



**Australian Government**

**Department of Education,  
Science and Training**

# **Disability Service Provision and the Delivery of Education and Training Programmes:**

A New Approach to Improving  
Education and Training Services for  
Tertiary Students with Disabilities

EIP 03/07

A Report to the  
Commonwealth Department of Education, Science and Training

Disability Services  
The University of Western Australia  
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## **EXECUTIVE SUMMARY**

### **Overview**

Over the last few years disability services in tertiary institutions in Australia have experienced increasing demands to provide services to students with disabilities and medical conditions. Many institutions are trying to meet these increased demands with little or no increase in disability resources or dedicated service funding. Within this context this project sought to take an alternative view of disability service provision for the educational and learning needs of students in tertiary institutions. In looking at these issues, this project focused on the issue of flexibility within mainstream, on-campus educational and training programmes and drew a distinction between these and other learning programmes such as distance education and courses that are solely delivered electronically or on-line. The project took an integrated approach which included a review of literature on the learning experiences of students and a survey of the views and attitudes of teaching and disability staff towards the delivery of more flexible and accessible methods. The survey of teaching staff included university and TAFE lecturers from both metropolitan and regional centres in Western Australia. There were 579 completed surveys from teaching staff from tertiary education institutions. The survey of disability services staff also included respondents from the university and TAFE sectors and 35 completed surveys were included in the study.

### **Key findings**

#### *The Literature Review*

- Students with disabilities will generally benefit in the same ways as other students from the advantages offered by more flexible means of delivering educational and training programmes. There are, however, difficulties that some students with specific disabilities, such as vision impairment or blindness, face when course materials or information is presented on-line.
- Students with disabilities prefer courses that are presented in flexible ways, particularly where this means that the content is presented via several different means. For example, students prefer courses that are presented through a combination of face-to-face lectures, lecture notes, and on-line recordings or text to those that are only presented orally.
- There is some evidence that students with disabilities do not want traditional lecture or classroom based teaching to be replaced by electronic delivery of course content, but prefer that lecture-based presentations be supplemented with access to electronic versions of that material.
- The functional impact of a variety of disabilities can result in a number of difficulties that students without disabilities can also occasionally experience in the formal learning situation. The flexible delivery of programmes has the potential to address these common functional difficulties for students with disabilities and for other students. Flexible Teaching and Learning (FTL) processes and structures also result in reduced reliance on the conventional individualised supports that disability services provide.
- One particular innovative approach to the flexible delivery of programmes, known as Universal Design for Learning (UDL), appears to have the potential to address the diverse learning needs of students with disabilities within a context of quality and

better accessibility and service for all students. The literature on UDL strongly suggests that this approach can help all students to select an appropriate form of access and/or learning mode in a particular course of study, thus increasing learners' access to, and control over, their learning environment. However, further investigations will need to be carried out in the Australia tertiary context before these positive findings can be generalized to local settings.

### *Survey of Teaching Staff*

- Most teaching staff would like more opportunity to include FTL methods in their course delivery.
- A lack of resources and the fact that FTL is not always suitable for a particular type of course accounted for the majority of reasons that are preventing staff from introducing greater flexibility in course delivery.
- Teaching staff do not consider the needs of students with disabilities when considering the course design or the utilisation of more innovative and FTL methods.
- Teaching staff are generally unaware of the possible benefits or potential drawbacks that FTL methods hold for students with disabilities. They are also unaware of how their teaching methods impact on the difficulties faced by students with particular functional disabilities such as writing management problems.
- Flexible approaches to teaching and learning, such as Universal Design for Learning (UDL), are best promoted within the context of quality in teaching and in the benefits that can result from such approaches for all students.
- The main inhibiting factors for the utilization of FTL methods amongst teaching staff are resource factors such as time, lack of necessary equipment/resources, lack of funding to implement strategies, availability of technical support and class size. Respondents are not particularly concerned about the security of academic materials or intellectual property and copyright issues. This indicates that it is not the philosophical or attitudinal factors that inhibit the move to implementing FTL methods but the more pragmatic issues of funding, time and resources.
- Teaching staff recognise that FTL methods can result in a more inclusive learning experience for all students and that they may also provide a more satisfying teaching experience for themselves.
- The issue of loss of intellectual property and copyright is also seen to be an unlikely outcome of FTL approaches by most respondents.
- Almost half of the teaching staff respondents feel that it was likely or highly likely that FTL results in lower attendance levels at lectures and classes; and more than a third feel that adopting FTL methods result in less communication between staff and students, and less student-to-student interaction.
- There are no appreciable differences in the response patterns between university and TAFE sector teachers. The only area of difference is that TAFE lecturers feel the lack of resources to be more of an inhibiting factor in their take up of FTL options.

### *Survey of Disability Staff*

- The most common approach taken by disability officers to address learning needs is the provision of individual supports and individual negotiation with lecturers. The “individual supports” approach includes such things as note-taking, individual transcription, and personal tutoring.
- The least common approach taken to meeting the learning needs of students with disabilities is increasing the flexibility of the method of delivering the course. Slightly less than a third of staff frequently employ this approach. This confirms the literature review finding that the “support model” approach of addressing disability needs is still the dominant model adopted by disability services in tertiary institutions.
- In contrast to the operational approach actually employed by disability staff, the survey found that 84% of respondents agree or agree strongly that students’ learning needs are best met through more flexible delivery of education and training programmes.
- A minority of disability staff feel that the individual targeting of needs is a very cost efficient way to deliver services.
- Almost half of the disability staff surveyed think that students’ learning needs should be met without the need for any type of disclosure.
- Disability staff agree that students with different types of disabilities often have the same support needs and that students with different types of disabilities often require the same types of support services.
- Disability staff feel that many key factors that influence the type of approach taken to provide services do not support systematic ways, such as FTL methods, of addressing students needs. These factors include the tertiary institution’s disability action plan and disability policy, the culture of the disability officers’ professional environment, and the disability officer’s own current method of service provision.
- If additional resources were available, most disability staff would allocate these to staff development on flexible delivery methods and disability. This is an important finding and it gives some idea of the priority that disability services staff place on this topic.

### **Conclusion**

Both teaching and disability staff recognise the potential benefits that FTL holds for meeting the learning needs of students with disabilities. However, teaching staff do not take disability issues into consideration when planning and designing the delivery methods for their programmes. They also feel that there are important factors, such as time, resources and some negative outcomes on student learning, that inhibit their making more use of FTL methods. While disability staff would prefer to operate from a more systemic model of service provision, they do not currently do so. They also do not see their institutions’ Disability Action Plan, Disability Policy, or their professional culture as being supportive of systemic approaches, such as FTL, to meeting the learning needs of students with disabilities.

The consequence of this is that the potential benefits of meeting the learning needs of students with disabilities through such methods as FTL are not being realised in a comprehensive or planned way. Where course are being delivered in a flexible way, the specific needs of some students with disabilities such as vision impairment, blindness or hearing impairment are not

being adequately addressed. This study has identified a number of steps which disability staff can take to support the move towards more accessible and flexible delivery of education and training programmes. These include:

- The provision of practical support and resources to teaching staff, course design staff, and Communications and Information Technology (CIT) personnel who are involved in the planning and delivery of new courses.
- Raising awareness among CIT support staff and teachers of the need for on-line materials and teaching resources to be accessible and to at least meet the guiding World Wide Web Consortium (W3C) standards in the area.
- The consideration of flexible course delivery and design issues in the review of all disability policies and disability action plans.
- The consideration of programme delivery and design in any teaching, CIT, or course design staff development and training sessions.
- The development of resources to assist teaching staff in their efforts to provide high quality and easily accessible educational and training programmes. These include on-line resources such as those developed in the project, printed promotional materials, as well as the allocation of funds as incentives to staff to provide more flexible learning environments.
- Raising awareness among students with disabilities on the advantages of more systemic ways of addressing their particular learning needs.
- Raising awareness among disability, equity and diversity staff of the advantages for many groups of students of FTL approaches to service and support provision.

## **SECTION 1: INTRODUCTION**

### **Report structure**

This project report consists of four main sections.

- An Introduction including purpose, background and rationale, and structure.
- A review of the significant literature available on the issue of disability and education programme design and particularly the experience of students with disabilities.
- A report on a survey of teaching and disability staff's views on FTL and disability.
- An outline of some practical resources for disability and teaching staff in the area of FTL that have eventuated from the project.

Disability services in tertiary institutions in Australia are currently experiencing a rapid increase in demand for services and individual support provision. The increasing demands to provide a wider range and a better quality of services to more students with disabilities and medical conditions is placing greater pressure and expectations on these services and institutions. Many institutions are trying to meet these increased demands with little or no increase in disability resources or dedicated service funding. Within this context, the project sought to take an alternative approach to the question of disability service provision for the education and learning needs of these students in tertiary institutions. The project took an integrated approach which included the learning experiences of students with disabilities and the views and attitudes of teaching and disability staff towards the delivery of more flexible and accessible methods. The general approach to the topic was based on a philosophical stance that recognised the potential benefits of FTL methods, and particularly the approach known as Universal Design for Learning (UDL), for students with disabilities. These issues are discussed in Section 1 of the report which deals with the historical context, purpose and scope, background, and rationale for the project.

Section 2 of the report presents a review of the literature which focuses specifically on teaching and learning issues within a disability context. Particular attention is paid to students' experiences of flexible delivery and disability issues. The findings are reported in a summary of the literature review. Little attention has previously been paid to the attitudes and opinions of teaching staff regarding accessible course design, or to how the method of programme delivery impacts on the learning experiences of students with disabilities. This information was gained through a state-wide survey of teaching staff from both universities and TAFE colleges and this phase of the project is reported on in Section 3. The results of the literature review and the survey were analysed and informed the development of the project's on-line resources and strategies for utilising FTL methods to address disability needs at a more systemic level than has generally been the case. The outcomes of this resource development phase are included in Section 4 of the report.

### **Historical context**

Over the past two decades there has been an ongoing development in the provision of dedicated disability services within tertiary education institutions in Australia. Initially, the focus of resources and of policy development was generally on the most obvious and blatant disadvantages facing students. This typically involved issues concerned with access barriers

within the physical environment of the institutions, and the disadvantages that high-needs students faced in gaining entry and participating fully in their courses and learning environments. These areas will continue to demand the allocation of time and resources from disability services.

In more recent times another point of focus has developed that relates to the actual delivery of education and training services within the tertiary sector. It has been widely recognized for many years that students with disabilities and chronic medical conditions have particular needs to cope with the demands of their academic courses. However, it has not been so clearly acknowledged in the past that these needs are more often related to the programme delivery methods than to the disability itself. It is still the case that the majority of tertiary programmes are delivered in a conventional format of lectures and tutorials with very little flexibility regarding the time or manner in which classes and course materials can be accessed. The difficulties that students with disabilities face, and the amount of support required, are often dependent on these inflexible delivery styles and have little to do with the actual type or severity of disability. It is with this issue of FTL and how it might be encouraged among teaching staff that this project is concerned.

During the relatively recent period of development in disability service provision in tertiary institutions there has also been an important movement concerned with the inclusion of equity, diversity and disability issues within the context of a quality approach to education. There is an important, yet frequently overlooked, nexus between the pursuit of quality in teaching and learning and institutional approaches to the provision of disability supports. Quality in education and training is now commonly being associated with aspects of course delivery such as the level of flexibility, the use and application of electronic media, and opportunities for asynchronous and independent learning. Such innovative and quality-driven approaches to teaching and learning have an immense potential to impact positively on the learning experiences of students with disabilities. The current project aims to contribute in a practical way to this bridging of quality, innovation and flexibility in programme delivery within the context of diverse student needs and learning styles. It is hoped that this more systemic way of considering the provision of disability services in education institutions will give a new perspective on a number of crucial difficulties currently facing funding bodies, service providers and tertiary students with disabilities.

### **Purpose and scope**

The purpose of the project was to investigate the relationships between the method and flexibility of course delivery and the provision of disability supports. From a review of student experiences of FTL and the analysis of teaching and disability staff views on these issues it was hoped that the project could develop some practical resources and strategies for disability services staff and teaching staff in the area of FTL practices and inclusive course design. Previous studies have indicated that, from the point of view of both general student populations and students with disabilities, there are many advantages for students in the application of more FTL approaches to the provision of education services. The findings from the studies of tertiary students with disabilities will be considered in detail in the review of literature. The data gathering phase of this current project focused on the experiences of teaching and disability staff and on how they approached the question of servicing disability needs within a programme delivery context.

The outcomes of the project reflect this focus on the resource needs of teaching and disability staff. It was also intended that the project might complement the existing approaches of disability services that have concentrated on the meeting of individual support requirements. For example, recently a Commonwealth funded programme has been implemented to support high-needs students with disabilities. It is hoped that the systemic strategies and education resources developed through this project will complement individually focused programmes.

## **Background and rationale**

The usual approach to addressing disadvantages in the learning setting has been to provide individual supports to students with disabilities to enable them to gain access to the information and learning opportunities provided through their teachers and course structures. This ‘support model’ approach has been the dominant model in use in both the university and TAFE sectors. Although it will always have an important contribution to make, the support approach to service provision has several major flaws. For example, the support model:

- does not allow full participation at the point at which the learning experience is offered to other students;
- is usually reactive to students’ needs and consequently is implemented too late or after key aspects of a programme have already been delivered;
- is fundamentally at odds with the proactive intent of state and federal legislation covering disability access and service provision;
- assumes that the problem is located “within” the student and subsequently does not look at the basic accessibility of the service being delivered;
- does not fundamentally address the need for a change in current course delivery and teaching practices and can lead to a static perspective on issues of flexibility or accessibility;
- relies on methods of support such as note-taking, transcription services and assistive technology supports which are often expensive, complex to administer, reliant on high levels of technical knowledge, difficult to maintain over long periods, inadequate for replicating information and sometimes not encouraging of the full participation for the student with a disability;
- requires that supports must be re-established for every student in each course that they attempt;
- is based on the assumption that disclosure will always take place and that it will be done at the appropriate time and to the right individuals;
- does not address the needs of those who do not disclose or those who encounter problems directly at the point of delivery of the course.

These are all very substantial problems and together they produce disability services where staff are caught up in a cycle of service provision that is time consuming, highly administrative and which does little to produce long-term change in the equitable provision of education services. In contrast to the reactive approach of the support model, the current proposal comes from an inclusive and proactive perspective. The project focuses on the learning environment itself and investigates how teaching staff view the whole issue of FTL and disability. This approach has great potential to improve the effectiveness and efficiency of disability services in higher education and to do so from a perspective that meets the

legislative obligations for service provision to be accessible and flexible at the point of delivery.

### **Teaching strategies and distance education**

It needs to be stressed that it is not the purpose of the project to focus on specific course adaptations or teaching strategies for particular disabilities. In the past, the support approach has encouraged teaching staff to offer “reasonable accommodations” to students with disabilities through adopting certain inclusive teaching practices and alterations to courses. There are three key problems with this approach that reduce its utility and effectiveness. First and foremost, it relies on the frequent and ongoing disclosure of support needs and type of disability by students. Second, the approach is only targeted at specific disabilities and places huge demands on teaching staff when a number of different types of disabilities are present in a single class. Finally, it presents a very exclusionist approach to disability supports to teaching staff and encourages a deficit model of disability. Whatever course changes or inclusive teaching practices that are instigated through this reasonable accommodations approach, they are highly unlikely to be continued as they are seen to be relevant only to one or two “students with disabilities”.

This project also does not approach the issue of programme flexibility from a distance education perspective but focuses on the mainstream experience of on-campus learning environments. Much work has already been done in the distance education field and it is not the intention of this project to replicate or review the work done in these areas. This project was to investigate how standard campus-based courses, which are available to the general student population, might be moved towards more inclusive methods of design and delivery. Students with disabilities already experience many isolating circumstances and exclusionary practices, and the distance education model should not be seen as a solution to these disadvantages. While there are many service elements that are shared by the distance education and flexible delivery models, particularly in the technology area, they are approaches that currently address very different learning needs of students. This is not to say that distance education and flexible delivery models will not in the future form very innovative alliances in the delivery of education programmes. In fact, this is one very likely outcome of the current development of new student learning environments. For the moment however, the authors do not see the distance education approaches as an appropriate model for meeting the disability needs of students enrolled in conventional campus-based courses.

## **Proposed outcomes, wider applications and national significance**

Based on the information and results drawn from the review and the survey phases of the project, several identified outcomes were achieved and practical resources developed. These include:

- the development of a comprehensive on-line resource for teaching and disability staff focussing on disability and FTL and Universal Design for Learning (UDL);
- the development of best practice information with checklists and hints to assist course designers and teachers in the structuring of their programme delivery methods;
- a staff development model to support the implementation of alternative modes and practices that increase flexibility in the learning environment;
- the wide dissemination of the project findings and resources to progress the effective and efficient improvement of disability services in learning and academic support.

