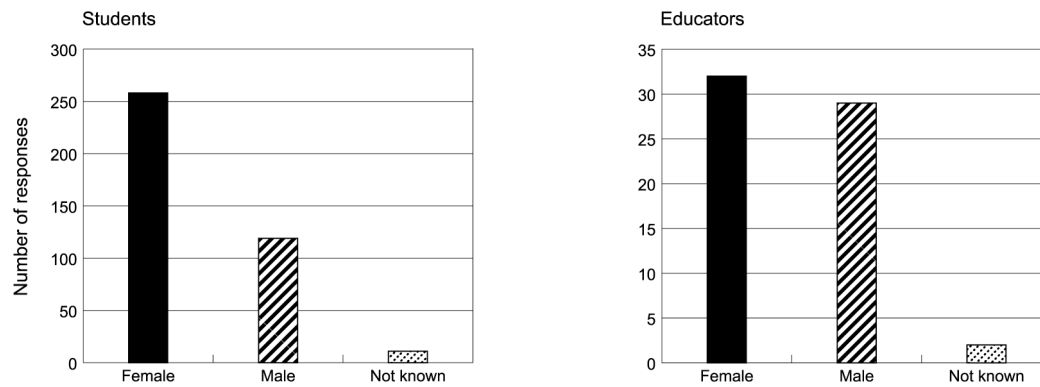
Educators

Age distribution

There is a peak in the student population in the under-21s, and as expected, there are no educators in this age bracket. However the next peak matches: the greatest number of educators lies in the 41–50-age bracket which is the same age range as the second peak in the student distribution.

Figure 9: Age distribution of responses to the questionnaire

Students

Educators
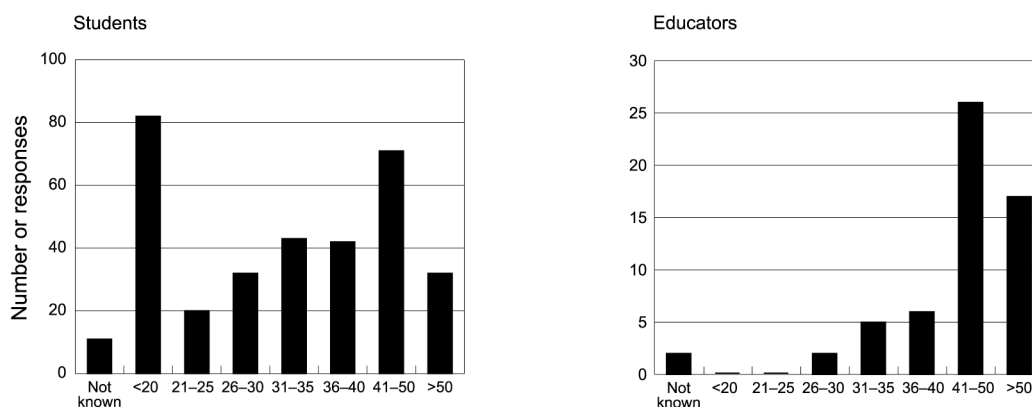
Location distribution

The majority of the students who responded to the questionnaire are from Victoria. While considerable efforts were made to attract participants from other states this was not achievable. Numbers of participants from New South Wales and South Australia were disappointingly low.

However, the educators in New South Wales were valiant in their efforts to get more students involved and a large number of them responded to the educator questionnaire (see figure 10).

Student characteristics

Generally speaking the computer skills of the students were high. Figures 11a–c summarise their description of these skills, showing their comfort level with online learning, employment status and experience with online learning. These were specified through a sliding scale which corresponded to a value from 0–5.