These outcomes will have an important national significance in that they will stimulate and support the move to a more equitable and efficient delivery of education and training services to tertiary students with disabilities. The numbers of tertiary students with disabilities is increasing rapidly and disability services need to find more innovative and proactive ways of providing support to these students. The existing disability services within universities and TAFE colleges cannot continue to provide the same level of services to students without the implementation of a more efficient approach that also addresses the need for quality in service provision and the meeting of individual needs. The community is also recognising that such services should generally be made available without the need for disclosure or notification of disability. The solution to these issues will not be found in traditional “support” models of disability services that target the micro-level of meeting disability needs, nor will it be found in the expectation that students adopt assistive technologies to overcome disadvantages in the classroom.

Instead of relying on students accommodating their learning styles and support needs to inflexible teaching practices, it is hoped that the results and resources developed through this project will assist teaching staff and disability officers to target service development in this area through more flexible and accessible academic and education programmes. This approach will have wide application in areas such as staff development, teaching and learning strategies, policy and planning considerations, information technology and course design. It is hoped that the results and resource outcomes of this project will contribute to the development of a more equitable and quality-focused approach to the inclusion of students with disability in education, training and learning environments.

## **SECTION 2: REVIEW OF LITERATURE**

### **Overview**

This review of literature on disability and programme delivery has included reports, scientific studies, surveys and resource books that specifically concern disability or equity issues within the context of FTL frameworks. The field of innovative teaching practices and methods of programme delivery is itself huge and this review did not attempt to speculate on how the findings in that area might relate to the issue of disability support. The focus was on the relatively small body of literature that deals specifically with flexible learning in the context of disability.

Most studies on the impact of innovative teaching practices on learning and education experiences find that there are considerable benefits in many important areas for the general student population (Dougiamas, 2000; Stickels & Neil, 1998; Voysey, 1998). In general this will also be the case for tertiary students with disabilities. Many studies have shown how students gain from independent learning processes, flexible approaches to course content delivery and from the adaptation of new technologies to create innovative settings. It has been recognised for some time that students with disabilities also benefit from such advances. At the Pathways II Conference in Brisbane in 1995 the then head of the equity division of the Commonwealth Department of Education made the statement (Gallagher 1995, p.66) that innovative teaching services will,

provide open-ended access ... to tertiary study, and also bring increased flexibility to tertiary education provision on campus. Participants will be able to study broadly at the time, place and pace of their choice.

From this basic position, the current review has focused specifically on disability related literature in this field and in particular on the development of a new approach called Universal Design for Learning (UDL) or Universal Instructional Design. The review takes a thematic approach to presenting its findings on disability and innovative teaching methods. These key themes are:

- contextual issues;
- the experiences of students with disabilities;
- the experiences of teaching staff;
- Universal Design for Learning and disability.

Before looking more closely at the review findings, some definitions of commonly used terms in this field are presented.

### **Definitions**

*Flexible teaching and learning* (FTL) is an umbrella term that relates to the range of provisions that create alternative learning environments for students. FTL provides a wide range of different access opportunities and teaching modes through which students may exercise choice. FTL includes the expert shaping of learning environments within a particular course or programme of study, specifically designed to optimise the learning opportunities of

the students. In certain situations this will enable students to select their most appropriate form of access and/or learning mode with respect to a particular programme of study, thus increasing learners' access to, and control over, their learning environment. FTL is the generic term used in this paper to refer to any methods of flexible programme delivery.

*Flexible programme delivery* (FPD) is a way of providing education programmes that uses a variety of learning environments that respond to the needs of a diverse student population. The flexibility aspect can refer to the guiding philosophy, the teaching style, the delivery methods and to the administrative processes that support the education or training provider.

*Self-directed learning* emphasises activities that encourage relatively independent access to knowledge, so that, to a large extent, students can plan their workload, adjust their learning pace, monitor their progress, and evaluate their own performance. This need not imply any lessening of academic standards since the learning is still subject to guidance and assessment by teachers.

*Equity* means fairness, or justice for students within the context of their rights to have equal access to the benefits that are provided by the education/training institution. In the tertiary sector the term "equity" often has connotations of discrimination in entry requirements and to the lack of access to education by certain groups within society. Equity basically means treating students fairly. Fair treatment, however, is not necessarily equal treatment.

*Inclusivity* is usually concerned with teaching practices that facilitate the best education outcomes for all students, regardless of factors such as gender, race, disability, sexuality, socio-economic status and cultural background. The term can also refer more specifically to the inclusive use of language and an awareness of cultural diversity.

*Diversity* refers to the varied characteristics which make one individual or group different from another, and which allows that individual or group to make unique contributions to a larger organization or community.

*Universal Design for Learning (UDL)* is a philosophy of education that aims to design and deliver education services and learning environments that are accessible and that accommodate a range of functional capabilities of students. UDL reduces the need for specific kinds of individualised services or remedial supports by connecting the quality of the education programme with a capacity to be accessible, equitable and accommodating to diverse student needs. UDL is achieved by means of flexible curricula materials and activities that provide alternatives for students with differing abilities. These alternatives are built into the instructional design and operating systems of education materials. They are not simply added on.

## **Contextual issues**

The number of students officially notifying their tertiary or training institution of their disability is increasing and will continue to increase. In an examination of the future issues and trends for students with disabilities, Johnson (2000) has identified an increase over the next 8-10 years of around 30% in the number of students with severe or profound disabilities who may access post secondary education and training. This increase will be substantially

higher for mild and moderate levels of disabilities which form the bulk of the numbers of students currently notifying their institutions that they have a disability. Johnson suggests that this trend, combined with the current pressure on existing resources in the area, will force disability services to “examine practices to ensure that we are making the best of what we have”. Johnson also acknowledges that it is important to ensure that courses and programs are being developed and delivered in the most flexible and inclusive manner. Reid (1999) also points to the need for FTL practices as a way of providing quality education in terms of best practice and improved learning opportunities for students with equity needs. In a discussion of learner-centred approaches to teaching, Reid (1999, p.93) concludes that to equip students for lifelong learning and to cater to their diverse needs “tertiary education programs must shift from teacher-dominated instruction to self-directed and distributed learning”.

Another important issue that sets the context for this review is that of the legislative and policy framework that governs the broad operational objectives of disability programmes within the tertiary sector. Stickels and Radloff (1996) have suggested that institutions are legally obliged to adjust programme delivery methods, methods of assessment and access to the learning environment to the needs of students with disabilities and medical conditions. These obligations are pointed out in both state and federal disability legislation. As long ago as 1993 the Federal Disability Discrimination Commissioner stated that, “it is the responsibility of the education institution to demonstrate 'unjustifiable hardship', not the responsibility of the person with a disability to prove it isn't” (Hastings, 1993). Hastings added that teachers will need to examine their methods of teaching and assessment, and the institution as a whole will need to develop policies and strategies which respond as creatively as possible to students with good minds, enthusiasm, vision, life plans and special needs.

Government legislation makes it clear that universities have an obligation to provide flexible and accommodating services at the point of delivery, and that these obligations come prior to the requirements for backup support services. While the current support model has provided an adequate level of support to many students, it does not address the needs of those who do not disclose or those who encounter problems directly at the point of delivery of the course. The support model is the dominant approach to providing disability services at tertiary education institutions in Australia (Edwards, 1999, 2000). This is a model of service delivery that deals with the provision of individual supports to students with disabilities. Although it will always have an important contribution to make, Edwards (1999) points out that the support approach to service provision has some major flaws and that the support model needs to be supplemented by more systemic ways of meeting reviewed the educational and training needs of tertiary students with disabilities.

Hartley and Young (2000) sound a cautionary note as to the promise that flexible learning might hold for students with disabilities. They state that flexible learning does present an enabling vision for the delivery of disability services, however, they also note that new learning environments can bring with them new types of barriers that result in unexpected disadvantages for students with disabilities. Regarding these new barriers they ask, (2000, pg 104),

Can the enabling vision be realised in relation to participation and successful outcomes for students with disabilities through flexible learning? Or have one set of barriers simply been exchanged for another.

Gollin and Kies (1999) have also expressed concern over the possible problems that innovative technologies might hold for equity groups. They point out that large populations of student with equity needs present a challenge to the traditional education practices of tertiary institutions. But, they say, “teaching with CIT [Communications and Information Technology] magnifies the education problems faced by such students”. They continue, “Solutions require us to think holistically about student needs and learning styles, and the education opportunities we put online” (1999, p.111). There is a need then to ensure that technological aspects to education programme delivery do not become another source of disadvantage for students with disabilities that results in some functional impact on their ability to use information technologies.

Several authors have pointed out that innovative teaching methods within an inclusive and holistic approach to learning do possess many advantages (Boden, 1999; Edwards, 1999; Doyle & Robson, 2002; O’Connor, 1991). This approach has the potential to greatly improve the effectiveness and efficiency of disability services in higher education. It does this from a perspective that meets the legislative obligations for service provision to be accessible and flexible at the point of delivery. This approach to improving disability services has seldom been taken, and it is hoped that this will be an innovative outlook on the ways that these services can operate in the future. In the disability field in education, this inclusive approach is also called Universal Design for learning (UDL) or universal instructional design. This topic will be dealt with more fully in a later section of the review.

### **The experiences and needs of students with disabilities in FTL environments**

All students need quality teaching to perform at their optimal level as learners. Quality learning emphasises learning for understanding and the development of analytical thinking, problem solving and professional communication skills. As student numbers rise and staff workloads increase it will become more difficult to maintain the level of quality teaching to students, and these changes may have a particular impact the learning experiences of students with disabilities (Stickels & Radloff, 1996). Stickels and Radloff (1996) argue that one reason for this is that the learning needs of students with disabilities and medical conditions may be more dependent on the quality of teaching and of the learning environment than the general population of students. They state that all students wish to experience good teaching and that this is difficult to provide unless the method of delivering a particular course is carefully design and implemented. The authors conclude that accommodating the needs of students with disabilities and improving their learning experiences can best be accomplished through the provision of quality teaching practices that include a focus on flexibility and ease of access which will in the end benefit all students.

The problems that students with disabilities encounter in attempting their course work and study demands can have a substantial impact on whether they finish. In a study of the retention and success rates of equity students, Mclean, Hartley, McDonald & Mc Donald, (1999) found that course structure can have a substantial impact on the experiences of students with disabilities. While the authors found no differences between students with disabilities and other equity students on a range of more general factors, they did find differences between these two groups with regard to such programme delivery related factors as the level of programme suitability, difficulty, academic support and study stress. Almost

one third of the total of 94 students with disabilities surveyed responded that the “suitability” in the way the programme was taught was of moderate or considerable importance in their decision to leave the course. Other factors are outlined in Table 1.

**Table 1: Reasons for withdrawing from course**

<b>Suitability of programme design</b>	<b>% of respondents saying item was important</b>
The way the programme was taught did not suit me	32.6
The overall organization of the programme did not suit me	24.9
The overall quality of the teaching	23.7
Inadequate academic support from staff	23.0
Classes were too large	18.1
Programme timetabling did not suit me	14.5

With regard to the matter of level of accessibility of course materials, McLean *et al* found that more than 50% of respondents said that their learning needs were not very well or even moderately supported by their institution.

The basic method of course delivery, and the subsequent need for individual supports, can also influence the enrolment choices of students with disabilities. O'Connor and Hartley (1993) conducted a study to determine the factors that encouraged and hindered students with a disability from accessing tertiary courses. Students and disability advisers from universities and TAFE Colleges were surveyed. A key finding identified by disability advisers was that the choice of courses was more limited for students with a disability because of their particular needs to access course information. These particular needs were in turn related to the availability and type of support programmes offered by the institutions. Recommendations of the study included the introduction and utilisation of alternative or flexible modes of teaching and learning and information dissemination, first to let students know how courses are delivered, and second to allow students access to a wider choice of education programs.

Edwards (1999) conducted a survey of the experiences of students with disabilities and the impact of their disability or medical condition on the ability to cope with the academic demands of courses. Students reported a range of disabilities with varying degrees of impact on their study and abilities to cope. The majority of students reported that the most difficult style of programme delivery to cope with was the traditional delivery mode of didactic "chalk and talk" lecture style, with no flexibility in information access. Students reported numerous problems with courses delivered in this inflexible mode. The problems most highly rated were difficulties with mental and physical fatigue, concentration in lectures and tutorials, note-taking in lectures and laboratories, and lack of lecture/reading notes.

Students attending lectures using traditional delivery methods, reported that most aspects of the programme created difficulties for their carrying out various activities. These difficulties were generally related to the type of disability. The components of a course that generated a low level of difficulty for all students were the quality of lecture handouts, oral presentation

of material, use of equipment, lecturer availability and obtaining general assistance. The following suggestions for alleviating these problems were made by students: making high-quality lecture and backup notes available, accessing material in their own time, increased awareness by academic staff, improved support equipment, audio-taped lectures and a policy that lecture notes should be made available to students. In considering delivery methods and their functional impact on students, Edwards found that the type of delivery method impacted on a broad cross section of disability types. Computer-based components were regarded as having the least deleterious impact on the student (Table 2).

**Table 2: Disability and level of impact on various types of disability**

Disability type	Level of impact of course delivery component			
	Lectures	Tutorials/Workshops	Laboratories	Computer-based component
hearing	High	High	moderate	low
vision	High	Moderate	high	low
writing	High	High	low	low
concentration	High	Moderate	moderate	moderate
attendance	High	High	high	low


Edwards asked about the impact of their disability or medical condition on the students' ability to cope with the academic demands of their course. The following table (table 3) shows that a broad range of severity of disability was represented by the student respondents. Most students indicated that their disability had a moderate or severe level of impact on their ability to cope.

**Table 3: Overall impact of disability on ability to cope with course**

Level of impact of disability	% of students
mild - some difficulties experienced	21
moderate - significant impact, performance is affected	36
severe - assistance may be needed, significant disadvantage in coping	36
profound - substantial supports needed, significant disadvantage experienced	7

Students were presented with a range of course delivery types ranging from very flexible methods, e.g. the provision of skeleton notes and on-line access to course content, to very inflexible methods, e.g. just a verbal presentation of information. The large majority of students nominated inflexible methods of programme delivery, such as didactic "chalk and talk" methods, as the most difficult to cope with. Edwards asked students to indicate what were the most common types of difficulties related to their disability or medical condition that they encountered in inflexible courses. There were several basic areas that were problematic for students in attempting this type of course (table 4).

**Table 4: Problems encountered with inflexible delivery methods**

<b>Problem encountered</b>	<b>Frequency</b>
mental and physical fatigue	Most Frequent  Least Frequent
concentration problems in lectures and tutorials	
note-taking in lectures and laboratories	
no lecture/reading notes	
movement in lectures not possible due to seating	
chronic pain	
lack of awareness by academic staff	
medication side effects impact on ability to cope in lectures	
workload problems due to disability	
seeing overheads	
motivation	
hearing the lecturer	
early lectures	
problems with disability supports	

Lectures are still, in most undergraduate courses, the main method for imparting information to students. In attending lectures students need to carry out physical and intellectual activities to access and record the information that is presented by the lecturer. In his study Edwards (1999) asked students with disabilities to rate their difficulty in carrying out various activities when attending lectures for courses that used traditional delivery methods (Table 5). The level and type of disability was not related to the level of difficulty of the rated activities. His means that students with disabilities were experiencing common difficulties irrespective of disability.

**Table 5: Level of difficulty experienced in lectures**

<b>Lecture activity</b>	<b>Level of difficulty experienced (Low, Moderate, Severe)</b>
Being physically present at lectures	Moderate
Reading the board or overheads	Low for non-vision impaired, Severe for vision impaired
Hearing the lecturer	Low for non-hearing impaired, Severe for hearing impaired
Quality of lecture hand outs	Low
Reading lecture hand outs	Low for non-vision impaired, Moderate for vision impaired
Accessing required readings	Moderate for vision and mobility impaired, low for all others
Writing notes	Severe for writing & sensory impaired, moderate for others
Concentrating during the lecture	Moderate for learning disability & mental illness, low for others
Discussing needs with the lecturer	Moderate for mental illness and learning disability
Lecturer availability	Low
Availability of lecture notes	Severe for writing impaired, sensory impaired, moderate for others
Getting general assistance	Low

Students were asked to rate the difficulty of carrying out various activities when attending standard tutorials and problem-solving workshops. The results are presented in Table 6.

**Table 6: Level of difficulty experienced in tutorials**

<b>Tutorial/workshop activity</b>	<b>Level of difficulty experienced</b>
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	<b>(Low, Moderate, Severe)</b>
Hearing in a group situation	Low for non hearing impaired Severe for hearing impaired
Concentrating	Severe for deafness, mental illness and chronic fatigue, low for all others
Talking/Presenting material orally	Low
Using equipment	Low
Discussing your needs with the lecturer	Low
Obtaining notes & other written material from the tutor	Moderate
Getting general assistance (please specify)	Low
Catching up on missed tutorials	Moderate for mental illness
Seating problems	Moderate for medical conditions

Students gave some suggestions for alleviating these problems. These were as follows:

- making lectures notes available
- easily obtaining backup notes for tutorials/lectures
- access material in own time
- increased awareness (academic staff)
- better support equipment
- better quality notes
- audio-taped lectures
- policy that notes should be made available to students

Edwards (1999) also investigated which course delivery methods presented the least difficulties for students with disability. All but one student chose delivery types that had employed traditional lecture styles with high flexibility in information access. Only one student preferred a non-traditional type of delivery where the whole course was presented solely on the Internet. The characteristics of the most preferred delivery method included:

- standard lectures (oral presentation of material, demonstrations, use of teaching aids, e.g. overhead, video)
- tutorials
- main points of lecture notes provided
- copies of overheads
- lectures audio-taped (may be available on Internet)
- some or full lecture notes be available on Internet.

The reasons given for preferring the above methods of course delivery were that it allows greater concentration on understanding the material with less pressure to write notes. The methods also allow for pre-reading and learning at one's own pace. Almost all students wanted to retain the traditional lecture and tutorial format because this allowed the opportunity for interaction, greater comprehension of the course content and for socialising and peer-group learning. Edwards found that most students preferred the combination of the traditional lecture and tutorial format with the more flexible delivery modes because this added the benefits of flexibility with the chance for class interaction, greater comprehension of the course content, and socialising and peer group learning. Almost all of the surveyed students felt that the traditional forms of course delivery should be supplemented with flexible delivery methods and designed according to inclusive teaching and learning principles.

These experiences and delivery preferences of students with disabilities seem to match the preferences of the general student quite closely. Several studies of tertiary student

populations (Gollin and Kies, 1999; Farrell & Armstrong; 1998; Lee, Budd, Doornbusch, & Fyfe, 2000) that investigated students' opinions and experiences of FTL approaches confirm that the benefits of these programmes are very similar for both students with disabilities and the general population of students. For example, the learning experiences of students with disabilities that were found in the Edwards study closely reflect those of a survey of general students by Stone (1997). The survey found that most students reported positive experiences of FTL because it :

- provided concise lecture materials
- allowed more timetable flexibility
- gave greater support and guidance for those who preferred self learning
- presented the opportunity for more structure and direction in the course content
- allowed greater flexibility in how course material is made available enabling the student to chose their level of involvement in formal lecture and tutorial classes

Many of these benefits to non-disabled students were also reported in the Edward's study (1999) and the experiences of both these students and those with disabilities reflect the positive influence that flexible and accessible modes of teaching and course design can have on student learning.

### **Current innovations in flexible delivery for tertiary students with disabilities**

#### *International Innovations - Universal Design for Learning (UDL)*

One approach that has attracted considerable international attention is that that of Universal Design for Learning (UDL). In general terms universal design is an approach towards the planning and design of services, products, and environments that maximises useability and accessibility for everyone. This model has now been applied to the area education and training services. Bowe (2000) states that the concept of universal design first arose when the design of the built environment took the idea of 'accessibility' (with its connotation of disability and government regulated building codes) and presented it as appealing to all. The concept quickly moved to products and, more recently, to services including education. The Assistive Technology Act in the USA (1998) defines the term in the following way:

Universal Design means a concept or philosophy for designing and delivering products and services that are useable by people with the widest range of functional capabilities. This includes products and services that are directly useable (without requiring assistive technology) and...those that are made useable with assistive technologies.

It is with the possibilities offered by UDL and more flexible teaching practices that many potential benefits are opened up for students with disabilities (Stahl & Branaman, 2000). Flexibility in teaching and learning means that the education approach uses a variety of student-centred teaching methods, resources and flexible administrative practices that respond to the needs of a diverse student population, and enable them to achieve vocational and professional qualifications and the goals of a university education (Hartley & Young, 2000). Under this general approach towards delivering education programmes, UDL provides some specific principles on how course design can cater for diverse needs (Bowe, 2000). Universal

design operates on some basic principles that have been reinterpreted by Bowe (2000) so that they can be applied to any education setting. These principles are outlined in the Table 7.

Bowe recommends that UDL curricula and materials should be designed and implemented to enable the education programme to (after Bowe, 2000):

- offer multiple ways for students to interact with and respond to curricula and materials to accommodate those with different learning styles;
- present information in different ways. Anything written or otherwise offered visually is also spoken aloud, and visa versa. Computers provide easy and rapid ways to customise how information is presented. Preparing curricula materials, handouts etc., on disk and making those available to students so they can make large print versions, use screen readers etc.
- ensure course materials and equipment are compatible with the functional and technological resources available to the great majority of students.
- provide multiple ways for students to demonstrate competency and knowledge;
- ensure web pages comply with the World Wide Web Consortium access guidelines.

**Table 7 : The principles of Universal Design**

- |   |
|---|
| <ol style="list-style-type: none"><li>1. <b>Equitable use.</b> The same means of use by all: identical where possible, equivalent when not. Avoid segregating or stigmatising any users. Make provisions for privacy, security and safety equally for all.</li><li>2. <b>Flexibility in use.</b> Provide choices in methods of use. Accommodate right or left-handed access and use, facilitate the user's accuracy and precision and provide adaptability to the users pace.</li><li>3. <b>Simple and intuitive use.</b> Eliminate unnecessary complexity. Be consistent with user expectations and intuition. Accommodate a wide range of literacy and language skills. Provide effective feedback.</li><li>4. <b>Perceptible information.</b> Use different modes (visual, verbal, tactile) for presentation of essential information. Maximise "legibility" of essential information. Make it easy to give instructions or directions. Provide compatibility with a variety of techniques or devices used by people with sensory limitations.</li><li>5. <b>Tolerance for error.</b> Arrange elements to minimise hazards or errors; the most used elements being the most accessible: hazardous elements eliminated, isolated or shielded.</li><li>6. <b>Low physical effort.</b> Allow users to maintain a neutral body position. Use reasonable operating forces, minimise repetitive actions and sustained physical effort.</li><li>7. <b>Size and space for approach and use.</b> Provide a clear line of sight to important elements for any seated or standing user. Make reach to all components comfortable for any seated or standing user. Accommodate variations in handgrip and size. Provide space for the use of any assistive devices or personal assistance.</li></ol> |
|---|

Bowe (2000) has noted that the principles place responsibility for making curricula, materials and environments accessible to and useable by all students, staff and the general public who access the institution. Where possible, the provision of education – facilities, services, equipment and teaching - should be designed/developed in the first instance to be accessible and useable for all without the need for assistive technology, or at minimum accessible and useable with assistive technology. Table 8 presents a comparison on a number of key issues between the UDL approach and the Assistive Technology approach to providing access to education programmes.

**Table 8 (after Bowe, 2000): Comparison of UDL and Assistive technology approaches**

<b>Key issue for providing easy and independent access</b>	<b>Universal Design for Learning</b>	<b>Assistive Technology</b>
Responsibility for providing access	Responsibility of designers, developers, educators	Responsibility of user or user's agent
Proactive or reactive approach	Proactive: Done while service is being designed and developed	Reactive: Done while or after service is delivered
Availability of the service	Very high: Serves many people at once	Very low: Serves one individual user
Ease of renewing service accessibility	High: Renewable accessibility	Low: Consumable accessibility
Level of innovation	Very high: Stimulates new and more interesting methods of programme delivery	Very low: The teacher may not even be aware of the students use of assistive technology.
Disclosure	No disclosure needed	Disclosure needed, often on many occasions
Level of inclusivity	Very high level of inclusion of all students needs	Very Low level of inclusivity
Allocation of resources	Resources result in higher quality programme for all students	Resources allocated on an individual basis.

Bowe (2000, 10) states that,

Universal design in education tells educators to prepare, in advance, for ... very different learning needs and, to the extent feasible, design and delivery instruction so as to meet those needs.

He also makes the point that, by designing accessible methods of delivery of courses from the outset, educators can contain costs and more easily market courses through electronic means. UDL recognises that it is much more expensive to alter courses after they are developed or put in supports such as textbooks changed to different formats. Often these costs are hidden and known only to disability staff.

### *Applications of UDL*

Legislation to accommodate student minority groups has been in effect in the USA for more than thirty years, and several innovative education philosophies and methods have come out of this social justice background. Concurrent with the elimination of inequitable barriers to access for prospective students, there has been a recognition that the increase in diversity has identified a need for increasing and broadening the ways in which education is delivered (Green, 1989). Green noted that in the USA the emphasis to date has been on assisting minorities to adapt to the existing norms and traditional practices of education and training institutions. He proposes a different approach and says that *how* we teach should be changed to reflect a diverse student population and a pluralistic society. The Higher Education Council of the National Board of Employment, Education and Training in the USA found that, globally, there has been a progression from an elite system of tertiary education to an accessible system of education for a much larger proportion of the general population. This movement has also been seen in attempts to increase the enrolments of disadvantaged groups such as students with disabilities. Although the equity initiatives of these countries differ, most are aiming to achieve representative proportions of diverse student bodies, reflecting the proportions of those groups within the diverse community populations that they come from.

This broader context has meant that innovation such as UDL has been quickly taken up by many educators and applied in a number of different learning settings.

Rose and Meyer (2000a) applied the principles of UDL in high school classrooms which included students with disabilities. The authors found that all students benefited from the inclusion of UDL in the way that various subject areas were taught. They made particular note of the potential of UDL for developing new means and methods for teaching stating that (2000a, p.39),

Applied to instruction, the principles of universal design can guide the development of education tools to accommodate the diverse needs of all learners, including those with disabilities.

In terms of its potential for meeting a great variety of individual needs, the authors conclude that (2000a, p.43),

UDL offers multiple means of representation, expression and engagement to adjust to the needs of all students, including those with learning disabilities, visual and auditory impairments, physical disabilities and diverse learning preferences as reflected by the Boston Globe's student writers. A working knowledge of the brain systems discussed here facilitates the design and appropriate use of UDL curricula and technology.

In a study of students with high support needs, Rose, Sethuraman, and Meo (2000) found that UDL can address many students with severe levels of functional disabilities. They state that that many students with disability and health problems encounter general functional difficulties in learning settings. They also found that students with very high levels of individual support needs can benefit from UDL approaches. They recommend that the adoption of the UDL approach to designing learning environments has the potential to meet many of the needs of these students. They make the statement (2000, p.57) that, “UDL provides educators with a framework to customize learning goals and assemble curriculum materials that are appropriate for *all* learners” (emphasis in the original).

The special-needs approach to disability has been criticized for being a short-term strategy that faces major challenges. Commenting on the situation in the Canadian tertiary sector, Bickenbach (1998) noted that the needs of people with disabilities are often seen to compete with the needs, wants and rights of the rest of the population and that they are, consequently, regarded as just another set of partisan demands on teaching staff. Birkenbach proposes that the concept of ‘universal design’ overcomes this problem and, if implemented, has long-term potential to address the needs of students with disabilities within the greater context of quality, accessibility and best practice.

Stahl and Branaman (2000, ¶16) make the point that the universal design approach to education must be proactively pursued. They point out that, “As colleges and universities increase their reliance on online offerings, Universal Design features should be built in”. Stahl and Branaman note that this universal design presence in education programmes will require collaboration between teaching staff, course designers, disability officers and policy makers. In conclusion, Stahl and Branaman, 2000, ¶17) state,

“As the flexibility of online materials expands and the speed of its delivery increases, the potential for providing students with automatic accommodations becomes more and more of a reality. With increased awareness and careful planning everyone - the colleges and universities, the publishers, and most significantly, the students - will gain.”

Meyer and O'Neill (2000) identified some cost advantages of UDL applications over present support practices of providing disability supports to individual students. The traditional methods of brailing or taping of texts and provision of note-takers, interpreters and transcribers are costly. These supports require considerable organisation and are often delivered after the point of delivery of the lecture or lab. The authors note that the UDL approach looks at how educators generally prepare lectures, class notes, laboratory books and other materials. Typically these are prepared on computers and so there is a readily accessible means for providing alternative access to information. Provision on disk to students who are blind, vision impaired or have difficulty note-taking enables this material to be spoken, printed in Braille or manipulated on computer to change font size or colour for reading or printing. Planning in advance makes the course available for more students at the time of delivery for very little cost.

The interest in UDL in the USA reflects the general interest in flexible course delivery that is a feature of college programmes in that country. The basic premise of UDL is that a curriculum should include alternatives that make the learning in it accessible and applicable to students with different backgrounds, learning styles, abilities and disabilities. As Rose and Meyer (2000, p.68) put it,

The ‘universal’ in UDL does not imply a single solution for everyone, but rather it underscores the need for inherently flexible, customisable content, assignments, and activities.

To date, most of the papers promoting UDL principles focus heavily on issue of the flexibility principle of Universal Design (Meyer & O'Neill, 2000; Rose & Meyer, 2000a&b; Rose et al, 2000; Stahl and Branaman, 2000). The key reason for this is that flexibility of access is vital for dealing with:

- i) the differences between learners in individual learning styles and means of accessing the learning experiences and information of a course;
- ii) with the need for teachers to employ different instructional media and techniques to best convey the content of their courses.

#### *Other international initiatives*

There are many approaches to providing academic support to students with disabilities that have been implemented in other countries. In the United Kingdom some new approaches to course flexibility have been developed through institutions such as the Open University (Dundas, 1994). This organisation is regarded as a leading provider of flexible programs for students with disabilities. The Open University operates using distance education methods supported by tutorial assistance and residential components to courses. The advantages of this model are that it combines new methods of delivering courses with high levels of traditional support services to ensure individual needs are being assessed and met. Special services provided by the Open University for students with disabilities include:

- the full range of disability services which are made available on a decentralised basis;
- tutorial services utilising a variety of modes: face-to-face contact, telephone, print, email, provision of preparatory courses;
- special learning materials;
- audio cassette version of printed course materials, enlarged print formats, transcripts of lectures, and subtitled course videos;
- special examination arrangements;
- loan of special equipment.

In New Zealand, the University of Waikato has developed an interesting programme of FTL incorporating supports for students with disabilities. The Disability Support Service is responsible for delivering a unique and inclusive programme of FTL to students with disabilities or "individual differences". Haines and Molenaar (2000) have been instrumental in setting up the programme and have identified in their findings the following benefits to students and advocate that;

- students become actively involved in developing their own learning strategies;
- students take ownership of their learning, gaining confidence in their ability to learn;
- students that are confident in their abilities to learn and comfortable with their individual differences "will assist in facilitating the development of FTL practices within the university".

These views are supported by Dowdy and Osborne (Dowdy, 2000), who suggest that students who see themselves primarily as a student rather than as a person with a disability are more likely to succeed as student and successfully manage their course and learning needs. The authors propose that these students have higher self-esteem because they refuse to passively accept that they always need to accommodate their goals and their preferred way of doing things to the constraints of their disability.

In Canada, Thomas and Thomas (1991) edited a directory of college facilities for students with disabilities and they noted that most services were focused on providing support services to students on an individual basis. They recommended a more mainstream type approach to dealing with issues such as the need for alternative formats. They recognised that inclusive practice and FTL offers the opportunity to create a range of different access opportunities and learning environments for all students but particularly students with disabilities and chronic medical conditions. They concluded that these approaches can enable students to select their most appropriate form of access and/or learning mode in a particular course of study, thus increasing learners' access to, and control over, their learning environment. Allowing a more FTL environment will free up valuable resources and allow them to be directed and used in the most appropriate manner.

Another Canadian initiative called the Liberated Learning Project has been undertaken by Saint Mary's University in Halifax. The projects' mission is to create and foster a learning environment free of barriers, where all students have equal access to information. The projects objectives are to develop and test multiple applications of speech recognition in university classrooms in a number of countries. Through this application of speech recognition in tertiary settings, the project hopes to attain a high level of accuracy in the real

time conversion of speech to text. The co-ordinators hope to demonstrate that speech recognition is preferred and has advantages over conventional classroom note-taking for some students with disabilities. It is also expected that non-disabled students will report positive uses of speech recognition in the classroom. The project will assess the use of speech recognition and lecture notes generated from speech recognition as an alternative to traditional classroom note taking. There are several project partners involved in the Liberated Learning Project. They include Deafax, which is a UK community-based centre for innovations in CIT for deaf and hearing impaired people, Stanford University, the University of the Sunshine Coast (USC), Ryerson University, in Toronto, University College of Cape Breton, the Alexander Graham Bell Institute, Durham College and the Ontario Institute of Technology (OIT) in Canada.