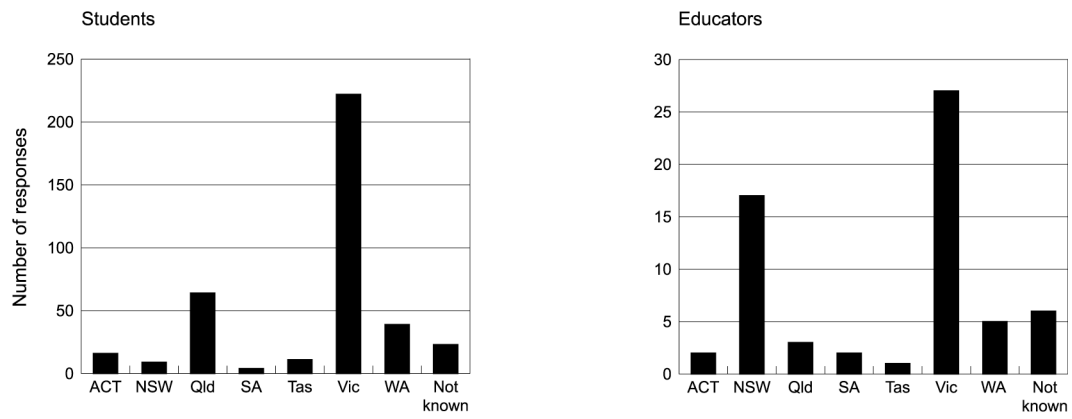**Figure 10:   Distribution of responses across the states**

Students

Educators

Figure 11a: Computer skills and comfort with online learning
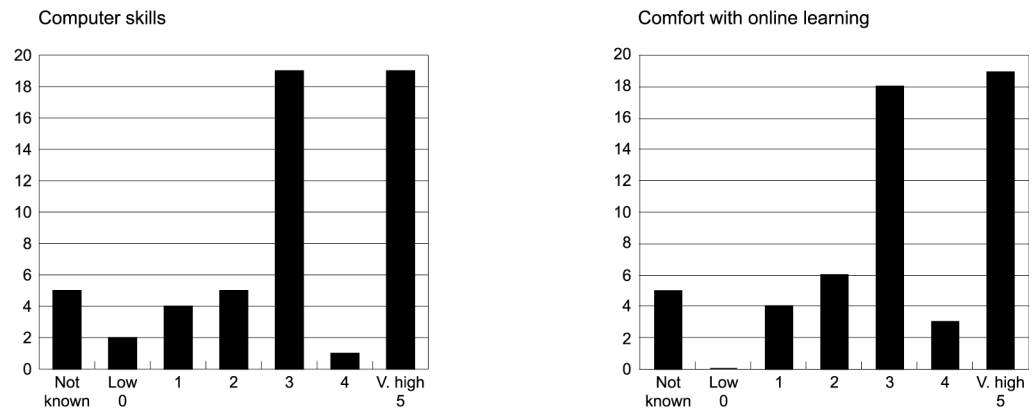
Computer skills