### *Some Australian Initiatives*

Over the past decade, Australian universities have witnessed an expansion in the variety of teaching and learning methods used to deliver education programmes. As is the case with all students, these innovations have had an impact on the learning experiences of students with disabilities. Student with disabilities have benefited from these innovations wherever they result in greater flexibility and mainstreaming of access provision. A report on equity innovations (NBEET, 1996) noted that institutions that had mainstreamed equity concerns also provided better practical incorporation of new programs and services. In these institutions, equity has become a part of the way they plan and implement their quality teaching and learning programs. The practice of 'mainstreaming' equity issues concerned with student learning has resulted in education programmes that are more flexible and accessible.

Dundas (1994) reported that the majority of students with a disability were enrolled in traditional academic programs on campus, and that each institution was offering much the same range of support services including note takers, audiotapes, computer-based methods for turning text into sound and sound into text, scanning and brailing, TTY, telephones, building modifications to improve access, personal carers, and assistance in the library for searching catalogues and photocopying. Although there is an awareness of FTL issues in most tertiary institutions across Australia, disability services still rely on individualised support approaches to addressing the needs of students and do not utilise whatever FTL systems that may in placar.

On a local level, individual institutions, departments and teaching staff are offering a range of FTL practices, including computer-based learning and video presentations, and access to course material on the Internet. However, support services for students with disabilities and medical conditions is still heavily utilised, with little emphasis on the development of flexible delivery formats. More recently however, there have been several initiatives that take a different approach to service provision in this area. The Liberated Learning Project mentioned earlier has several partners involved in the project in Australia. These include the University of the Gold Coast, Murdoch University and the Perth Central College of TAFE. The Project is a unique application of speech recognition technology as a method for assisting students with disabilities in the university classroom.

In these trials lectures are transcribed in real time using automated speech recognition and projected to the class, enabling students to "see" the lecture. After the lecture, comprehensive, software-generated notes are provided in a variety of formats. During lectures the teacher uses a wireless microphone 'connected' to a robust computer system running speech recognition software modified for classroom use. The text of the lecture is displayed via a projector to the class in real time so students can simultaneously see and hear the lecture as it is delivered. All students have access to comprehensive lecture notes in a variety of formats. The project has not yet been evaluated but promises many new opportunities to students and staff.

The disability programme at the University of Western Australia has been utilising a more systemic approach to meeting the learning needs of students with disabilities for the past three years (Edwards, 1999; 2000). This focus has been made possible because of the teaching and learning initiatives taken by the University which include the automatic digital recording of audio and visual information presented in lectures and making those recordings available online. A majority of the University's main undergraduate teaching venues have automated recording facilities and this has resulted in a dramatic reduction for requests from students with disabilities for note taking and transcription supports. This system, called the "iLecture" system is now being expanded to other institutions.

The Orange campus of TAFE in New South Wales is also undertaking an initiative that is based on the principles of UDL. The programme consists of several components: designing a template for print and web-based resources, training content developers in UDL, redesigning several subjects using UDL principles, and trialling this approach with students and teachers who use assistive technologies. The project is planning to work towards a policy where UDL is institutionally endorsed as the basis for all learning opportunities offered. The approach is promoted on the basis that 'it is good for everyone' as opposed to its being a disability issue.

All of the national and international initiatives in developing more systemic means of addressing the learning needs of students with disabilities are in their formative stages and have not yet been thoroughly evaluated. Although there is an awareness of the possible benefits of FTL issues among many disability services staff in many tertiary institutions, the use of these methods does not seem to have been widely applied or utilised as a major means for meeting students' learning needs. The greater use of systemic approaches to delivering disability services will depend on a wider level of awareness and support for these types of innovations and for evidence that they can provide a more equitable, effective and efficient means of meeting the learning needs of these students.

### *Disability and quality in education*

Much has been done in the Australian tertiary education to address equity issues and access for students with disabilities to education. Most significantly, the government in 1990 released a policy document titled *A Fair Chance For All: Higher Education That's Within Everyone's Reach* (Department of Employment, Education, and Training, 1990). This policy pledged a national commitment to address access issues for education and has been the stimulus for the advancement of a more inclusive higher education system. The move to shift to more inclusive higher education services is supported by the Disability Discrimination Act (DDA) formulated and legislated in 1992. The Act (states that:

it is unlawful for an education authority to discriminate against a student on the ground of the student's disability or a disability of any of the student's associates, by denying the student access or limiting the student's access, to any benefit provided by the education authority.

The National Board of Employment, Education and Training (1996) noted that the higher education authorities that have made the move to equity mainstreaming throughout faculties and departments, compared with single centralised units, have achieved conceptual and practical incorporation of new programs. In these institutions, equity has become a part of the way they plan and implement their quality teaching and learning programs. The practice of 'mainstreaming' equity ensures that University processes and procedures are flexible and accessible to all students.

The National Committee of Inquiry into Higher Education suggests that the 'normalisation' of disability implies that universities should be encouraged to generate a culture and environment where disability is not regarded as a problem but as an opportunity for improving the quality of education services. Adopting these methods in the future of higher education will develop best practice for both students and staff. The pursuit of quality in the students' learning experience is a value that all educators should strive for. Franklin *et al* (1995) have made the point that quality in learning should take account of the needs of a variety of students' perspectives, and this means that quality in education should be an inclusive and equitable approach that caters for all students. Nightingale and O'Neil (1994) suggest that in looking for a meaningful definition of quality in learning in higher education, we should be looking at education as a transformative process that involves a change in roles of the student and the teacher. The authors state that it should be assumed that quality is part of a continuous improvement process.

According to Parker (1999), FTL benefits all students, not just students with disabilities, because effective teaching for students with disabilities is likely to represent good practice for all students. The implications of adopting FTL techniques are substantial for all students, however, a significant benefit of these techniques is the outcomes it will have for students with a disability or chronic medical condition. Parker mentions that these methods can create greater access to education for all students and especially those from minority groups. Parker makes the point that the pursuit of quality and best practice does not mean 'trying to be all things to all students' but rather aiming to provide the most inclusive teaching and learning experience for the benefit to all students.

There are many examples in the literature on FTL where the provision of quality education programmes include characteristics like flexibility. Baron and Thiele (1995) conducted a two year longitudinal study of flexible learning in a South Australian TAFE College which reports on the shared responses of non-disabled students and staff. The authors found that respondents reported several advantages to a more flexible system of teaching and learning including increased progression rates, increased independence for learners and increased co-operation between teachers and support staff. Staff and students alike expressed a preference for allowing students the opportunity to decide their most appropriate study option, either traditional teaching in tutorial form or a more flexible format. The authors acknowledge that, in order to adopt FTL practices, staff are required to make a significant role change from authorities in a relatively narrow teaching sense to resourceful facilitators of learning in courses of study. As a consequence, the findings from the study suggest that a programme of ongoing staff development would fit the ideal of the flexible worker and lifelong learner.

However, quality in the students' learning experience can also be negatively affected by flexible delivery methods such as the on-line provision of learning materials and course components. Houweling (1999) argues that to access on-line education the user must have access to the Internet, and this is where the problem begins. This dilemma was also recognised in a report by West (1998), highlighting concern that a move to computer-based learning materials might disadvantage people who do not have access to computers, or a high degree of familiarity with computers, especially older people.

**Table 9: Benefits of FTL methods**

Authors/ Study	Student Benefits			
	Personal	Independence	Learning	Other students
<b>Haines and Molenaar</b>		Student takes ownership of their own learning, gains confidence in learning ability	Student assists facilitating the development of FTL within the university.	
<b>Dowdy and Osborne</b>	Better self-esteem more proactive management of disability issues	Student is more in control and likely to seek supports where needed		
<b>McClellan</b>	Can complete course and achieve goals		Better able to cope with demands of course	Greater flexibility and access to course materials for all students
<b>Edwards</b>	Flexible delivery results in less pressure and less stress	Allows pre-reading and learning at own pace	Allows greater concentration and understanding of materials	
<b>Moses</b>	Motivation to succeed	Allows pre-reading and learning at own pace	Allows greater concentration and understanding of materials	

A more negative aspect of flexible programme delivery, specifically distance mode education, was identified by Johnston and Challis (1994) as a lack of opportunity for students to discover knowledge by a process of discussion and interaction with a group of scholars. The findings from this study suggest that the best formula for higher education teaching and learning is using the flexible techniques of distance education in a face-to-face "on-campus" mode. These findings support those of Edwards (1999) who found that students with a disability or chronic medical condition identified their greatest preference as face-to-face contact with peers and lecturers, supported by materials that were developed with teaching and learning

principles and delivered through a flexible mode. Table 9 summarises the benefits for students undertaking their education in an environment of FTL.

### **Benefits and challenges facing teaching staff**

In an article on learning to teach in higher education, Ramsden (1992) argues that teachers may see themselves as transmitters of information, thereby reflecting the wider expectation, as opposed to that of transformers of students' learning. The teacher is portrayed in one of three roles - the manager of the learning environment, the facilitator of learning, and the spoon-feeder role. The model(s) out of which the teacher operates will have implications for the learning experiences, which proceed in the classroom. Ramsden (1992) indicates that deep, surface, and achievement-oriented learning styles in students will be reinforced or enhanced by the types of assessments used by the lecturer, the relationship which develops between the lecturer and the students, and the content of the curriculum. For example, a high content curriculum, with expectations of a passive student role is likely to lead to surface, short-lived learning, whilst a problem based curriculum, which involves critical questioning and analysis, will lead to a deep learning outcome.

Regarding the issue of the roles and expectations of the teacher and the student, Franklin and Roche (1995) identified a fundamental dilemma. Students need to have control over their learning in order to promote quality deep learning but this is opposed by a fear of relinquishing control of a process for which teachers are, traditionally, held responsible. In order to help students take responsibility for their own learning, Jeppesen, H. Laursen, P.F., O'Neil, M. (1994) indicate the role of the lecturer as that of facilitator, mentor and consultant to the student's learning. The lecturer takes on the role of resource and guide. Within such a role, the lecturer is required to take on a reflective practitioner role, which involves movement within the action research cycle. In such a role, the lecturer, working towards continuous improvement, would integrate evaluation and reflection as critical components of his or her work.

In a study into the views on the experiences of academics in a FTL environment, Willmot and McLean (1994) reported that students' and academics' perceptions of flexible learning tended to be very similar. Both agreed that in order to adopt flexible approaches there must be student-teacher interaction and teachers should be the ones to determine appropriate levels and types of guidance. Academics believed that teachers have an important role in assessing students' willingness and capacity to accept the responsibility for their own learning, and that this option would not be a cost cutting strategy. That is, in order to motivate and encourage students to become responsible for their own learning there must be a degree of teacher-student interaction where discussion and discovery occur, thus engendering motivation. Teacher contact should not be diminished but used more effectively than just courseware transfer.

In another study on FTL, Johnston and Challis (1994) studied six academics who moved from teaching a Master's degree in a traditional face-to-face tutorial format, to one in which they also taught the same programme in a distance mode. Teaching the distance mode of the unit was less satisfactory for academics than teaching the traditional face-to-face mode because of the lack of contact with the students and the inability to get to know the students individually. In terms of content, however, the academics agreed unanimously that the students studying in

the distance mode were offered a far greater amount and higher quality information than those studying in the traditional mode. Furthermore, the distance students received the whole course without needing to attend every session, and thus had both a complete and permanent record of the content. The academics also noted that the need to develop written notes had led to the sharing with students of more detailed and up-to-date information.

The study conducted by Edwards (1999) looked at the impact of FTL for students with disabilities on teaching staff. None of the staff had changed any process in their basic method of delivery to improve access for students with disabilities. Edwards reported that most staff agreed that didactic lectures would have the most deleterious impact on students with various disabilities and chronic medical conditions, and computer-based components of course delivery the least impact of all methods of course delivery. However, when asked about making changes to their teaching practices to accommodate students, most staff indicated they were unlikely to put any form of their materials on the internet. The primary reason was the cost in terms of time and resources. Edwards found that all staff had encountered students with some form of disability and their response to the needs of these students was always to make an *individual* arrangement to accommodate them. When asked about developing new and more flexible approaches to teaching and learning, all staff were concerned about quality teaching and learning practices, and not just with equity issues. A common reason was the desire to explore innovative teaching practices so that content could be communicated in a variety of ways. Some staff mentioned that their main focus was to improve the quality of the learning experience for students while others felt that their subject area was not particularly suitable for presentation via computer or web-based methods. With respect to the benefits to staff offering their courses in a more inclusive teaching and learning format, staff commonly mentioned that it would help to meet their teaching objectives, improve the quality of their teaching and provide a better learning experience for students.

When asked what changes could be made to programme delivery to provide better access to the course content and learning activities for students with a chronic medical condition or a disability (Edwards, 1999). Many staff indicated the Internet as a possible alternative mode of course delivery for nearly every aspect of the course. Another common suggestion was to include in the course outline a section on equity, and several staff mentioned that this would be a good way to encourage disclosure of disability so that accommodations could be more systematically provided in a proactive way. When staff were asked about the benefits for students of increased flexibility in delivery, the following advantages were provided: more independent learning, improved discussion and increased range of learning opportunities available to all students. The following disadvantages of more flexible delivery alternatives were also given: drop in lecture attendance, reducing the responsibility of students, reducing the opportunity for active learning..

A study conducted on university professors pioneering the integration of assistive technology and related content into their courses in Las Vegas identified a shift in the thinking and philosophy of the professors (Babbitt, 1998). The professors concluded unanimously that as a result of their experiences, they were more aware of the bigger picture and how their course relates to the world now and in the future. They also reported that they were more aware of the state of the world they were sending their students into and the needs and demands of the public their graduates will serve. FTL broadens awareness and generates community links,



bringing teaching to the present and making learning more relevant for students and staff alike (Babbitt, 1998).

The above studies appear to suggest that while most staff support the concept of increasing FTL practices, in reality there are many barriers to the practice of flexible programme delivery. The Edwards (1999) study found that staff regarded an inclusive approach to teaching and learning as time consuming, costly to set up, with increased workloads to maintain the system, with a subsequent lack of control of access to course content. In support of these, McNaught (2000) has outlined particular concerns for teaching staff with regard to the use of technology in FTL in higher education as:

- coherence of policy across all levels of institutional operations and specific policies which impact on flexible learning within institutions;
- intellectual property, particularly the role of copyright in online environments;
- leadership and institutional culture;
- professional development and training;
- staff recognition and rewards;
- motivation for individuals to implement and use FTL;
- specific resource issues related to funding for maintenance or updating of materials;
- staff time release and support staff.



The study also considered the general benefits for all students that would follow from increased flexibility in delivery. Several disadvantages of more flexible delivery alternatives were also mentioned. These comments are presented in the following table.

**Table 10: Advantages and disadvantages of flexible programme delivery for all students**

<b>Advantages to all students</b>	<b>Frequency</b>
more independent learning	More commonly mentioned  Less commonly mentioned
improve class discussion	
increase the range of learning opportunities	
course content is more available	
study at home	
assist students when problems arise outside class	
<b>Disadvantages to all students</b>	<b>Frequency</b>
may be a drop in attendance	More commonly mentioned  Less commonly mentioned
The availability of notes needs monitoring	
no disadvantage for students	
may lead to less emphasis on collective learning opportunities	
loss of learning opportunity for some students who decide not to come to lectures	
does not encourage independent work*	

Edwards looked at the benefits and disadvantages for teaching staff of FTL methods. The teaching staff felt that there were advantages but also some considerable drawbacks to delivering their courses by more flexible means. Table 11 presents these comments.

**Table 11: Advantage and disadvantages of FPD for teaching staff**

<b>Benefits of flexible delivery</b>	<b>Frequency</b>
will help me meet my teaching objectives	More commonly mentioned  Less commonly mentioned
improve the quality of my teaching	
provide a better learning experience for students	
decrease need for individual support	
free up time to allow for more latitude in content coverage	
"warm inner glow that I might be meeting the needs of students with disabilities"	
<b>Disadvantages of flexible delivery</b>	<b>Frequency</b>
time consuming and costly to set up	More commonly mentioned  Less commonly mentioned
Increased workload in maintaining the system	
lack of control of access to course content	
loss of control of teaching context of materials	
students will stop coming to lectures	
lead to less collective or peer learning opportunities	

Edwards also asked teaching staff what changes could be made to the programme delivery method to provide better access to students with disabilities to the course content and learning activities. This was in addition to the accommodations that could be made on an individual basis. The following table outlines the suggestions provided.

**Table 12: Suggestions for altering delivery method to meet disability needs**

<b>Disability Type</b>	<b>Lectures</b>	<b>Tutorials/ Workshops</b>	<b>Laboratories</b>	<b>Computer-based component</b>
Hearing	Internet, audio-taping,	Internet, buddy system*	Internet, buddy system	no changes suggested
Vision	Internet, detailed notes, put resource in closed reserve	Internet, put resources in closed reserve, buddy system	Internet, buddy system	Web page to meet disability standards
Writing	Internet, detailed notes, put resource in closed reserve	Internet, put resources in closed reserve, buddy system	Internet, buddy system	no changes suggested
Concentration	more visual information, notes	Internet	Internet	no changes suggested
Attendance	Internet, put resource in closed reserve	Internet	Internet	make available from home

\* the buddy system is where a suitable student is teamed up with a student to provide peer support and advice

One common suggestion that was unrelated to the course structure was to include in the course outline a section on equity. Several interviewees mentioned that this would be a good way to encourage disclosure of disability so that accommodations could be more systematically provided in a pro-active way.

In an earlier study of teaching and learning issues for students with disabilities, Silver and Bourke (1998) found that the main barriers for implementing FTL strategies were:

- time required to introduce and implement the techniques;
- staff attitudes to implementing such techniques thus creating the need for a shift in teaching culture;
- staff training in inclusive FTL practices;
- a loss of the sense of academic freedom to choose to teach in the particular form they desire.

Stickels and Radloff (1996) identified a number of factors that impacted negatively on the capacity of teaching staff to explore more innovative options in their teaching methods. These were:

- limited human and material resources
- large class sizes
- work overload for staff and students
- requirement to do 'more with less'
- mismatched expectations between staff and students

It is beyond the scope of this review to identify and describe individual technologies and components that can assist in removing barriers and implementing FTL techniques, however some broad strategies and innovations will be discussed.

Dundas (1995) noted that there is considerable inertia amongst staff regarding changing from traditional teaching methods to a learner-centred approach. One suggestion is that a cultural shift in the direction of FTL could be promoted through the quality assurance movement by making staff development for the teaching function, an explicit quality assurance criterion (NBEET, 1994). Staff development and human resources are an important component of a successful transition to FTL, as are resource support, incentive schemes for best practice, student involvement, and a shift in culture that supports creative attitudes to course development and teaching. Inclusive FTL is not a static pathway and will have different roads for different institutions and staff within the institutions and students. Allowing individualism within an institution will lead to greater teaching and learning for all.

In her 1999 report, Barrett outlined some very useful and basic strategies for removing barriers and making education more inclusive. Prior to a university course being offered to students, Barrett suggests that course materials and booklists should always be prepared in electronic format where possible and should be available prior to commencement, to allow students time to become familiar with course content. Students' anxiety may be minimised with the opportunity to familiarise themselves with equipment, laboratories and workshops prior to course commencement, and students themselves should have direct input to negotiate the format of education they require. Barrett recommends the following strategies be used during the delivery of course content, to facilitate FTL.

- students should be directed to key points in their reading by providing chapter outlines and self directed learning tasks

- a variety of teaching methods and presentation styles should be used, in plain English to minimise complex communication
- teachers should interact with students and rephrase information if necessary
- avoid digressing from the topic and use concrete examples as demonstrations
- supply students with key points and assignment details in hard copy
- read aloud all transparencies and blackboard/whiteboard work
- be flexible to genuine individual needs with regard to assignment deadlines
- ask if assistance is required and be alert to students needs.

Ratynyeke (1999) proposed that an incentive for lecturers to produce good quality, inclusive flexible teaching materials would come with the implementation of a recommendation of the Teaching and Learning Committee to recognise excellence in inclusivity in teaching and learning. They proposed an award available for three to five years, after which the criteria for teaching would become part of the criteria for all Excellence in Teaching Awards. Nunan (1996) supports this approach and suggests that flexible learning would be facilitated where reward systems and measures of productivity are changed to account for skills and energies directed towards establishing teaching and learning environments. In addition, student learning interactions and outcomes are judged to be superior to other approaches. The author argued that although this would be a complex matter, financial support and recognition of the production of resources, and development of support mechanisms accompanying the design of FTL environments would increase the likelihood of a shift in this direction.

Taylor (1996) recognise that FTL have a great future in the provision of higher education, however, some leadership needs to be established and the thrust forward must continue in a cohesive manner. There is currently concern that FTL is developing in a "piecemeal fashion" and although there is no desire to restrict innovations in teaching and learning there is a need for it to move together under a unified technology that will make access much easier for students. However, while the face-to-face environment is appreciated and irreplaceable, and the enthusiasm of a teacher can never be replaced, it could be better used more sparingly.

Devlin (2000) also recognises the enormous potential for FTL to facilitate access to education for students with a disability. She suggests that in the longer term, FTL may offer real reductions in costs and improvement in service delivery. During the initial phase of implementing FTL practices, it would be appropriate to assume that the costs in time and energy would be substantial. This would include preparation of courseware by teaching staff, and development of alternative formats. The personnel within staff training, human resources, technical support, and other areas will all be required to support the shift to FTL. An effort should be made to minimise costs in terms of time and energy. The resources needed to facilitate a shift to FTL include technology, hardware, and human resources. A conscious institution-wide shift to FTL would facilitate a more organised allocation and ultimately a more concentrated and focussed effort of resources.

The National Board of Employment, Education and Training (1995) further emphasise that at any given level of funding, we suggest that the quality of the service provided to students can be raised by wider and more effective use of FTL. Relatively small changes in the nature of funding, in the shape of the money would suffice. Lundin (1993) also agrees that funding need not be a major issue in the initial shift to FTL. The authors concludes that for every case of FTL, far more can be done in terms of students gaining access to a greater range of subject

offerings, and that the cost is always less per student for the student and the institution, and equivalent to conventional teaching. For examples, a study conducted at San Jose State University identifies the process of installing and implementing accessible workstations throughout the University. Christerson 1998) outline the importance of identifying legal and budgetary constraints, applying standards to meet diverse disability needs and obtaining technical help to install and maintain correct hardware and software.

## **Summary**

This review of literature has focused on the issue of FTL and the learning needs of students with disability. The general move towards more innovative and FTL methods has been associated with the benefits that these changes hold for students with disabilities. It seems reasonable to conclude that students with disabilities will share in many of the benefits that these methods offer to the general population of students. However, there are some areas, such as technological access, that remain as potential areas of disadvantage for some disability groups.

The possibilities of more flexible approaches are most clearly seen with the application of the concepts and principles of universal design to education settings. It seems that this theoretical framework for looking at issues of diversity, difference and individual need has the capacity to address these matters within a context of quality and better accessibility and servicing for all students. Several authors suggest that this can enable students to select their most appropriate form of access and/or learning mode in a particular course of study, thus increasing learners' access to, and control over, their learning environment. Overall, these developments offer many advantages over traditional ways of providing supports to higher education students with disabilities. However, traditional methods still dominate and systematic and targeted strategies are required to assist the move to flexible delivery to be inclusive of students with disabilities.

Many of the papers reviewed suggested that, where there was a focus was on providing flexible learning environments, the needs of students with disabilities were largely met without the need for special support or individual arrangements. The particular access needs of students with disabilities (and of other equity students) can be to a large extent catered for through the application of the several core principles of flexibility and accessibility. It also seems that students with disabilities find these more flexible methods of gaining access to course content preferable to the traditional support systems that disability offices typically provide. Again, further research is needed to confirm these findings.

## **SECTION 3: REPORT ON SURVEYS OF TEACHING AND DISABILITY STAFF**

### **INTRODUCTION**

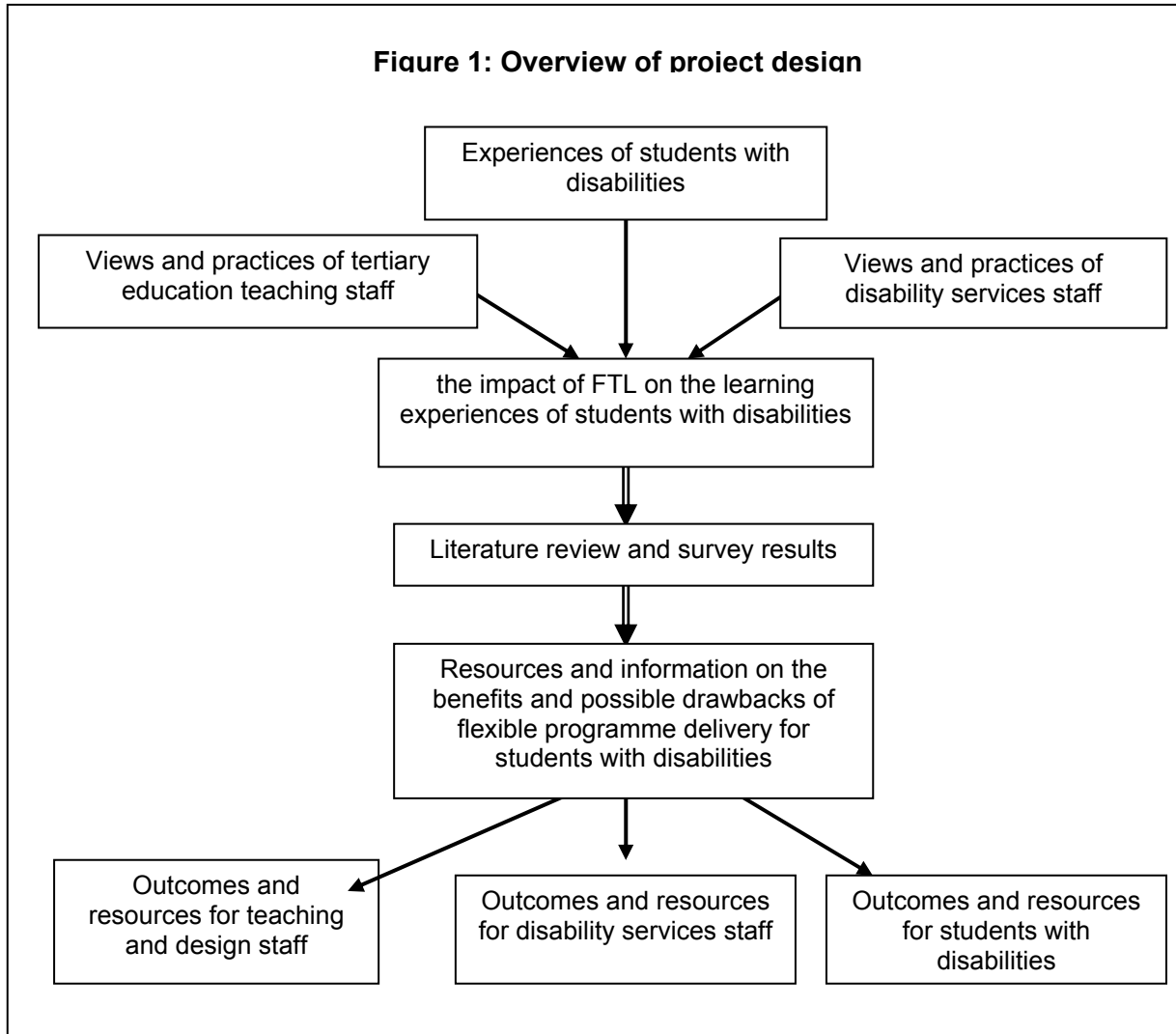
The development of new teaching technologies and communication media during the 1980s and 1990s has enabled possibilities for educators to provide more flexible and interesting learning experiences for their students (general reference here). There is also a wide range of students from non-traditional backgrounds who have gained particular benefit from these innovations. Perhaps those who stand to benefit most are students with disabilities and chronic health conditions. These students have traditionally faced considerable barriers and experienced ongoing disadvantages in the post-secondary education sector (Accommodations on line article). It has already been found that the general student population has benefited in many ways from these new approaches to teaching and learning (Brown, 2000; Devlin, 2000; Lundin, 1993; Olive, 1998). With some important qualifications in such areas as the accessibility of some Internet resources, these findings have been initially confirmed in the studies and reports that have considered the impact of these teaching approaches on the learning experiences of students with disabilities (Edwards, 1999, Stahl & Branaman, 2000; Doyle & Robson, 2002).

Various studies have investigated the attitudes of teaching staff to the new directions in the design and implementation of tertiary courses. However, no studies have considered in detail the viewpoints that teaching staff have towards the implications that these innovations might have for the provision of disability supports and for the learning experiences of students with disabilities. The institutional consideration of disability matters in the design of flexible course delivery is a crucial one for disability service providers. These more adaptive and accommodating methods of teaching and training have a great potential to create learning environments which can include the diversity of student needs. However, if disability issues are not specifically considered and addressed through such means as course design and compliance of IT with disability standards, then FTL might become yet another way in which students with disabilities will be marginalised and excluded from the mainstream of student life (Edwards, 1999).

To gain some basic understanding of this topic the current project collected information from three different sources - students with disabilities, teaching staff, and disability services staff. A basic overview of the views and experiences of students with disabilities was collected through the review of relevant literature on this topic. The project collected information from teaching staff and disability services staff from both the university and the TAFE sectors. Given that the views of teaching staff are central to issues of course design and delivery, the focus of the teaching staff surveys was on the identification of resource barriers and concerns that prevented staff from including inclusivity and accessibility factors in the way they taught their courses. The survey of disability services staff focused on the issue of meeting disability needs from the service provider perspective. The main interest here was on how disability needs were viewed and subsequently addressed by the disability service staff.

With basic information on FTL from these three complementary perspectives it was expected that clearer understanding of the issues surrounding FTL and disability could be gained. This, in turn, would inform the development of various types of resources and activities to further promote the potential for innovation in disability service provision in tertiary settings. Figure

1 sets out the basic structure of the study and shows how the information collected during the literature review and data gathering phases fed into the development of resources and activities for the various key stakeholders.



## METHOD

### Procedure

Nine institutions participated in the survey of teaching staff. These were The University of Western Australia (UWA), Edith Cowan University (ECU), Murdoch University (MU), Midland College of TAFE, South East Metropolitan College of TAFE, West Coast College of TAFE, Great Southern College of TAFE, South East Metropolitan College of TAFE, Karratha College of TAFE.

### *The Teaching Staff Survey*

The literature review process helped to identify several previous questionnaires and survey forms that were used to develop the draft survey for teaching staff. This draft went through several phases of piloting and editing before the final version was developed. A total of 3,000 teaching staff from Western Australian universities and TAFE colleges were sent survey forms through internal mail via their institutional disability office. Staff names and addresses were obtained through the human resources section of the various institutions. All survey forms had a covering letter from either the Managing Director, Vice Chancellor, or Deputy Vice Chancellor of the particular institution encouraging their staff to participate in the survey. Survey forms were to be returned to the particular institution's disability office. Follow-up reminders were sent out by most participating institutions through internal staff members e-mail lists.

Only permanent full-time or part-time teaching staff were asked to participate in the survey. However, a small percentage of casual staff members (2%) did complete the survey and these were also included in the results. Of the total number of potential respondents (3000), 579 returned questionnaires which represents a response rate of 19.30%.

### *The Disability Staff Survey*

The survey for disability staff was developed and piloted on two disability staff from the university sector and one disability officer from the TAFE sector. The form was sent out via e-mail through the AUS-TED e-mail discussion list which is the main electronic discussion forum for disability officers in tertiary education and training institutions in Australia. The list has daily communications passing between disability officers and is used on a regular basis to conduct surveys and to publicise research projects. The list has a membership of approximately 100 disability officers across the country. Thirty-two completed survey forms were returned by disability staff.

## **The Survey Forms**

There were two basic areas of interest that most of the survey items on the teaching staff forms focused on (see Appendix A). The first was the identification of the perceived benefits and barriers faced by teaching staff in adopting FTL methods. The second was the connections and considerations that teachers and lecturers made between programme design and delivery and their impact on the functioning of students with disabilities. In addition to this, basic demographic information was collected concerning the respondents' teaching institution, employment status and teaching experience. The teaching staff survey concentrated on staff's views and awareness of how disability and flexible teaching and learning issues were connected. FTL was defined as "the provision of a teaching and learning environment that supports a range of access methods and different learning modes to optimise the learning opportunities of students". The disability services staff survey focused on how staff applied flexible service delivery concepts in comparison to the other models of service provision that are currently used. Again, items were included in the survey that elicited information on both the benefits and barriers to using these approaches.

## RESULTS

### Teaching Staff Survey Results

#### *Demographics*

The response rate of 19.3% means that the results cannot be interpreted as a close representation of the views of teaching staff on the issue of flexible teaching and disability. However, the substantial number of surveys collected in the study provide a starting point for drawing general conclusions about this important topic. While the responses tend to favour views that are already supportive of the flexible delivery of courses, the survey produced many useful findings on issues such as the awareness among teaching staff of disability matters and the impact of delivery method on the functional problems faced by these students. A considerable proportion of participants were not inclined to pursue further opportunities for FTL methods. The analysis of these responses also provided some data on what views and barriers were stopping teaching staff from utilising these methods more consistently. Of the 579 teaching staff who returned completed surveys 417 (72%), were from universities and 162 (28%), were from TAFE colleges. The great majority of these staff were full-time teachers, and had extensive teaching backgrounds with 81% having taught for more than five years and only 8% of respondents having less than three years of teaching experience.