Comfort with online learning

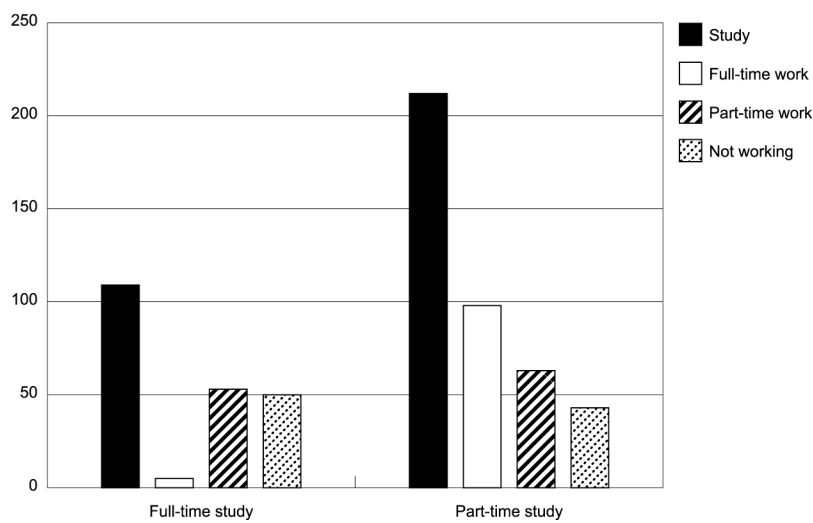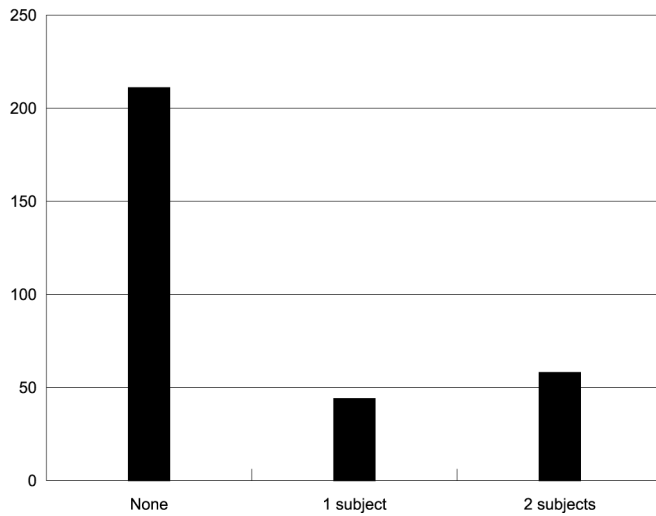

Figure 11b: Employment status

**Figure 11c: Experience with online learning**

Courses

There was a wide range of courses in the sample of student responses. Computing courses comprise most of the online delivery and accounted for 42%. The education courses included the professional development courses of Teaching and learning online (TALON) and also Workplace trainer and assessor. Hospitality and tourism courses (H&T) were well represented. The social science (Soc Sc) courses included the Community services courses in Aged care, Children's services and Disability as well Social sciences communication and Liberal arts. The Writing courses were mostly not related to a specific Australian Qualifications Framework (AQF) course.

Besides these groupings there were responses from individuals or a couple of students studying in a range of different courses including, Aerospace engineering, Building code of Australia, Painting, Horticulture, Master class marine, Microbiology for the Diploma of Confectionery Making, Hairdressing, Firefighting operations and Aquaculture.

Figure 12:   Course distribution for students responding to the questionnaire
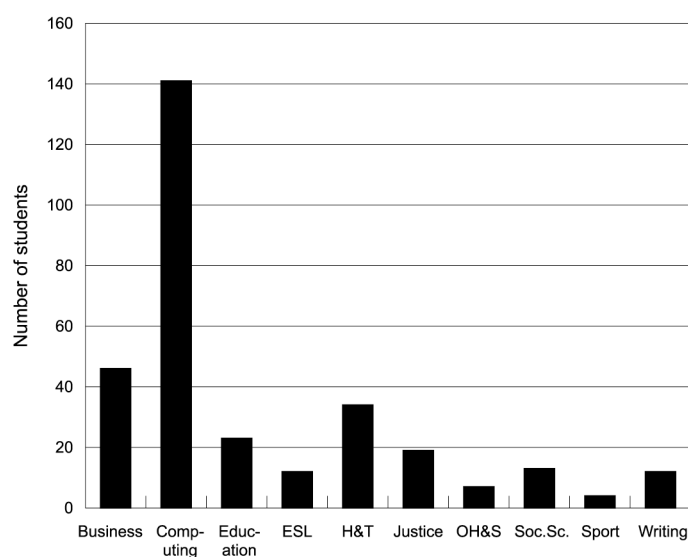
Levels

Students were distributed across most levels of the AQF, with the majority of students at the diploma level and only one student at certificate 1 level. Some of the students were in single subjects and not enrolled in specific course levels, others did not specify their level of study. Some people were undertaking the course for professional development purposes. These were mainly teachers taking units in TALON or the Certificate in Learning Technologies, which is a specially packaged certificate 2 for Education Department teachers in Victoria who needed some appropriate professional development to be eligible for a laptop computer.

Figure 13: Student distribution against AQF level
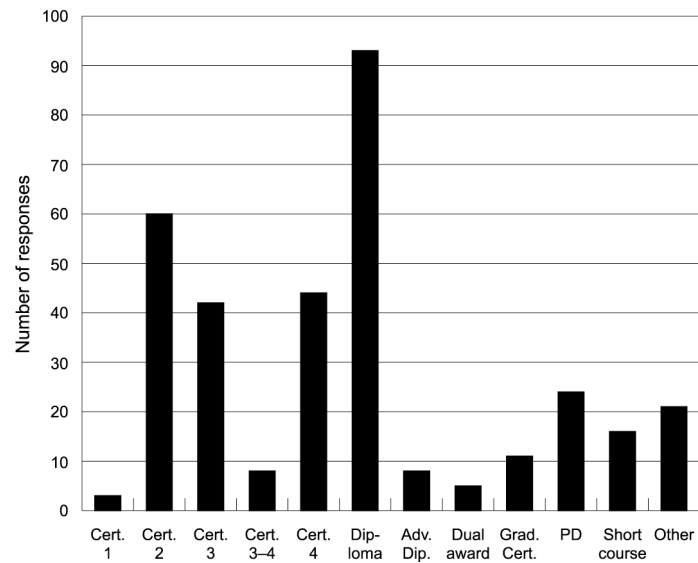
Quantitative data from the national survey

The online surveys sought information about specific aspects of online learning by means of Likert-type scale questions, Gap analysis and open-ended questions on quality learning. Both students and educators answered the same questions; thus a comparison between the responses was possible.

Likert scale analysis

The Likert-type scale poses questions which ask for responses such as a 'strongly agree', 'agree', 'disagree', 'strongly disagree' and 'uncertain'. Full details of the questionnaire can be found in appendix 1, and the detailed analysis of the results from the questionnaire can be found in appendix 2.

These Likert-type scale questions were grouped into the following areas:

✧ online education

✧ online communication

✧ online materials

✧ online support

✧ online assessment

✧ online technology.

The group of questions which addressed online education generally are directly related to the online learning environment, and probe learners' preferences relating to the online environment and the traditional face-to-face classroom environment.

Online communication explored communication through the electronic medium, such as chat or email. Aspects of this type of communication have been mentioned in the literature, specifically the time students have for reflective comment, and the freedom for students to make comments.

Students use online materials quite differently from the way they use printed materials, and these questions explored the importance to students of characteristics of online materials such as the interactivity and the nonlinear nature of the resources.

The questions investigating online support examined student attitudes to support and the need for induction, online help, support from teachers, support provided by other students and online library services.

Assessment online provides many challenges: the type of assessment that is appropriate, the interaction with the computer, the speed of receiving feedback as well as the validity and reliability of assessment through the online medium. These questions were designed to shed some light on these issues.

The set of questions on technology explored issues relating to access to technology and software, ease of use, and speed of downloading information.

Quality online learning—the student's perspective

The majority of students indicated they were receiving a quality online learning experience: 71% of all students responded that they were receiving a quality online learning experience; 18% were not experiencing quality online learning and 11% left the question blank. Discarding the blank responses, 80% of all respondents to this question were positive.

Table 3:   Respondents reporting quality online experiences by number and percentage

	Yes	No	No response	Total
Total sample	295	69	50	**414**
Percentage	71	17	12	**100**

The students were very positive about the flexibility, freedom and convenience of the online environment, but quite clear that they did not prefer it to face-to-face classes. They were neutral about which form of education took the most time. They were not studying online just because they could not get to class and they did not miss the discipline of getting to class. They considered that they needed to be more organised to study online than in class.

Flexibility

The most positive aspect to online learning was the flexibility it offered. All forms of questioning and analysis brought out flexibility as the number one indicator. Within flexibility there were different aspects, and these all emerged as being important to students and equally recognised by educators. The most strongly agreed with statement in the Likert-type scale was:

✧ I like the freedom of learning online.

The following statement was the third most agreed with:

✧ Learning online is more convenient for me than attending classes.

Students valued all the aspects of flexibility.

There was no evidence that programs are customised for different students. The 'just for me' element of flexibility was missing. However, what did come out clearly was the benefit students saw in being able to determine their own pace of learning. Some students wanted to speed through the work, while others wanted to reflect and assimilate information at a much slower pace.

Style of learning

The online medium provides flexibility in the style of learning. Students liked the flexibility of the web and the ability to have a large amount of information accessible at the same time. They did indicate that they liked sequential study, and appreciated having a subject map so they knew what they had to do and how all of the information fitted together. However there was no evidence that programs are customised for different students, so that 'just for me' is very limited at this stage.

> It was really great to be able to have many pages open at the same time and this helped me learn the subject.