**Table 13: Teaching status**

Teaching status	Freq	% of teaching staff
Full-time	496	86
Part-time	54	9
Casual	12	2
No response	17	3
Total	579	100

#### *Flexible Teaching and Learning*

The majority of teaching staff (67%) reported that they would like to have more opportunity for FTL in their course delivery. Of those who responded negatively 133 (70%) said they did not want to go to more flexible options because they felt that the current options provided adequate flexible opportunities. Only 14% of those who did not want more FTL gave other reasons such as class size or lack of time for preparing materials as reasons for not adopting more FTL methods.

**Table 14: Barriers to adopting FTL methods**

<b>Barriers for teachers who want more opportunity for implementing FTL methods</b>	<b>Percentages</b>
Lack of technical support, committed resources	34
FTL practices are not always suitable	21
Lack of funding; costs involved	11
Teaching load; large classes; workload	10
Time available to develop FTL methods	2
Limited knowledge about FTL practices delivery practices	8
Flexible delivery practices increases amount of work for students	7
Prevented by type of department policy and/or /tradition	5

Those staff who wanted more opportunity for FTL were asked what factors were preventing them from adopting more flexible teaching methods. Lack of resources and the fact that FTL was not always suitable for a particular type of course accounted for the majority of reasons (Table 14). The survey participants were asked to indicate their agreement or disagreement with a number of statements on how their teaching methods, and FTL in general, might impact on students with disabilities. The results are presented in Table 15.

**Table 15: Attitudes towards FTL and disability**

<b>Statement</b>	<b>Agree</b>	<b>Disagree</b>	<b>Unsure</b>	<b>No Response</b>
My teaching methods cater well for most students with disabilities	54	10	31	5
My usual methods of presenting class content may present difficulties for students who have physical difficulties with writing	39	44	13	4
I do not know how teaching methods might impact on students with a disability	21	54	21	4
I think that students with a disability should be accommodated through support services only and not by how I teach	5	74	17	4
I would change my teaching & learning methods if I knew how I might better accommodate students with disabilities	71	9	16	4
I would change my teaching and learning methods if I could see the benefit(s) for students with disabilities	74	8	13	5

The survey participants were asked to rate the importance of a range of factors that may inhibit teaching staff from adopting more FTL methods. The results are presented in Table 16. Participants were also asked if there were any other factors, other than those presented, that might inhibit or constrain them from adopting more flexible methods of teaching. No additional factors were offered.

**Table 16: Inhibiting or constraining factors for adopting FTL methods**

<b>Inhibiting or Constraining Factor</b>	<b>Very Little</b>	<b>Moderate Amount</b>	<b>A lot</b>	<b>No response</b>
Class size	20	28	51	1
Lack of necessary equipment/resources	7	25	67	1
Availability of technical support	12	36	51	1
Lack of funding to cover teaching load when developing flexible courses	6	23	70	2
Lack of funding to implement strategies	6	30	62	2
Constraints on time to create flexible materials	2	18	79	1
Concern over intellectual property/copyright	65	23	11	1
Security of academic materials	69	23	6	2
Loss of academic freedom	63	21	11	5
Nature of the course/unit is not conducive to flexible delivery	40	34	23	3
Faculty/department does not encourage flexible delivery	43	33	22	2
Lack of professional development/training/support	26	44	29	1
Learning space /environment restrictions	24	40	33	2

The barriers to implementing FTL were further analysed in terms of those staff who supported it and those who were not wanting to adopt FTL methods. Table 17 presents some of the more interesting results from this analysis.

**Table 17 : Barriers for FTL supportive and non-supportive respondents**

<b>Inhibiting or Constraining Factor</b>	<b>% of staff who felt factors would inhibit them from adopting FTL methods</b>	
	<b>Respondents not supportive of FTL</b>	<b>Respondents supportive of FTL</b>
Class size	52	48
Lack of necessary equipment/resources	69	62
Lack of technical support	54	45
Lack of teaching cover when developing flexible courses	73	66
Lack of funding to implement strategies	64	59
Constraints on time to create flexible materials	82	75
Concern over intellectual property/copyright	9	15
Security of academic materials	5	7
Loss of academic freedom	7	19
Faculty/department does not encourage flexible delivery	23	21

Participants were also questioned about the expected outcomes of adopting more flexible methods of teaching and learning (Table 18). Various outcomes for students with disabilities, the general student population, and teaching staff were included in the set of options

presented. The options presented to respondents came from the piloting phase of the survey development and also from previous research (Edwards, 1999). Some individual respondents included additional written comments about particular outcomes of adopting more FTL methods. Each of these additional comments are listed in Table 19.

**Table 18: Likelihood of various outcomes of adopting FTL methods**

<b>Possible outcome of adopting FTL methods</b>	<b>Unlikely</b>	<b>Likely</b>	<b>Highly Likely</b>	<b>No response</b>
A more inclusive learning experience for all students	12	44	40	4
A more satisfying teaching experience for staff	18	45	34	4
Drop off in attendance in lectures	47	31	17	5
Opens up other options for using lecture time	25	44	25	6
Less communication between staff and students	58	25	12	5
Less student to student interaction	52	25	19	5
Opens up more avenues for individual learning styles	8	35	52	4
A better learning experience for students with disability	6	31	51	6
Students listening and note-taking skills decrease	42	33	18	7
Increased pass rates for all students	31	44	16	8
Loss of intellectual property/copyright	66	18	7	9

The additional comments recorded in Table 19 include views that are very mixed in their view of FTL methods and the outcomes they might result in for both students and teachers. They do, however, show how contentious and important this issue is for many teachers who are faced with increasing demands and expectations from students and administrators.

**Table 19: additional comments on outcomes of FTL**

<b>Additional comments on FTL outcomes by individual survey respondents</b>
<p>“All beneficial outcomes depend on the availability of support and resources”</p> <p>“We already have procedures in place for the low quality of students; cannot do any more than that”</p> <p>“Students now expect/demand that course content be delivered in several modes”</p> <p>“I find that FTL results in improved student attitudes to learning and improved work ethic”</p> <p>“The adoption of flexible delivery practices is never appropriate”</p> <p>“I endorse flexible teaching practices, teachers stand to learn a lot from teaching students with disabilities”</p> <p>“I believe that FTL results in the loss of satisfaction and feeling of personal ownership of course by students”</p> <p>“FTL has the benefit that it results in more effective use of modern technological aids for teaching”</p> <p>“FTL only works when there is effective communication between staff and students”</p> <p>“There is a loss of depth and value in courses that use FTL methods; students feel less employable due to adoption of flexible delivery practices (particularly with practical courses)”</p> <p>“Flexible delivery requires more work, is inefficient use of time, not included in staff workloads”</p>

*University and TAFE lecturer responses*

Neither the teaching experience nor the employment status of participants was related to whether they wanted more opportunity to adopt FTL methods in their courses. Neither was there a difference between universities and TAFE colleges in the wish of teachers to use FTL methods. About the same proportion of TAFE and university lecturers (48% and 50% respectively) felt that their usual methods of course delivery might present difficulties for students with physical difficulties. Both TAFE and University lecturers generally felt that teachers also need to take a major role in providing support to students with disabilities.

There were similar levels of concern between university and TAFE lecturers over the impact that such factors as class size, time constraints, and technical and funding support would have on adopting more FTL methods. However, more TAFE staff (34%) than university staff (27%) felt that a lack of professional development, training and support would inhibit them from adopting FTL approaches. On the important issues of lecture attendance, similar small proportions of both TAFE (16%) and University (18%) staff felt that the use of FTL approaches would result in drop off in the numbers of students attending lectures.

*Adopting FTL methods*

A majority of lecturers (63%) who wanted more opportunity to use FTL methods thought that their teaching methods catered well for most students with disabilities. More than half (51%) of all those lecturers who did not want to use more FTL methods thought that their teaching did not cater well for students with disabilities. Three quarters of lecturers who supported more FTL felt that they also had a role in providing academic support to students with disabilities, while a somewhat smaller proportion (65%) of those who were not supportive of using FTL felt the same way. Those who would use more FTL were also more likely to change their teaching and learning methods if they knew how they might better accommodate students with disabilities. Table 20 compares staff who support a move to FTL to those who do not in their outcomes expectations for various FTL issues.

**Table 20: Responses of supportive/non-supportive staff for positive & negative FTL outcomes**

<b>Possible positive outcomes of adopting FTL methods</b>	<b>% of FTL non-supportive staff who think outcome is highly likely</b>	<b>% of FTL supportive staff who think outcome is highly likely</b>
An inclusive learning experience for all students	28	46
A more satisfying teaching experience for staff	25	38
Opens up other options for using lecture time	29	37
Increased pass rates for all students	13	18
Opens up avenues for individual learning styles	40	58
A better learning experience for students with dis.	35	60
Drop off in attendance at lectures	18	16
Students listening and note-taking skills decrease	21	16
Less communication between staff & students	27	34
Less student to student interaction	22	16
Loss of intellectual property/copyright	7	6

More than a third of staff who were supportive of greater use of FTL felt that the lack of professional development, training and support were inhibiting factors in this direction. In contrast, less than a quarter of non-supportive lecturers felt that professional development in the use and application of FTL methods was a factor. This pattern of response was also seen in the attitudes of these two groups towards the restrictions placed on teachers by the learning environments and spaces. Those who supported FTL approaches felt they were more hampered by physical classroom restrictions.

## **Disability Staff Survey Results**

Disability staff participants were asked a number of questions on issues related to FTL (FTL) and the impact that this has on their support needs and functional coping with course demands. There are several ways of tackling the issues that students with disabilities encounter in the course of their studies and training programmes. In this survey disability staff participants were asked to indicate the approach they take when students with disabilities have problems accessing course materials or lecture content. The following table presents their responses.

**Table 21: Disability service approach**

<b>Service provision approach</b>	<b>almost never</b>	<b>infrequently</b>	<b>sometime s</b>	<b>frequently</b>	<b>almost always</b>
Individual supports	6	3	19	42	29
Assistive technology	10	10	45	23	13
Refer to course lecturer	0	10	42	29	19
Negotiate with course lecturer for individual accommodations	0	0	39	35	26
Increased flexible delivery of course	6	39	23	13	19

Disability staff participants were asked to indicate their agreement or disagreement with a number of statements related to the ways that students' needs are addressed and accommodated. Table 22 presents the responses of the survey participants to this issue.

**Table 22: Responses to various statements on service provision**

<b>Statement on meeting students' needs</b>	<b>Strongly disagree (%)</b>	<b>Disagree (%)</b>	<b>Unsure (%)</b>	<b>Agree (%)</b>	<b>Strongly agree (%)</b>
The typical education/training need of most students with disabilities can best be met through more flexible delivery of those education programmes	3	0	13	45	39
The individual targeting of students with disabilities is mostly a very cost efficient way of providing disability supports	14	28	15	34	9
The needs of students with disabilities should generally be met without the requirement for disclosure of disability or medical condition	8	22	28	34	8
Students with different types of disabilities often have the same support needs	2	8	8	68	14
Students with different types of disabilities often require the same types of support services	2	4	8	72	14

There are many means by which government bodies, education institutions and disability officers can support more systemic ways of dealing with the needs of students with disabilities. Disability staff participants were asked to indicate whether they felt various factors such as government funding approaches, institutional policies, professional culture and personal preferences for providing services supported a systematic approach to addressing the education training needs of these students. Table 23 presents the participants' responses to this question.

**Table 23: Key factors that impact on service provision**

Key factor	Do these factors actually support systemic approaches? (% of respondents)		
	Yes	No	No response
Disability policy	10	84	6
Disability plan	13	81	6
Institutional funding approach	65	35	0
Culture of professional environment	16	81	3
Disability officer's current method of service provision	6	74	19
Students' preferred method of receiving services	23	71	6
DETYA's funding approach	52	39	10

Disability staff survey participants were presented with the hypothetical situation that they had substantially more resources to address the problems faced by students in accessing the content of their education or training programmes. They were then given three choices as to how those resources might be expended. Knowing how staff would allocate additional funds and other resources gives an idea of where they think the service priorities and the directions that service provision might be heading. Table 24 presents the responses of disability staff to this situation.

**Table 24: Resource allocation options**

Resource allocation option	Top preference (% of respondents)	Allocation of additional resources (%)
Option 1: Assistive technology to individual students	13	31
Option 2: Non-technological support to individual students, e.g. note taking, tutoring, transcription	18	26
Option 3: Staff development on flexible delivery methods and disability	69	43

Students with disabilities encounter a wide range of learning environments in tertiary education settings. These include variations in physical environments such as lecture theatres and class rooms, informational environments such as computer laboratories and lecture, and

interactive environments such as tutorials and practical laboratories. Their particular disabilities and medical conditions also result in a great variety of functional difficulties. Disability officer participants were asked to indicate which of two approaches – flexible programme delivery or individual supports – would be the more suitable for addressing a number of very common functional problems that students encounter Table 25 presents a summary of their responses to this issue.

**Table 25: Preferred approach for addressing common functional difficulties.**

Common functional difficulty	Preferred method for addressing need (% of respondents)		
	Individual Supports	Flexible Programme Delivery	No response
Unable to see most of the materials/information presented in education/training setting	10	81	10
Unable to hear most of the information presented in education/training setting	35	48	16
Writing management problems	58	29	13
Unable to concentrate in the education/training setting	32	61	6
Absence due to illness/disability	6	81	13
Unable to interact with the equipment/materials provided in the learning situation	45	32	23
Student has difficulty with disclosing disability	19	68	13
Student has difficulty in negotiating with teaching staff	35	48	16

Out of a total of 32 respondents, 26 either agreed or strongly agreed with the statement that FTL is the best way of meeting the needs of students. The responses of these 26 FTL supportive disability staff were further analysed in terms of their responses to the survey question on key factors that encourage a more systemic approach to disability service delivery. These responses are presented in Table 26.

**Table 26: Responses of FTL-supportive disability staff to key factors that could encourage FTL within their institutions**

Key Factor	Do these factors actually support systemic approaches? (%)		
	Yes	No	No response
Disability policy	8	92	0
Disability plan	12	81	7
Institutional funding approach	62	38	0
Culture of professional environment	16	84	0
Disability officer's current method of service provision	4	87	9
Students' preferred method of receiving services	28	82	0
DETYA's funding approach	48	44	8

## **DISCUSSION**

The literature review and survey results provided three sources of information that form the basis of the following discussion. This multi-focused approach gives a broad overview on the views and practices of the key stakeholders involved in the provision of education and training programmes and support services for students with disabilities and provides a basis for the development of resources that might assist in raising awareness of this issue. The following discussion will be based on the literature review findings that students with disabilities stand to gain considerable benefits from the development and use of flexible and accessible methods of providing education, training and learning opportunities. This is not to dismiss the very real possibility, however, that students with particular types of disability are in a very vulnerable position when these methods are not implemented in accessible or inclusive ways.

### **Discussion of Teaching Staff Survey Results**

The low return rate of completed survey forms means that the survey findings cannot be interpreted as an accurate representation of tertiary teaching staff views on FTL (FTL) and its impact on disability matters. However, the large number of participants in the survey does mean that the results provide a starting point for considering teaching staff's views on these issues. While most respondents seemed to be generally in support of FTL, there was also a considerable number of staff who were not wanting to adopt more flexible methods of providing their courses. So it seems reasonable to conclude that there is at least a range of views on a number of issues represented in the results. The survey results also provide a range of opinions on questions that allow the development of resources that can provide information and support in the area of FTL and disability.

Many more returned surveys were received from university teaching staff members than from their counterparts in the TAFE sector. Only 28% of survey forms were completed and returned by TAFE staff whereas 72% were returned by university staff. The numbers of forms actually sent to TAFE staff was 41% of the total of 2,900 surveys mailed out. The proportion of part-time staff involved in the survey was only 9% of the total. However, it was felt that the key decision makers in this area of course design and delivery would be more likely to be full-time staff, and their majority representation was felt to be helpful for the development of useful and practical resources on this issue. The great majority of participants had extensive teaching background with 81% having taught for more than five years and only 8% of respondents having less than three years teaching experience. This also means that the results are very meaningful in terms of the experience and teaching background of the participants.

#### *Flexible Teaching and Learning*

As mentioned, the majority of teaching staff surveyed reported that they would like to have more opportunity for FTL in their course delivery. This does not mean that this view is representative of tertiary teaching staff in this State. Of those who supported FTL, there was a strong indication that they also wanted to move further in this direction. The main barriers to this development were resource factors such as the lack of technical support and the lack of funding and committed resources. It was also felt that there were courses where FTL was just not a suitable option. This may indicate that many staff have a particular understanding of

what flexible delivery options might be available in courses where practical field work is more common or where the electronic delivery of information is more difficult to structure into the design of a programme.

The majority of those who did not want to go to more flexible options felt that the current ways in which they presented the course provided adequate flexible opportunities. There is evidence from previous research (Edwards, 1990) that teaching staff are not aware of the needs of students with disabilities when they consider the design and delivery methods to be used in developing their courses and programmes. This poses the question of whether further knowledge about the benefits of flexible delivery for students with disabilities and other diversity groups might influence the views of teaching staff who are not otherwise supportive of FTL. This possibility is also supported by the finding that only a small minority of these staff (14%) gave other reasons such as class size or lack of time for preparing materials as reasons for not adopting FTL methods.

It is important that teaching staff see the general benefits and possible disadvantages that FTL presents for students with disabilities and other students. The responses of survey participants to a number of statements on how their teaching methods impact on students with disabilities provide some very interesting information. The large majority of respondents acknowledge that they have an important role to play in accommodating the needs of students with disabilities and they feel that their teaching methods cater well for these students. However, many staff also feel unsure about how their teaching methods might impact on physical disabilities such as those resulting in writing management problems. It is also interesting to note that almost three quarters of respondents would change their FTL methods if they were provided with information on how students might benefit from a more accessible approach to teaching.

### *Inhibiting factors*

The main inhibiting factors for the utilization of FTL methods amongst teaching staff were constraints on time to create flexible materials, lack of necessary equipment/resources, lack of funding to implement strategies, availability of technical support and class size. Respondents were not particularly concerned about the security of academic materials, or about intellectual property/copyright. This indicates that it is not the philosophical issues or attitudinal factors that inhibit the move to implementing FTL methods. Rather, it is the more pragmatic issues such as funding and resources and the lack of time that are the most important determinants. The responses also suggest that teaching staff may not be aware of the personal benefits that can also be a consequence of adopting FTL methods in terms of time efficiencies and the capacity to control the on-line availability of information.

The findings here on factors that inhibit teachers from taking up or expanding FTL options confirm the findings from many previous studies that it is the resource implications of these approaches that most concern teachers and lecturing staff. Without a clearer picture about how the needs of students with disabilities can fit into the overall picture of delivering education and training programmes, it is unlikely that educators and course designers will consider disability issues when they are structuring and planning courses for tertiary students. This is particularly true if these staff, even those with the best of intentions, view disability issues as peripheral to the mainstream issues of learning and access. When this is the case

disability access is seen to be an issue that requires substantial additional resources that come on top of the already significant workload that is necessary when the delivery method of a course is changed.

### *Perceived outcomes of FTL methods*

What are the outcomes that teaching staff see as following on from the adoption and implementation of FTL methods? The survey presented various options on outcomes for students with disabilities, the general student population and teaching staff. The great majority of respondents (84%) felt that it was likely or highly likely that FTL methods would result in a more inclusive learning experience for all students. This is an important finding and it suggests a way to inject the issue of disability access into the whole question of delivery and design of programmes. Interestingly, the respondents also saw FTL opportunities as providing a more satisfying teaching experience for staff. A majority of staff (69%) reported that FTL opens up other options for using lecture time and that this would be a positive outcome for them in adopting FTL methods. It needs to be said, however, that these views come from a majority of respondents that already support FTL methods in their teaching and these views cannot be generalized to the greater population of tertiary teaching staff in this state. They do indicate that many staff see considerable personal benefits of FTL in their professional role. The issue of loss of intellectual property and copyright was also seen to be an unlikely outcome of FTL approaches by most respondents (66%).

Perhaps the most common issue that concerns lecturers about the provision of course content in flexible forms is the effect this may have on student attendance in the lecture and teaching venues. Almost half of the respondents (48%) felt that it was likely or highly likely that there would be a drop off in attendance at lectures and classes. This clearly remains a considerable concern for teachers and needs to be addressed in some way. Lectures times, tutorials, and other face-to-face settings still provide a major part of the feedback that lecturers need to assess the level of enthusiasm and interest of students in the programmes they are teaching. If more traditional presentation methods are supplemented with the delivery of content and learning experiences on-line and electronically, then students may take the option of not attending classes. In the present survey 37% of staff felt that FTL would actually result in less communication between staff and students. There was also a concern (44%) that likely or highly likely outcomes would be that less student-to-student interaction would occur and that this would therefore have an impact of informal peer group learning and the general social communication between students before and after classes. These issues are important ones and need to be considered by those who wish to promote FTL opportunities and support teaching staff in their uptake of these approaches.

A large majority of respondents saw the benefits of FTL in individual learning styles and in enabling a more effective learning experience for students with disabilities. However, there was a sizable minority who felt that students' skills in note taking and listening would decrease due to the increased access to recorded information and lecture content. A number of additional comments were provided by respondents on the likely outcomes of FTL methods. These comments were very mixed in their view of FTL methods and the outcomes that they might result in for both students and teachers. They do, however, show how contentious and important this issue is for teachers and lecturing staff who need to meet

increasing demands and expectations from students and administrators and the wider community.

#### *University and TAFE lecturer responses*

There were no appreciable differences in the response patterns between the TAFE and Uni staff on many of the survey questions. There was no significant difference in the demographics of the groups, either in teaching experience or employment status of participants. There was no difference in the proportion of staff from either sector in their attitude towards using FTL methods. About the same proportion of TAFE and university lecturers (48% and 50% respectively) felt that their usual methods of course delivery might present difficulties for students with physical difficulties. Both TAFE and University lecturers generally felt that teachers also need to take a major role in providing support to students with disabilities.

In terms of the FTL issues that were of concern to teaching staff, there were similar responses between university and TAFE lecturers over the impact that such factors as class size, time constraints, and technical and funding support would have on adopting more FTL methods. There was a greater indication from TAFE respondents, however, that a lack of professional development, training and support would inhibit them from adopting FTL approaches. It seems that TAFE staff are more concerned that if they increased FTL opportunities, they may not have the technical and professional support, either in terms of IT support or in-house training, to successfully implement FTL programme in the long-term. Staff from both sectors had similar levels of concern over some of the possible outcomes of FTL such as drop off in lecture attendance and communication between staff and students.

#### *Adopting FTL methods to assist students with disabilities*

A majority of lecturers thought that their ways of providing learning opportunities, information and content catered well for most students with disabilities. But when asked about specific issues such as writing management problems experienced by students far fewer respondents were confident that their methods assisted students with those types of functional problems. This seems to indicate that lecturers may assume that their delivery approach is suitable to students with various disabilities and medical conditions when this may not necessarily be the case. This is evidenced in the finding that more than half (51%) of all those lecturers who did not want to use more FTL methods thought that their teaching did not cater well for students with disabilities. It is important to note that the large majority of those lecturers who supported more FTL as well as those who did not felt that they also had a major role to play in providing academic support to students with disabilities.

The responses to prompts about changing teaching and learning methods clearly indicated that staff were willing to change their practices and course design if they knew that these changes would assist students with disabilities. It is clear, however, that most lecturers either have not considered this issue or are not clear about what delivery changes might be appropriate to support these students.

#### *Differences between FTL supportive and non-supportive respondents*

An analysis of the difference in responses between FTL supportive and non-supportive staff showed a clear disparity between the two groups on the perceived outcomes of FTL methods. For all the positive outcomes such as “a more inclusive learning experience for all students” and “a more satisfying teaching experience for staff” FTL supportive staff had a much higher expectation that the outcome would occur. The non-supporters had a higher expectation that negative outcomes such as “students listening and note-taking skills will decrease” and “less student to student interaction” would be more likely to occur. These difference give an indication that the promotion of flexible teaching methods may need to take a more subtle and differentiated approach to answering the concerns of lecturers depending on their basic stance towards innovative teaching approaches.

Those who are not supportive may need to have their concerns over negative outcomes directly addressed, and the design of FTL programmes needs to reduce as far as possible these possible negative consequences. On the other hand, with staff who were supportive of greater use of FTL, it is the perceived lack of technical support and professional development in this area that is seen as the major inhibiting factors to adopting FTL methods. Clearly if teachers are wanting to take up and use various technologies to increase the flexibility and accessibility of their courses, they will need to be more familiar with those technologies and have confidence in those technologies to deliver. In contrast, lecturers who rely more on didactic, “chalk and talk” methods will not have such concerns. This issue also appeared in the attitudes of these two groups towards the restrictions placed on teachers by the learning environments and spaces. Those who supported FTL approaches felt they were more hampered by physical classroom restrictions.

There was a consistent difference between FTL supportive and non-supportive staff in their assessment of the importance of the role various factors played in inhibiting their use of FTL methods. As would be expected, non-supportive staff saw factors such as class size, perceived lack of technical support, funding issues, and time constraints as more problematic than their FTL supportive colleagues. Neither group felt there were particular problems associated with the issues of intellectual property, copyright or security of academic information in the context of FTL.

## **Discussion of Disability Staff Survey Results**

Statistics on the total number of disability officers working in tertiary education in Australia were not collected for this project. Given that there are 38 universities and many more TAFE colleges the number of returned survey forms would probably represent approximately 20-30% of the total number of full-time disability officers working in this field. However, the results do give a general indication of the views of disability services staff on the issue of service delivery in the area of academic support needs and FTL issues.

### *Approaches to service provision*

There are several very interesting findings that came out of the survey of disability services staff. On the question of what approach to service provision do disability services staff take when students with disabilities need academic or learning support, it was found that individual supports and individual negotiation with teachers and lecturers are the most common methods of dealing with the needs of students. The “Individual supports” approach

to meeting learning needs includes supports such as note taking, individual transcription and personal tutoring. This approach is frequently or almost always employed by 71% of respondents. The approach of negotiating with lecturers for the needs of specific students is frequently or almost always employed 61% of the time. The least common approach taken to meeting the learning needs of students is increasing the flexibility of the method of delivering the course. Only 32% of disability staff frequently or almost always employ this approach. This confirms the literature review findings that the “support model” approach of addressing disability needs by providing supports to individual students is still the dominant model adopted by disability services in tertiary institutions.

### *Student needs and disclosure*

These findings contrast sharply with the respondents’ views on what is the best way to actually meet the typical education/training needs of most students with disabilities. The survey found that 84% of respondents agreed or agreed strongly that the students’ learning needs could best be met through more flexible delivery of education and training programmes. Respondents were equally split over the question of the efficient use of disability funds to address learning needs. Only the minority of disability staff (43%) felt that the individual targeting of needs was a very cost efficient way to deliver services, and 57% were either unsure or disagreed with the proposition. This is a very surprising finding given that the great majority of disability services resources, in terms of time and money, are spent on providing individual supports for students.

The support model of providing individualized supports for learning needs requires that students disclose their disability on several occasions in order to receive those supports. Disclosure often occurs in written form on enrolment forms, disability service registration forms and in application for specific supports. As well as written disclosure, verbal notification of disability and request for support is also often required. Verbal disclosure will sometimes be required by the lecturing staff, administrative personal, academic advisers and disability service staff, and often this has to be done several times for each course and for each term, semester or year that the learning supports are needed. Disclosure is essential for services and accommodations to be provided when the support model of service provision is used. Although this is currently the dominant model, 42% of respondents felt that the needs of students with disabilities should generally be met without any requirement for disclosure of disability or medical condition. A further 28% were unsure and this left a small minority of 30% supporting the current requirement for disclosure.

In the process of meeting the demands of their courses, students with disabilities encounter a wide range of learning environments in tertiary education settings. Their particular disabilities and medical conditions interact with these environments and result in a great variety of functional difficulties. The survey participants were asked to indicate which of two approaches – flexible programme delivery or individual supports – would be the most suitable for addressing a number of very common functional problems that students encounter in many learning situations. The survey findings present a mixed set of results, with FTL being preferred for some functional problems and the more individual support approach being preferred for others. In general, it seems that disability staff prefer to manage on an individual basis those disabilities that have a more serious impact on the learning situation. These include sensory impairments, blindness and deafness. This pattern of responses seems

to support the proposition that the majority of needs of students with disabilities can be met through the mainstreaming of flexibility and accessibility considerations while the higher level of needs of students such as deaf or blind students are best catered for through more individualised programmes of support.

### *Functional impact and FTL*

The types of disabilities and medical conditions that tertiary students report cover a very wide range and differ greatly in degree of severity (Andrews, 1994). These conditions also impact on students' functioning and learning experiences in a multitude of ways. However, because learning environments often require a relatively restricted range of behavioural capacities, such as sitting, fine motor manipulation, note taking and listening, student with disabilities often experience similar functional demands and problems even though their conditions vary widely (Edwards, 1999). The disability staff responses in this survey supported these previous findings with 82% of survey respondents agreeing or strongly agreeing that students with different types of disabilities often have the same support needs. Given this response it is not surprising that the great majority of respondents (86%) also agree or agree strongly that students with different types of disabilities often require the same types of support services. These findings suggest that disability staff recognise the value of FTL as a way of providing services to students with disabilities and that this approach has the potential to meet the most commonly reported types of difficulties that students encounter in education and training settings. However, it is also clear that disability services staff are not operating out of an FTL approach on a daily basis in the addressing the needs of their students.

### *Factors influencing service provision*

From the data on disability service staffs' preferred, as against their actual, model of meeting learning and education needs, there seems to be a substantial gap between what the disability services staff see as the most effective means of providing services and the current operational model that they employ at the micro-level of assisting students. It is interesting to consider what issues might influence disability officers' decision to adopt the individual support model as opposed to a more systemic method of the learning barriers that face students with disabilities. To explore this issue the survey asked about macro-level factors that might impact on whether more systematic approaches to dealing with students' needs were actually supported within their institution and some very interesting responses were received for this question.

The great majority of responses indicated that many key factors that influence the type of approach taken to provide services did not support systematic ways, such as FTL methods, of addressing students needs. These factors included the tertiary institution's disability action plan and disability policy, the culture of the disability officers' professional environment, and the disability officer's own current method of service provision. The responses of participants who either agreed or strongly agreed with the statement that FTL is the best way of meeting the needs of students (81%) was further analysed to see if they also felt there was a lack of structural supports that might encourage a more systemic approach to disability service delivery. Predictably their ratings of factors were even more pronounced and it was clear from their pattern of responses that they felt there to be little very institutional or professional support for adopting FTL approaches to meet students' learning needs.

Interestingly, most respondents felt that the funding approach of both their own institution and the relevant commonwealth department did support a more systemic approach to service provision. This may be because, in the past, funding by governments and institutions for disability supports has not been provided on an individual basis. Disability staff have usually been given considerable discretion in how and where funds are to be spent to support students. In any event, it seems that the issue of funding is not seen by disability staff as the main determinant in what type of service provision model they use in addressing students' learning needs. Contrary to the actual findings on the preferences of students with disabilities in this area, disability officers generally believed (71%) that the students' own preferred approaches to having their learning needs met did not support FTL methods.

### *Funding and resource allocation*

Disability staff survey participants were asked about their preferences for allocating additional resources. Knowing how staff would allocate additional funds and other resources gives an idea of where they think the service priorities and the directions that service provision might be heading. The limited set of funds, personnel and other resources available to tertiary disability services means that crucial decisions need to be made about the allocation of time and monies to the various demands that are made upon these areas. With the ever increasing numbers of students with disabilities and the demand for support services increase, it is important that disability service staff find more efficient ways of addressing these demands and prioritise their service objectives and appropriate their limited resources on that basis.

In providing disability services for the academic, learning and training needs of students with disabilities, there have traditionally been two areas where most resources have been allocated to provide support to students. The first has been the provision of individual supports such as note-taking, study skills advice, personal tutoring, transcriptions services and negotiating for individual accommodations. The second has been the provision of assistive technology to individual students to enable them to access information, course content and materials in a format that they prefer. The survey findings show that the majority of respondents (69%) would allocate additional resources to the area of staff development on flexible delivery methods and disability. This is an important finding and it gives some idea of the priority that disability services staff place on this topic.

## **CONCLUSION**

The basic findings from the survey of teaching staff in this study indicate that the general move towards more innovative and FTL methods has not specifically been connected with the possible benefits or drawbacks that these changes hold for students with disabilities. From the review of literature it is clear that these developments in teaching methods offer many advantages over traditional ways of providing supports to higher education students with disabilities. However, traditional methods of delivering courses are still the common and more systematic, and targeted strategies will be required to ensure that the move to flexible delivery is inclusive of students with disabilities.