Communication

Students were neutral about the communicative potential of online study. They felt that it gave them more time to reflect, but had no overall opinion about how worthwhile it was. Students relied on the relationship with their teacher and the teacher–student interaction far more than on the student-to-student interaction. Learning revolved around teachers. They saw email contact with their teacher as fast and efficient, but they did not interact more with other students online than they did in class. Educators valued the communication aspects more highly than did students. They have realised the potential for online communication to contribute substantially to online learning. These responses would indicate that the community-building aspect of online communication is in its infancy in the VET sector and certainly has not reached its potential.

Materials and content

Online interactive materials were very important to students and they accessed more learning resources online than when studying in class. They found their materials easy to follow, easy to understand and more up to date than class materials. The second most strongly agreed with statement in the Likert-type scale was:

✧ When I'm studying online it is very important to have interactive content.

Online materials were often considered to be very easy to understand, but the students still needed very clear instructions as to what was expected of them. They needed to be told what to do with the materials. In this area the educators were in strong agreement with the students.

Support

Students did not indicate that they needed a lot of support to study online. They considered support and administration significantly less important than technology, communication, resources, assessment and flexibility. This was the area of most difference between students' and educators' perspectives. Educators thought students required and would want far more support than the students indicated they would want or need. Students thought induction was important, but reported that no one had checked their skills before they started. They did not have ready access to online help and wanted a real person to help them, rather than a computer screen.

Assessment

Online assessment was of some importance to students. They were happy to have a computer checking their work and were neutral about the validity of online assessment and the ease of cheating online. These questions did not explore the aspects of downloading assignments and submitting work, critical problems identified by students in the open-ended questions.

Technology

Somewhat to the surprise of the researchers, students' attitudes to the technology were predominantly positive. They did not find getting into the system so difficult as to deter them from online learning. They were not annoyed with the course because web pages took a great deal of time to download. The technology was not confusing. Online links did not always fail. They had easy access to the hardware and software and satisfactory access to the internet. While respondents experienced problems with technology, only 25% reported these difficulties. Respondents overall were more positive than negative about their access to the internet and the associated technology. However, when the technology does not work well, it detracts significantly from the quality of the learning experience.

Approximately 25% of the students had problems with the technology. These students were quite vocal about their problems. Nevertheless, it is worth remembering that there were 75% students who were relatively positive about the technology.

Gap analysis

A Gap analysis was carried out to determine how the online learning environment was performing compared with student expectations. Each comment requires two responses: how important that aspect of online education is, and how the online unit rates with respect to that aspect. This provides a quantitative measure of the gap between the importance of the different aspects of online education to students and to educators, as well as identifying the standard of the actual online provision.

This analysis has also been useful in directly comparing student perspectives with educator perspectives.

Students' perspectives

The key statements were concerned with flexibility, communication, support and administration, assessment, technology and access. All these aspects were considered to be very important for students, with the exception of support, which was just important.

The online unit was rated as between medium and high for all areas with the exception of flexibility, which was closer to very high. Flexibility has been important for providing quality online learning and this is the area where the flexibility provided was closest to the importance for students. In no areas did the performance exceed the importance to the students.

The largest gap was in prompt technical help in the case of computer problems, where the service provided is of medium standard. Many of us who have been frustrated by the lack of technical support when required would be surprised that this area rated as high as medium.

From the Gap analysis order of importance is:

1 Technology

2 Assessment

3 Communication

4 Flexibility

5 Support.

Ratings of quality in the units studied were as follows:

1 Flexibility

2 Technology—with the exception of access to technical help, which rated worst of all the aspects

3 Assessment

4 Communication

5 Support.

Educators' perspectives

The educators' perspectives were not dissimilar to those of the students. They consider everything except support and administration very important. Support and administration only

rate as being of some importance, and this area had the smallest gap between importance and how the unit rated along with flexibility. Flexibility is important, and online education is actually seen to be very flexible. The largest gap was in the technology area where the online units of study only had a medium performance.

Students and educators—a similar view

There is very little difference in the importance that students and educators place on the various aspects of online learning detailed above. The importance for students was marginally lower in most cases (the exception being in support) than the importance to educators. Support and administration was the lowest area of importance for both groups. In all cases the unit rated less than its importance. This was true for both students and educators for all questions. While support and administration scored the lowest value, it was also the least important aspect for both groups. Technology was the most important with mixed ratings and flexibility rated best.