The experience of students involved in campus-based courses seems to be that they want to retain traditional campus-based delivery methods. This is understandable when one considers the isolating effects that disability can have on individuals. It is interesting to note that 'flexible programme delivery' and other similar terms, when associated with disability, are often thought of in the context of providing external courses or accessing information electronically. Students with chronic pain, writing management problems, chronic fatigue syndrome, mental illness or other chronic medical conditions form the majority of students with disabilities and they need flexibility options that address their needs on-campus as well as off. The problem for these students is not so much in getting to the campus but in accessing the relevant information once they are on-campus and in their classes. Being physically present on-campus as part of the university community may be even more important for students with disabilities than it is for the general student population. Disability and long-term illness is often a very isolating experience in itself, and the last thing that students in these situations need is another layer of isolation. This does not mean that access by correspondence or electronic media to course materials or library resources is not an important option. It simply means that the mechanisms of flexible delivery should be seen as part of the repertoire of supports that students with disabilities could access to supplement, rather than replace, their on-campus activities.

One of the issues needing further clarification that was raised in this study was the attitude of students themselves towards individualised supports versus a more mainstreamed FTL approach to disability service provision. It seems that students with disabilities find the more flexible methods of gaining access to course content preferable to the traditional support systems that disability offices typically provide once they have had experience of these more innovative ways of getting access to course content and materials. Disability staff, however, feel that students with specific needs expect more individualised addressing of those needs when they meet to discuss supports need in a face-to-face situation or when specific solutions to access problems are needed. This means that students themselves may need to be provided with information on how FTL can address their learning needs and how disability staff can assist them through more systemic approaches to service provision.

The possibilities of more flexible approaches are clearly seen with the innovative approach known as UDL. It appears that this theoretical framework for looking at issues of diversity, difference and individual need has the capacity to address these matters within a context of quality and better accessibility and servicing for all students. There have been several studies that have evaluated UDL and its impact on the learning of students with very positive results. The published literature on UDL strongly suggests that this approach can help all students to select an appropriate form of access and/or learning mode in a particular course of study, thus increasing learners' access to, and control over, their learning environment. There are also significant benefits for teaching staff from the adaptation of UDL principles to the design and delivery of education and training programmes. However, further evaluations will need to be carried out in the Australian tertiary context before these positive findings can be generalized to local settings.

Some of the papers reviewed concluded that, where there was a focus was on providing flexible learning environments, the needs of students with disabilities were largely met without the need for special support or individual arrangements. The particular access needs of students with disabilities (and of other equity students) can be to a significant extent be catered for through the application of the several core principles of flexibility and

accessibility. It should be emphasised however, that students with disabilities may see flexibility as a combination of traditional course delivery with more flexible supplementary means of gaining access to programme materials and information. Hence, FTL is not to be equated with e-learning, distance education or on-line learning methods which simply replace conventional lecture or class-based learning with electronically delivery methods. The results from the teachers' survey indicate that this understanding of FTL, as supplementing the current more conventional methods of teaching, can allay some of the concerns that were expressed in such areas as communicating with students and the possibility of drop off in attendance levels.

The results from the teaching staffs' survey show that FTL methods such as UDL are best promoted within the context of quality in teaching and in the benefits that can result from such approaches for all students. Teachers feel they have a part to play in ensuring access and participation for students with disabilities but they are unsure about what to do to provide this support when no individual student case is disclosed to them. They are also prepared to take on innovative teaching methods when they can see the benefits for the general population of students. It is within this more inclusive context that FTL may be successfully promoted rather than as "special supports" that need to be adopted for individual students, as has previously been the case with the promotion of strategies to assist students with disability.

The study has also pointed to some drawbacks in FTL that have not been emphasised before in the literature dealing with disability and FTL. It is well known that access to materials presented via electronic information and communications technology can be very problematic for some groups of students with disabilities. The findings from the survey of teachers also found that that more general impact of FTL on students with disabilities with particular disabilities is not considered in the design of the course and in the presentation of things such as multimedia materials or on-line recordings. Disability services have an important role in assisting teaching staff to develop flexible teaching methods and materials that are accessible and inclusive of this group of students. The great variety of developments currently taking place in the area of flexible course delivery within many tertiary education institutions means that there is considerable variation in those programmes that might be considered as flexible. While the lecturing staff own education, training and teaching objectives will understandably result in a great variety of learning experiences, there needs to be some basic level of convention on the means by which those objectives are mediated through the delivery of the programme. The findings indicate clearly that both students and staff recognise the potential benefits that will flow on to them from flexible delivery methods. There appears to be the promise of substantial benefits in teaching and learning opportunities and in the efficient delivery of supports to students with disabilities through these new methods. There are also significant potential drawbacks facing both students and academic staff that will need to be addressed if the move to more accessible education opportunities is to be successfully negotiated.

The results suggest that disability services heavily favour the adoption and use of more systematic and design-based methods to meet the learning needs of tertiary students with disabilities. They see the commonality in the functional barriers that students encounter in the classroom, lecture room, computer and science laboratory and feel that the majority of these needs can best be met through the delivery of course and programmes that employ FTL methodologies. However, they also recognise that there are students with some types of

disabilities and medical conditions that do require specific and individualized supports and that the needs of these students cannot be adequately catered for through FTL methods. The strong support of disability staff for more systemic and accessible service provision was clearly indicated in the options they chose for the allocation of additional resources. Disability staff are currently required to service ever increasing numbers of student with increasingly significant levels of disability and the allocation of resources is becoming an ever more important issue in responding to the needs of these students. That such a heavy weighting should be placed on the allocation of additional resources to raising the awareness and utilisation of FTL methods is indicative of the importance that staff in this area place on more efficient and effective ways of meeting the demand for services.

The key issue identified through the survey findings is that, while disability staff recognise the potential benefits of flexible and inclusive teaching methods, they also feel that their institutional plans, policies and service delivery culture in which they operate do not support the move to these more innovative options for addressing the learning needs of students with disabilities. Many of the disability policies, strategic plans and disability policies that are currently in effect in tertiary institutions were developed and endorsed during the early to mid 1990s. While the importance of a mainstream approach to physical access has been recognised for a considerable period, it seems that the value of a more systemic approach to academic, learning and training needs has only more recently come to the fore within disability and student equity services.

The disability survey phase of this study gave a general indication of the attitudes of operational staff to such issues as the effective and efficient use of funds, a more systemic approach to service provision, the implementation of an inclusive model of disability support provision, and the barriers that might be encountered in implementing such approaches. Further research is needed to investigate these matters and to see how they can be further supported by governments, institutions and professional groups. There are also well known disadvantages of FTL in that it can have a significant negative impact of the participation and access of student with various sensory impairments, particularly when internet-based resources are not designed to ensure disability access. These matters also need to be investigated within the context of the dramatically increased use of flexible delivery by education and training institutions and the numbers of important innovations that are happening in this field.

There are a number of innovations currently proceeding both in Australia and overseas that are directly targeted at enabling greater access to course materials and lecture-based information. These new approaches offer a better quality of service to students that does not require disclosure. They also open up further opportunities for the general population of students. It is within this context that the great potential of FTL methods can be fully exploited for the benefit of all students. Disability supports have often been seen as an additional burden on teaching staff and not as an opportunity for improving the quality of teaching for all students. In the end it is this incentive, that of improving the quality of the learning experience of all students, that will be the most important factor in the take up of FTL. As this movement expands and becomes more widespread, disability staff will need to ensure that the disadvantages that often accompany electronic forms of information delivery do not become another source of disadvantage for tertiary students with disabilities.



## **SECTION 4: PROJECT OUTCOMES**

The information and data from the literature review, the survey of teaching staff and the survey of disability services staff provide a basis for the development of resources that can be used to raise awareness among teachers, students and disability staff of the benefits and potential risks of FTL methods. To date the project has resulted in the following outcomes:

1. The wide dissemination of evidence that addressing service needs from a delivery standpoint is an effective and efficient means of improving the learning environments of student with disabilities. A paper outlining the results of the literature review and the theoretical basis of the project was presented at the Australasian Association for Research in Education Conference in December 2001. A paper on the project has also been accepted for the pathways 6 conference on Disability in Higher Education for later this year.
2. The development of a staff development model to support the implementation of alternative modes and practices that increase flexibility in the learning environment. The key findings from the project have been developed into an initial outline for a staff development package that will raise awareness of these issues and provide information and practical support for teaching staff wanting to explore further the potential benefits offered by FTL methods such as UDL. These outlines will be available on the web site that has been developed out of the project.
3. An on-line resource for academic staff and disability officers on the benefits of flexible program delivery. The development of a web site entitled, “Universal Design for Learning: Accessible programme design and Delivery in Higher Education” is completed but stills needs further evaluation. This site will be a major practical resource for teaching staff and disability service staff in universities and TAFE colleges in Western Australia. It includes practical information on UDL and FTL as well as a reading room, staff development resources, case studies, checklists and web-development guidelines.
4. The development of a best practice site with examples of delivery models to assist course designers and teachers in the structuring of their program delivery methods. This outcome will also form part of the on-line resources available to teaching staff as well as course designers and CIT resource personnel. This part of the web site will need further evaluation and development.

These outcomes will have an important state and national significance in that they will stimulate and support the move to a more equitable and efficient delivery of education services to tertiary students with disabilities. They will also raise awareness about some of the dangers of flexible delivery for students with particular disabilities. Instead of students needing to accommodate inflexible teaching practices (a state which the current model of service delivery supports) it is hoped that the results and resources developed through this project will assist in the move towards more flexible and accessible academic and education programmes. This approach will have application in areas such as staff development, teaching and learning strategies, and policy and planning considerations, e.g. those sections of disability action plans dealing with communication and the delivery of information. It is

recommended that the further evaluation and development of the site be undertaken by the State Disability Liaison Office officer for Western Australia.

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## **APPENDICES**

### APPENDIX A

#### **BENEFITS AND BARRIERS: A SURVEY OF VIEWS OF HIGHER EDUCATION TEACHING STAFF ON FTL METHODS AND DISABILITY**

This survey asks about your views on how FTL methods might interact with the learning experiences of students with disabilities and chronic medical conditions. The survey is being undertaken by the Disability Office of the University of Western Australia and aims to identify the benefits of more flexible teaching methods as well as the barriers that face teaching staff in adopting these approaches. The project outcomes will include the development of practical resources and information to support teaching staff in the use of FTL methods for all students. For further information on the project, please contact Mark Edwards on (08) 9380 3809 or by e-mail: [mgedwards@admin.uwa.edu.au](mailto:mgedwards@admin.uwa.edu.au)

**Thank you for taking the time to answer the following questions. The survey should take 10-15 minutes to complete. Please return the survey to YOUR institution's Disability Officer via internal mail by Monday 13<sup>th</sup> August 2001.**

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1. At which institution do you do all or most of your teaching?

2. Please indicate your employment status at this institution:

Full-time <sub>1</sub>

Part-time <sub>2</sub>

Casual <sub>3</sub>

3. How many years of teaching experience have you had?

1-2 years <sub>1</sub>

3-5 years <sub>2</sub>

more than 5 years <sub>3</sub>

For the purposes of this survey, FTL is defined as:

**“Providing a teaching and learning environment that supports a range of access methods and different learning modes to optimise the learning opportunities of students.”**

4. Would you like to have more opportunity to be more flexible in your course delivery?

**No** <sub>1</sub> If no, why not? .....

**Yes** <sub>2</sub> If yes, what is preventing you? .....

5. Use the scale provided below to indicate your agreement or disagreement with each of the following statements:

**1**                      **2**                      **3**  
Disagree              Agree                      Unsure

**As far as I am aware:**

- a) My teaching methods cater well for most students with disabilities
- b) My usual methods of presenting class content may present difficulties for students who have physical difficulties with writing
- c) I do not know how teaching methods might impact on students with a disability
- d) I think that students with a disability should be accommodated through support services only and not by how I teach
- e) I would change my teaching and learning methods if I knew how I might better accommodate students with disabilities
- f) I would change my teaching and learning methods if I could see the benefit(s) for students with disabilities

6. Using the scale provided, please rate each of the following factors on how much you feel they would inhibit you from adopting more flexible methods of teaching.

**1**                      **2**                      **3**  
**Very little**              **A moderate amount**              **A lot**

- a) Large class size
- b) Lack of necessary equipment/resources
- c) Lack of technical support
- d) Lack of funding to cover teaching load when developing flexible courses
- e) Lack of funding to implement strategies
- f) Constraints on time to create flexible materials
- g) Concern over intellectual property/copyright
- h) Security of academic materials
- i) Loss of academic freedom
- J) Nature of the course/unit is not conducive to flexible delivery
- k) Lack of encouragement from Faculty/department regarding flexible delivery
- l) Lack of professional development/training/support
- m) Learning space /environment restrictions
- n) Other (please specify)



## **APPENDIX B**

### **BENEFITS AND BARRIERS: A SURVEY OF SUPPORT PRACTICES OF DISABILITY OFFICERS IN HIGHER EDUCATION IN AUSTRALIA**

This survey aims to gather some information on the basic methods of service provision that disability officers employ to meet the education/training needs of higher education students with disabilities. The survey is being undertaken by the Disability Office of the University of Western Australia and is part of a DETYA funded project looking at the impact of flexible course delivery on the service needs of students with disabilities. The project outcomes will include the development of practical resources and information to support teaching staff in the development of more flexible teaching practices. For further information on the project contact Mark Edwards on (08) 9380 3809 or by e-mail: [mgedwards@admin.uwa.edu.au](mailto:mgedwards@admin.uwa.edu.au)

**The survey should take 15 minutes to complete. All responses are confidential and all identifying information will immediately be removed from your response.**

**DO NOT USE THE “REPLY” FUNCTION ON YOUR E-MAIL PROGRAMME.**

**Please email the completed survey to the return email address:**

**[mgedwards@admin.uwa.edu.au](mailto:mgedwards@admin.uwa.edu.au)**

NOTE: In this survey the term “flexible delivery” refers to flexibility in the delivery of education and training programmes to accommodate the diverse learning needs of students. In the disability context flexible delivery draws on the principles of Universal Instructional Design.

1. Use the scale provided below to indicate the approach you take when a student with a disability has a problem accessing course/unit materials or lecture content.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Almost Never</b>	<b>Infrequently</b>	<b>Sometimes</b>	<b>Frequently</b>	<b>Almost Always</b>

- a) I provide individually targeted support services (e.g. note taking) .....
- b) I provide individually targeted assistive technology .....
- c) I refer the student to the course coordinator .....
- d) I negotiate with the course coordinator to provide the student with individual supports, e.g., notes, overheads .....
- e) I negotiate with the course coordinator for increased flexibility in the basic method of course delivery, e.g. hard copy notes for all students .....

2. Please indicate your agreement or disagreement with the following statements by using the scale provided.

**1**                      **2**                      **3**                      **4**                      **5**  
**Strongly Disagree**    **Disagree**            **Unsure**            **Agree**              **Strongly Agree**

- a) The typical education/training needs of most students with disabilities can best be met through more flexible delivery of those education programmes .....
  - b) The individual targeting of supports is mostly a very cost efficient and effective way of providing disability services. ....
  - c) The needs of students with disability needs should generally be met without the need for disclosure of disability or medical condition.....
  - d) Students with different types of disabilities often have the same supports needs.....
  - e) Students with different types of disabilities often require the same types of support services. ....
  - f) Most students with disabilities need to repeatedly disclose their disability in order to receive education supports.....
3. Please indicate for each of the following whether they encourage a systemic approach to meeting the education/training needs of students with disabilities.
- a) My institutions Disability Policy.....Yes / No
  - b) My institutions Disability Action/Service Plan..... Yes / No
  - c) The funding approach of my institution..... Yes / No
  - d) The culture of my professional environment.....Yes / No
  - e) My preferred method of providing disability services.....Yes / No
  - f) The student's preferred method of receiving assistance..... Yes / No
  - g) DETYA's funding approach..... Yes / No
4. If I had more resources to address the problems students face in accessing the content of their education/training programmes, I would put them into improving (use percentages e.g. 25%, 50%, and 25%):
- a) the level of assistive technology supports provided to individual students .....
  - b) the level of general non-technological supports such as note taking, transcription, tutoring, and personal assistance.....
  - c) the level of supports provided to teaching/training staff to change their way of delivering courses .....
5. For each of the following types of functional problems encountered by students with disabilities, indicate whether they are best dealt with by flexible delivery or through individual supports. Put "FD" for flexible delivery and "IS" for individual supports.
- a. Unable to see much of the information presented in class .....

- b. Unable to hear much of the information presented in class .....
- c. Writing management problems .....
- d. Unable to concentrate in the education/training setting .....
- e. Absence due to illness/disability .....
- f. Unable to interact with the equipment/materials provided in the learning situation .....
- g. Student has difficulty with disclosing disability .....
- h. Student has difficulty in negotiating with teaching staff .....

**MANY THANKS FOR COMPLETING THIS SURVEY.**

**PLEASE RETURN IT TO:**

[mgedwards@admin.uwa.edu.au](mailto:mgedwards@admin.uwa.edu.au)